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Maine Energy Systems
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USA

Testing a pellet boiler model Pellematic 56 at category I (non CBI report)

(16 appendices)

The assignment

Testing the wood pellet fired hydronic heater, model Pellematic 56 in accordance with test method ASTM 2618-13, CSA B415.1-10 and ASTM 2515-11 for compliance with EPA 40 CFR Part 60, March 16, 2015. The test shall be performed at category I only, and the test is a basis for renewal of the certificate of compliance. The complete test of the pellet boiler Pellematic 56 refers to test report 9P07425-1A and 9P07425-1B dated February 18, 2020 and revised September 2, 2021.

Item for testing

The item tested a hydronic heater– type Pellematic 56 with serial nr.: XUTO2092, date of production 01/2025 and manufactured by Maine Energy Systems, USA. The hydronic heater arrived at RISE on 24th February 2025. The hydronic heater had been pre-conditioned by the manufacturer and was therefore in used condition.

The test at Category I was conducted 5th March 2025.

This test report relates only to the actual item tested.

Technical description

Pellets are charged either manually or via the suction system from the storage location into the hopper and from there via the backfire safety device to the drop stage. The burner auger transports the pellets to the burner plate where the heater rod heats them until they ignite. The ignition is monitored on the basis of the combustion chamber temperature and switches off once the pellets have ignited. The fuel and combustion air volume are automatically controlled by the combustion temperature and modulation level and the vacuum in the combustion chamber is controlled by means of the flue gas fan and burner fan. The heat exchanger is cleaned automatically with the cyclically activated cleaning spring in the heat exchanger. The ash is collected underneath the burner plate, and is transported by the ash auger into the ash bin.

The wood pellet fired hydronic heater Pellematic 56 is intended for indoor installation.

Informative material supplied

Two manuals were delivered from the manufacturer:

RISE Research Institutes of Sweden AB

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ISO/IEC 17025

- Operating manual, Pellet heating with auger delivery or vacuum suction system for the end user. AutoPellet PES 20, 22, 32, 56. Version: FA_V3.10
- Installation manual – Pellet heating with vacuum suction system type AutoPellet PES 56, MESys V1.1 Version valid from 03/2025.

Test arrangement

The hydronic heater was connected to the test rig according to method ASTM E2618-13. The chimney was connected to a dilution tunnel (see appendix 11).

The chimney diameter was 150 mm (5.9 in.), with a height of about 5 m (197 in.) above the upper surface of the scale. The dilution tunnel diameter was 160 mm (6.3 in.).

The manufacturer conducted a pre-test burning of 50 hours to condition the unit before testing (see appendix 15). The wood pellet hydronic heater Pellematic 56 is a non-catalytic appliance.

Test procedure

Testing was carried out at/by RISE Department for Energy and Resources 5th February 2025 in accordance with EPA regulations 40 CFR Part 60 subpart QQQQ. Testing was performed according to ASTM 2618-13 and ASTM 2515-11 at category I only.

Calculation of the average overall thermal efficiency (η_{SLM}) was done in accordance with Canadian standard CSA B415.1-10, clause 13.7 except for 13.7.2 (e), (f), (g), and (h) where the following average fuel properties for oak were used: C = 50.0 %, H = 6.6 %, O = 43.2 %, Ash = 0.2 %. The higher heating value (HHV) 8600 Btu/lb (19.99 MJ/kg) and the lower heating value (LHV) 7988 Btu/lb (18.567 MJ/kg) were used when calculating the efficiencies.

CO, CO₂ and O₂ emissions were measured continuously in the chimney during the test period. Emissions of CO in g/min were calculated according to the Canadian standard CSA B415.1-10 clause 13.9 (using the spreadsheet in annex F, CSA B415.1-10).

Calibration of CO and CO₂ was performed with two different concentrations of gas (see appendix 8, page 1).

The test fuel used was manufactured by Danubia Wood Trading GmbH, Vienna Austria and is classified as EN plus pellet and A1 according to ISO 17225-2. The fuel was delivered in 15 kg plastic bags. See fuel analyse in appendix 14.

Leakage checks of the particulate sampling trains were carried out before and after the tests (see appendix 4).

Instead of the thermopile on the load side of the heat exchanger one pair of PT-100 sensors were used to measure the temperatures. This was communicated with EPA by email (17/05/2016) and was approved. The PT-100 sensor has a higher accuracy and a higher sensitivity compared to the thermocouple.

Three sample trains were used in the dilution tunnel, two parallel trains and one train for the one hour emission.

The appliance was in operation at the specified draw rate two hours before the test started. The test period lasted for 4 hours at category I according to method E2618-13 clause 12.3.3.

The instructions of the manual was followed when operating the boiler.

A representative from the company Ökofen, Austria was present as observer during the test.

Summary of the test at category I

			T2 min	E _T	E	E	E g/hr	E g/kg	η _{del}	η _{SLM}
Category	Run No	Load % Capacity	Min return water temp	Total PM emissions	PM output based	PM output based	PM rate	PM factor	Delivered efficiency	Stack loss efficiency
			°F	g	lb/mmBtu out	g/MJ	g/hr	g/kg	%	%
I	1	≤ 15	127	0.47	0.0093	0.004	0.118	0.067	84.5	88.1

Comments and observations

The wood pellet hydronic heater Pellematic 56 manufactured by Maine Energy Systems, USA meets the step 2 requirement 2020 for PM emissions in EPA 40 CFR Part 60 of 0.10 lb/mmBtu heat output (average) and at each individual test rate.

The test result showed that the emission of particulate matter was below 0.090 lb/mmBtu.

No anomalies were detected during the test and the test at category I is found to be valid.

The model Pellematic 56 is safety tested by OMNI –Test Laboratories, Inc (report no. 0444PB0095).

The tested model has a rated output of 191,000 Btu/hr (56 kW).

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Quality assurance

RISE Research Institute of Sweden AB is accredited according to ISO/IEC 17025 as well as accredited by EPA as a test lab to perform tests according to EPA 40 CFR Part 60 subpart QQQQ.

**RISE Research Institutes of Sweden AB
Department Infrastructure concrete – Infrastructure Development**

Performed by



Henrik Persson
Test engineer

Examined by



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Director

Appendices

Appendix 1 Identification

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Appendix 1

Identification



Figure 1a. Pellematic 56



Figure 1b. boiler in test rig and measurement installation and setup

Appendix 1



Figure 1 c. boiler software



Figure 1 d. boiler sealing after test

Technical data

A summary of the technical data is shown in table 1.

Table 1. Technical data

Nominal output, Btu/h (kW)	191,000 (56)
Gross weight empty, lbs (kg)	1120 (508)
Water content, gal (l)	30.6 (116)
Dimensions, (height x depth x width), inch (mm)	61 x 39 x 51 (1555 x 990 x 1297)
Electrical connection	208 to 240 VAC, single phase, 60 Hz, 15 amp
Software version	V3.10d 10072020

Appendix 2

Results

Table 2 show the test results for the hydronic heater Pellematic 56 at category I.

Table 2. Test results at Category I

	Unit	Category I Run 1
Test date		05/03/2025
Atmospheric pressure	mm Hg (hPa)	740 (987)
Test duration	minute	240
Absolute average gas static pressure in dilution tunnel	mm Hg	740
Average velocity in dilution tunnel	m/s	7.3
Average gas tunnel temperature (at Pitot tube)	°F (°C)	72 (22)
Average temperature at PM filter, sampling train 1	°F (°C)	70 (21)
Average temperature at PM filter, sampling train 2	°F (°C)	70 (21)
Average temperature at PM filter, 1 hr sampling train	°F (°C)	(20)
Flue gas temp (chimney)	°F (°C)	160 (71)
Average temperature of the appliance and water at start of the test	°F (°C)	145 (63)
Average temperature of the appliance and water at the end of the test	°F (°C)	141 (61)
Average temperature of return water as it enters the appliance	°F (°C)	127 (53)
Average temperature of supply water as it leaves the appliance	°F (°C)	158 (70)
Average inlet temperature load side of the heat exchanger	°F (°C)	102 (39)
Average outlet temperature load side of the heat exchanger	°F (°C)	133 (56)
Test load as fired	lb (kg)	16.75 (7.60)
Fuel moisture content on dry basis	%	8.6
Diameter of pellet	mm	6
Water flow rate load side	gal/min (l/min)	1.88 (7.10)
Heat output (load side)	Btu/hr (kW)	28,379 (8.3)
Efficiency delivered (HHV)	%	84.5
Efficiency delivered (LHV)	%	91.0
Stack loss efficiency (HHV) ¹	%	88.1

Appendix 2

	Unit	Category I Run 1
CO (mean value)	mole-ppm	200
CO (mean value)	mole-%	0.0200
CO ₂ (mean value)	mole-%	12.6
O ₂ , (mean value)	mole-%	7.8
CO, (mean)	g/min	0.05 ²
Room air blank filter	mg	0.0
Total amount of particulate matter collected in dilution tunnel, sampling train 1	g	0.025
Total amount of particulate matter collected in dilution tunnel, sampling train 2	g	0.041
Total amount of particulate matter collected in dilution tunnel, 1 hr sampling train	g	0.026
Average gas flow rate in dilution tunnel	dscm/min	8.39
Absolute average dry gas meter temperature, sampling train 1	K	293
Absolute average dry gas meter temperature, sampling train 2	K	293
Absolute average dry gas meter temperature, 1 hr sampling train	K	295
Volume of gas sample measured corrected to standard conditions, sampling train 1	dscm	1.4120
Volume of gas sample measured corrected to standard conditions, sampling train 2	dscm	1.4124
Volume of gas sample measured corrected to standard conditions, 1 hr sampling train	dscm	0.8500
Volume of room air gas sample measured corrected to standard conditions	dscm	1.2498
Difference of PM between the two sampling trains and train precisions (in brackets)	g/kg _{dry} (%)	0.03 (24) ³

¹ Stack loss efficiency calculated according to CSA B415.1-10.² CO emission in g/min calculated according to B415.1-10.³ The requirement in ASTM 2515-11 for the difference between the two sampling trains are maximum 0.5 g/kg dry fuel **or** 7,5 % of total emissions from the average total emissions.

Table 3 below show the results from category I test.

Appendix 2
Table 3. Test condition summary

						Θ	W_{fuel}	MC_{ave}	Q_{in}	Q_{out}
Category	Run No	Load % Capacity	Target Load	Actual Load	Actual Load	Test Duration	Wood Weight as-fired	Wood Moisture	Heat Input	Heat Output
			Btu/hr	Btu/hr	% of max	hrs	lb	% DB	Btu	Btu
I	1	≤ 15	$\leq 28,650$	28,020	14.7	4.0	16.75	8.6	132,630	112,080

Table 4. Test results summary

			T2 min	E_T	E	E	$E_{g/hr}$	$E_{g/kg}$	η_{del}	η_{SLM}
Category	Run No	Load % Capacity	Min return water temp	Total PM emissions	PM output based	PM output based	PM rate	PM factor	Delivered efficiency	Stack loss efficiency
			°F	g	lb/mmBtu out	g/MJ	g/hr	g/kg	%	%
I	1	≤ 15	127	0.47	0.0093	0.004	0.118	0.067	84.5	88.1

Table 5 show the PM emissions from the first hour of measurement measured (train 3 probe 3).

Table 5. First hour of emission

Category	1 st hour emissions (g/hr)	1 st hour emissions (lb/mmBtu)
I Run 1	0.15	0.008

Figure 2 show the heat output (load side) in Btu/hr during the test at category I.

Appendix 2

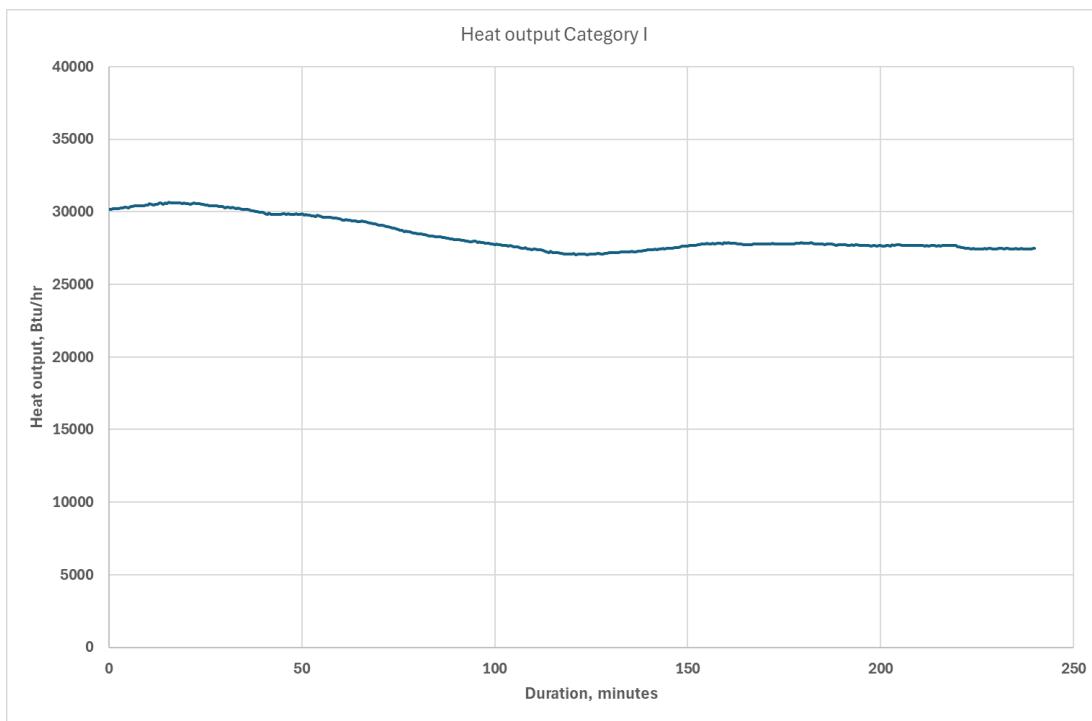


Figure 2. Heat output Category I run 1

Appendix 3

Dilution tunnel velocity traverse measurement

The dilution tunnel inside diameter was 160 mm (6.3 inch) and cross sectional area was 0.02 m² (0.22 ft²). The F_p factor has been included in the calculations of the particulate results.

Dilution tunnel measurement for category I

Table 6. Dilution tunnel traverse Category I

Traverse point	% of diameter (160 mm)	Temperature, °C	Velocity, m/s
Y1	6.7	32.0	7.0
Y2	25.0	32.0	7.6
Centre	50.0	31.9	8.0
Y3	75.0	29.0	7.8
Y4	93.3	29.0	6.8
X1	6.7	31.9	7.0
X2	25.0	32.0	7.6
Centre	50.0	31.5	8.0
X3	75.0	32.0	7.8
X4	93.3	32.0	6.6
V _{strav} , average (Y + X)	-	-	
V _{scent} , average (Centre)	-	-	

$$F_p = \frac{V_{strav}}{V_{scent}} = \frac{7.28}{8.01} = 0.9090$$

Appendix 4

Sampling equipment leakage check

The leakage check of the sampling trains were performed at a vacuum of 380 mm Hg (0.5 bar). This vacuum was not exceeded during the test periods

Table 7. Category I run 1

	Leakage rate, m ³ /min		Requirement, 0.0003 m ³ /min
	Pre-test	Post-test	
Sampling train 1	0.00025	0.00028	OK
Sampling train 2	0.00025	0.00025	OK
Sampling train 3	0.00020	0.00028	OK
Ambient train	0.00010	0.00010	OK

Appendix 5

Proportional rate variation

Table 8 shows the proportional rate variation of the sampling trains.

Table 8a. Category I run 1 sampling train 1

PROBE 1, Cat 1, run 1, 05-03-2025		1	2	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25		
Time total, minute	θ	240,00	240,00	240,00	240,00	240,00	240,00	240,00	240,00	240,00	240,00	240,00	240,00	240,00	240,00	240,00	240,00	240,00	240,00	240,00	240,00	240,00	240,00	240,00			
Gas meter volume of gas sample during 10 min interval, m ³	V _m	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05			
Average gas velocity in tunnel, m/s	V _i	8,040	8,040	8,040	8,040	8,040	8,040	8,040	8,040	8,040	8,040	8,040	8,040	8,040	8,040	8,040	8,040	8,040	8,040	8,040	8,040	8,040	8,040	8,040			
Absolute average dry gas meter temperature, K	T _m	293,182	293,182	293,182	293,182	293,182	293,182	293,182	293,182	293,182	293,182	293,182	293,182	293,182	293,182	293,182	293,182	293,182	293,182	293,182	293,182	293,182	293,182	293,182			
Absolute average gas temperature in tunnel during 10 minute interval, K(pitot)	T _s	295,38	295,40	295,38	295,35	295,31	295,31	295,25	295,22	295,22	295,15	295,15	295,13	295,09	295,08	295,13	295,14	295,13	295,11	295,05	295,01	294,99	294,94	294,98	294,92		
Volume of gas sample total, m ³	V _m	142	142	142	142	142	142	142	142	142	142	142	142	142	142	142	142	142	142	142	142	142	142	142	142		
Average gas velocity in tunnel for 10 min interval, m/s	V _g	8,03	8,03	8,03	8,04	8,05	8,04	8,05	8,04	8,05	8,05	8,06	8,05	8,05	8,06	8,05	8,06	8,05	8,06	8,05	8,06	8,05	8,06	8,04	8,04		
Absolute average gas temperature in tunnel (pitot), K	T _s	295,16	295,16	295,16	295,16	295,16	295,16	295,16	295,16	295,16	295,16	295,16	295,16	295,16	295,16	295,16	295,16	295,16	295,16	295,16	295,16	295,16	295,16	295,16			
Absolute average dry gas meter temperature during 10 minute interval, K(probe i)	T _m	292,85	292,86	292,90	292,93	292,97	293,00	293,04	293,09	293,12	293,15	293,19	293,22	293,24	293,27	293,30	293,32	293,34	293,36	293,37	293,37	293,37	293,37	293,37	293,37		
Actual time when reading, minute	θ	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10		
Results		90	90	90	90	90	90	90	90	90	90	90	91	95	101	108	109	108	109	110	108	108	108	107	109	109	108
Requirement		90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110		
Fail/ok		OK	OK	OK																							
Requirement 2		80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120		

Table 8b. Category I run sampling train 2

PROBE 2, Cat 1, run 1, 05-03-2025		Probe2	Probe3	Probe3																					
Time total, minute	θ	240,00	240,00	240,00	240,00	240,00	240,00	60,00	60,00	60,00	60,00	60,00	60,00	60,00	60,00	60,00	60,00	60,00	60,00	60,00	60,00	60,00	60,00	60,00	60,00
Gas meter volume of gas sample during 10 min interval, m ³	V _m	0,05	0,05	0,05	0,05	0,05	0,05	0,33	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05
Average gas velocity in tunnel, m/s	V _i	8,040	8,040	8,040	8,040	8,040	8,040	8,038	8,038	8,038	8,038	8,038	8,038	8,038	8,038	8,038	8,038	8,038	8,038	8,038	8,038	8,038	8,038	8,038	8,038
Absolute average dry gas meter temperature, K	T _m	293,151	293,151	293,151	293,151	293,151	293,151	292,952	292,952	292,952	292,952	292,952	292,952	292,952	292,952	292,952	292,952	292,952	292,952	292,952	292,952	292,952	292,952	292,952	
Absolute average gas temperature in tunnel during 10 minute interval, K(pitot)	T _s	295,38	295,40	295,38	295,35	295,31	295,31	295,34	295,22	295,22	295,15	295,15	295,13	295,09	295,08	295,13	295,14	295,13	295,11	295,05	295,01	294,99	294,94	294,98	294,92
Volume of gas sample total, m ³	V _m	147	147	147	147	147	147	0,32	0,32	0,32	0,32	0,32	0,32	0,32	0,32	0,32	0,32	0,32	0,32	0,32	0,32	0,32	0,32	0,32	0,32
Average gas velocity in tunnel for 10 min interval, m/s	V _g	8,03	8,03	8,03	8,04	8,05	8,04	8,04	8,05	8,05	8,06	8,05	8,05	8,06	8,05	8,06	8,05	8,06	8,05	8,06	8,02	8,00	8,00	8,01	8,04
Absolute average gas temperature in tunnel (pitot), K	T _s	295,16	295,16	295,16	295,16	295,16	295,16	295,36	295,36	295,36	295,36	295,36	295,36	295,36	295,36	295,36	295,36	295,36	295,36	295,36	295,36	295,36	295,36	295,36	
Absolute average dry gas meter temperature during 10 minute interval, K(probe i)	T _m	292,92	292,92	292,93	292,96	292,98	293,00	292,96	293,07	293,10	293,13	293,15	293,17	293,19	293,21	293,23	293,24	293,25	293,28	293,29	293,30	293,31	293,32	293,33	
Actual time when reading, minute	θ	10	10	10	10	10	10	70	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Results		92	83	92	90	90	90	90	90	90	91	91	90	90	90	90	90	90	90	90	91	90	90	90	90
Requirement		90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	
Fail/ok		OK	Fail	OK	Fail	Fail	Fail	OK	OK																
Requirement 2		80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	
Results		92	83	92	90	90	90	90	90	90	91	91	90	90	90	90	90	90	90	90	91	90	90	90	90
Requirement		90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110
Fail/ok		OK	Fail	OK	Fail	Fail	Fail	OK	OK																
Requirement 2		80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120	

Appendix 5

Table 8c. Category I run 1 sampling train 3 (1 hour emission)

PROBE 3 (1 hour), Cat 1, run 1, 05-03-2025							
	i 1	i 2	i 4	i 5	i 6	i 7	
Time total, minute	Θ	60,00	60,00	60,00	60,00	60,00	60,00
Gas meter volume of gas sample during 10 min interval, m ³	V _{mi}	0,05	0,05	0,05	0,05	0,06	0,05
Average gas velocity in tunnel, m/s	V _s	8,038	8,038	8,038	8,038	8,038	8,038
Absolute average dry gas meter temperature, K	T _m	292,917	292,917	292,917	292,917	292,917	292,917
Absolute average gas temperature in tunnel during 10 minute interval, K (pitot)	T _{si}	295,38	295,40	295,38	295,35	295,31	295,31
Volume of gas sample total, m ³	V _m	0,32	0,32	0,32	0,32	0,32	0,32
Average gas velocity in tunnel for 10 min interval, m/s	V _{si}	8,03	8,03	8,03	8,04	8,05	8,04
Absolute average gas temperature in tunnel (pitot), K	T _s	295,36	295,36	295,36	295,36	295,36	295,36
Absolute average dry gas meter temperature during 10 minute interval, K (probe i)	T _{mi}	292,85	292,86	292,90	292,93	292,97	293,00
Actual time when reading, minute	Θ _i	10	10	10	10	10	10
Results	98	101	99	97	106	100	
Requirement	90 - 110	90 - 110	90 - 110	90 - 110	90 - 110	90 - 110	90 - 110
Fail/ok	OK	OK	OK	OK	OK	OK	
Requirement 2	80 - 120	80 - 120	80 - 120	80 - 120	80 - 120	80 - 120	80 - 120

Appendix 6

Weight from filter, gasket and rinse

The tables below show the results from the filter, gasket and probe weighting. The filters and gasket have been weighted in pairs. The underlined values have been used in the calculation.

Table 9a: Filter+gasket weights.

Category Run nr.	Filter nr. Probe nr.	Pre-weight 1 g (date)	Pre-weight 2 g (date)	Post-weight 1 g (date)	Post-weight 2 g (date)
I Run 1	AF1 (filter+gasket) Ambient	2.62810 (04/03/25)	<u>2.62812</u> (05/03/25)	2.62810 (06/03/25)	<u>2.62808</u> (07/03/25)
I Run 1	F1, probe 1 (front filter)	2.64778 (04/03/25)	<u>2.64780</u> (05/03/25)	2.64805 (06/03/25)	<u>2.64798</u> (07/03/25)
I Run 1	F3, probe 1 (back filter)	2.59164 (04/03/25)	<u>2.59157</u> (05/03/25)	2.59168 (06/03/25)	<u>2.59163</u> (07/03/25)
I Run 1	F4, probe 2 (front filter)	2.57889 (04/03/25)	<u>2.57888</u> (05/03/25)	2.57905 (06/03/25)	<u>2.57899</u> (07/03/25)
I Run 1	F6, probe 2 (back filter)	2.61767 (04/03/25)	<u>2.61769</u> (05/03/25)	2.61765 (06/03/25)	<u>2.61769</u> (07/03/25)
I Run 1	F7, probe 3 hr (front filter)	2.58084 (04/03/25)	<u>2.58082</u> (05/03/25)	2.58096 (06/03/25)	<u>2.58093</u> (07/03/25)
I Run 1	F9, probe 3 hr (back filter)	2.62554 (04/03/25)	<u>2.62554</u> (05/03/25)	2.62558 (06/03/25)	<u>2.62556</u> (07/03/25)
	Blanc	2.65574	<u>2.65579</u>	2.65571	<u>2.65574</u>

Table 9b: Probe weights.

Test Cat.	Probe nr.	Pre-weight 1 container, g (date)	Pre-weight 2 container, g (date)	Post-weight 1 (cont.+rinse), g (date)	Post-weight 2 (cont.+rinse), g (date)
I Run 1	R1 Probe 1	118.75496 (04/03/25)	<u>118.75499</u> (05/03/25)	118.75502 (06/03/25)	118.75500 (07/03/25)
I Run 1	R2 Probe 2	118.51360 (04/03/25)	118.51359 (05/03/25)	118.51391 (06/03/25)	118.51389 (07/03/25)
I Run 1	R3 Probe 3, 1 hr	115.85361 (04/03/25)	115.85357 (05/03/25)	115.85374 (06/03/25)	115.85370 (07/03/25)

Appendix 7

Technician notes**Logg Pellematic 56, 2025****Preparations:**

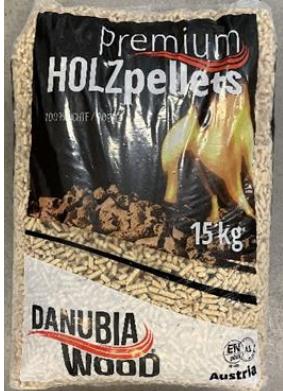
Scale weight without water = 856,4 kg and scale weight with water = 990,4 kg

- Scale calibration: 5,0 kg= 58.46 – 63.46, 10,0 kg= 58.46 – 68.46

- Dilution tunnel induced static pressure at the boiler: 8 m/s = -0,1 Pa

- Moisture pellets on wet base: $(1042.7-368.4)-(989.2-368.4)/(989.2-368.4)*100=8,62\%$

- Sampling trains adjusted to a sample flow below 0,007 m³/min



Appendix 7

Day 1,Cat I, 2025-03-05

- Air velocity: 0.05 m/s
- 230 V and 60 Hz
- Static pressure induced by the draught = -0,1 Pa (at 8 m/s in the dilution tunnel)
- Settings on the boiler: boiler temperature = 70 C, Under pressure =60 units
- Cat I 15 % of rated output 56 kW = 8,4 kW
- Return temperature min 120 F (49 C)
- Air velocity: 0,2-0.05 m/s SwemaAir 30 (inv. 201643)
- Settings on the boiler: boiler temperature at 70 C.
- Pstat in tunnel = 76.7 Pa
- Pre-burn is conducted at least 2 hours before start of test.

Test	Time (computer)	Weight (scale), kg	Probe 2 gas meter 202743	Probe 1 gas meter 901070	Probe 3 1 hr gas meter 200619	Ambient (200721)	barometer / humidity/ temp.	Comments
Start boiler								Calibration own file!
Start pre-burn test	27:25 (09:58)	29.25					986hPa/4 1%/20	Test category I run 1. File PES 56 catI_250305
Start test 1 (probe 1+2)	158:25	24.66	F4,F6	F1,F3	F7,F9	AF1		Stop Probe 3 (1 hour)
Stop 1 hr test probe 3	323:25							
End test	398:25	17.06					987hPa/4 5%/20	432.17- 435.17 control of calibration

Anomalies: No anomalies were found during the test at category I and the test is found to be valid.

Instrumentation and uncertainty

Measuring instruments

The designations listed below refer to RISE quality system

Resistance thermometer, PT-100	ETf-QD Db 2
Thermocouple, type K	ETf-QD-Db 3
Water flow meter Valmet 9V-MP150 (load side)	Inv.no. 200 783
Water flow meter Valmet 9V-MP150 (supply side)	Inv.no. 201 655
Data logging system	Inv. no. 202 561
Atmospheric pressure	Inv.no. 701 275
Scale Mettler (filter weighing)	Inv.no. BX7 2435
Particulate sampling equipment (Train 1)	Inv.no. 901 070
Particulate sampling equipment (Train 2)	Inv.no. 202 743
Particulate sampling equipment (Train 3, 1 hour emission)	Inv.no. 200 619
Particulate sampling equipment (ambient)	Inv.no. 200 721
Differential pressure gauge Furness FCO 14 (static pressure)	Inv.no. 200 925
Differential pressure gauge Furness FCO 12 (Dynamic pressure tunnel)	Inv.no. 202 638
CO/CO ₂ - analyser XStream (CO 0-2000 ppm)	Inv.no. 901 073
O ₂ -analyser PMA 10	Inv.no.KWP 00960

Calibration gases

The calibration gases for calibrating the gas analyser were accredited and delivered by Air Liquide. Oxygen calibration was performed at zero and span (21 %) points.

Table 10. Calibration gases

	Concentration	Uncertainty	Id. No.
CO	1742 mol-ppm	±1.0 % rel.	NoK9E36
CO	4389 mol-ppm	±1.0 % rel.	NOT 5699
CO ₂	15.89 mol-%	±1.0 % rel.	NoK9E36
CO ₂	15.95 mol-%	±1.0 % rel.	NOT 5699

Appendix 8

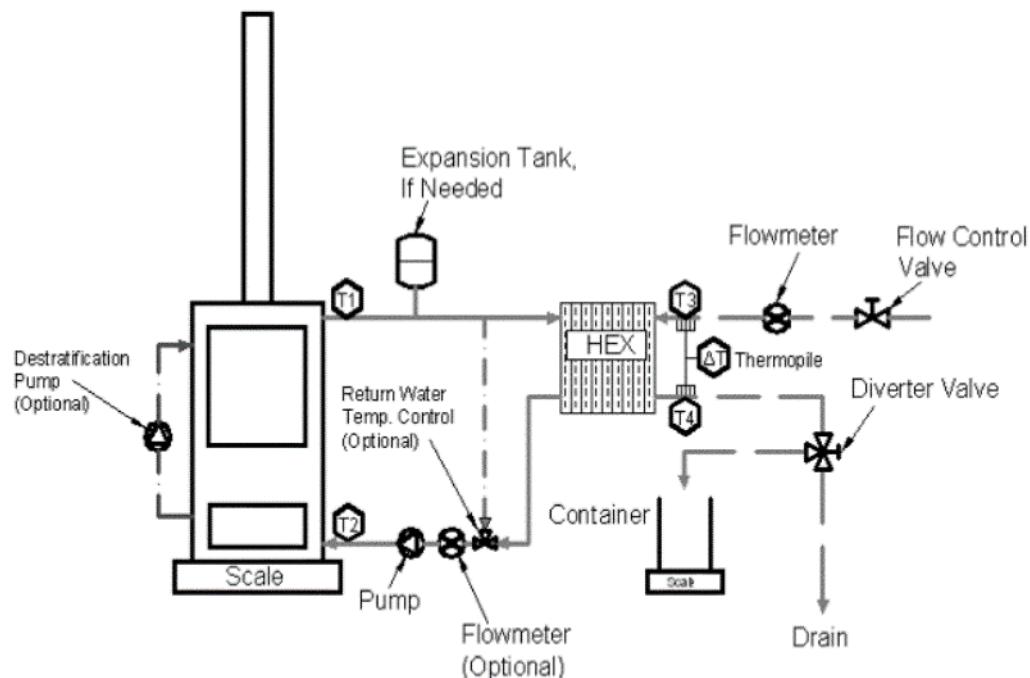
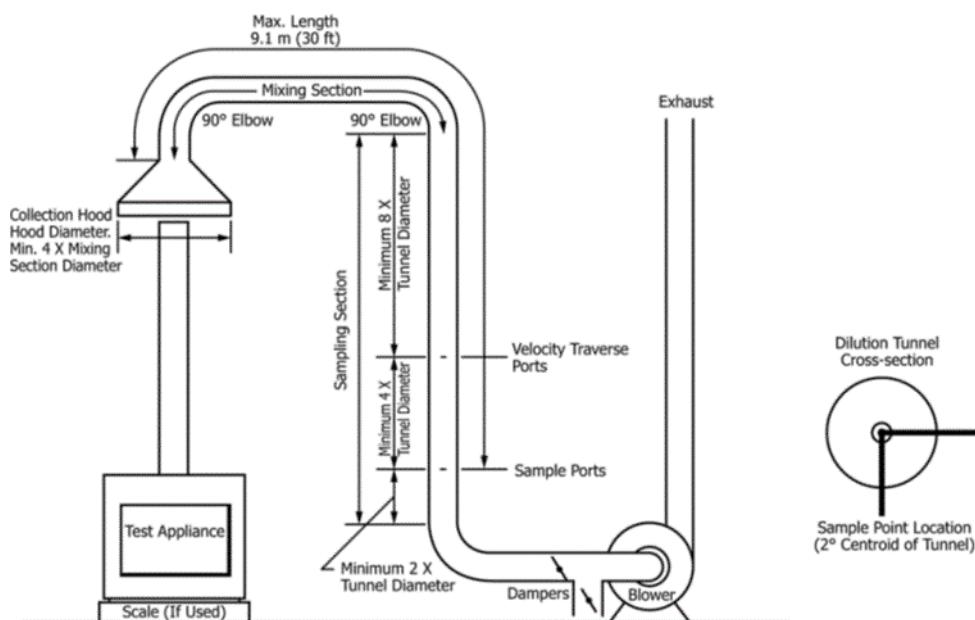
Uncertainty of measurement**Table 11. Uncertainty of measurements**

	Uncertainty
Temperature difference, load side	± 0.05 °C
Flue gas temperature	± 1 °C
Ambient temperature	± 1 °C
Static pressure in chimney and dynamic pressure	± 10 %
Liquid flow, load side	± 1 %-of flow
Fuel quantity	± 0.01 kg
PM filter weight	± 0.01 mg
CO-concentration	± 23 ppm
CO ₂ -concentration	± 0.3 %-points
Boiler efficiency ¹	± 2 %-points

¹ Does not include losses in the test rig.

The uncertainty has been calculated according to EA-4/16 with coverage factor k=2

Appendix 9

Test setup**Figure 3a. Test set up****Figure 3b. Dilution tunnel**

Appendix 10

Calibrations

Calibration of manometer for dynamic pressure in dilution tunnel



CALIBRATION CERTIFICATE

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Calibration of manometer

(1 appendix)

Object

Manometer: Furness FCO12 inv.nr 202638.

Arrival date: Internal.

Condition at arrival: Without remarks.

Date of calibration: 2024-10-02.

The result refers only to the object specified above.

Equipment

Reference manometer: Manometer Furness FCO 560, KWP16017.

Additional equipment: Vaisala HMT 361, inv.nr BX9 1524.

Druck DPI 260, inv.nr 201 637.

Calibration conditions

Location: RISE Borås, room 14-1023.

Ambient temperature: $22.3 \pm 0.5^\circ\text{C}$.

Atmospheric pressure: $997 \pm 5\text{ hPa}$.

Atmospheric humidity: $29 \pm 5\%$ -rh.

Calibration procedure

Calibration is carried out in accordance with the SP-Method 3635, edition 2.

Result

The results of the calibration are given in a table 1 and 2, and in graphical form in appendix 1.

True value = read value + correction.

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Appendix 10

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Reference
105403-I11245-K01Page
2 (3)

Table 1. Calibration results 10% range

Reference	Object			
	True pressure [Pa]	Indicated pressure [Pa]	Correction [Pa]	Uncertainty [Pa]
0,0	0,0	0,0	0,0	±0,31
2,0	2,0	2,0	0,0	±0,31
6,0	6,0	6,0	0,0	±0,31
10,0	9,9	9,9	0,1	±0,31
20,0	19,9	19,9	0,1	±0,31
30,0	29,9	29,9	0,1	±0,31
40,0	39,9	39,9	0,1	±0,31
50,0	49,9	49,9	0,1	±0,31
100,0	99,6	99,6	0,4	±0,31
150,0	149,5	149,5	0,5	±0,31
200,0	199,4	199,4	0,6	±0,41
0,0	-0,1	-0,1	0,1	±0,31
200,0	199,5	199,5	0,5	±0,41
0,0	-0,1	-0,1	0,1	±0,31
200,0	199,5	199,5	0,5	±0,41
0,0	-0,1	-0,1	0,1	±0,31

Table 2. Calibration results 100% range

Reference	Object			
	True pressure [Pa]	Indicated pressure [Pa]	Correction [Pa]	Uncertainty [Pa]
0,0	0	0	0,0	±0,66
20,0	20	20	0,0	±0,66
50,0	50	50	0,0	±0,66
100,0	99	99	1,0	±0,66
200,0	199	199	1,0	±0,71
300,0	299	299	1,0	±0,84
400,0	399	399	1,0	±0,99
500,0	499	499	1,0	±1,2
1000,0	1000	1000	0,0	±2,1
1500,0	1500	1500	0,0	±3,1
1990,0	1991	1991	-1,0	±4,1
0,0	0	0	0,0	±0,66
1990,0	1991	1991	-1,0	±4,1
0,0	0	0	0,0	±0,66
1990,0	1991	1991	-1,0	±4,1
0,0	0	0	0,0	±0,66

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2024-10-03
Reference
105403-I11245-K01Page
3 (3)

Measuring uncertainty and traceability

All instrument used are traceable through the Swedish National Primary Calibration Centre for pressure, temperature, length respective time and RISE for humidity. Measuring uncertainty was calculated in accordance with EA-4/02, with coverage factor $k = 2$. The uncertainties quoted in the Certificate of Calibration only apply to the measured value obtained during the period of calibration and are not indicative of the long term stability and hysteresis of the instrument under test.

RISE Research Institutes of Sweden AB
Inspection and Calibration - Calibration

Performed by

Magnus Bremholt

Examined by

Mattias Ekerind



Appendix 10

Calibration of manometer for static pressure in chimney



CALIBRATION CERTIFICATE

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Page
1 (3)

RISE
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Infrastruktur-labb

Calibration of manometer

(1 appendix)

Object

Manometer: Furness FCO 12 inv.nr. 200925.
Arrival date: 2024-09-02.
Condition at arrival: Without remarks.
Date of calibration: 2024-09-03.
The result refers only to the object specified above.

Equipment

Reference manometer: Manometer Furness FCO560, inv.nr KWP16017.
Additional equipment: Vaisala HMT 361, inv.nr BX9 1524.
Druck DPI 260, inv.nr 201 637.

Calibration conditions

Location: RISE Borås, room 14-1023.
Ambient temperature: 22,7 ± 0,5°C.
Atmospheric pressure: 999 ± 5hPa.
Atmospheric humidity: 53 ± 5%-rh.

Calibration procedure

Calibration is carried out in accordance with the SP-Method 3635, edition 2.

Result

The results of the calibration are given in a table 1 and 2, and in graphical form in appendix 1.

True value = read value + correction.

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Appendix 10

CALIBRATION
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2024-09-03
Reference
105403-I11226-K01Page
2 (3)

Table 1. Calibration results 10% Range

Reference	Object		
True pressure	Indicated pressure	Correction	Uncertainty
[Pa]	[Pa]	[Pa]	[Pa]
0,0	0,0	0,0	±0,41
2,0	1,9	0,1	±0,41
6,0	5,9	0,1	±0,41
10,0	10,0	0,0	±0,41
20,0	20,0	0,0	±0,41
30,0	30,1	-0,1	±0,41
40,0	40,1	-0,1	±0,41
50,0	50,1	-0,1	±0,41
100,0	100,3	-0,3	±0,41
150,0	150,5	-0,5	±0,41
195,0	195,8	-0,8	±0,41
0,0	0,0	0,0	±0,41
195,0	195,9	-0,9	±0,41
0,0	0,0	0,0	±0,41
195,0	195,8	-0,8	±0,41
0,0	0,0	0,0	±0,41

Table 2. Calibration results 100% Range

Reference	Object		
True pressure	Indicated pressure	Correction	Uncertainty
[Pa]	[Pa]	[Pa]	[Pa]
0,0	0	0,0	±0,71
20,0	20	0,0	±0,71
50,0	50	0,0	±0,71
100,0	100	0,0	±0,71
200,0	200	0,0	±0,71
300,0	300	0,0	±0,84
400,0	400	0,0	±0,99
500,0	500	0,0	±1,2
1000,0	1000	0,0	±2,1
1500,0	1497	3,0	±3,1
1990,0	1981	9,0	±4,1
0,0	0	0,0	±0,71
1990,0	1980	10,0	±4,1
0,0	0	0,0	±0,71
1990,0	1980	10,0	±4,1
0,0	0	0,0	±0,71

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2024-09-03
Reference
105403-I11226-K01Page
3 (3)

Measuring uncertainty and traceability

All instrument used are traceable through the Swedish National Primary Calibration Centre for pressure, temperature, length respective time. Measuring uncertainty was calculated in accordance with EA-4/02, with coverage factor $k = 2$. The uncertainties quoted in the Certificate of Calibration only apply to the measured value obtained during the period of calibration and are not indicative of the long term stability and hysteresis of the instrument under test.

RISE Research Institutes of Sweden AB
Inspection and Calibration - Calibration

Performed by

Magnus Bremholt

Examined by

Mattias Ekerind



Appendix 10

Calibration of gas meter, sampling train 1



CALIBRATION CERTIFICATE

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2025-02-06

Reference

105403-I11361-K02

Page

1 (2)

RISE

Infrastruktur-utveckling (104308)

Hus 14

Borås

Calibration of gas flow meter

(1 appendix)

Object

Flow meter: Itron Gallus G4 s/n 0021189014 inv.nr. 901070

Date of arrival: Internal instrument

Condition on arrival: No remarks

Date of calibration: 2025-02-06

Instrumentation

Flow meter L5, inv.nr 202 885

Manometer Furness FCO510, inv.nr 900 068

Manometer Furness FCO510, inv.nr 900 069

Thermometer Testo 635, inv.nr 900 061

Barometer Druck PACE1000, inv.nr 902 243

Ambient conditions

Location: RISE Borås, laboratory hall 14-1082

Ambient pressure: 1021 ± 5 hPa

Temperature: 21,6 ± 0,5°C

Humidity: 25 ± 5%-rh

Calibration procedure

The calibration was performed in accordance with SP Method 2527. Gas was pushed through the calibration object, which was positioned downstream of the flow reference. The gas flow was controlled by a pressure regulator. The gas tube from the reference flow meter was connected to the gas inlet marked "Från väkuumpump" on the calibration object, and its drying agent was removed prior to the calibration.

Traceability and uncertainty of measurement

Regular calibration of all the instruments used means that the measured results are traceable to Sweden's National Standards Laboratories for pressure and temperature, and to NIST for gas flow. Measuring uncertainty was calculated in accordance with EA-4/02, with coverage factor $k = 2$. The uncertainty of measurement applies only to the actual calibration point concerned and does not allow for the effects of long-term stability of the item or for hysteresis.

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Signed FN, PJ



Appendix 10

CALIBRATION
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105403-I11361-K02Page
2 (2)

Results

The results are presented in Table 1, including measurement uncertainties. In Appendix 1, the calibration results are plotted. The results apply only to the individual flow meter calibrated.

Table 1. Calibration results.

Reference	Object Condition			Object				
	Volume flow [m³/h]	Temperature [°C]	Gas density [kg/m³]	Indicated volume [l]	Measure Time [s]	Calculated flow [m³/h]	Correction [%]	Uncertainty [%]
0.195	21.8	1.206		20.0	375.7	0.192	1.7	± 1.2
0.497	21.8	1.206		40.0	296.0	0.487	2.1	± 0.96
1.021	21.8	1.205		80.0	288.4	0.999	2.3	± 0.93
1.815	21.7	1.206		160.0	326.2	1.766	2.8	± 0.92
2.958	21.7	1.206		200.0	252.5	2.851	3.8	± 0.92

Calibration gas: Air.

The volumetric flow readings refer to the outlet of the test object at ambient conditions.

$$\dot{V}_{Calculated} = \frac{V_{Indicated}}{t}$$

$$\dot{V}_{Reference} = \dot{V}_{Calculated} \cdot \left(1 + \frac{f_{Correction}}{100}\right)$$

where

- $V_{Indicated}$ Indicated volume on gas meter
 t Measured time
 $\dot{V}_{Calculated}$ Calculated volumetric gas flow
 $f_{Correction}$ Flow correction at calculated flow
 $\dot{V}_{Reference}$ Reference volumetric gas flow

RISE Research Institutes of Sweden AB
Inspection and Calibration - Calibration

Performed by

Examined by

Fredrik Niklasson

Per Jacobsson



Appendix 10

Calibration of gas meter, sampling train 2



CALIBRATION CERTIFICATE

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	Borås	

Calibration of gas flow meter

(1 appendix)

Object

Flow meter: Actaris G6 RF1 s/n 20749299, inv.nr 202743
Date of arrival: internal instrument
Condition on arrival: No remarks
Date of calibration: 2025-02-06

Instrumentation

Flow meter L5, inv.nr 202 885
Manometer Furness FCO510, inv.nr 900 068
Manometer Furness FCO510, inv.nr 900 069
Thermometer Testo 635, inv.nr 900 061
Barometer Druck PACE1000, inv.nr 902 243

Ambient conditions

Location: RISE Borås, laboratory hall 14-1082
Ambient pressure: 1023 ± 5 hPa
Temperature: 21,9 ± 0,5°C
Humidity: 25 ± 5%-rh

Calibration procedure

The calibration was performed in accordance with SP Method 2527. Gas was pushed through the calibration object, which was positioned downstream of the flow reference. The gas flow was controlled by a pressure regulator. The gas tube from the reference flow meter was connected to the gas inlet marked "Från vakuumpump" on the calibration object, and its drying agent was removed prior to the calibration.

Traceability and uncertainty of measurement

Regular calibration of all the instruments used means that the measured results are traceable to Sweden's National Standards Laboratories for pressure and temperature, and to NIST for gas flow. Measuring uncertainty was calculated in accordance with EA-4/02, with coverage factor $k = 2$. The uncertainty of measurement applies only to the actual calibration point concerned and does not allow for the effects of long-term stability of the item or for hysteresis.

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Appendix 10

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2 (2)

Results

The results are presented in Table 1, including measurement uncertainties. In Appendix 1, the calibration results are plotted. The results apply only to the individual flow meter calibrated.

Table 1. Calibration results.

Reference	Object Condition		Object					
	Volume flow [m³/h]	Temperature [°C]	Gas density [kg/m³]	Indicated volume [l]	Measure Time [s]	Calculated flow [m³/h]	Correction [%]	Uncertainty [%]
0.189	21.8	1.208		20.0	376.7	0.191	-1.3	± 1.1
0.508	21.7	1.209		40.0	281.0	0.512	-0.8	± 0.97
1.003	21.9	1.208		80.0	284.8	1.011	-0.8	± 0.93
1.783	21.8	1.208		160.0	323.0	1.783	0.0	± 0.92
2.965	21.8	1.208		200.0	245.5	2.933	1.1	± 0.92

Calibration gas: Air.

The volumetric flow readings refer to the outlet of the test object at ambient conditions.

$$\dot{V}_{Calculated} = \frac{V_{Indicated}}{t}$$

$$\dot{V}_{Reference} = \dot{V}_{Calculated} \cdot \left(1 + \frac{f_{Correction}}{100} \right)$$

where

- $V_{Indicated}$ Indicated volume on gas meter
- t Measured time
- $\dot{V}_{Calculated}$ Calculated volumetric gas flow
- $f_{Correction}$ Flow correction at calculated flow
- $\dot{V}_{Reference}$ Reference volumetric gas flow

RISE Research Institutes of Sweden AB
Inspection and Calibration - Calibration

Performed by

Examined by

Fredrik Niklasson

Per Jacobsson



Appendix 10

Calibration of gas meter, sampling train 3 (1 hour train)



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Page

1 (2)

RISE
Infrastruktur-utveckling (104308)
Hus 14
Borås

Calibration of gas flow meter

(1 appendix)

Object

Flow meter: Aichi Tokei Denki s/n 1902298, part of inv.nr 200619
Date of arrival: Internal instrument
Condition on arrival: No remarks
Date of calibration: 2025-02-05

Instrumentation

Flow meter L4, inv.nr 202 885
Flow meter L5, inv.nr 202 885
Manometer Furness FCO510, inv.nr 900 068
Manometer Furness FCO510, inv.nr 900 069
Thermometer Testo 635, inv.nr 900 061
Barometer Druck PACE1000, inv.nr 902 243

Ambient conditions

Location: RISE Borås, laboratory hall 14-1082
Ambient pressure: 1001 ± 5 hPa
Temperature: 21.8 ± 0,5°C
Humidity: 31 ± 5%-rh

Calibration procedure

The calibration was performed in accordance with SP Method 2527. Gas was pushed through the calibration object, which was positioned downstream of the reference. The gas flow was controlled by a pressure regulator.

Traceability and uncertainty of measurement

Regular calibration of all the instruments used means that the measured results are traceable to Sweden's National Standards Laboratories for pressure and temperature, and to NIST for gas flow. Measuring uncertainty was calculated in accordance with EA-4/02, with coverage factor $k = 2$. The uncertainty of measurement applies only to the actual calibration point concerned and does not allow for the effects of long-term stability of the item or for hysteresis.

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Confidentiality level
C2 - Internal

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SWEDAC
ACCREDITING
Accred. No. 1002
Calibration
ISO/IEC 17025

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Appendix 10

CALIBRATION
CERTIFICATEDate
2025-02-06
Reference
105403-I11361-K01Page
2 (2)

Results

The results are presented in Table 1, including measurement uncertainties. In Appendix 1, the calibration results are plotted. The results apply only to the individual flow meter calibrated.

Table 1. Calibration results.

Reference	Object Condition			Object			
	Volume flow	Temperature	Gas density	Indicated volume	Measure Time	Calculated flow	Correction
[l/min]	[°C]	[kg/m³]	[l]	[s]	[l/min]	[%]	[%]
0,271	21,9	1,183	4,0	862,0	0,278	-2,8	± 3,1
2,508	22,0	1,181	20,0	474,4	2,520	-0,9	± 1,1
6,003	21,9	1,181	40,0	395,7	6,051	-0,8	± 0,96
10,21	21,9	1,181	60,0	351,0	10,26	-0,4	± 0,94
14,41	21,9	1,181	80,0	332,5	14,44	-0,2	± 0,94

Calibration gas: Air.

The volumetric flow readings refer to the outlet of the test object at ambient conditions.

$$\dot{V}_{Calculated} = \frac{V_{Indicated}}{t}$$

$$\dot{V}_{Reference} = \dot{V}_{Calculated} \cdot \left(1 + \frac{f_{Correction}}{100}\right)$$

where

- $V_{Indicated}$ Indicated volume on gas meter
 t Measured time
 $\dot{V}_{Calculated}$ Calculated volumetric gas flow
 $f_{Correction}$ Flow correction at calculated flow
 $\dot{V}_{Reference}$ Reference volumetric gas flow

RISE Research Institutes of Sweden AB
Inspection and Calibration - Calibration

Performed by

Fredrik Niklasson

Examined by

Per Jacobsson



Appendix 10

Calibration of scale (filter+gasket and probe)



CALIBRATION CERTIFICATE

Issued by an Accredited Calibration Laboratory

Contact person
Niklas Sund
Division Safety and Transport
+46 10 516 61 20
niklas.sund@ri.se

Date
2024-11-04
Reference
105403-1724 918

Page
1 (2)

RISE ETf
Box 857
501 15 Borås

Calibration of scale

Date

Calibration date 2024-10-30

Measurement object

Analysvåg manufactured by Mettler Toledo GmbH
Model XS205DR. Serial no B737651894. Internal no Inv nr BX7 2435.

The scale has one or more ranges with different scale divisions.

	Load	Interval, d
Max load range, no 1	81 g	0.00001 g
Max load range, no 2	220 g	0.0001 g

Placement

RISE ETf 14-1029

Measuring environment

Vågen var stabilt uppställd på vågfundament. Temperatur 22 °C

Measurement method

Kalibrering av våg enligt KVj 18 under antagande av referensdensiteten 8000 kg/m³ och att luftens densitet är 1.2 kg/m³.

Traceability

The measuring results are through regular calibration of known weights traceable to the national site for mass at RISE Research Institutes of Sweden.

Weight set used: AMP75

Other reference equipment: Temperaturinstrument: BX82317

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Appendix 10

CALIBRATION
CERTIFICATEDate
2024-11-04
Reference
105403-1724 918Page
2 (2)**Results**

(Results relate only to the object that is specified in this document)

The scale was zeroed before each load.

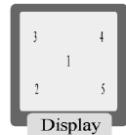
After adjustment with internal weight

Load, g	Indicated, g	Measurement uncertainty, \pm g
0,01	0,00999	0,00002
0,1	0,10000	0,00003
1	1,00000	0,00002
10	10,00000	0,00003
50	49,99994	0,00006
80	79,99991	0,00010
100	99,9995	0,0005
200	199,9998	0,0003

All readings are based on 3 measurements.

Results with eccentric load

Load point	Load, g	Indicated, g
1	100	99,9998
2	100	100,0003
3	100	99,9991
4	100	99,9993
5	100	100,0007

**Measurement uncertainty**

The reported expanded uncertainty of measurement is the product of the standard uncertainty of measurement and the covering factor $k=2$, which for normal distribution has a covering probability of about 95%. The standard uncertainty of measurement is set according to EAL:s publication EA-4/02.

RISE Research Institutes of Sweden AB
Inspection and Calibration - Calibration

Performed by

Niklas Sund

RISE Research Institutes of Sweden AB

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Appendix 10

Calibration of flow meter on load side



KALIBRERINGSBEVIS

utfärdat av riksmätplats 01

Kontaktperson
Ronny Lövstrand
Säkerhet och transport
+46Datum
2025-02-19
Beteckning
105104-I11369-K01

Calibration certificate

Sida
1 (2)RISE 104302 Infrastruktur-labb
Box 587
501 15 BORÅSKalibrering av induktiv flödesmätare nr 202994
Calibration of an inductive water flow meter nr. 202994

Identifiering Identification

Objekt Object	Induktiv flödesmätare Kamstrup MP115 serienummer 52112324 med transmitter MP115 serienummer 52112624. Mätaren är märkt "RISE Inventarienummer 202994". Spänningsmatning 230 V AC på plint L och N. Pulsutgång med nominell K-faktor 5760 p/l på plint 58 (+) och 59 (-).
Objekts tillstånd Object condition	Vid ankomsten var objektet utan synliga skador. No visible damage
Ankomstdatum Date arrival	2025-02-17
Kalibreringsort/plats Cal. location	Borås
Kalibreringsdatum Cal. date	2025-02-17 – 18

Mätmetoder och -rutiner Measurement method and routines

Mätaren har kalibrerats med flygande start och stopp i kundens provningsrigg med tillhörande raksträckor (ca 290 mm uppströms och ca 190 mm nedströms) ansluten till mätbänk VM5 med slangar. **The meter has been calibrated using flying start and stop in the test rig of the customer and with the straights used (app. 290 mm upstream and app. 190 mm downstream) and connected to the test rig VM5 with hoses.**

Mätförhållanden Measuring conditions

Rum Room	6:232
Rumstemperatur Room temperature	ca 20 °C
Provvarvsmedel Liquide	Vatten Water

Resultat Result

Resultaten avser enbart det objekt som är specificerat i detta dokument. **The result in this document concerns the test object only.**

RISE Research Institutes of Sweden AB

Postadress Box 857 501 15 BORÅS	Besöksadress Brinellgatan 4 504 62 BORÅS	Tfn / Fax / E-post 010-516 50 00 033-13 55 02 info@ri.se
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Konfidentialitetsnivå

K2 - Intern

Riksmätplats utses av regeringen enligt lagen (2011:791) och förordningen om Riksmätplatser (2019:16). RISE Research Institutes of Sweden AB tillämpar kvalitetssystem enligt SS-EN ISO/IEC 17025 under överinseende av SWEDAC. Detta dokument får endast återges i sin helhet om inte RISE Research Institutes of Sweden AB i förväg skriftligen godkänt annat.

RMP
01

Appendix 10

KALIBRERINGSBEVIS
Calibration certificateDatum
2025-02-19
Beteckning
105104-II11369-K01Sida
2 (2)

Väntlig flöde Actual flow [m³/h]	Temperatur Temperature [°C]	Tryck Pressure [MPa]	K-faktor K-factor [p/l]	Korrektion Correction [%]	Mätosäkerhet Measurement uncertainty [%]
3,995	20	0,4	5800,3	-0,69	±0,10
2,518	20	0,3	5797,6	-0,65	±0,10
0,999	20	0,2	5796,1	-0,62	±0,10
0,500	20	0,2	5799,4	-0,68	±0,10
0,200	20	0,4	5801,7	-0,72	±0,15
0,040	20	0,3	5852,1	-1,57	±0,20

Resultaten anges som medelvärdet av tre mätningar. *The results are an arithmetic mean of three measurements.*

$$\text{Korrektion [%]} = \frac{\text{Nominell K - faktor} - \text{Uppmätt K - faktor}}{\text{Uppmätt K - faktor}} \times 100$$

Den angivna utvidgade mätosäkerheten är produkten av standardmätosäkerheten och en täckningsfaktor $k = 2$, vilket för en normalfördelning svarar mot en täckningssannolikhet av ungefär 95 %. Standardmätosäkerheten ingår uppskattade osäkerhetsbidrag från alla faktorer som anses påverka mätningen. Standardmätosäkerheten har bestämts i enlighet med EAs publikation EA-4/02. Hänsyn har ej tagits till det kalibrerade objekts längtidstabilitet. *The reported expanded uncertainty of measurement is the product of the standard uncertainty of measurement and the covering factor k=2, which for normal distribution has a covering probability of about 95%. The standard uncertainty of measurement is set according to EAL:s publication EA-4/02.*

Spårbarhet RISE är Sveriges Nationella Metrologiska Institut och ansvarar för Riksmätplatser enligt SFS 2019:16. Mätsresultaten är genom kalibrering av mätplatsens normaler spårbara till de svenska riksmätplatserna för volym, massa, längd, temperatur, tryck, elektriska storheter samt tid och frekvens. Vattnets densitet har beräknats enligt Tanaka, et. al, Metrologia, 2001, 38, 301-309.

Utrustning Mätutrustning	Inventarienr	Kalibreringsdokument
Massflödesmätare Siemens Sitrans FC300	BX81820	105104-II11007-K08
Volymnormal nr 11, 50 l	600188	105104-II10375-K05
Volymnormal nr 12, 100 l	600187	105104-II10375-K06
Våg Mettler Toledo KE2000+ID5	601918	105102-II11008-K01

RISE Research Institutes of Sweden AB
Mätteknik - Volym och flöde

Utfört av

Ronny Lövstrand

Granskat av

Kerstin Mattiasson

Calibration of temperature sensors on load side (PT-100)



Appendix 10

Appendix 10

Appendix 11

Calculations

The calculations have been performed according to ASTM 2515-11 and ASTM 2618-13.

MC	Moisture content (oven dry method according to ASTM D4442), %
m_n	Total particulate matter collected, mg
$V_{m(\text{std})}$	Volume of gas sampled corrected to standard conditions, dscm
V_s	Average dilution tunnel gas velocity, m/sec
C_s	Particulate concentration, g/dscm
Q_{std}	Dilution tunnel gas flow rate, dscm/min
E_T	Total particulate emissions, grams
PR	Proportional rate variation, %
Q_{in}	Heat input, Btu
Q_{out}	Heat output, Btu
	Heat output, Btu/hr
$E_{g/\text{MJ}}$	Emission rate, g/MJ
$E_{\text{lb/MMBtu input}}$	Emission rate, lb/MMBtu input
$E_{\text{lb/MMBtu output}}$	Emission rate, lb/MMBtu output
$E_{g/\text{kg}}$	Emission rate, g/kg
$E_{g/\text{hr}}$	Emission rate, g/hr
η_{del}	Delivered efficiency

Appendix 11

MC -Moisture content

ASTM 2618-13 (12.3.2) refers to ASTM D4442 method A or B for determining the moisture content of the wood pellet fuel.

Method A:

$$\text{MC, \%} = [(A-B)/B] \times 100$$

Where:

A = Original mass, g

B = Oven dry mass, g

$$\text{MC, \%} = (674,3 - 620,8)/620,8 \times 100$$

$$\text{MC, \%} = 8.6 \%$$

 m_n – Total particulate matter collected

ASTM 2515-11 equation (12)

$$m_n = m_p + m_{ff} + m_{fb}$$

where:

m_n = Total particulate matter collected, mg

m_p = mass of particulate from probe, mg

m_{ff} = mass of particulate from front filter+gasket, mg

m_{fb} = mass of particulate from back filter+gaskets, mg

Sample calculation train 1:

$$m_n = 0.01 + 0.18 + 0.06$$

$$m_n = 0.25 \text{ mg}$$

Sample calculation train 2:

$$m_n = 0.30 + 0.11 + 0.0$$

$$m_n = 0.41 \text{ mg}$$

Sample calculation train 1 hour:

$$m_n = 0.13 + 0.11 + 0.02$$

$$m_n = 0.26 \text{ mg}$$



Appendix 11

V_{m(std)} – Volume of gas sampled corrected to dry standard conditions, dscf

ASTM 2515-11 equation (6)

$$V_{m(\text{std})} = V_m \times Y \times K_1 \times \frac{P_b + \frac{\Delta H}{13.6}}{T_m}$$

Where:

 $K_1 = 0.3855 \text{ K/mm Hg}$ (for inch pound units 17.64 °R/in.Hg) V_m = Volume of gas sample measured at the dry gas meter, dscm Y = Dry gas meter calibration factor, dimensionless P_b = Barometric pressure at the testing site, in mm Hg ΔH = Average pressure differential across the orifice meter, mm H₂O T_m = Absolute average dry gas meter temperature, K

Sample calculation train 1:

$$V_{m(\text{std})} = 1,4497 \times 1 \times 0.3855 \times \frac{740 + \frac{0}{13.6}}{293}$$

$$V_{m(\text{std})} = 1.4120 \text{ dscm}$$

Sample calculation train 2:

$$V_{m(\text{std})} = 1,4501 \times 1 \times 0.3855 \times \frac{740 + \frac{0}{13.6}}{293}$$

$$V_{m(\text{std})} = 1.4124 \text{ dscm}$$

Sample calculation train 1 hour:

$$V_{m(\text{std})} = 0.8727 \times 1 \times 0.3855 \times \frac{740 + \frac{0}{13.6}}{295}$$

$$V_{m(\text{std})} = 0.8500 \text{ dscm}$$

Sample calculation train ambient:

$$V_{m(\text{std})} = 1,3234 \times 1 \times 0.3855 \times \frac{740 + \frac{0}{13.6}}{302}$$

$$V_{m(\text{std})} = 1.2498 \text{ dscm}$$

V_s – Dilution tunnel gas velocity, m/sec

ASTM 2515-11 equation (9)

$$V_s = F_p \times k_p \times C_p \times \sqrt{\Delta P_{\text{avg}}} \times \sqrt{\frac{T_s}{P_s \times M_s}}$$



Appendix 11

Where:

V_s = Average gas velocity in the dilution tunnel, m/sec

F_p = Adjustment factor for center of tunnel pitot tube placement $F_p = V_{strav}/V_{scent}$

K_p = pitot tube constant 34.97 m/sec ((g/gmole)(mmHg)/(K)x(mmwater))

C_p = Standard pitot tube coefficient 0.99 according to ASTM 2515-11 nomenclature 11.2

ΔP = Velocity pressure in the dilution tunnel, mm water

P_s = Absolute average gas static pressure in dilution tunnel, mm Hg

M_s is assumed to be 29 g/g mole according to ASTM 2515-11 nomenclature 11.2

Sample calculation

$$V_s = 0.909 \times 34.97 \times 0.99 \times \sqrt{3.956} \times \sqrt{\frac{295}{740 \times 29}}$$

$$V_s = 7.34 \text{ m/sec}$$

C_s – Concentration of particulate matter in tunnel gas, dry basis, corrected to standard condition, g/dscm

ASTM 2515-11 equation (13)

$$C_s = K_2 \times \frac{mn}{Vm(std)}$$

Where:

C_s = Concentration of particulate matter in tunnel gas, dry basis, corrected to standard condition, g/dscm

K_2 = Constant 0.001 g/mg

m_n = Total amount of particulate matter collected, mg

$V_{m(std)}$ = Volume of gas sample measured by the dry gas meter corrected to standard condition, dscm

Sample calculation train 1:

$$C_s = 0.001 \times \frac{0.25}{1.4120}$$

$$C_s = 0.0001771 \text{ g/dscm}$$

Sample calculation train 2:

$$C_s = 0.001 \times \frac{0.41}{1.4124}$$

$$C_s = 0.0002903 \text{ g/dscm}$$

Appendix 11

Sample calculation train 1 hour:

$$C_s = 0.001 \times \frac{0.26}{0.8500}$$

$$C_s = 0.000306 \text{ g/dscm}$$

Q_{std} - Average gas flow rate in dilution tunnel, dscm/min

ASTM 2515-11 equation (3)

$$Q_{\text{std}} = 60 \times (1-B_{ws}) \times V_s \times A \times \left[\frac{T_{\text{std}} \times P_s}{T_s \times P_{\text{std}}} \right]$$

Where:

Q_{std} = Average gas flow rate in dilution tunnel, dscm/min

B_{ws} = Water vapor in the gas stream proportion by volume assumed to be 0.02 (2 %) according to ASTM 2515-11 nomenclature 11.2

V_s = Average gas velocity in the dilution tunnel, m/sec

A = Cross sectional area of tunnel, m²

T_{std} = Standard absolute temperature, 293 K

P_s = Absolute average gas static pressure in dilution tunnel, mm Hg

T_s = Absolute average gas temperature in the dilution tunnel, K

P_{std} = Standard absolute pressure, 760 mm Hg

Sample calculation:

$$Q_{\text{std}} = 60 \times (1-0.02) \times 7.34 \times 0.020 \times \left[\frac{293 \times 740}{295 \times 760} \right]$$

$$Q_{\text{std}} = 8.390 \text{ dscm/min}$$

E_T – Total particulate emissions, g

ASTM 2515-11 equation (15)

$$E_T = (C_s - C_r) \times Q_{\text{std}} \times \Theta$$

Where:

E_T = Total particulate emission, g

C_s = Concentration of particulate matter in tunnel gas, dry basis, corrected to standard conditions, g/dscm

C_r = Concentration of particulate matter in room air, dry basis, corrected to standard conditions, g/dscm

Q_{std} = Average gas flow rate in dilution tunnel, dscm/min

Θ = Total sampling time



Appendix 11

Sample calculation:

Train 1:

$$E_T = (0.0001771 - 0) \times 8.390 \times 240$$

$$E_T = 0.3565 \text{ g}$$

Train 2:

$$E_T = (0.0002903 - 0) \times 8.390 \times 240$$

$$E_T = 0.5845 \text{ g}$$

Train difference:

$$\text{Train difference} = 0.033 \text{ g/kg}_{\text{dry}}$$

$$\% \text{ of the average} = 24 \%$$

Train 1 hour:

$$E_T = (0.000306 - 0) \times 8.390 \times 60$$

$$E_T = 0.154 \text{ g}$$

$$E_{T/\text{hr}} = 0.154$$

 Q_{in} – Heat input, Btu

ASTM 2618-13 equation (4 and 5)

$$Q_{in} = (W_{\text{fuel}} / 1 + (MC_{\text{ave}} / 100)) \times HHV$$

$$Q_{in,LHV} = (W_{\text{fuel}} / 1 + (MC_{\text{ave}} / 100)) \times LHV$$

Where:

Q_{in} = Total heat input in test fuel, Btu

W_{fuel} = Fuel charge weight in pounds

MC_{ave} = Fuel moisture content based on dry fuel weight

HHV = Higher heating value, 8600 Btu/lb

LHV = Lower heating value, 7988 Btu/lb

Sample calculation:

HHV:

$$Q_{in} = (16.748 / (1 + (8.6 / 100))) \times 8600$$

$$Q_{in} = 132,630 \text{ Btu}$$

LHV:

$$Q_{in} = (16.748 / (1 + (8.6 / 100))) \times 7988$$

$$Q_{in} = 123,191 \text{ Btu}$$

Appendix 11

Q_{out} – Heat output, Btu

Test method ASTM 2618-13 equation (7)

$$Q_{out} = [\sum(C_p \times \Delta T \times M \times t)] + (W_{app} \times C_{steel} + C_p \times W_{water}) \times (TF_{avg} - TI_{avg})$$

$$M = V_f \times \sigma$$

$$\sigma = (62.56 + (0.0003413 \times T_3) + (-0.00006225 \times T_3)) \times 0.1337$$

$$C_p = 1.0014 + (-0.00003485 \times T_3)$$

Where:

 C_p = specific heat of water, Btu/lb °F C_{steel} = Specific heat of steel, Btu/lb °F ΔT = Temperature difference between water entering and exiting the heat exchanger, °F M = Mass flow rate of water, lb/min t = data sampling time , minutes W_{app} =Weight of empty appliance , lbs W_{water} = Weight of water in supply side of system, lbs TF_{avg} = Average temperature of the appliance and water at the end of the test, °F TI_{avg} = Average temperature of the appliance and water at the start of the test, °F T_3 = Temperature of water at the inlet to the load side of the heat exchanger, °F V_f = Volumetric flow rate of water in heat exchanger system, gal/min σ = Density of water, lb/gal

Sample calculation:

$$[\sum(C_p \times \Delta T \times M \times t)] = (1.001 \times 30.438 \times 15.521 \times 240)$$

$$[\sum(C_p \times \Delta T \times M \times t)] = 113,754 \text{ Btu}$$

$$Q_{out} = 113,754 \times (1119.9 \times 0.1 + 1.001 \times 297.6) \times (141.0 - 145.1)$$

$$Q_{out} = 112,080$$

Q_{out} – Heat output rate, Btu/hr

Test method ASTM 2618-13 equation (15)

Heat output rate = Q_{out} / test duration

Heat output rate = 112,080 / (240/60)

Heat output rate = 28,020



Appendix 11

 η_{del} = Delivered efficiency , %

Test method ASTM 2618-13 equation (20)

$$\eta_{\text{del}} = (Q_{\text{out}}/Q_{\text{in}}) \times 100$$

$$\eta_{\text{delLHV}} = (Q_{\text{out}}/Q_{\text{inLHV}}) \times 100$$

Where:

 η_{del} = Delivered heating efficiency, % η_{delLHV} = Delivered heating efficiency with lower heating value, %

Sample calculation:

$$\eta_{\text{del}} = (112,080/132,630) \times 100$$

$$\eta_{\text{del}} = 84.5 \%$$

$$\eta_{\text{delLHV}} = (112,080/123,191) \times 100$$

$$\eta_{\text{delLHV}} = 91.0 \%$$

Emission rates, g/MJ, g/kg, lb/MMBtu output, g/hr

ASTM 2618-13 equations (16 to 19)

$$E_{\text{g/MJ}} = E_T / (Q_{\text{out}} \times 0.001055)$$

$$E_{\text{g/kg}} = E_T / (W_{\text{fuel}} / (1 + MC / 100))$$

$$E_{\text{lb/MMBtu output}} = (E_T / 453.59) / (Q_{\text{output}} \times 10^{-6})$$

$$E_{\text{g/hr}} = E_T / \Theta$$

Sample calculation train 1:

$$E_{\text{g/MJ}} = 0.356 / (112,080 \times 0.001055)$$

$$E_{\text{g/MJ}} = 0.003 \text{ g/MJ}$$

$$E_{\text{g/kg}} = 0.356 / (7.597 / (1 + 8.6 / 100))$$

$$E_{\text{g/kg}} = 0.051 \text{ g/kg}$$

$$E_{\text{lb/MMBtu output}} = (0.356 / 453.59) / (112,080 \times 10^{-6})$$

$$E_{\text{lb/MMBtu output}} = 0.0070 \text{ lb/MMBtu}_{\text{output}}$$

$$E_{\text{g/hr}} = 0.356 / (240 / 60)$$

$$E_{\text{g/hr}} = 0.089 \text{ g/hr}$$

Sample calculation train 2:

$$E_{\text{g/MJ}} = 0.585 / (112,080 \times 0.001055)$$

$$E_{\text{g/MJ}} = 0.0049 \text{ g/MJ}$$



Appendix 11

$$E_{g/kg} = 0.585/(8.005/(1+8.6/100))$$

$$E_{g/kg} = 0.084 \text{ g/kg}$$

$$E_{lb/MMBtu \text{ output}} = (0.585/453.59)/(112,080 \times 10^{-6})$$

$$E_{lb/MMBtu \text{ output}} = 0.0115 \text{ lb/MMBtu}_{\text{output}}$$

$$E_{g/hr} = 0.585/(240/60)$$

$$E_{g/hr} = 0.146 \text{ g/hr}$$



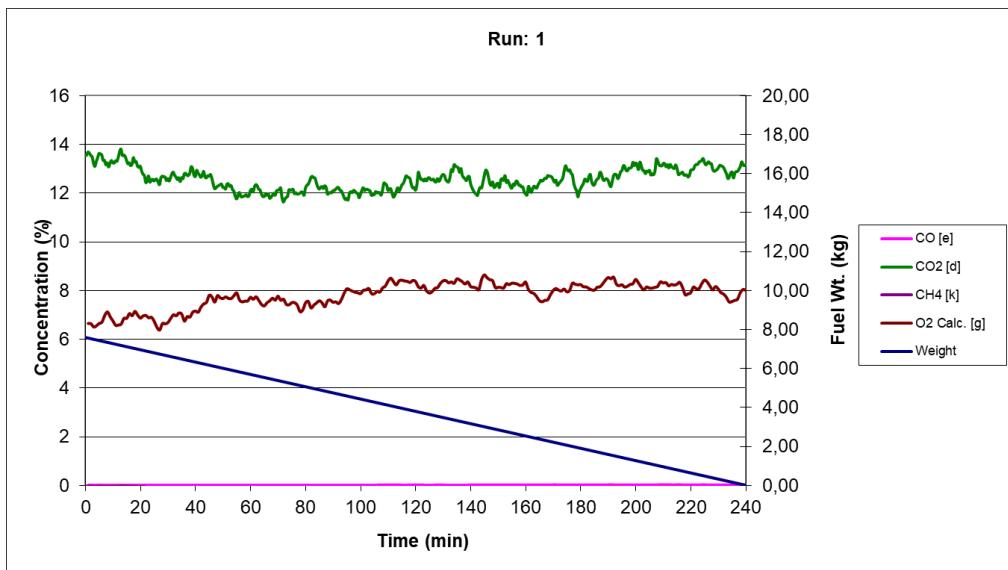
Appendix 12

CSA B415.1-10 results

The tables below are summary from the calculations according to CSA B415.1-10.

Category I run 1:

ABC Laboratories, Inc.		
Manufacturer: Maine energy system	Technicians:	Cat I, no anomalies
Model: Pellematic 56		
Date: 05/03/2025		
Run: 1		
Control #:		
Test Duration: 240		
Output Category: Retest Category I		
Test Results in Accordance with CSA B415.1-10		
	HHV Basis	LHV Basis
Overall Efficiency	88,1%	94,9%
Combustion Efficiency	99,5%	99,5%
Heat Transfer Efficiency	89%	95,4%
Output Rate (kJ/h)	30 586	29 014 (Btu/h)
Burn Rate (kg/h)	1,74	3,83 (lb/h)
Input (kJ/h)	34 701	32 918 (Btu/h)
Test Load Weight (dry kg)	6,94	15,30 dry lb
MC wet (%)	8,6	
MC dry (%)	9,41	
Particulate (g)	0,47	
CO (g)	13	
Test Duration (h)	4,00	
Emissions	Particulate	CO
g/MJ Output	0,00	0,11
g/kg Dry Fuel	0,07	1,88
g/h	0,12	3,26
lb/MM Btu Output	0,01	0,25
Air/Fuel Ratio (A/F)	9,72	
VERSION:	2,4	2010-04-15



Appendix 13

Fuel analyse

Dieses Zertifikat bestätigt, dass für den Handel von

Holzpellets
Qualitätsklasse A1

gehandelt durch

DANUBIA WOOD TRADING GMBH
AT-1130 Wien, Auhofstraße 170/7

am Firmenstandort

AT-1130 Wien, Auhofstraße 170/7

eine Erstinspektion für den Handel von Sackware durchgeführt wurde und eine laufende Überwachung der Umsetzung der Anforderungen von

ENplus®
Qualitätszertifizierung für Holzpellets



durch die Holzforschung Austria in der jeweils gültigen Fassung durchgeführt wird und das Produkt der Qualitätsklasse A1 entspricht.

Die Gültigkeit des Zertifikats ist unter www.holzforschung.at zu überprüfen.

ENplus® ID: AT 325

Zertifikatsnummer: HFA-ENplus-0013

Datum der Erstausstellung: 27.03.2014

Datum der Ausstellung: 21.03.2023

Gültig bis: 26.03.2026

A handwritten signature in blue ink.

Dipl.-Ing. Andreas Haider
Zeichnungsberechtigter



A handwritten signature in blue ink.

PD Gerhard Gräßl

Leiter der Zertifizierungsstelle

HOLZFORSCHUNG AUSTRIA - ÖSTERREICHISCHE GESELLSCHAFT FÜR HOLZFORSCHUNG ZVR 850936522
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Appendix 13



3.2. Test results

3.2.1. Sample 2907/2022_P

Parameter	Unit	Reference state	Result	Requirements according to		
				DINplus	ENplus® A1	ENplus® A2
Diameter, D	mm	ar	6,1	6 ± 1 (8 ± 1)	6 ± 1 (8 ± 1)	6 ± 1 (8 ± 1)
Length, L	mm	ar	18,0 (10 - 36)	3,15 < L ≤ 40	3,15 < L ≤ 40	3,15 < L ≤ 40
Moisture, M	%	ar	6,9	≤ 10	≤ 10	≤ 10
Ash, A	%	d	0,3	≤ 0,6	≤ 0,7	≤ 1,2
Ash deformation temperature, DT	°C	d	1390	≥ 1200	≥ 1200	≥ 1100
Mechanical durability, DU	%	ar	98,8	≥ 98,0	≥ 98,0	≥ 97,5
Net calorific value, Q (q _{p,net,ar})	MJ/kg	ar	17,4	≥ 16,5	≥ 16,5	≥ 16,5
Net calorific value, Q (q _{p,net,ar})	kWh/kg	ar	4,8	≥ 4,6	≥ 4,6	≥ 4,6
Gross calorific value, q _{v,g}	MJ/kg	ar	18,9	—	—	—
Gross calorific value, q _{v,g}	kWh/kg	ar	5,2	—	—	—
Bulk density, BD	kg/m³	ar	650	600 ≤ BD ≤ 750	600 ≤ BD ≤ 750	600 ≤ BD ≤ 750
Nitrogen, N	%	d	0,057	≤ 0,3	≤ 0,3	≤ 0,5
Sulfur, S	%	d	0,018	≤ 0,04	≤ 0,04	≤ 0,05
Chlorine, Cl	%	d	0,005	≤ 0,02	≤ 0,02	≤ 0,02
Arsenic, As	mg/kg	d	<0,50	≤ 1	≤ 1	≤ 1
Cadmium, Cd	mg/kg	d	0,18	≤ 0,5	≤ 0,5	≤ 0,5
Chromium, Cr	mg/kg	d	<1,0	≤ 10	≤ 10	≤ 10
Copper, Cu	mg/kg	d	<1,0	≤ 10	≤ 10	≤ 10
Lead, Pb	mg/kg	d	<0,50	≤ 10	≤ 10	≤ 10
Mercury, Hg	mg/kg	d	<0,075	≤ 0,1	≤ 0,1	≤ 0,1
Nickel, Ni	mg/kg	d	<1,0	≤ 10	≤ 10	≤ 10
Zinc, Zn	mg/kg	d	11	≤ 100	≤ 100	≤ 100

ar ... as received

d ... dry basis

3.2.2. Sample 2907/2022_F

Parameter	Unit	Reference state	Result	Requirements according to		
				DINplus	ENplus® A1	ENplus® A2
Fines, F (< 3,15 mm) bagged pellets	%	ar	0,10	≤ 0,5	≤ 0,5	≤ 0,5

ar ... as received

Appendix 14

Conditioning data

Conditioning of the boiler Pellematic 56 was conducted by the manufacturer 15th February 2025 to 17th February 2025.

Date	Time	Boiler Tem	Modulation	Flame cha	Auger time	Pause time	Fan %	Suction Fa	under pressure pa
15.02.2025	00:02:32	72,6	30	642	24,21	81	41	38	79,8
15.02.2025	00:03:32	72,6	30	651,6	23,28	81	41	37	81,4
15.02.2025	00:04:32	72,8	30	659,6	22,29	81	41	37	80,6
15.02.2025	00:05:32	73,1	30	658,3	22,17	81	41	38	79,4
15.02.2025	00:06:32	73	30	666,2	21,15	81	41	37	80,2
15.02.2025	00:07:32	73,2	30	663,2	21,03	81	41	38	79,5
15.02.2025	00:08:32	73,3	30	656,8	21,3	81	41	37	81,6
15.02.2025	00:09:32	73,3	30	652,7	21,45	81	41	37	81
15.02.2025	00:10:32	73,3	30	644,7	22,05	81	41	37	80,2
15.02.2025	00:11:32	73,2	30	633,3	23,07	81	41	37	80,3
15.02.2025	00:12:32	73,1	30	630,3	23,34	81	41	38	79,7
15.02.2025	00:13:32	73,3	30	633,2	23,07	81	41	38	79,6
15.02.2025	00:14:32	73,3	30	636,5	22,8	81	41	38	79,1
15.02.2025	00:15:32	73,3	30	638,9	22,56	81	41	37	79,1
15.02.2025	00:16:32	73,4	30	638,8	22,56	81	41	37	80,6
15.02.2025	00:17:32	73,6	30	637,5	22,68	81	41	38	77,9
15.02.2025	00:18:32	73,4	30	635,6	22,86	81	41	38	79,3
15.02.2025	00:19:32	73,5	30	637	22,71	81	41	37	81,1
15.02.2025	00:20:32	73,7	30	636,4	22,77	81	41	38	79,1
15.02.2025	00:21:32	73,6	30	652,9	21,27	81	41	37	80,4
15.02.2025	00:22:32	74	30	680,3	18,39	81	41	37	80,2
15.02.2025	00:23:32	74,3	30	679,5	17,85	81	41	37	80,7
15.02.2025	00:24:32	74,3	30	666,2	18,57	81	41	36	84
15.02.2025	00:25:32	74,4	30	650,4	19,71	81	41	37	81,7
15.02.2025	00:26:32	74,2	30	640,7	20,55	81	41	38	79,8
15.02.2025	00:27:32	74,3	30	644,5	20,22	81	41	37	80,2
15.02.2025	00:28:32	74,5	30	648,8	19,8	81	41	37	80,7
15.02.2025	00:29:32	74,5	30	648,8	19,8	81	41	37	81,2
15.02.2025	00:30:32	74,6	30	645,1	20,07	81	41	36	83,8
15.02.2025	00:31:32	74,5	30	622,3	22,17	81	41	37	81,1
15.02.2025	00:32:32	74,3	30	598,3	24,75	81	41	37	80,7
15.02.2025	00:33:32	74	30	590,3	26,13	81	41	37	80,1
15.02.2025	00:34:32	74	30	599,4	25,98	81	41	37	82,1
15.02.2025	00:35:32	74,1	30	614,8	25,05	81	41	38	79,8
15.02.2025	00:36:32	74,2	30	637,8	23,13	81	41	38	77,8
15.02.2025	00:37:32	74,5	30	643,1	22,65	81	41	37	80,1
15.02.2025	00:38:32	74,7	30	641,6	22,77	81	41	38	79,4
15.02.2025	00:39:32	74,7	30	639,9	22,92	81	41	37	80,7
15.02.2025	00:40:32	74,7	30	636,5	23,22	81	41	38	78,7
15.02.2025	00:41:32	74,7	30	629,5	23,88	81	41	37	80,2
15.02.2025	00:42:32	74,8	30	635	23,43	81	41	38	79,2
15.02.2025	00:43:32	74,9	30	645,9	22,44	81	41	37	81,5
15.02.2025	00:44:32	74,9	34	651,6	22,56	80	44	37	80,5
15.02.2025	00:45:32	75,1	30	650,4	21,78	81	41	37	80,1
15.02.2025	00:46:32	74,9	34	641,2	23,34	80	41	37	80,4
15.02.2025	00:47:32	74,9	34	643,5	23,19	80	44	37	81
15.02.2025	00:48:32	75,1	30	653,3	21,45	81	41	38	77,8
15.02.2025	00:49:32	75,1	30	653,3	21,24	81	41	38	79,5
15.02.2025	00:50:32	75,3	30	651	21,27	81	41	37	81
15.02.2025	00:51:32	75,4	30	648,4	21,39	81	41	37	81,5
15.02.2025	00:52:32	75,4	30	646,6	21,51	81	41	37	80,5
15.02.2025	00:53:32	75,3	30	649,2	21,27	81	41	37	80,3
15.02.2025	00:54:32	75,3	30	649,3	21,09	81	41	38	79,4
15.02.2025	00:55:32	75,3	30	641,9	21,75	81	41	37	80,6
15.02.2025	00:56:32	75,4	30	637,4	22,14	81	41	37	81,4
15.02.2025	00:57:32	75,3	30	647,9	21,18	81	41	37	80,3
15.02.2025	00:58:32	75,5	30	651,1	20,76	81	41	37	80,7
15.02.2025	00:59:32	75,5	30	642,5	21,48	81	41	37	82,2
15.02.2025	01:00:32	75,5	30	637,1	21,96	81	41	37	80

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15.02.2021	01:01:32	75,4	30	636,1	22,05	81	41	37	80,4
15.02.2021	01:02:32	75,6	30	640,2	21,69	81	41	38	79,9
15.02.2021	01:03:32	75,6	30	636,6	22,02	81	41	37	83
15.02.2021	01:04:32	75,5	30	632,8	22,38	81	41	37	80,6
15.02.2021	01:05:32	75,7	30	622,8	23,4	81	41	37	81,2
15.02.2021	01:06:32	75,6	30	635,4	22,47	81	41	38	79,8
15.02.2021	01:07:32	75,8	30	666,5	19,5	81	41	38	78,8
15.02.2021	01:08:32	76	30	686,6	17,13	81	41	37	80,4
15.02.2021	01:09:32	76,1	30	682,3	16,83	81	41	37	79,9
15.02.2021	01:10:32	76,2	30	662,7	18,12	81	41	38	78,3
15.02.2021	01:11:32	76,1	30	649,6	19,05	81	41	37	80,1
15.02.2021	01:12:32	76	30	635	20,34	81	41	38	79,9
15.02.2021	01:13:32	75,8	34	624,8	22,2	80	44	38	80,6
15.02.2021	01:14:32	75,6	34	630,5	21,93	80	44	37	80,1
15.02.2021	01:15:32	75,8	34	635,6	21,57	80	44	37	81,1
15.02.2021	01:16:32	75,7	30	628	21,51	81	41	38	79,7
15.02.2021	01:17:32	75,6	30	612,3	23,19	81	41	37	82,8
15.02.2021	01:18:32	75,4	30	609,7	23,85	81	41	37	80,9
15.02.2021	01:19:32	75,1	30	611,6	24,09	81	41	37	80,7
15.02.2021	01:20:32	75,5	30	608,3	24,78	81	41	37	80,1
15.02.2021	01:21:32	76,3	30	616,7	24,45	81	41	37	82,2
15.02.2021	01:22:32	77,4	30	625,7	23,88	81	41	38	79,9
15.02.2021	01:23:32	78,3	0	636,1	0	0	40	37	82,7
15.02.2021	01:24:32	78,9	0	625,9	0	0	34	37	80,3
15.02.2021	01:25:32	78,3	0	581,2	0	0	29	34	82,4
15.02.2021	01:26:32	77	0	527,4	0	0	25	28	82,3
15.02.2021	01:27:32	75,4	0	478,3	0	0	21	27	82,3
15.02.2021	01:28:32	73,8	0	434,1	0	0	17	27	81,1
15.02.2021	01:29:32	72,6	0	396,5	0	0	12	27	82,3
15.02.2021	01:30:32	71,6	0	364,7	0	0	11	22	81,2
15.02.2021	01:31:32	70,7	0	338,1	0	0	11	23	80,2
15.02.2021	01:32:32	70,3	0	316,1	0	0	0	23	79,6
15.02.2021	01:33:32	70,2	0	297,9	0	0	0	22	81,2
15.02.2021	01:34:32	70,5	0	282,8	0	0	0	23	79,3
15.02.2021	01:35:32	70,8	0	269,5	0	0	0	22	80,3
15.02.2021	01:36:32	71	0	257,2	0	0	0	22	81,1
15.02.2021	01:37:32	71,4	0	246,2	0	0	0	23	79,7
15.02.2021	01:38:32	71,6	0	236,1	0	0	0	22	80,3
15.02.2021	01:39:32	72	0	227,1	0	0	0	22	80
15.02.2021	01:40:32	72,4	0	219,3	0	0	0	23	92,5
15.02.2021	01:41:32	72,1	0	211,9	0	0	0	23	92,6
15.02.2021	01:42:32	71	0	205	0	0	0	23	92,2
15.02.2021	01:43:32	69,6	0	198,7	0	0	0	23	91,9
15.02.2021	01:44:32	68,4	0	192,9	0	0	0	23	92,4
15.02.2021	01:45:32	67,2	78	187,1	0	0	51	32	80,2
15.02.2021	01:46:32	66,4	82	180,7	43,62	80	93	38	78,6
15.02.2021	01:47:32	65,9	86	180,3	55,08	80	98	38	80,3
15.02.2021	01:48:32	66,4	82	220,4	57,42	80	93	37	81,1
15.02.2021	01:49:32	67,6	78	309,6	54,33	80	89	38	81,9
15.02.2021	01:50:32	69,5	70	442,8	43,86	80	82	38	79,7
15.02.2021	01:51:32	71,6	62	566,2	32,58	80	74	38	79,4
15.02.2021	01:52:32	73,5	50	649,3	22,44	80	59	37	81,6
15.02.2021	01:53:32	75,2	42	664,3	19,11	80	52	38	80,9
15.02.2021	01:54:32	76,5	38	655,9	18,81	80	48	37	81
15.02.2021	01:55:32	77,5	30	640,9	18,48	81	41	37	79,9
15.02.2021	01:56:32	78,1	0	619,9	0	0	40	37	80,6
15.02.2021	01:57:32	77,5	0	592,8	0	0	34	38	79,9
15.02.2021	01:58:32	76,1	0	550,6	0	0	30	34	82,3
15.02.2021	01:59:32	74,1	0	505,2	0	0	25	28	83,7
15.02.2021	02:00:32	72,3	0	462,2	0	0	21	28	80,5

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15.02.2025	02:01:32	70,5	0	421,6	0	0	17	27	80,5
15.02.2025	02:02:32	69	0	385,6	0	0	12	28	79,9
15.02.2025	02:03:32	67,6	0	354,3	0	0	31	29	73,6
15.02.2025	02:04:32	66,6	78	327,6	0	0	86	35	77,1
15.02.2025	02:05:32	66,4	82	307	50,97	80	93	38	80
15.02.2025	02:06:32	66,9	82	315,6	56,91	80	93	38	80,3
15.02.2025	02:07:32	67,8	78	369,9	55,74	80	89	38	80,6
15.02.2025	02:08:32	69,3	70	458,1	48,72	80	82	38	81,2
15.02.2025	02:09:32	71,1	62	565,4	38,85	80	74	37	82
15.02.2025	02:10:32	73,1	54	647,2	30,21	80	68	37	80,4
15.02.2025	02:11:32	74,7	46	701,4	23,07	80	55	37	80,9
15.02.2025	02:12:32	76,3	38	707,8	19,74	80	48	38	80,1
15.02.2025	02:13:32	77,2	30	690,3	18,9	81	41	37	81,4
15.02.2025	02:14:32	76,5	34	665,7	21,36	80	44	38	79
15.02.2025	02:15:32	75	38	657,1	22,92	80	48	38	80,9
15.02.2025	02:16:32	73,8	46	661,8	24,66	80	55	38	78,7
15.02.2025	02:17:32	72,6	50	650,8	27,12	80	59	37	81,3
15.02.2025	02:18:32	69,9	62	646,8	32,31	80	74	37	80,7
15.02.2025	02:19:32	65	82	655,4	42,72	80	93	39	79,8
15.02.2025	02:20:32	64	86	706,8	42,33	80	98	45	79
15.02.2025	02:21:32	64,4	86	770	37,26	80	98	48	80
15.02.2025	02:22:32	63,5	90	781,2	39,45	80	98	48	80,7
15.02.2025	02:23:32	61,4	100	776,2	47,61	80	100	47	80,6
15.02.2025	02:24:32	61,6	100	780,5	47,64	80	100	48	80,1
15.02.2025	02:25:32	63,8	90	797,9	38,82	80	98	48	80,1
15.02.2025	02:26:32	64,8	86	819,6	33,3	80	98	48	80,3
15.02.2025	02:27:32	61,1	100	799,7	45,24	80	100	47	79,9
15.02.2025	02:28:32	57,9	100	776,3	47,64	80	100	47	82,6
15.02.2025	02:29:32	56,8	100	769	48,84	80	100	48	79,2
15.02.2025	02:30:32	58,1	100	749,2	51,27	80	100	48	79,6
15.02.2025	02:31:32	60,1	100	742,8	52,71	80	100	48	80,7
15.02.2025	02:32:32	63,8	90	769	43,68	80	98	48	80
15.02.2025	02:33:32	64,8	86	787,1	38,73	80	93	47	81,6
15.02.2025	02:34:32	62,9	94	776,5	46,35	80	98	48	79,4
15.02.2025	02:35:32	63,7	94	766,5	47,58	80	98	47	80
15.02.2025	02:36:32	64,3	90	769,2	44,22	80	98	47	79,9
15.02.2025	02:37:32	60,9	100	785,1	50,37	80	100	47	81,2
15.02.2025	02:38:32	58,4	100	793	49,92	80	100	47	80
15.02.2025	02:39:32	57,5	100	805,1	48,96	80	100	47	80,1
15.02.2025	02:40:32	58,5	100	814,9	48	80	100	48	80,4
15.02.2025	02:41:32	61,2	100	817,1	47,64	80	100	48	79,1
15.02.2025	02:42:32	65,3	82	807,4	34,92	80	93	47	80,9
15.02.2025	02:43:32	66,8	78	799,3	32,58	80	89	47	80,6
15.02.2025	02:44:32	67,7	74	786	31,02	80	86	42	83,5
15.02.2025	02:45:32	62,9	100	764,8	50,4	80	100	43	80,3
15.02.2025	02:46:32	58,5	100	763,4	51,15	80	100	44	80,3
15.02.2025	02:47:32	57,5	100	771,8	50,97	80	100	44	79,9
15.02.2025	02:48:32	58,5	100	796,7	49,05	80	100	48	79,2
15.02.2025	02:49:32	61,7	100	807,5	48,09	80	100	47	80,9
15.02.2025	02:50:32	65,6	82	799,6	35,25	80	93	47	80,6
15.02.2025	02:51:32	62,8	100	786	49,44	80	98	47	81,2
15.02.2025	02:52:32	59,2	100	783,1	49,95	80	100	47	80,3
15.02.2025	02:53:32	58,4	100	789,3	49,62	80	100	47	81,2
15.02.2025	02:54:32	59,2	100	801,5	48,69	80	100	48	79,6
15.02.2025	02:55:32	61,5	100	799,8	48,99	80	100	47	80,9
15.02.2025	02:56:32	64,1	86	803,4	38,07	80	98	47	81,5
15.02.2025	02:57:32	64,4	86	806,4	37,47	80	98	47	80,8
15.02.2025	02:58:32	61,2	100	796,7	48,78	80	100	47	81,9
15.02.2025	02:59:32	59,6	100	781,4	50,37	80	100	47	80,1
15.02.2025	03:00:32	59,7	100	790,6	49,8	80	100	48	79,8

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15.02.2024	03:01:32	60,5	100	810,5	48,09	80	100	48	79,1
15.02.2024	03:02:32	61,3	100	811	47,94	80	100	47	80,8
15.02.2024	03:03:32	61,7	100	807,4	48,3	80	100	48	80
15.02.2024	03:04:32	61,8	100	814,3	47,7	80	100	48	79,4
15.02.2024	03:05:32	63,1	90	838,1	37,74	80	98	47	82
15.02.2024	03:06:32	65	82	832,7	31,56	80	93	47	81,9
15.02.2024	03:07:32	64,1	86	810,1	35,49	80	98	47	81,1
15.02.2024	03:08:32	61,1	100	792	47,64	80	100	48	79,8
15.02.2024	03:09:32	60,3	100	788,5	48,12	80	100	47	81,8
15.02.2024	03:10:32	60,7	100	793,1	47,88	80	100	48	80,3
15.02.2024	03:11:32	61,7	100	807,7	46,68	80	100	48	79,9
15.02.2024	03:12:32	62,2	94	810,9	42,3	80	98	48	81,2
15.02.2024	03:13:32	62,3	94	816,1	41,52	80	98	48	80,1
15.02.2024	03:14:32	62,2	100	799,6	46,83	80	100	48	79,6
15.02.2024	03:15:32	61,8	100	776,8	49,05	80	100	47	81,3
15.02.2024	03:16:32	61,7	100	769,7	50,19	80	100	47	81,2
15.02.2024	03:17:32	61,8	100	765,5	51,12	80	100	47	81,4
15.02.2024	03:18:32	62,1	100	777,2	50,52	80	100	48	79,9
15.02.2024	03:19:32	62,2	100	792,7	49,44	80	100	48	80,7
15.02.2024	03:20:32	62,3	100	801,4	48,69	80	100	47	82
15.02.2024	03:21:32	62,1	100	804	48,51	80	100	48	79,8
15.02.2024	03:22:32	62,2	100	808,1	48,15	80	100	47	80,6
15.02.2024	03:23:32	62,6	100	809,7	48,03	80	100	47	81,3
15.02.2024	03:24:32	63,1	100	807,5	48,24	80	100	48	80,4
15.02.2024	03:25:32	65	90	809,9	40,59	80	98	47	81,2
15.02.2024	03:26:32	67,3	82	803,9	34,92	80	93	47	81,4
15.02.2024	03:27:32	65,8	90	787,9	41,82	80	98	48	79,2
15.02.2024	03:28:32	62,5	100	780,3	50,07	80	100	47	81,5
15.02.2024	03:29:32	60,9	100	785,2	49,95	80	100	47	81,3
15.02.2024	03:30:32	61,2	100	798,9	48,87	80	100	48	79,9
15.02.2024	03:31:32	62,2	100	807,1	48,21	80	100	48	80,7
15.02.2024	03:32:32	62,5	100	809,3	48,06	80	100	48	79,6
15.02.2024	03:33:32	62,4	100	808,6	48,18	80	100	47	81
15.02.2024	03:34:32	62,3	100	801,7	48,87	80	100	47	81,4
15.02.2024	03:35:32	62,4	100	810	48,18	80	100	48	80,1
15.02.2024	03:36:32	63,1	94	813,4	43,83	80	98	48	80,9
15.02.2024	03:37:32	65	86	817,2	36,51	80	98	47	81,4
15.02.2024	03:38:32	65	86	803,2	37,29	80	98	48	80,2
15.02.2024	03:39:32	62,9	100	786,8	49,29	80	100	48	80,2
15.02.2024	03:40:32	62,1	100	791,8	48,96	80	100	48	79,1
15.02.2024	03:41:32	62	100	796,8	48,63	80	100	48	80,7
15.02.2024	03:42:32	62,1	100	804,9	47,97	80	100	48	79,1
15.02.2024	03:43:32	62,4	100	801,2	48,36	80	100	48	80
15.02.2024	03:44:32	62,6	100	808,7	47,76	80	100	48	79,3
15.02.2024	03:45:32	62,8	100	805,2	48,09	80	100	48	80,6
15.02.2024	03:46:32	62,8	100	812,3	47,49	80	100	47	80,6
15.02.2024	03:47:32	62,8	100	807,3	47,94	80	100	47	82,1
15.02.2024	03:48:32	62,8	100	806,6	48,03	80	100	48	80,4
15.02.2024	03:49:32	62,9	100	812,5	47,49	80	98	48	79,9
15.02.2024	03:50:32	63	94	826	42,12	80	98	47	81,2
15.02.2024	03:51:32	63,2	94	839	40,32	80	98	48	80,5
15.02.2024	03:52:32	63,3	94	834	40,14	80	98	48	80,8
15.02.2024	03:53:32	63,3	100	826,6	44,28	80	100	47	81,6
15.02.2024	03:54:32	63,3	100	811,2	45,48	80	100	48	80,4
15.02.2024	03:55:32	63,3	100	809,8	45,63	80	100	47	80,9
15.02.2024	03:56:32	63,2	100	799,4	46,62	80	100	47	80,3
15.02.2024	03:57:32	63,4	100	788,9	47,73	80	100	48	80,9
15.02.2024	03:58:32	65,2	90	793,6	39,93	80	98	47	81,7
15.02.2024	03:59:32	65,2	90	785,9	40,5	80	98	47	81,4
15.02.2024	04:00:32	63,9	100	758,2	50,58	80	98	48	79,5

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15.02.2021	04:01:32	62,9	100	756,7	51,45	80	100	48	81,2	
15.02.2021	04:02:32	62,2	100	769,3	50,94	80	100	48	80,1	
15.02.2021	04:03:32	61,9	100	788	49,62	80	100	47	81,2	
15.02.2021	04:04:32	62,1	100	800,3	48,6	80	100	48	80,4	
15.02.2021	04:05:32	62,7	100	812,3	47,52	80	100	48	80,8	
15.02.2021	04:06:32	63	94	807,3	43,89	80	98	47	81,8	
15.02.2021	04:07:32	62,4	100	805,4	47,97	80	100	47	81,2	
15.02.2021	04:08:32	62,1	100	808,4	47,73	80	100	48	80	
15.02.2021	04:09:32	62,4	100	805,3	48,06	80	100	48	78,4	
15.02.2021	04:10:32	62,7	100	808,9	47,76	80	100	48	79,9	
15.02.2021	04:11:32	62,8	100	804,2	48,21	80	100	48	80,9	
15.02.2021	04:12:32	62,7	100	802,9	48,36	80	100	48	80,4	
15.02.2021	04:13:32	62,8	100	812,8	47,46	80	100	47	82,1	
15.02.2021	04:14:32	63	94	823	42,42	80	98	47	81,2	
15.02.2021	04:15:32	63,1	94	815,1	42,75	80	98	48	80,6	
15.02.2021	04:16:32	63	100	803,9	47,49	80	100	48	79,5	
15.02.2021	04:17:32	63,1	100	806,2	47,34	80	100	48	80,3	
15.02.2021	04:18:32	63,1	100	797,6	48,18	80	100	47	80,6	
15.02.2021	04:19:32	62,9	100	801,7	47,85	80	100	48	80	
15.02.2021	04:20:32	62,4	100	802,3	47,82	80	100	48	80,9	
15.02.2021	04:21:32	62	100	800,9	48	80	100	47	81,1	
15.02.2021	04:22:32	62,3	100	813,4	46,89	80	100	47	81,8	
15.02.2021	04:23:32	63	94	812,9	42,9	80	98	47	81,8	
15.02.2021	04:24:32	63,7	94	812,6	42,63	80	98	47	81,6	
15.02.2021	04:25:32	63,8	94	797,9	43,77	80	98	47	80,4	
15.02.2021	04:26:32	63,3	100	786,3	48,84	80	100	48	80,2	
15.02.2021	04:27:32	62,1	100	795,1	48,27	80	100	48	80,1	
15.02.2021	04:28:32	61,8	100	803	47,61	80	100	47	81,2	
15.02.2021	04:29:32	62,1	100	805,5	47,4	80	100	48	79	
15.02.2021	04:30:32	62,8	100	811,8	46,83	80	100	48	79,7	
15.02.2021	04:31:32	63,5	94	798	44,04	80	98	48	80,1	
15.02.2021	04:32:32	63,6	94	799,2	43,83	80	98	48	78,8	
15.02.2021	04:33:32	62,4	100	806,8	47,01	80	100	47	80,9	
15.02.2021	04:34:32	61,8	100	810	46,8	80	100	48	80,2	
15.02.2021	04:35:32	62,1	94	836,3	40,26	80	98	49	79,8	
15.02.2021	04:36:32	62,8	94	852,2	38,04	80	98	48	80,9	
15.02.2021	04:37:32	63	94	824	39,81	80	98	48	80,4	
15.02.2021	04:38:32	62,4	100	793,7	46,35	80	100	48	80,7	
15.02.2021	04:39:32	62,2	100	797,9	46,05	80	100	49	80,9	
15.02.2021	04:40:32	62,6	100	799,9	45,96	80	100	49	80,4	
15.02.2021	04:41:32	62,8	100	798,4	46,17	80	100	49	80	
15.02.2021	04:42:32	62,5	100	792,4	46,8	80	100	49	79,4	
15.02.2021	04:43:32	62,3	100	806,5	45,57	80	100	48	81,2	
15.02.2021	04:44:32	63,5	94	800,4	42,21	80	98	49	78,4	
15.02.2021	04:45:32	65,3	86	776,8	37,59	80	98	48	79,4	
15.02.2021	04:46:32	65,3	86	752	40,05	80	98	48	79,8	
15.02.2021	04:47:32	64,9	90	749,5	43,86	80	98	49	79,1	
15.02.2021	04:48:32	64	94	755	47,28	80	98	49	81,2	
15.02.2021	04:49:32	63,2	100	747,6	52,62	80	100	48	80,2	
15.02.2021	04:50:32	62,5	100	762,2	52,05	80	100	48	81,9	
15.02.2021	04:51:32	61,9	100	794,6	49,53	80	98	49	80,1	
15.02.2021	04:52:32	62,1	94	813,9	43,71	80	98	49	80,1	
15.02.2021	04:53:32	62,4	94	802,7	44,49	80	98	48	80,9	
15.02.2021	04:54:32	62,3	100	799,9	48,63	80	100	48	81,2	
15.02.2021	04:55:32	62,3	100	810,4	47,76	80	100	48	81,2	
15.02.2021	04:56:32	62,5	100	801,1	48,6	80	100	48	81	
15.02.2021	04:57:32	62,6	100	796,4	49,11	80	100	48	79,9	
15.02.2021	04:58:32	63,2	94	806,5	44,31	80	98	48	80,5	
15.02.2021	04:59:32	64,2	90	806,5	40,65	80	98	48	81	
15.02.2021	05:00:32	64,7	90	805,5	40,53	80	98	48	81,2	

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15.02.2025	05:01:32	65	86	800,4	37,62	80	98	47	82,1	
15.02.2025	05:02:32	63,6	100	784,9	49,44	80	100	48	81,1	
15.02.2025	05:03:32	62,1	100	786,1	49,59	80	100	48	80,5	
15.02.2025	05:04:32	62,2	94	794,1	45,06	80	98	48	81,7	
15.02.2025	05:05:32	63,7	90	803,1	40,68	80	98	48	79,7	
15.02.2025	05:06:32	64,9	86	784,9	38,97	80	98	48	80,5	
15.02.2025	05:07:32	64,4	86	778,2	39,54	80	98	48	81	
15.02.2025	05:08:32	62,7	100	780,1	49,89	80	100	48	81,3	
15.02.2025	05:09:32	61,8	100	790,5	49,2	80	100	48	80	
15.02.2025	05:10:32	61,8	100	787,2	49,68	80	100	48	81,1	
15.02.2025	05:11:32	62,1	94	798,7	44,88	80	98	48	80,7	
15.02.2025	05:12:32	62,5	94	817,1	42,99	80	98	48	79,5	
15.02.2025	05:13:32	62,5	94	814	42,9	80	98	47	81,3	
15.02.2025	05:14:32	62,3	100	800,7	47,85	80	100	47	81,5	
15.02.2025	05:15:32	62,4	100	792,3	48,75	80	100	48	80,7	
15.02.2025	05:16:32	63,3	94	788,2	45,3	80	98	47	81,2	
15.02.2025	05:17:32	64	90	792,1	41,46	80	98	48	80,1	
15.02.2025	05:18:32	64,6	90	791,9	41,31	80	98	48	80,6	
15.02.2025	05:19:32	64,5	90	791,2	41,25	80	98	49	79,7	
15.02.2025	05:20:32	63	100	814,1	46,53	80	100	48	81,4	
15.02.2025	05:21:32	62,4	100	835,1	44,34	80	100	48	81,2	
15.02.2025	05:22:32	63,5	94	825,4	40,83	80	98	48	81,7	
15.02.2025	05:23:32	64	90	807,8	38,58	80	98	48	80,2	
15.02.2025	05:24:32	63,2	100	798,2	46,74	80	100	47	81,5	
15.02.2025	05:25:32	62,3	100	796,8	47,01	80	100	48	80,4	
15.02.2025	05:26:32	62,2	100	810,7	45,84	80	100	51	78,4	
15.02.2025	05:27:32	62,6	100	816,4	45,21	80	100	52	80,1	
15.02.2025	05:28:32	62,9	100	809,2	45,69	80	100	52	80,7	
15.02.2025	05:29:32	62,7	100	798,9	46,71	80	100	51	81,8	
15.02.2025	05:30:32	62,6	100	783,1	48,24	80	100	51	80	
15.02.2025	05:31:32	63,1	94	771,1	45,84	80	98	52	79,4	
15.02.2025	05:32:32	64,1	90	771,9	42,57	80	98	52	79,4	
15.02.2025	05:33:32	64,9	90	775,9	42,36	80	98	52	80,3	
15.02.2025	05:34:32	64,5	0	754,2	0	0	40	38	80,6	
15.02.2025	05:35:32	62,4	0	681,1	0	0	40	38	80,9	
15.02.2025	05:36:32	60,9	0	605,1	0	0	40	37	80,6	
15.02.2025	05:37:32	60,4	0	539,1	0	0	40	37	80,8	
15.02.2025	05:38:32	60,5	0	485,6	0	0	40	35	81,7	
15.02.2025	05:39:32	60,7	0	439,9	0	0	40	33	80,6	
15.02.2025	05:40:32	60,8	0	403	0	0	40	33	80,3	
15.02.2025	05:41:32	60,5	0	371,8	0	0	40	32	80,4	
15.02.2025	05:42:32	59,4	0	343,6	0	0	40	32	80	
15.02.2025	05:43:32	57,9	0	320	0	0	40	32	81,2	
15.02.2025	05:44:32	57	0	299,2	0	0	40	32	81,3	
15.02.2025	05:45:32	57,1	0	281,3	0	0	40	33	79,8	
15.02.2025	05:46:32	58	0	265,3	0	0	40	32	81,2	
15.02.2025	05:47:32	59,6	0	250,6	0	0	40	32	81,4	
15.02.2025	05:48:32	60,7	100	237,1	0	0	100	38	79,8	
15.02.2025	05:49:32	59,4	100	225,2	57,27	80	100	37	81,1	
15.02.2025	05:50:32	57,9	100	235	64,92	80	100	38	80,7	
15.02.2025	05:51:32	57,4	100	289,6	68,07	80	100	39	77,9	
15.02.2025	05:52:32	58,2	100	363	68,61	80	100	40	78,7	
15.02.2025	05:53:32	60,2	100	428,4	68,73	80	100	46	78,9	
15.02.2025	05:54:32	62,2	94	494,6	63,96	80	98	49	79	
15.02.2025	05:55:32	63,3	90	572,5	57,3	80	98	53	79,7	
15.02.2025	05:56:32	63,6	90	656,1	52,29	80	98	52	81,7	
15.02.2025	05:57:32	64,2	86	725,5	44,28	80	98	52	79,8	
15.02.2025	05:58:32	64	90	764,6	44,4	80	98	52	80,2	
15.02.2025	05:59:32	62,6	100	762,9	52,38	80	100	52	81	
15.02.2025	06:00:32	62	0	769,1	0	0	40	40	87,3	



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15.02.2021	06:01:32	61,9	0	723,8	0	0	40	37	81,8	
15.02.2021	06:02:32	61,5	0	646,7	0	0	40	38	79,9	
15.02.2021	06:03:32	60,7	0	569,9	0	0	40	37	80,7	
15.02.2021	06:04:32	60	100	505,9	0	0	60	37	78,1	
15.02.2021	06:05:32	59,1	100	454,4	64,5	80	100	38	79,1	
15.02.2021	06:06:32	58,3	100	426,6	72,54	80	100	38	81,4	
15.02.2021	06:07:32	57,9	100	450,6	75,81	80	100	44	78,9	
15.02.2021	06:08:32	59	100	543	72,06	80	100	52	76,7	
15.02.2021	06:09:32	61,4	100	681	62,55	80	100	52	80,6	
15.02.2021	06:10:32	65,2	82	779,8	41,25	80	93	52	81,9	
15.02.2021	06:11:32	65,7	82	802,8	38,7	80	93	52	78,9	
15.02.2021	06:12:32	63,2	90	789,6	45,48	80	98	53	77,7	
15.02.2021	06:13:32	62,1	100	774,2	54,57	80	100	51	83,4	
15.02.2021	06:14:32	62,2	100	783,8	54,18	80	100	53	80	
15.02.2021	06:15:32	63,4	94	809,9	48,03	80	98	52	79,8	
15.02.2021	06:16:32	64,9	90	818,3	43,44	80	98	52	79,6	
15.02.2021	06:17:32	65,6	86	811,6	40,38	80	98	52	80,2	
15.02.2021	06:18:32	64,4	90	793,8	44,82	80	98	52	80,1	
15.02.2021	06:19:32	62,5	100	772,4	54,48	80	100	52	81,2	
15.02.2021	06:20:32	62	94	795,1	48,9	80	98	52	80	
15.02.2021	06:21:32	62,6	94	805,7	47,79	80	98	52	79,6	
15.02.2021	06:22:32	62,9	94	814,4	46,8	80	98	52	80,6	
15.02.2021	06:23:32	63	94	833,4	44,64	80	98	52	81,8	
15.02.2021	06:24:32	63	94	829,5	44,4	80	98	52	79,4	
15.02.2021	06:25:32	62,9	100	814,1	49,29	80	98	51	81,9	
15.02.2021	06:26:32	63,1	94	815,5	45,15	80	98	51	82,5	
15.02.2021	06:27:32	64,2	90	814,7	41,43	80	98	52	80,8	
15.02.2021	06:28:32	65,4	86	808,4	38,4	80	98	53	79	
15.02.2021	06:29:32	66,2	82	788,4	37,2	80	93	52	81	
15.02.2021	06:30:32	65,4	86	767,4	41,61	80	98	52	79,6	
15.02.2021	06:31:32	63,1	100	757,8	53,43	80	100	52	82,4	
15.02.2021	06:32:32	62,4	100	754,7	54,39	80	100	52	79,9	
15.02.2021	06:33:32	63,3	94	761,3	50,61	80	98	52	80,4	
15.02.2021	06:34:32	65	86	781,7	42,39	80	98	52	79,9	
15.02.2021	06:35:32	66,1	82	781,5	39,48	80	93	52	80,6	
15.02.2021	06:36:32	64,6	90	774,6	45,9	80	98	52	81,6	
15.02.2021	06:37:32	62,5	100	767,9	54,27	80	100	52	81,4	
15.02.2021	06:38:32	62,1	100	775,8	54,06	80	100	51	82,2	
15.02.2021	06:39:32	62,4	100	798	52,32	80	100	52	79	
15.02.2021	06:40:32	62,9	100	812,9	50,97	80	100	52	79,7	
15.02.2021	06:41:32	63	94	820,2	46,14	80	98	52	81,5	
15.02.2021	06:42:32	62,9	100	810,5	50,64	80	100	52	80,9	
15.02.2021	06:43:32	63,4	94	801,2	47,55	80	98	52	82,1	
15.02.2021	06:44:32	64,4	90	798,7	44,22	80	98	52	80,6	
15.02.2021	06:45:32	65,1	86	806,6	40,14	80	98	52	79,5	
15.02.2021	06:46:32	65,6	86	802	40,17	80	98	52	80,3	
15.02.2021	06:47:32	64,3	90	795,4	43,74	80	98	52	79,7	
15.02.2021	06:48:32	62,6	100	788,9	51,87	80	100	52	79,4	
15.02.2021	06:49:32	63	94	791,4	47,94	80	98	51	82,5	
15.02.2021	06:50:32	64,9	90	799,4	43,68	80	98	52	79,5	
15.02.2021	06:51:32	66,3	82	797	37,8	80	93	51	84,5	
15.02.2021	06:52:32	66,4	82	785,6	38,46	80	93	52	80,5	
15.02.2021	06:53:32	63,8	100	773,1	52,71	80	98	52	80,3	
15.02.2021	06:54:32	62,1	100	765,9	53,91	80	100	51	82,9	
15.02.2021	06:55:32	61,8	100	787,8	52,35	80	100	52	79,7	
15.02.2021	06:56:32	62,3	94	797	47,67	80	98	52	81,6	
15.02.2021	06:57:32	62,7	94	805,8	46,8	80	98	52	80,7	
15.02.2021	06:58:32	63	94	815	45,78	80	98	52	80,1	
15.02.2021	06:59:32	63	94	804,5	46,53	80	98	52	80,2	
15.02.2021	07:00:32	63,9	94	808,8	45,96	80	98	52	79,1	

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15.02.2024	07:01:32	65	86	813,5	38,52	80	98	52	81	
15.02.2024	07:02:32	66	82	803,1	36,33	80	93	52	79,4	
15.02.2024	07:03:32	66,5	82	776,6	38,34	80	93	48	83,2	
15.02.2024	07:04:32	65,9	86	763,5	42,12	80	98	47	80,4	
15.02.2024	07:05:32	63,3	100	754,4	53,88	80	100	48	80,1	
15.02.2024	07:06:32	62,2	100	758,6	54,24	80	100	48	80,2	
15.02.2024	07:07:32	63,6	94	787,5	48,18	80	98	48	80,3	
15.02.2024	07:08:32	65,9	86	828,7	37,47	80	98	48	81,9	
15.02.2024	07:09:32	67	78	825	31,71	80	89	47	81	
15.02.2024	07:10:32	64,9	90	810,3	40,56	80	98	47	81,3	
15.02.2024	07:11:32	62,6	100	782,1	50,55	80	100	47	82,4	
15.02.2024	07:12:32	62	100	790,9	50,04	80	100	48	80,9	
15.02.2024	07:13:32	62,4	100	801,3	49,35	80	100	48	80,3	
15.02.2024	07:14:32	63	94	819,6	43,68	80	98	49	80,5	
15.02.2024	07:15:32	63,1	94	808,5	44,34	80	98	49	80,7	
15.02.2024	07:16:32	63	100	800,9	49,02	80	100	48	80,7	
15.02.2024	07:17:32	63,7	100	792,9	49,86	80	100	49	78,5	
15.02.2024	07:18:32	64,7	94	768,8	48,36	80	98	48	80,7	
15.02.2024	07:19:32	65,6	90	763,1	45,72	80	98	48	80,5	
15.02.2024	07:20:32	66,5	86	762,2	42,9	80	98	49	78,5	
15.02.2024	07:21:32	65,5	90	776,9	44,91	80	98	48	79,9	
15.02.2024	07:22:32	63,2	100	776,4	52,62	80	100	47	81,8	
15.02.2024	07:23:32	62,8	100	785,7	52,11	80	100	48	80,9	
15.02.2024	07:24:32	64,8	90	795,4	43,86	80	98	48	79,8	
15.02.2024	07:25:32	66,7	82	798,5	37,41	80	93	47	81,2	
15.02.2024	07:26:32	66,5	82	781,4	38,52	80	93	48	80,2	
15.02.2024	07:27:32	63,5	100	760,9	53,76	80	100	48	80,8	
15.02.2024	07:28:32	61,9	100	768	53,73	80	98	48	79,5	
15.02.2024	07:29:32	62	94	782,5	48,96	80	98	48	80,3	
15.02.2024	07:30:32	62,5	94	797	47,67	80	98	48	79,3	
15.02.2024	07:31:32	63	90	792,9	44,58	80	98	48	80,1	
15.02.2024	07:32:32	62,9	100	792,2	52,05	80	100	48	81,3	
15.02.2024	07:33:32	62,9	100	802,1	51,33	80	100	48	80,9	
15.02.2024	07:34:32	63,7	94	811,2	46,44	80	98	48	79,8	
15.02.2024	07:35:32	64,9	90	809,4	42,78	80	98	48	80,7	
15.02.2024	07:36:32	66	82	797,5	37,62	80	93	48	80,2	
15.02.2024	07:37:32	66,9	82	776,3	39,18	80	93	48	80,5	
15.02.2024	07:38:32	65,6	86	768,6	42,48	80	98	48	79,7	
15.02.2024	07:39:32	63,2	100	774	52,83	80	100	48	80,4	
15.02.2024	07:40:32	62,8	100	781	52,53	80	100	49	80,6	
15.02.2024	07:41:32	64,7	90	788,5	44,55	80	98	50	78,7	
15.02.2024	07:42:32	66,5	82	798,6	37,56	80	93	50	81,3	
15.02.2024	07:43:32	67	78	788,4	35,49	80	89	48	81,5	
15.02.2024	07:44:32	64,1	90	764,9	45,81	80	98	48	80,4	
15.02.2024	07:45:32	62,2	100	763,2	53,97	80	100	48	81,4	
15.02.2024	07:46:32	61,9	100	776,5	53,28	80	100	48	80,9	
15.02.2024	07:47:32	62,5	94	795,7	47,73	80	98	49	80,6	
15.02.2024	07:48:32	62,9	94	809,2	46,38	80	98	51	79,3	
15.02.2024	07:49:32	63	94	797,1	47,28	80	98	52	80,1	
15.02.2024	07:50:32	62,8	100	793,3	51,69	80	100	52	81,4	
15.02.2024	07:51:32	63,6	94	797,6	47,43	80	98	53	79,6	
15.02.2024	07:52:32	64,9	90	817,4	42	80	98	52	81,2	
15.02.2024	07:53:32	66	82	817,5	35,49	80	93	51	82,2	
15.02.2024	07:54:32	67,4	78	794,3	34,5	80	89	51	81,4	
15.02.2024	07:55:32	65,7	86	764,5	42,03	80	98	52	79,9	
15.02.2024	07:56:32	63,1	100	759,1	53,52	80	100	52	79,4	
15.02.2024	07:57:32	62,5	100	779,3	52,26	80	100	52	79,8	
15.02.2024	07:58:32	64,1	90	804,4	42,69	80	98	52	80,5	
15.02.2024	07:59:32	66,2	82	802,5	36,66	80	93	52	79,9	
15.02.2024	08:00:32	66,4	82	788,9	37,44	80	93	52	80,7	

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15.02.2025	08:01:32	63,8	100	775,9	51,78	80	98	52	79,9	
15.02.2025	08:02:32	62,3	100	757,1	54,03	80	100	52	80	
15.02.2025	08:03:32	61,9	100	753,4	55,11	80	100	52	80	
15.02.2025	08:04:32	62,3	94	774	49,8	80	98	52	80,8	
15.02.2025	08:05:32	62,8	94	787,8	48,69	80	98	52	81	
15.02.2025	08:06:32	63	94	801,9	47,43	80	98	51	83	
15.02.2025	08:07:32	63,1	94	800,4	47,43	80	98	52	81,5	
15.02.2025	08:08:32	63,8	94	801,8	47,25	80	98	53	79,4	
15.02.2025	08:09:32	64,8	90	799,3	43,83	80	98	52	79,5	
15.02.2025	08:10:32	65,5	86	794,7	40,95	80	98	52	79,3	
15.02.2025	08:11:32	65,6	86	782,1	41,94	80	98	53	79,4	
15.02.2025	08:12:32	64,2	94	781,1	48,63	80	98	52	81,4	
15.02.2025	08:13:32	62,9	100	791,2	51,84	80	100	52	80,9	
15.02.2025	08:14:32	63,4	94	810,4	46,26	80	98	52	80,4	
15.02.2025	08:15:32	65	86	800,6	40,26	80	98	52	81	
15.02.2025	08:16:32	66,2	82	790,2	38,25	80	93	52	80,2	
15.02.2025	08:17:32	64,7	90	790,1	43,89	80	98	52	81,4	
15.02.2025	08:18:32	62,9	100	781,7	52,17	80	98	52	79,2	
15.02.2025	08:19:32	62,3	100	780,1	52,65	80	100	52	81,1	
15.02.2025	08:20:32	62,4	100	789,6	52,02	80	100	52	79,9	
15.02.2025	08:21:32	62,8	100	799,1	51,33	80	100	52	80,4	
15.02.2025	08:22:32	63	94	807,1	46,68	80	98	52	81,8	
15.02.2025	08:23:32	63	94	811	46,11	80	98	52	80,6	
15.02.2025	08:24:32	62,9	100	805	50,34	80	98	53	80,1	
15.02.2025	08:25:32	63,1	94	804,1	46,56	80	98	53	79,8	
15.02.2025	08:26:32	63	94	806,1	46,29	80	98	52	80	
15.02.2025	08:27:32	63,1	100	799,6	50,82	80	100	52	82,3	
15.02.2025	08:28:32	63,2	100	798,6	51,03	80	100	52	82,1	
15.02.2025	08:29:32	64,5	94	799	47,13	80	98	53	79,5	
15.02.2025	08:30:32	65,9	90	815,8	41,91	80	98	52	79,2	
15.02.2025	08:31:32	67,2	82	811,5	35,85	80	93	52	80,6	
15.02.2025	08:32:32	66,8	86	788,2	40,14	80	98	52	79,8	
15.02.2025	08:33:32	64	100	772,6	52,17	80	100	53	78,9	
15.02.2025	08:34:32	62,8	100	779,6	51,99	80	100	52	80,6	
15.02.2025	08:35:32	63,5	94	781,2	48,18	80	98	52	79,8	
15.02.2025	08:36:32	64	90	776,4	45,33	80	98	52	82,2	
15.02.2025	08:37:32	64,1	90	800,4	43,26	80	98	52	81,4	
15.02.2025	08:38:32	66,1	82	839,3	33,3	80	93	52	80,4	
15.02.2025	08:39:32	67,1	78	820,3	31,5	80	89	52	80,9	
15.02.2025	08:40:32	64,6	94	772,2	47,16	80	98	52	80,8	
15.02.2025	08:41:32	62,6	100	756,6	53,07	80	100	52	81,6	
15.02.2025	08:42:32	62,3	100	779,2	51,63	80	100	52	80,3	
15.02.2025	08:43:32	62,9	100	810,8	48,9	80	100	52	80,3	
15.02.2025	08:44:32	63,3	94	804,5	45,36	80	98	52	81,6	
15.02.2025	08:45:32	63,1	94	803	45,33	80	98	52	80,4	
15.02.2025	08:46:32	63,3	94	798,2	45,72	80	98	52	81,5	
15.02.2025	08:47:32	64,6	90	792,1	42,75	80	98	52	79,5	
15.02.2025	08:48:32	65,3	86	762,9	42,27	80	98	52	80,4	
15.02.2025	08:49:32	65,9	86	752,4	43,53	80	98	51	82,1	
15.02.2025	08:50:32	65,9	86	749,3	44,07	80	98	53	78,9	
15.02.2025	08:51:32	63,9	100	750,2	55,02	80	98	52	80,8	
15.02.2025	08:52:32	62,4	100	770,4	53,88	80	100	52	79,9	
15.02.2025	08:53:32	63,3	94	797,6	47,79	80	98	52	79,9	
15.02.2025	08:54:32	65,3	86	797,8	41,07	80	98	51	82,1	
15.02.2025	08:55:32	66,8	82	796,5	38,16	80	93	52	80,5	
15.02.2025	08:56:32	66,4	82	783,5	38,97	80	93	52	80,9	
15.02.2025	08:57:32	63,5	100	766,8	53,79	80	100	52	79,7	
15.02.2025	08:58:32	61,9	100	775,2	53,58	80	100	52	82,1	
15.02.2025	08:59:32	62	94	799,8	47,67	80	98	52	81	
15.02.2025	09:00:32	62,6	94	808,9	46,65	80	98	52	81,1	

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15.02.2024	09:01:32	62,9	100	811,8	50,01	80	98	52	79,7
15.02.2024	09:02:32	62,9	100	800,4	51	80	100	52	81,4
15.02.2024	09:03:32	63,2	94	795,2	47,67	80	98	51	83,1
15.02.2024	09:04:32	64,4	90	803,9	43,35	80	98	53	79,3
15.02.2024	09:05:32	65,3	86	804,3	39,84	80	98	53	79
15.02.2024	09:06:32	66,2	82	800,7	36,99	80	93	52	80,6
15.02.2024	09:07:32	66,5	82	788,3	37,71	80	93	52	80,4
15.02.2024	09:08:32	65,6	86	774,3	41,46	80	98	52	79,3
15.02.2024	09:09:32	63,3	100	767,9	52,86	80	100	51	82,5
15.02.2024	09:10:32	62,3	100	773,3	52,89	80	100	52	79,9
15.02.2024	09:11:32	63,8	94	791,6	47,55	80	98	52	81,4
15.02.2024	09:12:32	65,5	86	802,9	39,81	80	98	52	80,1
15.02.2024	09:13:32	66,9	82	796,1	37,2	80	93	52	81,8
15.02.2024	09:14:32	65	86	769,6	42,06	80	98	52	80
15.02.2024	09:15:32	62,8	100	760	54	80	100	52	80,5
15.02.2024	09:16:32	62,1	100	784,9	52,23	80	100	52	80,3
15.02.2024	09:17:32	62,4	100	802,2	50,88	80	100	52	81,3
15.02.2024	09:18:32	62,9	100	799,9	51,12	80	100	52	79,8
15.02.2024	09:19:32	62,9	100	800,2	51,27	80	100	52	80,8
15.02.2024	09:20:32	62,7	100	798	51,6	80	100	52	80,9
15.02.2024	09:21:32	62,9	100	804,9	51,09	80	100	53	80
15.02.2024	09:22:32	64	90	835,6	40,62	80	98	52	79,2
15.02.2024	09:23:32	65,7	86	848,6	35,4	80	98	52	81,4
15.02.2024	09:24:32	66,7	82	820	34,23	80	93	52	80,6
15.02.2024	09:25:32	67,5	78	789,7	33,9	80	89	52	79,4
15.02.2024	09:26:32	65,9	86	766,1	40,8	80	98	52	78,3
15.02.2024	09:27:32	63	100	754,5	52,86	80	100	52	80,1
15.02.2024	09:28:32	62,6	100	765	52,59	80	100	53	79,8
15.02.2024	09:29:32	64,4	90	785,2	43,68	80	98	52	81,7
15.02.2024	09:30:32	66,5	82	796,8	36,6	80	93	52	79,6
15.02.2024	09:31:32	66,7	82	785,6	37,14	80	93	52	81,1
15.02.2024	09:32:32	64	94	753	49,41	80	98	51	80,4
15.02.2024	09:33:32	61,9	100	728,8	56,49	80	98	52	80,7
15.02.2024	09:34:32	61,7	100	751,3	55,44	80	100	52	80,4
15.02.2024	09:35:32	62,3	94	783	49,11	80	98	52	80,1
15.02.2024	09:36:32	62,9	94	800,8	47,52	80	98	52	80,5
15.02.2024	09:37:32	63,1	94	809,9	46,44	80	98	53	78,9
15.02.2024	09:38:32	63,1	94	806,1	46,59	80	98	52	81,3
15.02.2024	09:39:32	64	90	797,6	43,77	80	98	52	81,7
15.02.2024	09:40:32	65	86	793,9	40,86	80	98	52	80
15.02.2024	09:41:32	66,2	82	793,8	37,95	80	93	53	78,9
15.02.2024	09:42:32	67,3	78	788,6	35,64	80	89	52	80,1
15.02.2024	09:43:32	67,3	78	757,8	38,1	80	89	52	80,4
15.02.2024	09:44:32	64,7	94	751,4	50,61	80	98	53	79
15.02.2024	09:45:32	62,4	100	760,6	54,39	80	100	52	81,2
15.02.2024	09:46:32	62,7	100	792,4	51,96	80	100	52	81,9
15.02.2024	09:47:32	65	86	815	39,18	80	98	52	79,8
15.02.2024	09:48:32	67,1	78	825,2	32,43	80	89	52	80,5
15.02.2024	09:49:32	65,9	86	800,9	38,88	80	93	52	80,2
15.02.2024	09:50:32	63	100	779,1	51,42	80	100	52	80,3
15.02.2024	09:51:32	62,1	100	774,4	52,29	80	100	51	82,2
15.02.2024	09:52:32	62,2	100	791,6	51,03	80	100	52	80,5
15.02.2024	09:53:32	62,8	100	806,3	49,83	80	100	52	80,3
15.02.2024	09:54:32	63,1	94	813,1	45,12	80	98	52	79
15.02.2024	09:55:32	63,4	94	806,3	45,48	80	98	52	82,2
15.02.2024	09:56:32	64,3	90	806	41,79	80	98	52	81
15.02.2024	09:57:32	65,4	86	790	39,9	80	98	52	81
15.02.2024	09:58:32	65,9	86	773,2	41,34	80	98	52	81,6
15.02.2024	09:59:32	66,4	82	770,5	38,79	80	93	52	82,5
15.02.2024	10:00:32	65,3	90	783	43,38	80	98	52	80

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15.02.2024	10:01:32	63	100	775	51,66	80	100	52	80,2	
15.02.2024	10:02:32	62,5	100	771,8	52,47	80	100	52	82,3	
15.02.2024	10:03:32	64,2	90	792,9	43,41	80	98	52	80,3	
15.02.2024	10:04:32	66,3	82	805,4	36,15	80	93	52	81,6	
15.02.2024	10:05:32	67,6	78	782,9	35,25	80	89	52	81,3	
15.02.2024	10:06:32	66,6	82	764,8	39	80	93	52	80,8	
15.02.2024	10:07:32	63,4	100	774,3	51,6	80	100	52	79,6	
15.02.2024	10:08:32	62,2	100	807,4	48,84	80	100	52	80,4	
15.02.2024	10:09:32	62,4	100	818	47,76	80	100	52	80,2	
15.02.2024	10:10:32	62,9	100	822,1	47,22	80	98	52	82	
15.02.2024	10:11:32	63,1	94	815,7	43,5	80	98	52	80,5	
15.02.2024	10:12:32	62,9	100	803,7	48,24	80	98	52	79,2	
15.02.2024	10:13:32	63,6	94	793	45,27	80	98	52	80,1	
15.02.2024	10:14:32	64,4	90	794	41,67	80	98	52	80,3	
15.02.2024	10:15:32	65	86	788,4	38,94	80	98	53	79,2	
15.02.2024	10:16:32	65,6	86	788,7	38,76	80	98	51	82,4	
15.02.2024	10:17:32	66,2	82	766,3	37,92	80	93	52	79,4	
15.02.2024	10:18:32	64,9	94	746,5	49,35	80	98	52	80,7	
15.02.2024	10:19:32	62,6	100	741,5	54,54	80	100	52	80	
15.02.2024	10:20:32	62,3	100	751,6	54,48	80	100	52	79,1	
15.02.2024	10:21:32	63,7	94	774,1	49,08	80	98	51	83,5	
15.02.2024	10:22:32	65,5	86	800	40,08	80	98	52	81	
15.02.2024	10:23:32	66,5	82	798,2	37,05	80	93	52	79,7	
15.02.2024	10:24:32	64,8	90	769	45,36	80	98	53	78,8	
15.02.2024	10:25:32	62,6	100	757,5	54,21	80	100	52	80,3	
15.02.2024	10:26:32	62	100	766	54,09	80	100	53	79,8	
15.02.2024	10:27:32	62,4	100	796,3	51,72	80	100	52	81,7	
15.02.2024	10:28:32	63	94	813,8	46,23	80	98	52	79,8	
15.02.2024	10:29:32	63,2	94	819,2	45,36	80	98	52	80,6	
15.02.2024	10:30:32	63,2	94	818,4	45,06	80	98	52	80,9	
15.02.2024	10:31:32	63	100	804,7	50,01	80	100	52	79,8	
15.02.2024	10:32:32	62,9	100	788,7	51,57	80	100	52	80	
15.02.2024	10:33:32	62,8	100	787,5	51,93	80	100	53	79,1	
15.02.2024	10:34:32	64,2	90	806,9	42,78	80	98	52	80,2	
15.02.2024	10:35:32	65,6	86	811,2	38,85	80	98	52	80,5	
15.02.2024	10:36:32	66,4	82	806,5	35,91	80	93	52	81,5	
15.02.2024	10:37:32	66	82	774,5	38,43	80	93	52	81,8	
15.02.2024	10:38:32	63,7	100	760,7	53,13	80	100	53	78,2	
15.02.2024	10:39:32	62,3	100	751,8	54,66	80	100	51	82,1	
15.02.2024	10:40:32	62,6	100	758,4	54,81	80	100	52	81,9	
15.02.2024	10:41:32	64,4	90	784,1	45,45	80	98	53	79,3	
15.02.2024	10:42:32	65,6	86	797,2	40,98	80	98	52	81,2	
15.02.2024	10:43:32	64,5	90	797,2	43,89	80	98	52	79,1	
15.02.2024	10:44:32	62,9	100	789,9	52,05	80	98	52	79,8	
15.02.2024	10:45:32	62,5	100	789,2	52,32	80	100	53	79,1	
15.02.2024	10:46:32	62,7	100	801,5	51,36	80	100	52	79,3	
15.02.2024	10:47:32	63	94	811,8	46,5	80	98	52	80,8	
15.02.2024	10:48:32	63	94	808,2	46,59	80	98	53	78,8	
15.02.2024	10:49:32	63	94	812,9	45,93	80	98	52	79,6	
15.02.2024	10:50:32	63,1	100	811,4	49,8	80	100	52	79,7	
15.02.2024	10:51:32	63,7	100	813,5	49,5	80	100	52	80	
15.02.2024	10:52:32	64,8	94	831,9	43,62	80	98	52	80,5	
15.02.2024	10:53:32	66,4	86	847,6	34,74	80	98	52	80,3	
15.02.2024	10:54:32	67	82	823,3	33,24	80	93	52	81,3	
15.02.2024	10:55:32	64,5	94	801,6	44,07	80	98	52	79,1	
15.02.2024	10:56:32	62,7	100	777,1	50,4	80	100	52	81,3	
15.02.2024	10:57:32	62,6	100	791,9	49,41	80	100	51	84,3	
15.02.2024	10:58:32	64,5	90	807,9	40,53	80	98	52	79	
15.02.2024	10:59:32	66,2	82	804,9	34,47	80	93	53	79,3	
15.02.2024	11:00:32	66,7	82	797,3	34,59	80	93	52	81,4	

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15.02.2025	11:01:32	64,3	90	777,1	42,09	80	98	53	78	
15.02.2025	11:02:32	62,3	100	753,8	52,05	80	100	52	80,4	
15.02.2025	11:03:32	61,9	100	730,3	55,05	80	98	51	82,3	
15.02.2025	11:04:32	62	94	738	51,45	80	98	53	79,1	
15.02.2025	11:05:32	62,4	100	768,5	53,34	80	100	52	79,8	
15.02.2025	11:06:32	62,9	100	802	50,61	80	98	52	79,7	
15.02.2025	11:07:32	63,1	94	820,8	44,73	80	98	52	80,8	
15.02.2025	11:08:32	63,4	94	814,1	44,97	80	98	52	79,9	
15.02.2025	11:09:32	64,5	94	795,2	46,47	80	98	52	80,4	
15.02.2025	11:10:32	65,2	90	784,7	43,92	80	98	52	81,6	
15.02.2025	11:11:32	66	86	784,7	40,65	80	98	53	78,2	
15.02.2025	11:12:32	65	90	783,1	43,86	80	98	52	79,6	
15.02.2025	11:13:32	63	100	783,4	51,33	80	100	52	81,6	
15.02.2025	11:14:32	62,8	100	806,2	49,44	80	100	52	80,9	
15.02.2025	11:15:32	64,8	90	811,9	41,22	80	98	52	80,5	
15.02.2025	11:16:32	66,3	82	801,4	35,82	80	93	52	81,3	
15.02.2025	11:17:32	66,3	82	777	37,65	80	93	52	82,2	
15.02.2025	11:18:32	63,8	100	757,9	52,77	80	100	52	79,1	
15.02.2025	11:19:32	62	94	764,6	48,93	80	98	52	78,9	
15.02.2025	11:20:32	61,9	100	776,5	52,26	80	100	52	81,7	
15.02.2025	11:21:32	62,3	94	790,6	47,25	80	98	52	80,2	
15.02.2025	11:22:32	62,9	94	795,9	46,77	80	98	52	80,6	
15.02.2025	11:23:32	62,9	100	793,2	51	80	98	51	82,1	
15.02.2025	11:24:32	62,8	100	804,8	50,1	80	100	52	79,3	
15.02.2025	11:25:32	63,4	94	811,1	45,48	80	98	52	80,4	
15.02.2025	11:26:32	64,4	90	810,5	41,76	80	98	52	79,4	
15.02.2025	11:27:32	65,3	86	800,9	39,15	80	98	52	80,8	
15.02.2025	11:28:32	66	82	788,7	37,38	80	93	52	80,5	
15.02.2025	11:29:32	65,1	86	782,5	40,41	80	98	52	80,2	
15.02.2025	11:30:32	63	100	779,3	51,33	80	100	52	79,9	
15.02.2025	11:31:32	62,4	100	773,4	52,32	80	100	53	79,1	
15.02.2025	11:32:32	63,7	94	790	47,19	80	98	52	80,5	
15.02.2025	11:33:32	65,6	86	808,3	38,7	80	98	52	80,3	
15.02.2025	11:34:32	67,2	78	793,7	34,38	80	89	51	83,4	
15.02.2025	11:35:32	65,7	86	771	41,19	80	98	53	79	
15.02.2025	11:36:32	62,9	100	763,9	52,8	80	100	52	81,8	
15.02.2025	11:37:32	62	100	799,7	49,98	80	100	52	82,4	
15.02.2025	11:38:32	62,5	100	834,3	46,65	80	100	52	81,6	
15.02.2025	11:39:32	63,2	94	831,6	42,51	80	98	52	81,5	
15.02.2025	11:40:32	63,3	94	832,7	41,82	80	98	53	79,4	
15.02.2025	11:41:32	63,2	94	815,6	42,84	80	98	52	80,1	
15.02.2025	11:42:32	63,2	100	787,8	49,32	80	100	52	81,6	
15.02.2025	11:43:32	64,2	94	798,6	44,55	80	98	53	79,2	
15.02.2025	11:44:32	65,4	90	810,4	39,84	80	98	52	81,1	
15.02.2025	11:45:32	66,4	86	798,9	37,41	80	98	52	80,9	
15.02.2025	11:46:32	67,1	82	786,4	35,58	80	93	51	82,4	
15.02.2025	11:47:32	66	86	759,9	40,5	80	98	52	82,4	
15.02.2025	11:48:32	62,9	100	733,4	54,21	80	100	53	78,8	
15.02.2025	11:49:32	61,8	100	740,9	54,54	80	100	52	80,8	
15.02.2025	11:50:32	62,1	94	758,8	49,8	80	98	52	79	
15.02.2025	11:51:32	62,7	94	776,4	48,54	80	98	53	78,3	
15.02.2025	11:52:32	63	94	794,3	46,98	80	98	52	82,2	
15.02.2025	11:53:32	62,9	100	799,5	50,46	80	100	52	80	
15.02.2025	11:54:32	63,3	94	800,3	46,5	80	98	53	79,5	
15.02.2025	11:55:32	64,5	90	795,7	43,41	80	98	53	78,7	
15.02.2025	11:56:32	65,6	86	789,4	40,65	80	98	52	79,4	
15.02.2025	11:57:32	66,6	82	782,3	38,31	80	93	52	80,3	
15.02.2025	11:58:32	67,2	78	774,2	36,27	80	89	52	79,4	
15.02.2025	11:59:32	67,4	78	764,9	36,75	80	89	53	78,9	
15.02.2025	12:00:32	64,9	94	739,3	51,03	80	98	52	79,2	

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15.02.2024	12:01:32	62,6	100	758,4	54,03	80	100	53	78,9	
15.02.2024	12:02:32	63,9	94	789,4	47,7	80	98	52	82,2	
15.02.2024	12:03:32	66,2	82	805,7	36,69	80	93	52	80	
15.02.2024	12:04:32	67,8	78	798	34,32	80	89	52	79,6	
15.02.2024	12:05:32	66,9	82	782	37,65	80	93	52	80	
15.02.2024	12:06:32	63,7	100	760,7	52,89	80	100	53	79,8	
15.02.2024	12:07:32	62	100	763,1	53,37	80	100	52	80,7	
15.02.2024	12:08:32	62,1	94	787,6	47,64	80	98	52	80	
15.02.2024	12:09:32	62,8	94	808,2	45,69	80	98	52	82,2	
15.02.2024	12:10:32	63,1	90	805,7	42,15	80	98	51	82,6	
15.02.2024	12:11:32	63,3	90	808,7	41,55	80	98	52	80	
15.02.2024	12:12:32	64,2	90	795,1	42,57	80	98	53	79	
15.02.2024	12:13:32	65,2	86	790,7	39,78	80	98	52	80,3	
15.02.2024	12:14:32	65,9	86	782,7	40,41	80	98	52	80,1	
15.02.2024	12:15:32	66,5	82	768,5	38,79	80	93	52	80,7	
15.02.2024	12:16:32	65,5	86	761,2	42,15	80	98	52	81,3	
15.02.2024	12:17:32	62,9	100	763,6	52,89	80	98	53	78,3	
15.02.2024	12:18:32	62,6	100	772,8	52,59	80	100	52	80,4	
15.02.2024	12:19:32	64,3	90	784	44,43	80	98	53	79,3	
15.02.2024	12:20:32	66,4	82	806,6	36,24	80	93	52	80,4	
15.02.2024	12:21:32	67,8	78	788,4	34,86	80	89	52	80,4	
15.02.2024	12:22:32	67	78	772,8	35,94	80	89	52	78,8	
15.02.2024	12:23:32	64	94	783,4	46,68	80	98	53	78,2	
15.02.2024	12:24:32	62,2	100	786,1	50,7	80	100	52	80,8	
15.02.2024	12:25:32	62,1	94	791	46,59	80	98	52	81,7	
15.02.2024	12:26:32	62,7	94	787,1	47,01	80	98	53	79,5	
15.02.2024	12:27:32	62,8	94	784,5	47,37	80	98	52	81,4	
15.02.2024	12:28:32	62,9	100	808,9	49,14	80	98	51	83	
15.02.2024	12:29:32	64	90	817,1	40,77	80	98	52	80,9	
15.02.2024	12:30:32	65,1	86	807,4	38,04	80	98	52	82,9	
15.02.2024	12:31:32	65,9	86	790,5	39,33	80	98	52	81,4	
15.02.2024	12:32:32	66,6	82	775	37,77	80	93	53	78,1	
15.02.2024	12:33:32	67,1	78	741,8	38,43	80	89	51	82,3	
15.02.2024	12:34:32	66,6	82	733,8	41,85	80	93	51	83,2	
15.02.2024	12:35:32	63,7	100	734,6	55,62	80	100	52	81,6	
15.02.2024	12:36:32	62,3	100	748	55,41	80	100	52	80,6	
15.02.2024	12:37:32	64,1	90	779,7	45,66	80	98	53	79,2	
15.02.2024	12:38:32	66,3	82	798,1	38,01	80	93	52	80,6	
15.02.2024	12:39:32	68	74	793,1	35,49	80	86	51	83,6	
15.02.2024	12:40:32	68	74	785,7	33,42	80	86	52	80,3	
15.02.2024	12:41:32	65,1	86	770,9	41,76	80	98	53	79,7	
15.02.2024	12:42:32	62,4	100	763,7	53,37	80	100	52	80,7	
15.02.2024	12:43:32	61,9	100	775	52,86	80	98	52	79,1	
15.02.2024	12:44:32	62,3	94	792,4	47,58	80	98	52	80,8	
15.02.2024	12:45:32	63	90	801,1	43,26	80	98	52	81,6	
15.02.2024	12:46:32	63,2	94	804,3	46,2	80	98	52	81	
15.02.2024	12:47:32	64	90	796,4	43,32	80	98	52	78,9	
15.02.2024	12:48:32	65,1	86	791,3	40,59	80	98	52	82,7	
15.02.2024	12:49:32	65,6	86	786,7	40,89	80	98	52	80,9	
15.02.2024	12:50:32	66,5	82	774,8	39,06	80	93	52	80,4	
15.02.2024	12:51:32	66,9	82	776,9	38,64	80	89	51	82,8	
15.02.2024	12:52:32	67,9	78	764,5	37,05	80	89	53	79,8	
15.02.2024	12:53:32	67,6	78	765	36,69	80	89	52	81,8	
15.02.2024	12:54:32	64,4	94	746,6	50,22	80	98	52	79,3	
15.02.2024	12:55:32	62,1	100	740,6	55,59	80	100	52	81,3	
15.02.2024	12:56:32	61,8	100	761,4	54,51	80	100	52	81,3	
15.02.2024	12:57:32	62,3	100	790,1	52,35	80	100	52	81,7	
15.02.2024	12:58:32	62,9	100	801,4	51,42	80	100	52	81,1	
15.02.2024	12:59:32	63,1	94	810,7	46,59	80	98	52	80	
15.02.2024	13:00:32	63,7	94	806,9	46,68	80	98	52	79	

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15.02.2021	13:01:32	65	86	811,3	39,36	80	98	52	80,9	
15.02.2021	13:02:32	66	82	799,5	37,29	80	93	52	79,3	
15.02.2021	13:03:32	66,5	82	787,1	38,01	80	93	52	80,5	
15.02.2021	13:04:32	67,2	78	775,4	36,36	80	89	52	81	
15.02.2021	13:05:32	68,2	74	769,6	34,41	80	86	52	80,2	
15.02.2021	13:06:32	67,5	78	772,4	35,88	80	89	52	80,7	
15.02.2021	13:07:32	64,3	94	766	48,27	80	98	52	82,1	
15.02.2021	13:08:32	62,5	100	782,1	51,15	80	100	52	80,7	
15.02.2021	13:09:32	62,5	100	823,5	47,49	80	100	52	81	
15.02.2021	13:10:32	63,1	94	828,3	42,75	80	98	53	78,6	
15.02.2021	13:11:32	63,2	94	819,1	43,11	80	98	53	78,8	
15.02.2021	13:12:32	63,2	94	803,4	44,28	80	98	52	81	
15.02.2021	13:13:32	64,1	90	794,6	41,52	80	98	52	80,1	
15.02.2021	13:14:32	65,3	86	797	38,07	80	98	52	81,1	
15.02.2021	13:15:32	66,4	82	785,4	36,21	80	93	52	81	
15.02.2021	13:16:32	67,1	78	769	35,01	80	89	51	82,4	
15.02.2021	13:17:32	67,8	78	744,1	37,17	80	89	52	80,8	
15.02.2021	13:18:32	68,2	74	713,4	38,16	80	86	52	81,3	
15.02.2021	13:19:32	66,4	86	703,9	46,89	80	98	52	80,7	
15.02.2021	13:20:32	63,2	100	712,3	57,93	80	100	52	81	
15.02.2021	13:21:32	62	94	751,5	51,57	80	98	52	81,6	
15.02.2021	13:22:32	62,5	94	785,7	48,81	80	98	52	79,9	
15.02.2021	13:23:32	63	90	783,1	45,72	80	98	53	77,9	
15.02.2021	13:24:32	62,9	100	783,6	53,13	80	98	52	80,9	
15.02.2021	13:25:32	63,4	94	785	49,29	80	98	51	83,2	
15.02.2021	13:26:32	64,8	90	793,8	45,09	80	98	53	79	
15.02.2021	13:27:32	65,9	86	794,9	41,64	80	98	52	79,8	
15.02.2021	13:28:32	66,8	82	797,9	38,19	80	93	52	80,1	
15.02.2021	13:29:32	67,5	78	782,3	36,75	80	89	52	80,7	
15.02.2021	13:30:32	68,2	74	762,7	36	80	86	52	81,3	
15.02.2021	13:31:32	68,7	74	761,3	35,85	80	86	51	81,3	
15.02.2021	13:32:32	66,3	82	752,4	41,01	80	93	51	78,2	
15.02.2021	13:33:32	63,2	100	751,8	54,87	80	100	52	82,3	
15.02.2021	13:34:32	62,3	100	768,1	54,06	80	100	52	81,3	
15.02.2021	13:35:32	62,6	100	791,1	52,38	80	100	51	84,1	
15.02.2021	13:36:32	63	94	799,9	47,85	80	98	52	80,2	
15.02.2021	13:37:32	63,2	0	811,1	0	0	40	46	86,9	
15.02.2021	13:38:32	64	0	767,7	0	0	40	37	80,8	
15.02.2021	13:39:32	64,4	0	686,9	0	0	40	37	80,6	
15.02.2021	13:40:32	64	0	602,5	0	0	40	38	81	
15.02.2021	13:41:32	63,5	0	535,1	0	0	40	37	80,1	
15.02.2021	13:42:32	63,1	0	480,7	0	0	40	37	80,1	
15.02.2021	13:43:32	63	0	435,8	0	0	40	37	80,5	
15.02.2021	13:44:32	62,8	0	399	0	0	40	36	81,3	
15.02.2021	13:45:32	62,1	0	367,7	0	0	40	33	81,5	
15.02.2021	13:46:32	60	0	341,7	0	0	40	32	81	
15.02.2021	13:47:32	58,1	0	319	0	0	40	33	79,8	
15.02.2021	13:48:32	57,1	0	299,2	0	0	40	32	81	
15.02.2021	13:49:32	57,3	0	281,4	0	0	40	32	80,2	
15.02.2021	13:50:32	58,9	0	265,3	0	0	40	32	80,3	
15.02.2021	13:51:32	60,2	100	251,2	0	0	65	33	79,9	
15.02.2021	13:52:32	60,1	100	237,9	56,49	80	100	38	80,8	
15.02.2021	13:53:32	58,4	100	232	65,49	80	100	37	82,5	
15.02.2021	13:54:32	57,6	100	257,6	71,49	80	100	38	80,3	
15.02.2021	13:55:32	58,2	100	324,6	73,2	80	100	42	79,4	
15.02.2021	13:56:32	60,4	100	398,6	73,05	80	100	44	78,7	
15.02.2021	13:57:32	62,2	94	459,7	69,21	80	98	48	80	
15.02.2021	13:58:32	63,2	90	530,8	63,72	80	98	52	79,9	
15.02.2021	13:59:32	62,9	94	609,4	63,24	80	98	53	78,7	
15.02.2021	14:00:32	61,9	100	691,5	61,95	80	98	52	80,3	

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15.02.2025	14:01:32	61,9	100	754,6	57,54	80	100	52	79,4	
15.02.2025	14:02:32	62,5	94	797,1	50,07	80	98	52	79	
15.02.2025	14:03:32	63,1	90	801,2	46,2	80	98	52	81,9	
15.02.2025	14:04:32	63,8	0	786,4	0	0	40	38	79,9	
15.02.2025	14:05:32	64,5	0	713,8	0	0	40	37	82,7	
15.02.2025	14:06:32	64,4	0	630,9	0	0	40	38	79,7	
15.02.2025	14:07:32	64,2	0	554,6	0	0	30	35	80,9	
15.02.2025	14:08:32	63,5	94	492,2	0	0	90	37	81,1	
15.02.2025	14:09:32	62,6	100	447,9	73,47	80	100	38	80,8	
15.02.2025	14:10:32	60,9	100	461,5	77,58	80	100	46	76,6	
15.02.2025	14:11:32	60,4	100	554,3	73,68	80	100	53	79,1	
15.02.2025	14:12:32	62,1	94	699,1	59,4	80	98	52	82,3	
15.02.2025	14:13:32	65,1	82	792,4	42,21	80	93	53	78,8	
15.02.2025	14:14:32	65,8	82	823	38,73	80	93	52	80,6	
15.02.2025	14:15:32	63,8	90	810,8	45,12	80	98	52	80,8	
15.02.2025	14:16:32	62,7	100	794,2	53,85	80	100	52	79,4	
15.02.2025	14:17:32	62,6	100	786,5	54,84	80	100	53	78,6	
15.02.2025	14:18:32	62,8	100	790,7	54,75	80	100	53	79,5	
15.02.2025	14:19:32	63	94	797,2	50,34	80	98	52	79,5	
15.02.2025	14:20:32	63,1	94	774,2	52,53	80	98	53	79,5	
15.02.2025	14:21:32	63,5	94	770,2	53,31	80	98	52	80,1	
15.02.2025	14:22:32	64,9	90	781,9	49,02	80	98	52	78,4	
15.02.2025	14:23:32	65,9	86	779,6	46,14	80	98	52	79,1	
15.02.2025	14:24:32	66,5	82	797,5	41,46	80	93	52	82	
15.02.2025	14:25:32	64,5	94	791,7	51	80	98	52	79,8	
15.02.2025	14:26:32	62,7	100	786,7	55,56	80	100	52	80,6	
15.02.2025	14:27:32	63,5	94	798,4	50,76	80	98	52	81	
15.02.2025	14:28:32	65,4	86	800,9	43,74	80	98	51	83,5	
15.02.2025	14:29:32	66,7	82	793,2	41,31	80	93	52	81,7	
15.02.2025	14:30:32	67,2	78	782,1	39,48	80	89	52	80,3	
15.02.2025	14:31:32	64,7	94	787,9	50,49	80	98	53	79,3	
15.02.2025	14:32:32	62,6	100	780,2	55,38	80	100	52	79,9	
15.02.2025	14:33:32	62,2	100	783,5	55,44	80	100	52	80,5	
15.02.2025	14:34:32	62,5	100	795	54,72	80	100	52	81,8	
15.02.2025	14:35:32	62,9	100	815,8	52,89	80	100	51	83,1	
15.02.2025	14:36:32	63,2	94	828,1	47,43	80	98	52	82,7	
15.02.2025	14:37:32	63,3	94	809,7	48,69	80	98	52	79,5	
15.02.2025	14:38:32	64	90	802,9	45,66	80	98	52	81,2	
15.02.2025	14:39:32	64,9	90	803	45,39	80	98	52	80,3	
15.02.2025	14:40:32	65,7	86	799,2	42,33	80	98	52	82,1	
15.02.2025	14:41:32	66,7	82	794,3	39,66	80	93	52	80,2	
15.02.2025	14:42:32	67,6	78	794,4	36,69	80	89	51	80,3	
15.02.2025	14:43:32	66,4	86	774,7	43,2	80	98	52	81	
15.02.2025	14:44:32	63,4	100	759,5	55,38	80	100	52	81,7	
15.02.2025	14:45:32	62,9	100	764,5	55,59	80	100	52	80,6	
15.02.2025	14:46:32	64,6	90	779,9	47,07	80	98	52	79,4	
15.02.2025	14:47:32	66,6	82	798,6	39,36	80	93	52	81,1	
15.02.2025	14:48:32	67,2	78	786,9	37,5	80	89	52	80	
15.02.2025	14:49:32	64,8	94	779,1	49,77	80	98	52	79,2	
15.02.2025	14:50:32	62,7	100	789	53,1	80	100	52	79,3	
15.02.2025	14:51:32	62,5	100	782	54,06	80	100	52	80,7	
15.02.2025	14:52:32	62,5	100	794,6	53,19	80	100	52	81	
15.02.2025	14:53:32	62,9	100	807,6	52,11	80	98	52	79,7	
15.02.2025	14:54:32	63	94	813,4	47,49	80	98	51	82,8	
15.02.2025	14:55:32	63,4	94	831,1	45,45	80	98	52	80,2	
15.02.2025	14:56:32	64,7	90	833,6	41,1	80	98	52	81,2	
15.02.2025	14:57:32	66,2	82	822,6	35,46	80	93	53	79,1	
15.02.2025	14:58:32	66,5	82	797,2	37,08	80	93	52	81,2	
15.02.2025	14:59:32	66,4	82	780,6	38,25	80	93	52	80,3	
15.02.2025	15:00:32	64,3	94	773,4	48,21	80	98	53	78,2	

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15.02.2021	15:01:32	62,7	100	785,1	51,39	80	100	52	79,9	
15.02.2021	15:02:32	64,3	90	798,7	42,87	80	98	52	82,3	
15.02.2021	15:03:32	66,4	82	807,2	35,88	80	93	52	80,7	
15.02.2021	15:04:32	67,7	78	787,7	34,59	80	89	52	79,6	
15.02.2021	15:05:32	65,9	86	741	43,8	80	98	52	79,2	
15.02.2021	15:06:32	62,8	100	725,6	56,61	80	100	52	79,4	
15.02.2021	15:07:32	61,7	100	741,3	56,22	80	100	52	80,5	
15.02.2021	15:08:32	61,9	100	762,9	55,08	80	100	52	80	
15.02.2021	15:09:32	62,6	94	787,8	49,17	80	98	52	78,6	
15.02.2021	15:10:32	63,2	90	806	43,95	80	98	53	78,4	
15.02.2021	15:11:32	63,3	90	803,4	43,86	80	98	52	80,5	
15.02.2021	15:12:32	63,7	94	797,9	47,67	80	98	53	78,6	
15.02.2021	15:13:32	64,7	90	794,1	44,46	80	98	52	79,7	
15.02.2021	15:14:32	65,5	86	797,6	40,86	80	98	52	79,9	
15.02.2021	15:15:32	66,4	82	790,8	38,46	80	93	52	81,2	
15.02.2021	15:16:32	66,2	82	777	39,42	80	93	52	81,8	
15.02.2021	15:17:32	63,8	100	771,7	53,13	80	98	52	80	
15.02.2021	15:18:32	62,7	100	769,6	53,85	80	100	53	78,6	
15.02.2021	15:19:32	64,2	90	796,7	44,28	80	98	52	79,1	
15.02.2021	15:20:32	66,1	82	800	37,83	80	93	53	78,6	
15.02.2021	15:21:32	67,5	78	787,8	36,06	80	89	52	80,7	
15.02.2021	15:22:32	66,7	82	772,8	39,45	80	93	52	79,8	
15.02.2021	15:23:32	63,6	100	757,9	54,21	80	100	52	81,7	
15.02.2021	15:24:32	62,1	100	770,8	53,67	80	100	51	81,8	
15.02.2021	15:25:32	62,3	94	788,3	48,42	80	98	53	78,9	
15.02.2021	15:26:32	62,7	94	808,9	46,47	80	98	52	81,6	
15.02.2021	15:27:32	63,1	90	809,3	42,66	80	98	52	79,5	
15.02.2021	15:28:32	63,1	94	805	46,23	80	98	51	82,6	
15.02.2021	15:29:32	63,6	94	803	46,23	80	98	52	83,1	
15.02.2021	15:30:32	64,8	90	788,5	44,01	80	98	53	78,8	
15.02.2021	15:31:32	65,6	86	783,3	41,22	80	98	52	79,9	
15.02.2021	15:32:32	66,5	82	779,5	38,64	80	93	52	82,2	
15.02.2021	15:33:32	67,2	78	768,7	36,93	80	89	52	80,3	
15.02.2021	15:34:32	65,9	86	755,2	43,2	80	93	51	82,6	
15.02.2021	15:35:32	63,1	100	756,4	54,15	80	100	52	78	
15.02.2021	15:36:32	62,9	100	769,8	53,55	80	100	52	81	
15.02.2021	15:37:32	64,7	90	782,8	45,21	80	98	52	79,1	
15.02.2021	15:38:32	66,5	82	793,5	38,22	80	93	52	81,4	
15.02.2021	15:39:32	67,9	78	797,5	34,98	80	89	52	79,7	
15.02.2021	15:40:32	67	78	809,2	33,18	80	89	52	80,8	
15.02.2021	15:41:32	63,9	100	797,6	49,47	80	100	53	79,9	
15.02.2021	15:42:32	62,5	100	789,1	50,43	80	100	53	79,4	
15.02.2021	15:43:32	62,3	100	792,9	50,43	80	100	51	82,1	
15.02.2021	15:44:32	62,7	100	803,6	49,62	80	100	52	82,2	
15.02.2021	15:45:32	63,2	94	832,7	42,81	80	98	52	81,3	
15.02.2021	15:46:32	63,7	94	825,1	42,9	80	98	52	80,8	
15.02.2021	15:47:32	64,5	90	808,3	40,56	80	98	52	79,1	
15.02.2021	15:48:32	65,4	86	789	38,91	80	98	52	79,4	
15.02.2021	15:49:32	66	82	771,3	37,68	80	93	52	81	
15.02.2021	15:50:32	66,3	82	736,2	41,01	80	93	52	80,9	
15.02.2021	15:51:32	66,9	82	722	42,81	80	93	53	78,9	
15.02.2021	15:52:32	65,3	90	729,4	48,66	80	98	52	80,5	
15.02.2021	15:53:32	62,8	100	751,2	54,9	80	100	52	81,6	
15.02.2021	15:54:32	63,1	94	773	49,62	80	98	53	77,9	
15.02.2021	15:55:32	65,1	86	785,1	42	80	98	52	81,8	
15.02.2021	15:56:32	66,8	82	800,5	37,59	80	93	52	81,2	
15.02.2021	15:57:32	68,1	74	794,4	32,97	80	86	52	80,7	
15.02.2021	15:58:32	66,2	82	769,5	39,33	80	93	52	80	
15.02.2021	15:59:32	63	100	763,6	53,4	80	100	52	79,3	
15.02.2021	16:00:32	62	94	781,7	48,33	80	98	51	83,3	

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15.02.2025	16:01:32	62,2	94	797,6	47,04	80	98	53	78,7	
15.02.2025	16:02:32	62,8	94	816,1	45,15	80	98	52	82,2	
15.02.2025	16:03:32	63	94	810,4	45,3	80	98	52	81,5	
15.02.2025	16:04:32	63,4	94	799,6	46,11	80	98	52	79,9	
15.02.2025	16:05:32	64,4	90	795,2	42,99	80	98	52	80,8	
15.02.2025	16:06:32	65,4	86	793,9	39,87	80	98	52	81	
15.02.2025	16:07:32	66,2	82	794,3	36,93	80	93	52	80,2	
15.02.2025	16:08:32	66,8	82	782,2	37,68	80	93	52	80,3	
15.02.2025	16:09:32	67,6	78	760,5	36,99	80	89	52	80,1	
15.02.2025	16:10:32	68,3	74	754,2	35,37	80	86	51	81	
15.02.2025	16:11:32	69,2	70	748,2	33,84	80	82	49	80,6	
15.02.2025	16:12:32	69,8	70	746,3	33,84	80	82	48	79,9	
15.02.2025	16:13:32	70,4	62	749,2	29,67	80	74	46	80,9	
15.02.2025	16:14:32	71	58	743,6	28,17	80	70	44	82,7	
15.02.2025	16:15:32	72	54	735,8	26,94	80	68	41	81,5	
15.02.2025	16:16:32	72,6	54	725,7	27,33	80	68	41	80,4	
15.02.2025	16:17:32	73,3	50	712,2	26,88	80	59	38	81,2	
15.02.2025	16:18:32	74	42	692,6	26,1	80	52	38	81	
15.02.2025	16:19:32	74,4	42	682,9	26,61	80	52	38	80,1	
15.02.2025	16:20:32	75,1	38	682	25,29	80	48	37	81,1	
15.02.2025	16:21:32	75,5	38	679,2	25,11	80	48	38	80	
15.02.2025	16:22:32	75,9	34	674,2	24,27	80	41	37	82,1	
15.02.2025	16:23:32	76,4	30	669,4	23,43	81	41	37	81,1	
15.02.2025	16:24:32	76,8	30	674,6	22,47	81	41	37	81,5	
15.02.2025	16:25:32	77,5	30	695,3	19,92	81	41	37	81,5	
15.02.2025	16:26:32	78	0	697,9	0	0	40	37	80,1	
15.02.2025	16:27:32	78,4	0	673,1	0	0	35	38	79,1	
15.02.2025	16:28:32	78,4	0	610,9	0	0	30	38	79,9	
15.02.2025	16:29:32	78	0	546,2	0	0	26	33	84,1	
15.02.2025	16:30:32	77,5	0	490,5	0	0	22	28	83,3	
15.02.2025	16:31:32	76,9	0	444,2	0	0	17	28	79,1	
15.02.2025	16:32:32	75,3	0	404,9	0	0	13	28	80,9	
15.02.2025	16:33:32	69,4	0	372,3	0	0	11	26	81,7	
15.02.2025	16:34:32	64,5	90	344,7	0	0	56	33	79,6	
15.02.2025	16:35:32	61,3	100	318,3	59,16	80	100	38	78,7	
15.02.2025	16:36:32	59,5	100	304,9	67,68	80	100	38	79,8	
15.02.2025	16:37:32	60	100	339,3	71,88	80	100	42	76,9	
15.02.2025	16:38:32	61,1	100	437,7	69,24	80	100	49	79,1	
15.02.2025	16:39:32	63,3	90	595,4	51,87	80	98	52	80,6	
15.02.2025	16:40:32	66,4	78	719,4	34,14	80	89	52	79,3	
15.02.2025	16:41:32	69,8	66	762	24,42	80	78	48	82,4	
15.02.2025	16:42:32	72,1	54	754	20,01	80	68	44	82,3	
15.02.2025	16:43:32	73,8	50	727,8	20,46	80	59	40	82,7	
15.02.2025	16:44:32	74,9	42	693,5	20,64	80	52	37	82,2	
15.02.2025	16:45:32	75,9	38	668,6	21,42	80	48	38	80,4	
15.02.2025	16:46:32	76,9	34	662,6	20,76	80	44	37	80,7	
15.02.2025	16:47:32	78	0	649,1	0	0	40	37	80,8	
15.02.2025	16:48:32	79,1	0	621,7	0	0	35	38	79,1	
15.02.2025	16:49:32	79,6	0	571,5	0	0	31	37	80,4	
15.02.2025	16:50:32	79,8	0	516,2	0	0	26	34	83,9	
15.02.2025	16:51:32	79,3	0	467,2	0	0	22	30	82,9	
15.02.2025	16:52:32	77,8	0	425,4	0	0	18	28	79,8	
15.02.2025	16:53:32	75,6	0	391,3	0	0	13	27	80,7	
15.02.2025	16:54:32	73,6	0	362,2	0	0	11	27	81	
15.02.2025	16:55:32	71,8	0	337,1	0	0	11	25	81	
15.02.2025	16:56:32	70,3	0	316,4	0	0	0	23	80,2	
15.02.2025	16:57:32	69,1	0	298,6	0	0	0	23	79,3	
15.02.2025	16:58:32	68,3	0	283,7	0	0	0	23	79,5	
15.02.2025	16:59:32	67,9	0	270,1	0	0	31	29	72,2	
15.02.2025	17:00:32	67,9	78	256	0	0	86	38	76,8	

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15.02.2024	17:01:32	68,4	74	245,2	43,59	80	86	38	79,6	
15.02.2024	17:02:32	69,2	70	256,3	48,06	80	82	37	81,2	
15.02.2024	17:03:32	70,2	66	308,8	48,3	80	78	38	78,2	
15.02.2024	17:04:32	71,6	62	405,7	43,35	80	74	38	81,6	
15.02.2024	17:05:32	73,5	54	524,6	33,39	80	68	37	81,7	
15.02.2024	17:06:32	75,5	42	595,9	25,17	80	52	37	82	
15.02.2024	17:07:32	77	34	636,3	20,19	80	44	38	80,4	
15.02.2024	17:08:32	78,4	0	656,4	0	0	40	38	79,9	
15.02.2024	17:09:32	79,2	0	637,7	0	0	34	37	80,3	
15.02.2024	17:10:32	78,7	0	586,4	0	0	30	37	80,8	
15.02.2024	17:11:32	76,9	0	530,6	0	0	25	32	82,5	
15.02.2024	17:12:32	74,5	0	481,3	0	0	21	28	81,8	
15.02.2024	17:13:32	72,3	0	437,2	0	0	17	28	80,8	
15.02.2024	17:14:32	70,2	0	397,5	0	0	12	27	81,3	
15.02.2024	17:15:32	68,4	0	364,3	0	0	11	25	81,4	
15.02.2024	17:16:32	67,4	74	336,3	0	0	51	33	79	
15.02.2024	17:17:32	67,4	74	311,3	43,83	80	86	37	80,9	
15.02.2024	17:18:32	67,7	78	299,5	53,58	80	89	38	81,3	
15.02.2024	17:19:32	68,4	74	325,9	55,77	80	86	37	82,4	
15.02.2024	17:20:32	69,7	70	401,3	52,62	80	82	38	79,7	
15.02.2024	17:21:32	71,4	62	516,5	42,75	80	74	39	78,9	
15.02.2024	17:22:32	73,5	54	618,8	32,79	80	68	38	80,8	
15.02.2024	17:23:32	75,7	42	681,1	24,18	80	52	38	81	
15.02.2024	17:24:32	77,6	34	706,9	19,26	80	44	38	80,2	
15.02.2024	17:25:32	78,2	0	684,9	0	0	36	37	81,7	
15.02.2024	17:26:32	77,1	0	624,4	0	0	32	37	80,3	
15.02.2024	17:27:32	75,1	0	559,2	0	0	27	37	80,4	
15.02.2024	17:28:32	73	0	502,7	0	0	23	31	81,8	
15.02.2024	17:29:32	70,9	0	452,9	0	0	19	27	81,1	
15.02.2024	17:30:32	69,4	0	410,4	0	0	15	28	80,1	
15.02.2024	17:31:32	67,9	0	374,7	0	0	16	27	80,5	
15.02.2024	17:32:32	67,1	74	344,1	0	0	76	36	78	
15.02.2024	17:33:32	67,1	74	320	50,1	80	86	38	80,1	
15.02.2024	17:34:32	67,5	74	318,7	56,67	80	86	38	79,9	
15.02.2024	17:35:32	68,5	70	355,2	57,45	80	82	38	80,6	
15.02.2024	17:36:32	70	58	445,1	49,29	80	70	38	82,9	
15.02.2024	17:37:32	71,9	54	566,5	40,02	80	68	38	80,5	
15.02.2024	17:38:32	74,2	42	662,3	28,83	80	52	38	81,2	
15.02.2024	17:39:32	75,5	38	711	22,92	80	48	38	80	
15.02.2024	17:40:32	72,6	50	704,4	26,19	80	59	38	80,9	
15.02.2024	17:41:32	68,5	66	690,9	33,27	80	78	38	80,8	
15.02.2024	17:42:32	64,6	86	691	45,09	80	93	48	77,8	
15.02.2024	17:43:32	62,9	94	728,5	49,56	80	98	52	80,5	
15.02.2024	17:44:32	64,8	86	765,8	40,14	80	98	52	80,1	
15.02.2024	17:45:32	67,6	74	756,1	33,81	80	86	51	82,1	
15.02.2024	17:46:32	69,9	66	747,2	30,6	80	78	48	80	
15.02.2024	17:47:32	71,9	58	746,6	27,03	80	70	46	80,8	
15.02.2024	17:48:32	74,2	42	739,8	22,05	80	52	45	81,5	
15.02.2024	17:49:32	76,5	34	721,2	20,58	80	44	42	81,5	
15.02.2024	17:50:32	76	34	699,5	21,6	80	44	38	80,4	
15.02.2024	17:51:32	72,5	50	680,8	27,15	80	59	38	81,4	
15.02.2024	17:52:32	69,3	62	670,8	32,49	80	74	39	79,6	
15.02.2024	17:53:32	67,5	70	673,7	36,45	80	82	40	80,7	
15.02.2024	17:54:32	66,5	74	665,6	40,23	80	86	47	78,9	
15.02.2024	17:55:32	66,4	74	673,7	40,62	80	86	48	80,7	
15.02.2024	17:56:32	67,4	70	695,5	37,56	80	82	48	79,8	
15.02.2024	17:57:32	69,6	62	716,9	32,49	80	74	47	80,3	
15.02.2024	17:58:32	72	46	719,6	26,7	80	55	45	80	
15.02.2024	17:59:32	74,1	38	718	23,97	80	48	43	80,6	
15.02.2024	18:00:32	75,9	34	697,7	24,06	80	44	38	83,1	

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15.02.2021	18:01:32	76,5	30	674,3	24,66	81	41	37	81,6	
15.02.2021	18:02:32	76,2	30	661,7	25,35	81	41	37	80,7	
15.02.2021	18:03:32	75,5	34	653,5	26,61	80	44	38	78,4	
15.02.2021	18:04:32	75	34	659,9	25,86	80	44	37	81,5	
15.02.2021	18:05:32	74,7	38	673,5	25,29	80	48	37	82	
15.02.2021	18:06:32	74,7	34	679,8	23,37	80	44	38	80,9	
15.02.2021	18:07:32	74,9	34	675	23,31	80	44	37	81,7	
15.02.2021	18:08:32	75	30	663,1	23,31	81	41	38	79,2	
15.02.2021	18:09:32	74,9	34	651,6	24,87	80	44	38	80,3	
15.02.2021	18:10:32	75,1	30	645,7	24,45	81	41	37	80,3	
15.02.2021	18:11:32	75,2	30	638,6	24,96	81	41	37	80,8	
15.02.2021	18:12:32	75,2	30	630,5	25,74	81	41	38	79,9	
15.02.2021	18:13:32	75,6	30	628,6	26,07	81	41	38	79,6	
15.02.2021	18:14:32	75,8	30	630,6	26,01	81	41	37	82,7	
15.02.2021	18:15:32	76	30	643,9	24,81	81	41	37	80,1	
15.02.2021	18:16:32	76,4	30	659,5	23,25	81	41	37	80,1	
15.02.2021	18:17:32	76,8	30	664,8	22,44	81	41	37	80	
15.02.2021	18:18:32	77	30	666,6	21,87	81	41	38	79,9	
15.02.2021	18:19:32	77,5	30	662	21,93	81	41	37	81	
15.02.2021	18:20:32	77,4	30	652,8	22,5	81	41	37	80	
15.02.2021	18:21:32	77,7	30	654	22,2	81	41	37	82,7	
15.02.2021	18:22:32	77,8	30	655,5	21,84	81	41	37	82,8	
15.02.2021	18:23:32	77,9	30	648,7	22,29	81	41	37	80,4	
15.02.2021	18:24:32	77,9	0	642,6	0	0	40	37	81,4	
15.02.2021	18:25:32	77,8	0	625,2	0	0	34	37	80,3	
15.02.2021	18:26:32	77,4	0	582,9	0	0	30	37	79,4	
15.02.2021	18:27:32	76,8	0	531,4	0	0	25	32	82,5	
15.02.2021	18:28:32	75,9	0	480,7	0	0	21	28	81,5	
15.02.2021	18:29:32	75,1	0	437	0	0	17	28	80,1	
15.02.2021	18:30:32	74,4	0	400,4	0	0	12	28	80,5	
15.02.2021	18:31:32	73,6	0	368,6	0	0	11	27	81	
15.02.2021	18:32:32	72,9	0	342,1	0	0	11	25	81,1	
15.02.2021	18:33:32	72,4	0	319,3	0	0	0	23	80,7	
15.02.2021	18:34:32	72,2	0	301,1	0	0	0	23	79,5	
15.02.2021	18:35:32	72,6	0	285,9	0	0	0	22	81,4	
15.02.2021	18:36:32	72,8	0	272,1	0	0	0	23	80,8	
15.02.2021	18:37:32	73,1	0	260,1	0	0	0	22	80,5	
15.02.2021	18:38:32	73,5	0	249,3	0	0	0	22	80,1	
15.02.2021	18:39:32	73,8	0	239,4	0	0	0	23	79,5	
15.02.2021	18:40:32	74,1	0	230,6	0	0	0	23	80,5	
15.02.2021	18:41:32	73,8	0	222,3	0	0	0	22	76,3	
15.02.2021	18:42:32	72,7	0	215,3	0	0	0	22	76	
15.02.2021	18:43:32	71,4	0	208,6	0	0	0	22	76,5	
15.02.2021	18:44:32	70,1	0	202,7	0	0	0	22	76,6	
15.02.2021	18:45:32	69,1	0	197,4	0	0	0	22	77	
15.02.2021	18:46:32	68,3	0	192,3	0	0	0	22	76,3	
15.02.2021	18:47:32	68	0	187,4	0	0	31	32	73,4	
15.02.2021	18:48:32	68,2	74	181,7	0	0	86	38	76,7	
15.02.2021	18:49:32	68,6	74	175,3	45,45	80	86	38	80,4	
15.02.2021	18:50:32	69,1	70	189	50,76	80	82	38	80,9	
15.02.2021	18:51:32	70,1	66	254,7	50,67	80	78	38	81,3	
15.02.2021	18:52:32	71,8	62	390	42,87	80	74	39	80,2	
15.02.2021	18:53:32	74,1	46	553,2	26,37	80	55	39	79,9	
15.02.2021	18:54:32	76,5	38	635,5	17,82	80	48	38	81,3	
15.02.2021	18:55:32	78,5	0	654,8	0	0	40	38	79,5	
15.02.2021	18:56:32	79,5	0	630,3	0	0	34	37	80,8	
15.02.2021	18:57:32	79,9	0	579,8	0	0	30	37	80,5	
15.02.2021	18:58:32	78,6	0	519,9	0	0	25	32	83,2	
15.02.2021	18:59:32	76,5	0	465,3	0	0	21	28	82,1	
15.02.2021	19:00:32	74,1	0	417,1	0	0	17	28	80,6	

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15.02.2025	19:01:32	72,1	0	377	0	0	20	28	81,5	
15.02.2025	19:02:32	70,2	0	342,8	0	0	20	31	77,1	
15.02.2025	19:03:32	68,6	0	313,7	0	0	20	31	82,2	
15.02.2025	19:04:32	67,5	0	289,7	0	0	20	30	78,7	
15.02.2025	19:05:32	66,9	0	268,9	0	0	20	30	80,5	
15.02.2025	19:06:32	67,1	0	251,1	0	0	20	32	80,2	
15.02.2025	19:07:32	67,4	0	235,4	0	0	20	32	80,5	
15.02.2025	19:08:32	67,7	0	221,1	0	0	35	32	77,5	
15.02.2025	19:09:32	67,9	78	208	0	0	89	38	79,8	
15.02.2025	19:10:32	68,1	74	195,1	48,69	80	86	37	82,2	
15.02.2025	19:11:32	68,4	74	199,5	56,49	80	86	39	78,6	
15.02.2025	19:12:32	67,4	78	243,8	62,37	80	89	39	78,9	
15.02.2025	19:13:32	64,4	90	355,8	67,71	80	98	48	78,5	
15.02.2025	19:14:32	63,7	100	509	66,66	80	100	52	81,7	
15.02.2025	19:15:32	63,8	100	655,3	56,79	80	100	52	81,2	
15.02.2025	19:16:32	65,3	90	728,5	44,37	80	98	53	77,9	
15.02.2025	19:17:32	68,1	78	766,9	33,09	80	89	52	79,8	
15.02.2025	19:18:32	70,3	70	766,8	28,8	80	82	50	83,1	
15.02.2025	19:19:32	71,9	66	735,2	29,58	80	74	48	80,3	
15.02.2025	19:20:32	73,1	54	702,2	28,05	80	68	45	82,9	
15.02.2025	19:21:32	74,1	50	685,4	28,47	80	59	43	80,7	
15.02.2025	19:22:32	75,1	46	679,1	27,9	80	55	43	79,2	
15.02.2025	19:23:32	76,1	38	681,2	25,53	80	48	42	81,1	
15.02.2025	19:24:32	77	34	675,7	24,84	80	44	42	81,3	
15.02.2025	19:25:32	77,9	30	678,6	23,37	81	41	39	83,5	
15.02.2025	19:26:32	78,6	0	661,9	0	0	36	37	81,7	
15.02.2025	19:27:32	78,9	0	611,6	0	0	31	37	80,7	
15.02.2025	19:28:32	78,5	0	549,8	0	0	27	36	82,5	
15.02.2025	19:29:32	77,8	0	494,9	0	0	23	32	80,9	
15.02.2025	19:30:32	75,5	0	446,4	0	0	19	29	81,8	
15.02.2025	19:31:32	73,1	0	406,4	0	0	14	28	80,8	
15.02.2025	19:32:32	71	0	372,2	0	0	11	27	80,1	
15.02.2025	19:33:32	69,3	0	343,7	0	0	11	27	80,4	
15.02.2025	19:34:32	67,7	0	319,4	0	0	21	28	79,3	
15.02.2025	19:35:32	66,4	82	297,3	0	0	81	37	80,2	
15.02.2025	19:36:32	65,3	86	278,6	54,27	80	98	38	81,5	
15.02.2025	19:37:32	64,4	90	286,9	64,26	80	98	41	78,9	
15.02.2025	19:38:32	64,4	90	353,6	65,19	80	98	49	79	
15.02.2025	19:39:32	65	86	479	56,22	80	98	52	80	
15.02.2025	19:40:32	66,5	82	621,3	44,1	80	93	52	81,4	
15.02.2025	19:41:32	68,2	74	712,6	32,64	80	86	52	80,8	
15.02.2025	19:42:32	69,7	70	731,4	29,28	80	82	50	82,2	
15.02.2025	19:43:32	71,1	58	721,8	25,26	80	70	47	81,1	
15.02.2025	19:44:32	72	54	707,2	25,17	80	68	46	81,7	
15.02.2025	19:45:32	72,7	54	698	25,98	80	68	44	82,8	
15.02.2025	19:46:32	73,4	50	684,4	26,04	80	59	44	81,9	
15.02.2025	19:47:32	73,9	50	682,8	26,19	80	59	43	80,4	
15.02.2025	19:48:32	74,5	42	672	24,87	80	52	43	79,3	
15.02.2025	19:49:32	75	38	669,2	24,03	80	48	43	79,7	
15.02.2025	19:50:32	75,3	38	668,4	23,91	80	48	42	81,5	
15.02.2025	19:51:32	75,5	38	659,5	24,57	80	48	41	81	
15.02.2025	19:52:32	75,8	34	656,7	23,79	80	44	42	81,6	
15.02.2025	19:53:32	76	30	652,4	23,22	81	41	38	79,1	
15.02.2025	19:54:32	76	30	643,1	23,88	81	41	38	78,4	
15.02.2025	19:55:32	76,1	30	641,6	23,97	81	41	37	81	
15.02.2025	19:56:32	76,1	30	640,9	23,88	81	41	37	82,7	
15.02.2025	19:57:32	76	30	641	23,76	81	41	38	78,8	
15.02.2025	19:58:32	76,3	30	664	21,51	81	41	37	81,5	
15.02.2025	19:59:32	76,7	30	678,1	19,71	81	41	37	80,6	
15.02.2025	20:00:32	76,8	30	668,2	20,1	81	41	37	80,7	

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15.02.2025	20:01:32	76,9	34	658,9	21,33	80	41	37	80,5	
15.02.2025	20:02:32	77,1	30	649,6	21,27	81	41	37	80,3	
15.02.2025	20:03:32	77,3	30	660,3	20,16	81	41	37	80	
15.02.2025	20:04:32	77,6	30	662,7	19,59	81	41	37	83,4	
15.02.2025	20:05:32	77,8	30	660,7	19,44	81	41	38	78,3	
15.02.2025	20:06:32	77,8	30	652,1	19,95	81	41	38	79,3	
15.02.2025	20:07:32	77,9	0	644,6	0	0	40	37	82,5	
15.02.2025	20:08:32	77,9	0	616,3	0	0	35	37	79,4	
15.02.2025	20:09:32	77,3	0	559,8	0	0	30	37	82,5	
15.02.2025	20:10:32	76,5	0	504,9	0	0	26	35	82,9	
15.02.2025	20:11:32	75,7	0	455	0	0	22	31	82,7	
15.02.2025	20:12:32	74,9	0	410,7	0	0	18	28	80,9	
15.02.2025	20:13:32	74,1	0	374,5	0	0	13	28	79,3	
15.02.2025	20:14:32	73,4	0	343,8	0	0	11	27	80	
15.02.2025	20:15:32	72,7	0	319,4	0	0	0	26	83,1	
15.02.2025	20:16:32	72,2	0	299,3	0	0	0	22	81,5	
15.02.2025	20:17:32	71,7	0	282,3	0	0	0	23	79,6	
15.02.2025	20:18:32	71,4	0	267,8	0	0	0	22	81,3	
15.02.2025	20:19:32	71,7	0	254,7	0	0	0	23	79,9	
15.02.2025	20:20:32	72	0	243,6	0	0	0	22	81,5	
15.02.2025	20:21:32	72,2	0	233,6	0	0	0	23	81	
15.02.2025	20:22:32	72,6	0	224,2	0	0	0	22	81,1	
15.02.2025	20:23:32	72,9	0	216,2	0	0	0	22	74,6	
15.02.2025	20:24:32	73,2	0	209	0	0	0	22	75	
15.02.2025	20:25:32	73,5	0	202,6	0	0	0	22	75,6	
15.02.2025	20:26:32	73,5	0	196,9	0	0	0	22	75	
15.02.2025	20:27:32	72,5	0	191,3	0	0	0	22	75,5	
15.02.2025	20:28:32	71	0	186,2	0	0	0	22	75,3	
15.02.2025	20:29:32	69,6	0	181,4	0	0	0	22	75,3	
15.02.2025	20:30:32	68,5	0	177,2	0	0	0	22	75,6	
15.02.2025	20:31:32	67,4	78	172,9	0	0	46	33	80,5	
15.02.2025	20:32:32	67	78	166,5	38,79	80	89	38	80,7	
15.02.2025	20:33:32	67,2	78	161,7	48,03	80	89	39	79	
15.02.2025	20:34:32	67,7	78	184,2	54,78	80	89	39	79,2	
15.02.2025	20:35:32	68,8	74	261,8	53,55	80	86	43	78,3	
15.02.2025	20:36:32	70,8	66	387,8	44,58	80	78	42	80	
15.02.2025	20:37:32	73	50	521,9	30,66	80	59	42	81,8	
15.02.2025	20:38:32	75,3	42	617,2	21,33	80	52	42	79,4	
15.02.2025	20:39:32	77,2	30	649,3	16,08	81	41	40	83,5	
15.02.2025	20:40:32	77,6	30	639,8	16,83	81	41	37	82,4	
15.02.2025	20:41:32	72,5	50	617,7	24,24	80	59	38	78,9	
15.02.2025	20:42:32	69,2	62	606	30,78	80	74	38	80,3	
15.02.2025	20:43:32	67,2	70	613,8	35,37	80	82	38	81,2	
15.02.2025	20:44:32	65,8	78	632,3	39,63	80	89	48	78,8	
15.02.2025	20:45:32	67,1	70	665,2	34,11	80	82	49	79,6	
15.02.2025	20:46:32	69,1	62	698,7	28,32	80	74	46	82,5	
15.02.2025	20:47:32	70,8	58	690,6	27,81	80	70	43	82,6	
15.02.2025	20:48:32	72,1	46	684	24,66	80	55	42	80,4	
15.02.2025	20:49:32	73,1	42	681,1	23,73	80	52	42	80,7	
15.02.2025	20:50:32	74,1	38	666,6	23,79	80	48	40	82,3	
15.02.2025	20:51:32	74,7	38	655,7	24,57	80	48	40	80,2	
15.02.2025	20:52:32	75,5	30	646,3	23,64	81	41	37	81,9	
15.02.2025	20:53:32	76,2	30	636,9	24,42	81	41	38	78,7	
15.02.2025	20:54:32	76,7	30	633,1	24,84	81	41	37	79,1	
15.02.2025	20:55:32	77,4	30	641	24,15	81	41	37	80,9	
15.02.2025	20:56:32	78,4	0	648,2	0	0	40	37	80,9	
15.02.2025	20:57:32	79,1	0	624,9	0	0	33	37	81,2	
15.02.2025	20:58:32	79,4	0	574,4	0	0	29	37	80,4	
15.02.2025	20:59:32	79,1	0	519,9	0	0	25	34	82,4	
15.02.2025	21:00:32	77,2	0	470,1	0	0	20	31	81,3	

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15.02.2025	21:01:32	74,9	0	426,8	0	0	16	28	80,1	
15.02.2025	21:02:32	73	0	391,4	0	0	12	28	80,7	
15.02.2025	21:03:32	71,1	0	361	0	0	11	28	79,7	
15.02.2025	21:04:32	69,6	0	334,7	0	0	11	27	80,8	
15.02.2025	21:05:32	68,1	0	312,6	0	0	0	25	84,8	
15.02.2025	21:06:32	66,8	82	293,3	0	0	66	37	79,5	
15.02.2025	21:07:32	65,6	86	275,7	50,01	80	98	38	80,4	
15.02.2025	21:08:32	64,7	90	272,4	61,11	80	98	39	77,2	
15.02.2025	21:09:32	64,1	90	314,5	64,68	80	98	48	78,7	
15.02.2025	21:10:32	64,4	90	428	60,63	80	98	53	79,6	
15.02.2025	21:11:32	65,6	86	583,5	47,67	80	98	52	80,4	
15.02.2025	21:12:32	67,5	78	688,5	34,98	80	89	52	80,7	
15.02.2025	21:13:32	70,3	66	732	25,68	80	78	49	81,5	
15.02.2025	21:14:32	72,6	54	734,5	20,73	80	68	47	80,3	
15.02.2025	21:15:32	74,5	46	713,2	19,65	80	55	45	81,1	
15.02.2025	21:16:32	75,6	42	698,6	19,41	80	52	43	82,2	
15.02.2025	21:17:32	75,2	42	693,5	19,38	80	52	42	80,7	
15.02.2025	21:18:32	74,6	46	683,1	21,06	80	55	41	80,4	
15.02.2025	21:19:32	74	42	668,7	21,21	80	52	39	82,5	
15.02.2025	21:20:32	73,5	46	660,2	23,22	80	55	39	81,3	
15.02.2025	21:21:32	73,3	46	662,3	23,28	80	55	40	80,8	
15.02.2025	21:22:32	73,4	46	664,7	23,28	80	55	41	80,7	
15.02.2025	21:23:32	73,6	46	662,6	23,64	80	55	41	80,8	
15.02.2025	21:24:32	73,7	46	653,9	24,6	80	55	40	80,2	
15.02.2025	21:25:32	73,9	42	653,6	23,79	80	52	40	81,6	
15.02.2025	21:26:32	74	38	640,6	23,91	80	48	38	82,5	
15.02.2025	21:27:32	74	38	623,1	25,77	80	48	38	79,8	
15.02.2025	21:28:32	73,9	42	613,6	28,23	80	48	39	77,9	
15.02.2025	21:29:32	74	38	613	27,81	80	48	38	81,7	
15.02.2025	21:30:32	74,2	34	609,7	27,75	80	44	38	80,7	
15.02.2025	21:31:32	74,4	34	616,3	27,63	80	44	38	80,9	
15.02.2025	21:32:32	74,7	34	626,2	27,09	80	44	38	80,4	
15.02.2025	21:33:32	75,2	30	646,9	24,51	81	41	37	80,7	
15.02.2025	21:34:32	75,5	30	652,4	23,82	81	41	37	80,2	
15.02.2025	21:35:32	75,7	30	653,5	23,58	81	41	37	80,2	
15.02.2025	21:36:32	76	30	649,8	23,76	81	41	37	79,9	
15.02.2025	21:37:32	76,3	30	650,7	23,58	81	41	37	81,5	
15.02.2025	21:38:32	76,4	30	642,8	24,18	81	41	37	81,5	
15.02.2025	21:39:32	76,6	30	641	24,27	81	41	37	80,3	
15.02.2025	21:40:32	76,8	30	641,3	24,18	81	41	37	80,1	
15.02.2025	21:41:32	77	30	643	24	81	41	37	82,4	
15.02.2025	21:42:32	77,1	30	646,4	23,64	81	41	38	80,5	
15.02.2025	21:43:32	77,3	30	644,8	23,73	81	41	38	79,7	
15.02.2025	21:44:32	77,2	30	637	24,39	81	41	37	81,7	
15.02.2025	21:45:32	77,2	30	642,8	23,85	81	41	37	80,7	
15.02.2025	21:46:32	77,3	30	649,1	23,25	81	41	37	82,4	
15.02.2025	21:47:32	77,4	30	648,8	23,13	81	41	38	80,8	
15.02.2025	21:48:32	77,4	30	643,6	23,58	81	41	38	80,3	
15.02.2025	21:49:32	77,5	30	644,5	23,46	81	41	37	82,9	
15.02.2025	21:50:32	77,4	30	652,9	22,65	81	41	37	82,1	
15.02.2025	21:51:32	77,3	30	662,2	21,51	81	41	37	82	
15.02.2025	21:52:32	77,1	30	654,1	21,96	81	41	39	76,7	
15.02.2025	21:53:32	77	30	642,7	22,92	81	41	37	82,9	
15.02.2025	21:54:32	76,9	30	636,3	24,24	80	44	37	81,3	
15.02.2025	21:55:32	76,9	34	628,9	24,96	80	41	37	80,1	
15.02.2025	21:56:32	76,8	34	634,6	24,66	80	44	38	81,5	
15.02.2025	21:57:32	76,6	30	652,2	22,35	81	41	38	78,6	
15.02.2025	21:58:32	76,8	30	654,5	21,9	81	41	38	79,4	
15.02.2025	21:59:32	76,8	30	652,7	21,87	81	41	38	79,1	
15.02.2025	22:00:32	77,6	30	650,2	21,93	81	41	38	79,4	

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15.02.2021	22:01:32	78,7	0	650,3	0	0	36	38	79,7	
15.02.2021	22:02:32	79,6	0	619,9	0	0	32	37	80,1	
15.02.2021	22:03:32	80	0	568,3	0	0	28	37	80,7	
15.02.2021	22:04:32	79,4	0	516,5	0	0	23	32	81,7	
15.02.2021	22:05:32	77,9	0	468,6	0	0	19	31	81,8	
15.02.2021	22:06:32	76,1	0	426,8	0	0	15	27	81,3	
15.02.2021	22:07:32	74,4	0	390,8	0	0	11	27	81,1	
15.02.2021	22:08:32	73	0	360,1	0	0	11	28	79,9	
15.02.2021	22:09:32	71,9	0	334,5	0	0	11	27	80,8	
15.02.2021	22:10:32	70,9	0	312,1	0	0	0	23	83,9	
15.02.2021	22:11:32	70,6	0	293,9	0	0	0	23	80,5	
15.02.2021	22:12:32	70,7	0	278,6	0	0	0	22	81,1	
15.02.2021	22:13:32	70,9	0	264,8	0	0	0	22	81	
15.02.2021	22:14:32	71,2	0	252,3	0	0	0	23	80,6	
15.02.2021	22:15:32	71,4	0	241,2	0	0	0	23	80,8	
15.02.2021	22:16:32	71,6	0	231,4	0	0	0	22	80,9	
15.02.2021	22:17:32	71,9	0	222,5	0	0	0	22	81,1	
15.02.2021	22:18:32	72,1	0	214,7	0	0	0	23	86,9	
15.02.2021	22:19:32	72,4	0	207,5	0	0	0	23	87	
15.02.2021	22:20:32	72,7	0	200,7	0	0	0	23	87,6	
15.02.2021	22:21:32	73,2	0	194,8	0	0	0	23	87,8	
15.02.2021	22:22:32	73,2	0	189,1	0	0	0	23	87,3	
15.02.2021	22:23:32	72,2	0	184	0	0	0	23	87,6	
15.02.2021	22:24:32	70,8	0	179,4	0	0	0	23	87,4	
15.02.2021	22:25:32	69,3	0	174,7	0	0	0	23	87,4	
15.02.2021	22:26:32	68	0	170,2	0	0	0	23	88	
15.02.2021	22:27:32	66,8	82	165,5	0	0	71	34	79,5	
15.02.2021	22:28:32	65,7	86	158,8	49,71	80	98	38	78,8	
15.02.2021	22:29:32	65,5	86	163	58,53	80	98	38	81,3	
15.02.2021	22:30:32	66,4	82	213,1	60,15	80	93	43	79,3	
15.02.2021	22:31:32	67,9	78	328,3	54,72	80	89	49	80,1	
15.02.2021	22:32:32	70,2	66	487,7	39,48	80	78	48	79,7	
15.02.2021	22:33:32	72,4	58	615,5	27,27	80	70	46	80,1	
15.02.2021	22:34:32	74,4	46	663,1	19,95	80	55	44	81,9	
15.02.2021	22:35:32	76,2	38	677,8	16,41	80	48	41	82,2	
15.02.2021	22:36:32	77,4	30	660,2	16,05	81	41	37	81,1	
15.02.2021	22:37:32	78	0	634,4	0	0	40	37	80,9	
15.02.2021	22:38:32	78,3	0	606,8	0	0	34	38	78,7	
15.02.2021	22:39:32	78,1	0	560,7	0	0	30	38	79,8	
15.02.2021	22:40:32	76	0	508,8	0	0	26	34	82,7	
15.02.2021	22:41:32	73,9	0	460,5	0	0	22	32	81,7	
15.02.2021	22:42:32	71,7	0	417,1	0	0	17	27	81,2	
15.02.2021	22:43:32	69,9	0	380,7	0	0	13	28	80,5	
15.02.2021	22:44:32	68,2	0	349,8	0	0	11	28	79,9	
15.02.2021	22:45:32	66,6	78	322,9	0	0	66	37	79,7	
15.02.2021	22:46:32	65,6	86	299,6	50,67	80	98	38	80,2	
15.02.2021	22:47:32	65,6	86	295,8	58,29	80	98	39	79,4	
15.02.2021	22:48:32	66,4	82	334,9	58,86	80	93	48	77,5	
15.02.2021	22:49:32	67,9	78	429,7	53,64	80	89	50	78,3	
15.02.2021	22:50:32	70	66	536,7	41,88	80	78	48	80,5	
15.02.2021	22:51:32	72	58	621,7	33,21	80	70	46	82,3	
15.02.2021	22:52:32	74,1	46	685,7	24,33	80	55	45	81,6	
15.02.2021	22:53:32	75,7	42	698,6	21,72	80	52	42	80,8	
15.02.2021	22:54:32	77	30	697,6	18,48	81	41	39	86,6	
15.02.2021	22:55:32	77,8	30	676,2	19,71	81	41	37	81,6	
15.02.2021	22:56:32	76,7	34	651,3	22,38	80	44	38	78,8	
15.02.2021	22:57:32	74,9	42	649,2	24,57	80	48	38	80,1	
15.02.2021	22:58:32	73,6	46	650,7	25,68	80	55	37	81,5	
15.02.2021	22:59:32	72,5	50	639	28,44	80	59	38	80,1	
15.02.2021	23:00:32	71,5	54	636	30,69	80	68	38	79,7	

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15.02.2025	23:01:32	70,8	58	651,8	31,44	80	70	37	82	
15.02.2025	23:02:32	70,2	58	669,8	30,57	80	70	39	79,7	
15.02.2025	23:03:32	70,1	58	690,8	29,13	80	70	41	79,8	
15.02.2025	23:04:32	70,3	58	697,6	28,71	80	70	40	80,5	
15.02.2025	23:05:32	71,5	54	691,1	28,14	80	68	40	81	
15.02.2025	23:06:32	73	46	691,3	25,77	80	55	41	80,4	
15.02.2025	23:07:32	74,4	42	694,2	24,15	80	52	40	80,9	
15.02.2025	23:08:32	75,5	34	690,3	21,96	80	44	38	81,9	
15.02.2025	23:09:32	76,3	30	676,4	21,87	81	41	38	79,9	
15.02.2025	23:10:32	75,4	34	664,2	23,31	80	44	37	81,7	
15.02.2025	23:11:32	74,3	38	656,6	24,66	80	48	37	81,4	
15.02.2025	23:12:32	72,9	46	648,9	27,57	80	52	37	80,8	
15.02.2025	23:13:32	71,7	50	651,4	28,89	80	59	38	79,4	
15.02.2025	23:14:32	71,1	50	653,9	29,13	80	59	38	79	
15.02.2025	23:15:32	70,6	54	663,8	29,97	80	68	38	81,4	
15.02.2025	23:16:32	70,5	54	678,1	29,04	80	68	37	81,2	
15.02.2025	23:17:32	70,4	50	686	27,3	80	59	37	81,3	
15.02.2025	23:18:32	71,5	46	683,4	26,34	80	55	38	79,2	
15.02.2025	23:19:32	72,8	42	707,5	22,74	80	52	37	81,4	
15.02.2025	23:20:32	73,9	38	721,1	19,53	80	48	38	80,3	
15.02.2025	23:21:32	74,8	34	692,5	20,28	80	44	38	79,5	
15.02.2025	23:22:32	75,1	30	663,3	21,69	81	41	38	79	
15.02.2025	23:23:32	75,4	30	653,1	22,26	81	41	37	80,2	
15.02.2025	23:24:32	75,8	30	663,8	21	81	41	37	81,7	
15.02.2025	23:25:32	75,7	34	670,5	20,82	80	44	38	78,5	
15.02.2025	23:26:32	74,5	38	666,5	21,75	80	48	38	79,7	
15.02.2025	23:27:32	73,3	42	666,2	22,71	80	52	38	79,9	
15.02.2025	23:28:32	72,2	46	666,3	23,82	80	55	38	80,5	
15.02.2025	23:29:32	71,3	50	650,7	26,73	80	59	37	82,1	
15.02.2025	23:30:32	70,4	54	629,6	30,6	80	68	38	80,1	
15.02.2025	23:31:32	69,9	58	628,5	33,12	80	70	38	80,6	
15.02.2025	23:32:32	69,4	58	643,4	32,85	80	70	38	79,8	
15.02.2025	23:33:32	69,6	58	663,7	31,86	80	70	37	81,9	
15.02.2025	23:34:32	69,8	58	677,2	31,17	80	70	38	80,2	
15.02.2025	23:35:32	69,9	58	693,1	30,09	80	70	38	81,4	
15.02.2025	23:36:32	70,3	50	696,7	27,15	80	59	38	80,6	
15.02.2025	23:37:32	70,5	50	688,4	27,81	80	59	38	80,5	
15.02.2025	23:38:32	70,5	50	680,8	28,47	80	59	38	80,1	
15.02.2025	23:39:32	70,6	50	680,3	28,47	80	59	38	79,9	
15.02.2025	23:40:32	70,6	50	675,4	28,92	80	59	38	80,4	
15.02.2025	23:41:32	70,8	50	667,9	29,79	80	59	38	79,5	
15.02.2025	23:42:32	70,9	50	672,5	29,58	80	59	38	80,4	
15.02.2025	23:43:32	71,1	46	680,3	27,63	80	55	38	80,1	
15.02.2025	23:44:32	71,1	42	695,1	24,9	80	52	37	81,2	
15.02.2025	23:45:32	71,3	42	691,3	24,75	80	52	38	81,4	
15.02.2025	23:46:32	71,5	42	677,5	25,71	80	52	38	80,5	
15.02.2025	23:47:32	71,4	42	666,7	26,52	80	52	38	80,7	
15.02.2025	23:48:32	71,4	42	670,5	26,01	80	52	37	81,5	
15.02.2025	23:49:32	71,4	42	677,9	25,2	80	52	38	79,5	
15.02.2025	23:50:32	71,6	42	671,7	25,65	80	52	38	80,2	
15.02.2025	23:51:32	71,5	42	664,9	26,16	80	52	37	81,6	
15.02.2025	23:52:32	71,4	38	657,6	25,56	80	48	38	80,1	
15.02.2025	23:53:32	71,4	38	653,8	25,74	80	48	38	80,8	
15.02.2025	23:54:32	71,6	38	657	25,32	80	48	37	81,6	
15.02.2025	23:55:32	71,6	38	660,6	24,87	80	48	38	80	
15.02.2025	23:56:32	71,7	38	657,8	24,99	80	48	38	79,4	
15.02.2025	23:57:32	71,8	38	663	24,42	80	48	38	81	
15.02.2025	23:58:32	71,8	38	665,5	24,09	80	48	38	80,2	
15.02.2025	23:59:32	71,8	38	659,2	24,6	80	48	38	80	
16.02.2025	00:00:32	72	30	653,4	23,31	81	41	37	82,7	

Appendix 14

Date	Time	Boiler Tem	Modulation	Flame cha	Auger time	Pause time	Fan %	Suction Fa	under pressure pa
16.02.2021	00:02:32	72	30	650,6	23,19	81	41	37	80,4
16.02.2021	00:03:32	72,1	30	651,4	22,95	81	41	37	82,4
16.02.2021	00:04:32	72,2	30	666,1	21,39	81	41	37	81,8
16.02.2021	00:05:32	72,3	30	676,9	19,95	81	41	37	80,3
16.02.2021	00:06:32	72,4	30	681,5	18,93	81	41	37	80,4
16.02.2021	00:07:32	72,6	30	675,2	18,93	81	41	37	80,2
16.02.2021	00:08:32	72,6	30	664,6	19,44	81	41	38	80,3
16.02.2021	00:09:32	72,6	30	662,6	19,26	81	41	37	81,3
16.02.2021	00:10:32	72,6	30	654,7	19,68	81	41	38	79,8
16.02.2021	00:11:32	72,4	30	649	20,07	81	41	37	80,9
16.02.2021	00:12:32	72,3	30	645,6	20,31	81	41	38	79,1
16.02.2021	00:13:32	72,2	30	641	20,7	81	41	38	79,8
16.02.2021	00:14:32	72,1	30	627,5	21,93	81	41	37	81
16.02.2021	00:15:32	72	30	612,7	23,52	81	41	38	79
16.02.2021	00:16:32	71,9	34	608,6	25,17	80	44	38	79,3
16.02.2021	00:17:32	72	30	612,7	24,51	81	41	38	79,2
16.02.2021	00:18:32	72,1	30	623,2	23,88	81	41	38	79,4
16.02.2021	00:19:32	72,2	30	629,7	23,46	81	41	37	80,6
16.02.2021	00:20:32	72,2	30	635,9	22,92	81	41	38	79,3
16.02.2021	00:21:32	72,4	30	639,8	22,56	81	41	37	80,8
16.02.2021	00:22:32	72,6	30	637,9	22,71	81	41	37	82,7
16.02.2021	00:23:32	72,7	30	639,5	22,56	81	41	37	80,7
16.02.2021	00:24:32	72,6	30	639,4	22,56	81	41	37	81,7
16.02.2021	00:25:32	72,7	30	643,9	22,14	81	41	37	81,4
16.02.2021	00:26:32	72,8	30	648,5	21,69	81	41	37	80,4
16.02.2021	00:27:32	72,9	34	647,1	22,56	80	44	38	79,8
16.02.2021	00:28:32	73,1	30	648,4	21,69	81	41	37	82,9
16.02.2021	00:29:32	73	30	651,5	21,36	81	41	37	80,1
16.02.2021	00:30:32	73	30	647,8	21,54	81	41	38	78,9
16.02.2021	00:31:32	73,1	30	640,9	22,17	81	41	37	81,1
16.02.2021	00:32:32	73,2	30	635,2	22,68	81	41	38	79
16.02.2021	00:33:32	73,3	30	634,6	22,74	81	41	37	80,2
16.02.2021	00:34:32	73,2	30	634,3	22,77	81	41	37	80,2
16.02.2021	00:35:32	73,1	30	630,5	23,1	81	41	37	82,6
16.02.2021	00:36:32	73,2	30	634,5	22,77	81	41	38	78,7
16.02.2021	00:37:32	73,2	30	638,4	22,41	81	41	38	77,3
16.02.2021	00:38:32	73,3	30	644,2	21,9	81	41	37	80,6
16.02.2021	00:39:32	73,4	30	652,3	21,09	81	41	38	79,8
16.02.2021	00:40:32	73,6	30	664,3	19,74	81	41	38	80,7
16.02.2021	00:41:32	73,7	30	651,6	20,58	81	41	38	79,2
16.02.2021	00:42:32	73,7	30	635,6	21,99	81	41	37	81,4
16.02.2021	00:43:32	73,7	30	633,1	22,23	81	41	38	80
16.02.2021	00:44:32	73,6	30	639,5	21,66	81	41	37	80,3
16.02.2021	00:45:32	73,7	30	639,1	21,69	81	41	37	80,6
16.02.2021	00:46:32	73,6	30	636,4	21,93	81	41	37	81
16.02.2021	00:47:32	73,6	30	634,9	22,08	81	41	38	79,3
16.02.2021	00:48:32	73,6	30	631,9	22,35	81	41	37	81,7
16.02.2021	00:49:32	73,6	30	643,6	21,3	81	41	38	79,7
16.02.2021	00:50:32	73,7	30	667	18,96	81	41	37	81,3
16.02.2021	00:51:32	74,1	30	671,4	18,09	81	41	37	81,3
16.02.2021	00:52:32	74,1	30	659,7	18,75	81	41	38	78,6
16.02.2021	00:53:32	74	30	652,4	19,23	81	41	37	82,1
16.02.2021	00:54:32	74,2	30	657,8	18,51	81	41	37	80,2
16.02.2021	00:55:32	74,2	30	656,9	18,33	81	41	38	79,1
16.02.2021	00:56:32	74,1	30	651	18,66	81	41	37	82,8
16.02.2021	00:57:32	73,9	34	642,5	20,13	80	41	37	80,3
16.02.2021	00:58:32	73,9	34	635,1	20,85	80	41	38	78,6
16.02.2021	00:59:32	74	30	620,8	21,48	81	41	37	80,3
16.02.2021	01:00:32	73,6	34	598,1	24,81	80	44	38	80,5

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16.02.2025	01:01:32	73,6	34	592,9	26,01	80	44	37	81,3	
16.02.2025	01:02:32	73,5	30	598	25,5	81	41	37	80,6	
16.02.2025	01:03:32	73,3	30	598,6	26,04	81	41	38	77,4	
16.02.2025	01:04:32	73,4	30	602,7	26,22	81	41	38	79,6	
16.02.2025	01:05:32	73,5	30	615,8	25,47	81	41	37	80,5	
16.02.2025	01:06:32	73,7	30	640,2	23,4	81	41	38	79,6	
16.02.2025	01:07:32	74,1	30	650,9	22,41	81	41	37	82,5	
16.02.2025	01:08:32	74,3	30	655,5	21,78	81	41	37	81,3	
16.02.2025	01:09:32	74,2	30	656,4	21,45	81	41	37	81,4	
16.02.2025	01:10:32	74,2	30	649,5	21,87	81	41	37	80,6	
16.02.2025	01:11:32	74,3	30	643,6	22,38	81	41	38	81	
16.02.2025	01:12:32	74,3	30	632,3	23,4	81	41	38	79,9	
16.02.2025	01:13:32	74,2	30	627,8	23,94	81	41	37	80,6	
16.02.2025	01:14:32	74,1	30	629,4	23,85	81	41	37	81,4	
16.02.2025	01:15:32	74,2	30	634	23,46	81	41	37	81,2	
16.02.2025	01:16:32	74,3	30	636,3	23,25	81	41	37	82	
16.02.2025	01:17:32	74,2	30	639,1	23,01	81	41	38	80	
16.02.2025	01:18:32	74,5	30	650,1	21,99	81	41	37	80,1	
16.02.2025	01:19:32	74,5	30	660,7	20,79	81	41	37	81,6	
16.02.2025	01:20:32	74,5	30	659	20,64	81	41	37	81,6	
16.02.2025	01:21:32	74,7	30	649,3	21,27	81	41	38	79,4	
16.02.2025	01:22:32	74,7	30	635,8	22,47	81	41	38	79,3	
16.02.2025	01:23:32	74,6	30	627,5	23,28	81	41	38	79,6	
16.02.2025	01:24:32	74,7	30	631,8	23,04	81	41	38	79	
16.02.2025	01:25:32	74,7	30	636,8	22,59	81	41	37	82,2	
16.02.2025	01:26:32	74,6	30	640,1	22,29	81	41	38	78,8	
16.02.2025	01:27:32	74,6	30	648	21,57	81	41	38	79,1	
16.02.2025	01:28:32	74,6	30	644,4	21,87	81	41	38	79,4	
16.02.2025	01:29:32	74,5	30	641,6	22,11	81	41	38	79	
16.02.2025	01:30:32	74,6	30	641,3	22,14	81	41	37	82,2	
16.02.2025	01:31:32	74,6	30	643	21,99	81	41	37	81,3	
16.02.2025	01:32:32	74,7	30	646,3	21,66	81	41	37	81,7	
16.02.2025	01:33:32	74,8	30	646,2	21,66	81	41	38	79,2	
16.02.2025	01:34:32	74,9	34	659,2	21,12	80	41	38	79,2	
16.02.2025	01:35:32	75,1	30	679,9	18,09	81	41	37	81,6	
16.02.2025	01:36:32	75,4	30	678,8	17,61	81	41	37	83	
16.02.2025	01:37:32	75,3	30	665	18,33	81	41	37	81,5	
16.02.2025	01:38:32	75,1	30	656	18,87	81	41	38	79,1	
16.02.2025	01:39:32	75,1	30	658,1	18,42	81	41	38	78,8	
16.02.2025	01:40:32	75,1	30	652	18,75	81	41	37	83	
16.02.2025	01:41:32	75	30	647,7	18,99	81	41	38	78,9	
16.02.2025	01:42:32	75	30	642,6	19,44	81	41	37	81,6	
16.02.2025	01:43:32	75	30	636,8	19,98	81	41	38	79,6	
16.02.2025	01:44:32	74,8	34	622,8	22,11	80	44	37	81,3	
16.02.2025	01:45:32	74,6	34	607,4	23,94	80	44	37	81,1	
16.02.2025	01:46:32	74,6	34	605,4	24,69	80	44	38	80,6	
16.02.2025	01:47:32	74,6	34	608,3	24,99	80	44	37	81,7	
16.02.2025	01:48:32	74,5	34	614,8	24,9	80	44	38	79,4	
16.02.2025	01:49:32	74,5	34	622,9	24,54	80	44	37	81,4	
16.02.2025	01:50:32	74,9	30	629,6	23,4	81	41	37	80,4	
16.02.2025	01:51:32	75	30	641	22,38	81	41	38	79,3	
16.02.2025	01:52:32	74,9	34	639,9	23,25	80	41	38	80,3	
16.02.2025	01:53:32	75,1	30	638,3	22,62	81	41	37	81,3	
16.02.2025	01:54:32	75	30	643	22,17	81	41	37	80,9	
16.02.2025	01:55:32	75,2	30	643,6	22,05	81	41	37	81,7	
16.02.2025	01:56:32	75	30	636,5	22,68	81	41	37	82,2	
16.02.2025	01:57:32	75	30	634,6	22,83	81	41	38	78,9	
16.02.2025	01:58:32	75	30	630,7	23,19	81	41	37	80,8	
16.02.2025	01:59:32	72,8	42	630,1	26,19	80	48	37	81,5	
16.02.2025	02:00:32	67,8	62	633,9	33	80	70	38	79,3	

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16.02.2025	02:01:32	64,8	74	641	39,09	80	82	40	78,5	
16.02.2025	02:02:32	63,5	82	659,9	43,47	80	93	52	78,3	
16.02.2025	02:03:32	63,2	82	700,7	41,07	80	93	52	80,8	
16.02.2025	02:04:32	63,4	82	744,4	37,77	80	93	52	80	
16.02.2025	02:05:32	63,8	82	756,8	36,84	80	93	52	81,6	
16.02.2025	02:06:32	66	70	761,3	29,91	80	82	52	81,1	
16.02.2025	02:07:32	69	58	751,1	25,41	80	70	48	81,4	
16.02.2025	02:08:32	71,3	50	724,7	24,69	80	59	47	80,6	
16.02.2025	02:09:32	73,4	38	703,8	22,62	80	48	46	82	
16.02.2025	02:10:32	73	38	689,9	23,13	80	48	44	81,8	
16.02.2025	02:11:32	67,5	62	673,8	31,98	80	74	42	80,6	
16.02.2025	02:12:32	62	86	675,5	45,51	80	98	52	77,4	
16.02.2025	02:13:32	59,5	90	693,5	48,54	80	98	51	82,5	
16.02.2025	02:14:32	58,5	94	732,7	49,62	80	98	52	80,8	
16.02.2025	02:15:32	57,9	100	759,5	51,84	80	100	52	82	
16.02.2025	02:16:32	58	100	774,1	51,09	80	100	52	79,5	
16.02.2025	02:17:32	59,6	100	783,2	50,7	80	100	52	80,5	
16.02.2025	02:18:32	63,4	90	806	41,4	80	98	52	81,1	
16.02.2025	02:19:32	65	82	821,2	33,6	80	93	52	81	
16.02.2025	02:20:32	64,4	86	803,5	37,41	80	98	51	81,7	
16.02.2025	02:21:32	65,3	82	795,6	35,01	80	93	52	80,7	
16.02.2025	02:22:32	63,4	94	781,9	45,33	80	98	52	81,6	
16.02.2025	02:23:32	58,8	100	773,9	50,4	80	100	52	82,3	
16.02.2025	02:24:32	57	100	785	49,8	80	100	53	79,6	
16.02.2025	02:25:32	58,5	100	801,2	48,57	80	100	52	80,8	
16.02.2025	02:26:32	62,1	94	816,8	43,2	80	98	53	78,1	
16.02.2025	02:27:32	65,4	82	817,2	33,27	80	93	53	78,8	
16.02.2025	02:28:32	63	94	802,2	43,38	80	98	52	81	
16.02.2025	02:29:32	59,8	100	764,8	50,97	80	100	52	78,6	
16.02.2025	02:30:32	58,9	100	750,3	53,01	80	100	52	81,8	
16.02.2025	02:31:32	59	100	754,7	53,4	80	100	52	80,5	
16.02.2025	02:32:32	59,6	100	770,6	52,59	80	100	51	83,8	
16.02.2025	02:33:32	60,8	100	792,8	50,85	80	100	52	81,7	
16.02.2025	02:34:32	63,2	90	807,9	42,15	80	98	52	81,3	
16.02.2025	02:35:32	65,2	82	813,2	35,34	80	93	53	78,7	
16.02.2025	02:36:32	63,8	90	801,6	41,67	80	98	53	79,7	
16.02.2025	02:37:32	60,8	100	781,9	50,94	80	100	52	80,3	
16.02.2025	02:38:32	60	100	781	51,39	80	100	52	80,9	
16.02.2025	02:39:32	60,6	100	800,5	49,83	80	100	52	79,5	
16.02.2025	02:40:32	61,7	100	809,1	49,08	80	100	53	78,5	
16.02.2025	02:41:32	62,5	94	811,8	44,7	80	98	52	81,6	
16.02.2025	02:42:32	62,4	94	796,3	45,93	80	98	52	81,7	
16.02.2025	02:43:32	61,7	100	794,4	50,07	80	100	52	81,6	
16.02.2025	02:44:32	61,5	100	796,1	50,04	80	100	53	77,1	
16.02.2025	02:45:32	61,6	100	793,1	50,43	80	100	52	80,1	
16.02.2025	02:46:32	61,8	100	811,6	48,84	80	100	52	79,1	
16.02.2025	02:47:32	62,1	100	812,7	48,57	80	100	52	82,8	
16.02.2025	02:48:32	62,1	100	820,8	47,7	80	100	52	81,4	
16.02.2025	02:49:32	62,1	100	825,4	46,98	80	100	52	80,9	
16.02.2025	02:50:32	62,1	100	811,6	48,06	80	100	52	79,8	
16.02.2025	02:51:32	62	100	806,3	48,57	80	100	52	78,6	
16.02.2025	02:52:32	62	94	816,7	43,62	80	98	51	82,3	
16.02.2025	02:53:32	62,2	94	818,1	43,11	80	98	52	81,1	
16.02.2025	02:54:32	62,2	94	807,2	43,77	80	98	52	81,1	
16.02.2025	02:55:32	62	100	787,1	49,5	80	100	52	80,3	
16.02.2025	02:56:32	61,9	100	791,1	49,35	80	100	52	82,2	
16.02.2025	02:57:32	62	94	803	44,34	80	98	52	80,3	
16.02.2025	02:58:32	62,4	94	797,7	44,7	80	98	52	80,2	
16.02.2025	02:59:32	62,2	94	790,2	45,3	80	98	52	80,3	
16.02.2025	03:00:32	62,1	100	793,5	49,02	80	100	52	80,3	

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16.02.2021	03:01:32	62,3	100	805,8	48	80	100	51	82,1	
16.02.2021	03:02:32	62,6	100	805,1	48,12	80	100	52	80,8	
16.02.2021	03:03:32	62,5	100	802,7	48,39	80	100	53	78,6	
16.02.2021	03:04:32	62,6	100	822,6	46,53	80	100	53	79,2	
16.02.2021	03:05:32	62,7	100	835,3	45,06	80	100	52	81,8	
16.02.2021	03:06:32	63	94	840,9	40,08	80	98	52	80,9	
16.02.2021	03:07:32	63	94	817,7	41,61	80	98	52	80,1	
16.02.2021	03:08:32	63,5	94	797,8	43,23	80	98	53	78,9	
16.02.2021	03:09:32	64,5	90	790,5	40,29	80	98	52	81,9	
16.02.2021	03:10:32	64,7	90	785,9	40,62	80	98	52	81,6	
16.02.2021	03:11:32	63	100	784,1	48,18	80	100	52	80,8	
16.02.2021	03:12:32	62,1	100	788,4	48,03	80	100	51	83,3	
16.02.2021	03:13:32	62,2	100	797	47,4	80	100	52	82	
16.02.2021	03:14:32	63,2	94	782	44,94	80	98	52	82	
16.02.2021	03:15:32	64,1	90	767,9	43,02	80	98	53	78,9	
16.02.2021	03:16:32	64,4	90	763,9	43,65	80	98	52	80,2	
16.02.2021	03:17:32	63,1	100	765,4	51,24	80	100	53	78,5	
16.02.2021	03:18:32	61,8	100	780	50,43	80	100	51	81,5	
16.02.2021	03:19:32	61,6	100	799,1	48,9	80	100	52	82,5	
16.02.2021	03:20:32	62,2	100	805,5	48,39	80	100	52	81,5	
16.02.2021	03:21:32	62,5	100	803,9	48,63	80	100	51	83	
16.02.2021	03:22:32	62,5	100	811,8	47,94	80	100	52	80,3	
16.02.2021	03:23:32	62,4	100	811,2	47,91	80	100	52	79,8	
16.02.2021	03:24:32	62,6	100	809,5	48,09	80	100	53	78,8	
16.02.2021	03:25:32	62,7	100	804,8	48,54	80	100	52	79,2	
16.02.2021	03:26:32	62,8	100	801,3	48,9	80	100	52	80,3	
16.02.2021	03:27:32	62,8	100	800,9	48,96	80	100	52	82,5	
16.02.2021	03:28:32	62,9	100	805,7	48,51	80	98	53	79,7	
16.02.2021	03:29:32	63	100	804,1	48,57	80	100	53	79,1	
16.02.2021	03:30:32	63	100	802,4	48,78	80	100	52	80,8	
16.02.2021	03:31:32	63	94	795,6	45,48	80	98	52	79	
16.02.2021	03:32:32	62,9	100	794,3	49,5	80	100	53	79,9	
16.02.2021	03:33:32	63	94	814,9	43,71	80	98	53	79,3	
16.02.2021	03:34:32	63,9	94	820,3	42,84	80	98	52	79,8	
16.02.2021	03:35:32	65,4	86	808,1	36,81	80	98	53	78,8	
16.02.2021	03:36:32	64,8	90	795,8	40,83	80	98	52	79,4	
16.02.2021	03:37:32	64,1	90	777,6	42,42	80	98	52	79,9	
16.02.2021	03:38:32	63,5	100	785	49,44	80	100	52	81,4	
16.02.2021	03:39:32	62,6	100	788,7	49,26	80	100	52	80,6	
16.02.2021	03:40:32	62,1	100	801,9	48,18	80	100	52	80,7	
16.02.2021	03:41:32	62,8	100	804,9	48	80	100	52	79,8	
16.02.2021	03:42:32	63,6	94	808,7	43,65	80	98	52	80,5	
16.02.2021	03:43:32	63,8	94	800,2	44,28	80	98	52	80,8	
16.02.2021	03:44:32	62,9	100	796,2	48,51	80	100	52	81,8	
16.02.2021	03:45:32	62	100	792,4	48,99	80	100	52	81,2	
16.02.2021	03:46:32	62,2	94	807,1	43,74	80	98	52	80,6	
16.02.2021	03:47:32	62,8	94	804,7	43,77	80	98	51	83,4	
16.02.2021	03:48:32	62,7	94	794	44,64	80	98	53	78,3	
16.02.2021	03:49:32	62,8	100	816,4	46,5	80	100	52	79,2	
16.02.2021	03:50:32	62,9	100	834,6	44,55	80	100	52	81,7	
16.02.2021	03:51:32	63,1	94	825,6	40,95	80	98	52	81,9	
16.02.2021	03:52:32	63,1	94	804,9	42,45	80	98	52	80,1	
16.02.2021	03:53:32	62,9	100	786,1	48,18	80	100	52	82,3	
16.02.2021	03:54:32	62,8	100	802,2	46,86	80	100	53	79,3	
16.02.2021	03:55:32	63	94	806,4	42,6	80	98	52	79,4	
16.02.2021	03:56:32	63	100	801,4	46,98	80	100	51	82,5	
16.02.2021	03:57:32	63,1	100	803,7	46,86	80	100	53	78,4	
16.02.2021	03:58:32	63,2	100	804	46,89	80	100	53	77,8	
16.02.2021	03:59:32	63,1	100	780,6	49,14	80	100	52	82,5	
16.02.2021	04:00:32	62,8	100	773,1	50,22	80	100	52	81,5	

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16.02.2024	04:01:32	62,8	100	780,6	49,98	80	100	52	80,9	
16.02.2024	04:02:32	62,8	100	795,6	48,87	80	100	52	79,6	
16.02.2024	04:03:32	63	94	804,2	44,16	80	98	53	79,7	
16.02.2024	04:04:32	63,1	94	799,5	44,43	80	98	52	81,1	
16.02.2024	04:05:32	63,2	94	789,2	45,27	80	98	51	83,2	
16.02.2024	04:06:32	63,2	94	802,3	44,01	80	98	51	82,2	
16.02.2024	04:07:32	63,3	100	802	47,88	80	100	52	80,8	
16.02.2024	04:08:32	63,3	100	805,7	47,64	80	100	52	81,3	
16.02.2024	04:09:32	63,5	100	809,1	47,4	80	100	51	82,2	
16.02.2024	04:10:32	63,4	100	801,7	48,12	80	100	53	79,4	
16.02.2024	04:11:32	64,5	94	812,3	43,23	80	98	52	80,2	
16.02.2024	04:12:32	65,1	90	809,1	39,72	80	98	53	78,3	
16.02.2024	04:13:32	64,6	100	792,7	48,45	80	100	53	79,9	
16.02.2024	04:14:32	64,1	100	779,8	49,92	80	100	52	80,2	
16.02.2024	04:15:32	63,6	100	798,4	48,45	80	100	52	79,1	
16.02.2024	04:16:32	62,7	100	817,2	46,74	80	100	52	80,3	
16.02.2024	04:17:32	62,4	100	820,4	46,26	80	100	52	81,8	
16.02.2024	04:18:32	63,3	94	820,8	42	80	98	52	80,6	
16.02.2024	04:19:32	64,3	90	808,3	39,27	80	98	51	83,3	
16.02.2024	04:20:32	64,2	90	810,3	38,79	80	98	52	80,9	
16.02.2024	04:21:32	63	94	790,9	43,95	80	98	52	80,4	
16.02.2024	04:22:32	61,7	100	779,7	49,14	80	100	53	79,4	
16.02.2024	04:23:32	61,6	100	791,1	48,36	80	100	52	80,7	
16.02.2024	04:24:32	61,9	100	793,5	48,24	80	100	53	78,2	
16.02.2024	04:25:32	62,2	94	793,4	44,25	80	98	52	81,1	
16.02.2024	04:26:32	62,3	94	804,6	43,14	80	98	51	83,4	
16.02.2024	04:27:32	62,5	100	809,7	46,56	80	100	52	79,3	
16.02.2024	04:28:32	62,6	100	808,2	46,71	80	100	53	79,4	
16.02.2024	04:29:32	62,8	100	793,1	48,12	80	100	51	83,6	
16.02.2024	04:30:32	62,9	100	793,5	48,18	80	98	52	80,7	
16.02.2024	04:31:32	63	94	805	43,26	80	98	52	80,4	
16.02.2024	04:32:32	63	94	814	42,24	80	98	52	82,4	
16.02.2024	04:33:32	62,9	100	809,2	46,47	80	100	52	80,1	
16.02.2024	04:34:32	62,4	100	817,1	45,72	80	100	53	79,1	
16.02.2024	04:35:32	62,6	100	829,1	44,4	80	100	53	79,7	
16.02.2024	04:36:32	63,6	94	823,3	40,53	80	98	52	79,8	
16.02.2024	04:37:32	64	90	805,5	38,37	80	98	52	81	
16.02.2024	04:38:32	64	90	790,4	39,54	80	98	52	80,3	
16.02.2024	04:39:32	63,2	94	780,6	43,89	80	98	52	80,4	
16.02.2024	04:40:32	62	100	782,4	48	80	100	52	80,9	
16.02.2024	04:41:32	62	94	791,7	43,41	80	98	52	79,2	
16.02.2024	04:42:32	63,1	90	805,1	38,64	80	98	51	80,9	
16.02.2024	04:43:32	64,4	86	791	36,57	80	98	52	80,9	
16.02.2024	04:44:32	64,5	86	761,1	39,21	80	98	52	81,5	
16.02.2024	04:45:32	62,7	100	738,6	52,29	80	100	52	81,5	
16.02.2024	04:46:32	61,4	100	750,7	52,08	80	100	52	80,2	
16.02.2024	04:47:32	61,4	100	768	51,21	80	100	51	82,3	
16.02.2024	04:48:32	62,1	94	797,3	44,91	80	98	52	79,9	
16.02.2024	04:49:32	62,7	94	806,3	44,01	80	98	52	80,3	
16.02.2024	04:50:32	62,6	94	792,9	45,12	80	98	52	80,2	
16.02.2024	04:51:32	62,3	100	799,8	48,39	80	100	52	79,4	
16.02.2024	04:52:32	62,3	100	801,7	48,36	80	100	52	80,5	
16.02.2024	04:53:32	62,6	100	796,5	48,93	80	100	52	80,8	
16.02.2024	04:54:32	62,8	100	797,2	48,96	80	100	52	80,3	
16.02.2024	04:55:32	62,8	100	808,3	48,06	80	100	53	78,9	
16.02.2024	04:56:32	62,7	100	817,1	47,16	80	100	52	80,4	
16.02.2024	04:57:32	62,5	100	815,3	47,16	80	100	52	79,4	
16.02.2024	04:58:32	62,5	100	816,7	46,86	80	100	52	81,4	
16.02.2024	04:59:32	62,9	100	810,7	47,34	80	100	52	80,9	
16.02.2024	05:00:32	63,9	94	805,2	43,77	80	98	52	82,1	

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16.02.2025	05:01:32	64,4	90	802,7	40,32	80	98	52	80,2
16.02.2025	05:02:32	64,5	90	805,1	39,93	80	98	52	80,4
16.02.2025	05:03:32	63,1	100	787,2	48,87	80	100	53	78,9
16.02.2025	05:04:32	62,1	100	784,1	49,47	80	100	52	82,4
16.02.2025	05:05:32	62,3	94	798,4	44,31	80	98	53	78,9
16.02.2025	05:06:32	63,6	90	800,6	40,56	80	98	52	81,7
16.02.2025	05:07:32	64,5	86	806,6	36,57	80	98	52	80,8
16.02.2025	05:08:32	63,8	90	794,5	40,5	80	98	52	80,5
16.02.2025	05:09:32	62,1	100	774,9	49,8	80	100	52	81,6
16.02.2025	05:10:32	61,7	100	771	50,61	80	100	52	79,2
16.02.2025	05:11:32	62	94	782,2	46,14	80	98	52	81,6
16.02.2025	05:12:32	62,5	94	801,5	44,37	80	98	51	83,8
16.02.2025	05:13:32	62,8	100	806,1	47,7	80	100	51	82,5
16.02.2025	05:14:32	62,6	100	807,2	47,67	80	100	52	78,6
16.02.2025	05:15:32	62,6	100	806,4	47,79	80	100	52	80,7
16.02.2025	05:16:32	62,5	100	805,9	47,91	80	100	52	80,7
16.02.2025	05:17:32	62,6	100	807,8	47,82	80	100	52	81,3
16.02.2025	05:18:32	62,8	100	805	48,12	80	100	52	81,1
16.02.2025	05:19:32	63,7	94	835,4	41,16	80	98	52	80,4
16.02.2025	05:20:32	65,3	86	832,6	34,05	80	98	52	80,1
16.02.2025	05:21:32	65,5	86	809,4	35,52	80	98	52	79,4
16.02.2025	05:22:32	63,9	100	778,2	48,69	80	100	52	80,6
16.02.2025	05:23:32	62,5	100	769	50,01	80	100	52	80,4
16.02.2025	05:24:32	62,1	100	792,6	48,24	80	100	52	80,2
16.02.2025	05:25:32	62,7	100	811,5	46,59	80	100	52	81,8
16.02.2025	05:26:32	63,6	94	813,6	42,21	80	98	52	82,8
16.02.2025	05:27:32	64,7	90	792,2	40,5	80	98	52	81,7
16.02.2025	05:28:32	64,9	90	783,9	41,19	80	98	53	78,7
16.02.2025	05:29:32	63,4	100	764,7	50,4	80	100	52	78,7
16.02.2025	05:30:32	62,1	100	754,7	51,99	80	100	52	79,7
16.02.2025	05:31:32	61,9	100	769,6	51,33	80	100	51	83,2
16.02.2025	05:32:32	62,2	94	795,5	45,24	80	98	52	80,3
16.02.2025	05:33:32	62,6	0	785,7	0	0	40	43	83,2
16.02.2025	05:34:32	62,3	0	710,7	0	0	40	37	81,5
16.02.2025	05:35:32	61,2	0	626	0	0	40	37	81,2
16.02.2025	05:36:32	60,2	0	551,7	0	0	40	38	79,8
16.02.2025	05:37:32	59,6	0	494	0	0	40	38	80,6
16.02.2025	05:38:32	59,7	0	447,1	0	0	40	37	80,6
16.02.2025	05:39:32	59,6	0	406,8	0	0	40	38	79,7
16.02.2025	05:40:32	59,5	0	372,5	0	0	40	38	80,3
16.02.2025	05:41:32	59,2	0	342,4	0	0	40	38	80,5
16.02.2025	05:42:32	58,8	0	317	0	0	40	37	80,5
16.02.2025	05:43:32	58,3	0	295	0	0	40	37	80,5
16.02.2025	05:44:32	57,2	0	275,3	0	0	40	37	80
16.02.2025	05:45:32	57,7	0	258	0	0	40	37	80,5
16.02.2025	05:46:32	59,3	0	242,6	0	0	30	33	87,6
16.02.2025	05:47:32	59,9	100	229,1	0	0	85	37	81
16.02.2025	05:48:32	60,5	100	215,9	56,31	80	100	40	79,3
16.02.2025	05:49:32	59,2	100	221,1	64,53	80	100	39	79,9
16.02.2025	05:50:32	57,5	100	272,7	68,16	80	100	46	78,8
16.02.2025	05:51:32	57,2	100	361,2	67,5	80	100	51	79
16.02.2025	05:52:32	58,7	100	434,2	66,93	80	100	52	79,2
16.02.2025	05:53:32	60,7	100	500,2	66,06	80	100	52	80,1
16.02.2025	05:54:32	62,5	94	577,5	59,1	80	98	53	79,9
16.02.2025	05:55:32	63,6	90	650,4	51,63	80	98	52	81,6
16.02.2025	05:56:32	62,5	100	708,7	55,41	80	100	52	80,1
16.02.2025	05:57:32	61,9	100	762,6	51,63	80	100	53	79,8
16.02.2025	05:58:32	62,3	94	790,2	45,51	80	98	52	79,9
16.02.2025	05:59:32	62,6	0	784,9	0	0	40	47	85,1
16.02.2025	06:00:32	62,4	0	745,1	0	0	40	38	81,1

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16.02.2024	06:01:32	61,7	0	665,8	0	0	40	38	80,3	
16.02.2024	06:02:32	60,9	0	587,5	0	0	40	38	79,4	
16.02.2024	06:03:32	60,1	100	518,4	0	0	70	38	79,8	
16.02.2024	06:04:32	59,4	100	462	65,52	80	100	40	79,2	
16.02.2024	06:05:32	58,6	100	439,8	72,81	80	100	50	77,9	
16.02.2024	06:06:32	58,2	100	482,3	74,16	80	100	53	79,5	
16.02.2024	06:07:32	58,6	100	591,6	68,34	80	100	52	80,8	
16.02.2024	06:08:32	60,1	100	722,4	58,77	80	100	53	80,4	
16.02.2024	06:09:32	62	94	789,4	49,5	80	98	53	78,9	
16.02.2024	06:10:32	63,3	90	810,4	44,04	80	98	52	79,3	
16.02.2024	06:11:32	63,4	90	805,5	44,16	80	98	52	80,1	
16.02.2024	06:12:32	63	94	811,1	46,86	80	98	52	79	
16.02.2024	06:13:32	63,1	94	812,8	46,41	80	98	52	81	
16.02.2024	06:14:32	63	94	793,3	48,03	80	98	52	81,6	
16.02.2024	06:15:32	62,9	100	789,2	52,47	80	100	52	80,2	
16.02.2024	06:16:32	63	94	803,7	47,37	80	98	53	79,5	
16.02.2024	06:17:32	63,2	94	801,6	47,43	80	98	52	80	
16.02.2024	06:18:32	63,3	94	803,2	47,13	80	98	52	80,1	
16.02.2024	06:19:32	63,2	94	802,5	47,07	80	98	53	79	
16.02.2024	06:20:32	63,2	100	811,5	50,07	80	100	51	83,1	
16.02.2024	06:21:32	63,4	100	831,6	48,06	80	100	51	83,4	
16.02.2024	06:22:32	64,1	94	847,8	42,18	80	98	52	81,3	
16.02.2024	06:23:32	65,5	90	833,1	39,27	80	98	52	80,8	
16.02.2024	06:24:32	66,6	86	816,7	36,99	80	98	51	81,6	
16.02.2024	06:25:32	67	82	795,7	35,67	80	93	52	78,4	
16.02.2024	06:26:32	65,2	90	778,2	43,02	80	98	52	81,9	
16.02.2024	06:27:32	63,1	100	779,9	50,52	80	100	52	80	
16.02.2024	06:28:32	63	94	787,7	46,17	80	98	53	78,3	
16.02.2024	06:29:32	64,6	90	794,7	42,09	80	98	52	80,8	
16.02.2024	06:30:32	66,2	82	794,2	36,09	80	93	53	79,5	
16.02.2024	06:31:32	66	82	768,4	38,13	80	93	52	80,1	
16.02.2024	06:32:32	63,2	100	741,6	54,24	80	100	52	80,6	
16.02.2024	06:33:32	61,7	100	742,5	55,14	80	100	52	80,6	
16.02.2024	06:34:32	61,8	100	760,8	54,27	80	100	51	83,4	
16.02.2024	06:35:32	62,4	94	783,9	48,63	80	98	53	78,8	
16.02.2024	06:36:32	62,8	94	796,2	47,52	80	98	52	82,5	
16.02.2024	06:37:32	62,9	100	811,6	50,1	80	100	52	79,7	
16.02.2024	06:38:32	63,4	94	821	45,03	80	98	52	79,4	
16.02.2024	06:39:32	64,4	90	815,9	41,55	80	98	52	80,7	
16.02.2024	06:40:32	65	86	806,6	38,85	80	98	52	80,5	
16.02.2024	06:41:32	65,6	86	795,2	39,57	80	98	53	78,9	
16.02.2024	06:42:32	65,3	86	766,4	42,09	80	98	52	80,9	
16.02.2024	06:43:32	63,5	100	763,7	53,25	80	100	52	80,5	
16.02.2024	06:44:32	62,1	100	779,6	52,32	80	100	52	79,9	
16.02.2024	06:45:32	62,7	94	791,7	47,4	80	98	52	80,1	
16.02.2024	06:46:32	64,4	86	796	40,29	80	98	52	80	
16.02.2024	06:47:32	65,7	82	789,7	37,89	80	93	52	82,5	
16.02.2024	06:48:32	65,4	82	781,7	38,25	80	93	52	80,9	
16.02.2024	06:49:32	63,1	94	778,4	47,79	80	98	52	79,9	
16.02.2024	06:50:32	61,8	100	783	51,57	80	100	51	82	
16.02.2024	06:51:32	61,8	100	790	51,21	80	100	52	80	
16.02.2024	06:52:32	62,3	94	798,9	46,62	80	98	52	79,2	
16.02.2024	06:53:32	62,7	94	814	45,03	80	98	51	82,2	
16.02.2024	06:54:32	62,7	100	808,1	49,35	80	100	52	81,1	
16.02.2024	06:55:32	62,5	100	803,5	49,86	80	100	52	82,6	
16.02.2024	06:56:32	63,1	94	814,4	44,91	80	98	53	79	
16.02.2024	06:57:32	64,3	90	810,3	41,43	80	98	52	81,3	
16.02.2024	06:58:32	65,2	86	794,9	39,45	80	98	52	80	
16.02.2024	06:59:32	65,8	86	790,1	39,69	80	98	52	79,8	
16.02.2024	07:00:32	65,6	86	775,5	40,8	80	98	51	83,5	

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16.02.2024	07:01:32	63,3	100	765,2	52,53	80	100	51	83,9	
16.02.2024	07:02:32	61,9	100	757,8	53,88	80	98	51	82,1	
16.02.2024	07:03:32	62,5	94	783,4	48,09	80	98	52	81,1	
16.02.2024	07:04:32	64,5	86	812,6	38,67	80	98	52	80,4	
16.02.2024	07:05:32	66,3	78	816,3	32,49	80	89	52	81,4	
16.02.2024	07:06:32	65,5	82	814,1	34,2	80	93	52	81,2	
16.02.2024	07:07:32	63	94	793,2	45,09	80	98	52	80,6	
16.02.2024	07:08:32	62,1	100	795,3	49,08	80	100	52	79,5	
16.02.2024	07:09:32	62,3	100	801,9	48,63	80	100	52	80	
16.02.2024	07:10:32	62,9	100	807,5	48,12	80	100	52	79	
16.02.2024	07:11:32	62,9	100	808,5	48	80	98	53	79,4	
16.02.2024	07:12:32	62,9	100	813	47,46	80	98	52	79,4	
16.02.2024	07:13:32	62,8	100	799,9	48,63	80	100	52	79,6	
16.02.2024	07:14:32	62,8	100	794	49,29	80	100	53	79,1	
16.02.2024	07:15:32	64	90	800,9	41,25	80	98	52	81,2	
16.02.2024	07:16:32	65,1	86	782	39,66	80	98	52	79,8	
16.02.2024	07:17:32	65,7	86	761,1	41,67	80	98	52	81,7	
16.02.2024	07:18:32	66,4	82	758,8	39,24	80	93	52	80,6	
16.02.2024	07:19:32	64,8	90	754,2	45,72	80	98	52	79,4	
16.02.2024	07:20:32	62,6	100	756,3	53,55	80	100	52	79,9	
16.02.2024	07:21:32	62,1	100	771,1	52,83	80	100	52	79,5	
16.02.2024	07:22:32	62,5	100	798,9	50,58	80	100	52	79,4	
16.02.2024	07:23:32	63	94	813,2	45,36	80	98	52	79,8	
16.02.2024	07:24:32	63,1	94	813,2	45,03	80	98	52	79,5	
16.02.2024	07:25:32	62,9	100	808,8	49,2	80	100	53	79,1	
16.02.2024	07:26:32	62,8	100	803,1	49,8	80	100	52	79,4	
16.02.2024	07:27:32	63,1	94	809,8	45,33	80	98	52	79,9	
16.02.2024	07:28:32	64,1	90	812,6	41,34	80	98	52	80,4	
16.02.2024	07:29:32	65,5	86	808,7	38,1	80	98	52	81,6	
16.02.2024	07:30:32	66,8	82	793,2	36,33	80	93	53	77,5	
16.02.2024	07:31:32	66,5	82	775,9	37,5	80	93	53	78,9	
16.02.2024	07:32:32	63,9	100	759,7	52,35	80	98	52	81,9	
16.02.2024	07:33:32	62,3	100	763,4	52,68	80	100	51	82,6	
16.02.2024	07:34:32	62,3	100	772,8	52,38	80	100	52	80,8	
16.02.2024	07:35:32	63,2	94	797,9	46,44	80	98	52	82,4	
16.02.2024	07:36:32	64,9	90	814,4	41,22	80	98	52	81,4	
16.02.2024	07:37:32	66,4	82	807,6	35,4	80	93	52	80,9	
16.02.2024	07:38:32	65,1	86	780	40,17	80	98	52	78,9	
16.02.2024	07:39:32	62,6	100	755	53,34	80	100	53	78,6	
16.02.2024	07:40:32	61,9	100	771,9	52,44	80	100	52	80,1	
16.02.2024	07:41:32	62,3	94	789,4	47,1	80	98	52	79,4	
16.02.2024	07:42:32	62,7	94	791,9	46,89	80	98	52	80	
16.02.2024	07:43:32	62,8	94	798,7	46,29	80	98	51	83,6	
16.02.2024	07:44:32	62,7	100	806,5	49,5	80	100	52	79,3	
16.02.2024	07:45:32	63,3	94	807	45,45	80	98	52	81,2	
16.02.2024	07:46:32	64,1	90	800,6	42,45	80	98	52	80,6	
16.02.2024	07:47:32	64,8	90	791,5	43,14	80	98	52	80,7	
16.02.2024	07:48:32	66	82	793,9	36,9	80	93	52	81,5	
16.02.2024	07:49:32	66,2	82	790,3	36,87	80	93	51	82,7	
16.02.2024	07:50:32	64	94	776,9	47,28	80	98	52	80	
16.02.2024	07:51:32	62,3	100	792,9	50,01	80	100	53	78,3	
16.02.2024	07:52:32	62,6	100	827,7	46,8	80	100	53	78,9	
16.02.2024	07:53:32	64,4	90	821,1	39,6	80	98	51	82,4	
16.02.2024	07:54:32	66	82	812,4	33,96	80	93	52	80,6	
16.02.2024	07:55:32	66,9	82	791,2	35,31	80	93	52	81,9	
16.02.2024	07:56:32	64,8	94	774,1	45,96	80	98	52	80,8	
16.02.2024	07:57:32	62,3	100	768,1	50,88	80	100	52	80,7	
16.02.2024	07:58:32	61,7	100	776,7	50,58	80	100	52	81,2	
16.02.2024	07:59:32	62,2	94	790,7	45,63	80	98	52	79,7	
16.02.2024	08:00:32	62,8	94	792,8	45,45	80	98	52	81,8	

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16.02.2025	08:01:32	62,8	100	774,8	51,15	80	100	52	81,7
16.02.2025	08:02:32	62,4	100	768,1	52,29	80	100	52	80,3
16.02.2025	08:03:32	62,6	100	770	52,62	80	100	51	82,4
16.02.2025	08:04:32	63,6	100	784,8	51,72	80	100	52	82,2
16.02.2025	08:05:32	64,7	94	798,6	46,59	80	98	52	81,2
16.02.2025	08:06:32	65,3	90	804,3	42,48	80	98	52	79,3
16.02.2025	08:07:32	65,7	90	805,5	42,06	80	98	52	81,4
16.02.2025	08:08:32	64,4	94	793,9	46,44	80	98	53	78,6
16.02.2025	08:09:32	62,7	100	796,3	50,25	80	100	51	82,6
16.02.2025	08:10:32	62,6	100	789,1	51,06	80	100	53	79,4
16.02.2025	08:11:32	63,9	94	806,1	45,63	80	98	53	78,5
16.02.2025	08:12:32	65,5	86	809,2	38,34	80	98	52	80,3
16.02.2025	08:13:32	65,2	86	788,2	39,99	80	98	52	80,6
16.02.2025	08:14:32	63,2	100	776,2	51,69	80	100	52	81,7
16.02.2025	08:15:32	62,1	100	786,8	51,06	80	100	52	82,7
16.02.2025	08:16:32	62,2	100	803,6	49,71	80	100	52	79,2
16.02.2025	08:17:32	62,7	100	811,1	48,96	80	100	52	81,3
16.02.2025	08:18:32	62,8	100	806,7	49,41	80	100	52	78,8
16.02.2025	08:19:32	62,8	100	805,8	49,56	80	100	53	80
16.02.2025	08:20:32	62,6	100	809,1	49,32	80	100	52	80
16.02.2025	08:21:32	62,9	100	814,3	48,72	80	100	52	82,8
16.02.2025	08:22:32	63	94	820,9	44,01	80	98	52	80,7
16.02.2025	08:23:32	63,1	94	812,8	44,37	80	98	52	79,5
16.02.2025	08:24:32	63,1	94	806,1	44,73	80	98	53	78,1
16.02.2025	08:25:32	63	100	792,7	49,8	80	100	52	80,9
16.02.2025	08:26:32	63,2	100	803,6	48,9	80	100	52	80,1
16.02.2025	08:27:32	63,3	100	798	49,5	80	100	52	80,8
16.02.2025	08:28:32	63,3	100	800,4	49,35	80	100	52	81,4
16.02.2025	08:29:32	63,3	100	812,7	48,27	80	100	52	82,5
16.02.2025	08:30:32	63,4	100	817,7	47,67	80	100	52	82,7
16.02.2025	08:31:32	63,5	100	817,7	47,46	80	100	52	79,8
16.02.2025	08:32:32	63,4	100	803,7	48,66	80	100	52	81,3
16.02.2025	08:33:32	63,2	100	801,1	48,93	80	100	52	80,5
16.02.2025	08:34:32	63,3	100	804,7	48,63	80	100	53	79,1
16.02.2025	08:35:32	63,2	100	803,4	48,78	80	100	52	81,4
16.02.2025	08:36:32	63,2	100	829,9	46,23	80	100	52	79,8
16.02.2025	08:37:32	63,6	100	845,3	44,34	80	100	52	81,3
16.02.2025	08:38:32	64,2	94	821,9	42,06	80	98	52	79,8
16.02.2025	08:39:32	65,5	90	809,5	39,39	80	98	53	78,4
16.02.2025	08:40:32	66,4	86	805,8	36,3	80	98	52	81,2
16.02.2025	08:41:32	67,2	82	793,1	34,35	80	93	52	80,8
16.02.2025	08:42:32	65,5	94	766,8	45,9	80	98	52	82,1
16.02.2025	08:43:32	63,1	100	750,3	51,96	80	100	52	80,9
16.02.2025	08:44:32	62,8	100	761,2	51,72	80	100	52	80,2
16.02.2025	08:45:32	64,7	90	800,9	40,92	80	98	52	82,1
16.02.2025	08:46:32	66,5	82	774,4	37,2	80	93	52	80,2
16.02.2025	08:47:32	65,7	86	754,9	41,67	80	98	52	81,8
16.02.2025	08:48:32	63	100	740,4	54,12	80	100	52	80,1
16.02.2025	08:49:32	61,9	100	744,1	54,69	80	100	52	80,8
16.02.2025	08:50:32	61,9	100	765	53,58	80	100	52	80
16.02.2025	08:51:32	62,5	94	784,7	48,21	80	98	52	79,5
16.02.2025	08:52:32	62,9	94	801	46,71	80	98	52	81,9
16.02.2025	08:53:32	62,8	100	805,4	50,22	80	100	52	81,9
16.02.2025	08:54:32	62,9	100	798,9	50,94	80	100	52	81,8
16.02.2025	08:55:32	63,7	94	808,1	46,14	80	98	53	77,4
16.02.2025	08:56:32	64,7	90	803,7	42,75	80	98	52	82
16.02.2025	08:57:32	65	86	789,3	40,74	80	98	52	80,6
16.02.2025	08:58:32	65,1	86	776,8	41,79	80	98	53	78,6
16.02.2025	08:59:32	64,1	94	793,4	46,98	80	98	52	80,7
16.02.2025	09:00:32	62,7	100	815,2	48,93	80	100	52	81,3

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16.02.2021	09:01:32	62,8	100	827,7	47,55	80	100	52	80,3	
16.02.2021	09:02:32	63,9	94	811,6	44,76	80	98	53	79,1	
16.02.2021	09:03:32	65,4	86	800,3	38,82	80	98	53	77,8	
16.02.2021	09:04:32	65,4	86	785,7	39,96	80	98	52	81,2	
16.02.2021	09:05:32	63,1	94	768,1	48,27	80	98	52	81	
16.02.2021	09:06:32	61,9	100	769,3	52,62	80	100	53	78,9	
16.02.2021	09:07:32	61,9	100	778,9	52,2	80	100	53	78,5	
16.02.2021	09:08:32	62,4	94	793,6	47,04	80	98	52	80,4	
16.02.2021	09:09:32	62,8	94	810,6	45,33	80	98	52	79,9	
16.02.2021	09:10:32	62,8	100	805,2	49,59	80	100	52	80,3	
16.02.2021	09:11:32	62,5	100	803,5	49,86	80	100	52	80,3	
16.02.2021	09:12:32	62,7	100	811,3	49,17	80	100	52	80,8	
16.02.2021	09:13:32	63,6	100	827	47,52	80	100	52	79,2	
16.02.2021	09:14:32	64,8	94	820,2	43,83	80	98	51	82,4	
16.02.2021	09:15:32	65,8	90	807,4	41,1	80	98	52	79,4	
16.02.2021	09:16:32	65,7	90	785,2	42,87	80	98	52	80,7	
16.02.2021	09:17:32	63,7	100	781,6	50,64	80	100	52	81	
16.02.2021	09:18:32	62,5	100	779,1	51,24	80	100	52	79,3	
16.02.2021	09:19:32	62,4	100	778,6	51,66	80	100	53	78,4	
16.02.2021	09:20:32	63,5	94	799,8	46,02	80	98	52	81,5	
16.02.2021	09:21:32	65,4	86	837,8	35,49	80	98	52	80,6	
16.02.2021	09:22:32	66,5	82	832,1	32,31	80	93	52	80,9	
16.02.2021	09:23:32	64,3	90	805,3	39,87	80	98	52	81,9	
16.02.2021	09:24:32	62,3	100	792	48,57	80	100	52	80,8	
16.02.2021	09:25:32	62,3	100	793,9	48,6	80	100	52	78,9	
16.02.2021	09:26:32	62,8	100	800,6	48,18	80	100	52	82,2	
16.02.2021	09:27:32	63	94	812	43,11	80	98	52	80,6	
16.02.2021	09:28:32	62,9	100	795	48,42	80	98	52	80,2	
16.02.2021	09:29:32	62,7	100	800	48,12	80	100	53	77,4	
16.02.2021	09:30:32	62,9	100	808,1	47,49	80	100	52	79,6	
16.02.2021	09:31:32	63,6	94	784,5	45,63	80	98	52	80,3	
16.02.2021	09:32:32	64,4	90	756,7	44,94	80	98	51	82,9	
16.02.2021	09:33:32	65,1	86	747,5	43,11	80	98	53	78,6	
16.02.2021	09:34:32	66	82	748,9	40,74	80	93	53	78,4	
16.02.2021	09:35:32	65,5	86	763,2	42,33	80	98	52	79,3	
16.02.2021	09:36:32	63,5	100	778,6	51,75	80	100	52	80,2	
16.02.2021	09:37:32	62,7	100	785,3	51,39	80	100	52	79,8	
16.02.2021	09:38:32	63,7	94	789,8	47,19	80	98	53	79,5	
16.02.2021	09:39:32	65,7	86	805,9	38,97	80	98	52	79,7	
16.02.2021	09:40:32	66,9	82	815,2	34,74	80	93	53	78,2	
16.02.2021	09:41:32	65	86	793,3	38,85	80	98	52	82,8	
16.02.2021	09:42:32	62,4	100	758,2	52,89	80	100	52	82,9	
16.02.2021	09:43:32	61,9	100	757,9	53,64	80	100	53	79,3	
16.02.2021	09:44:32	62,1	94	773,3	48,87	80	98	53	78,7	
16.02.2021	09:45:32	62,7	94	800,3	46,5	80	98	52	80,3	
16.02.2021	09:46:32	63	94	810,9	45,3	80	98	53	79,9	
16.02.2021	09:47:32	63	94	802	45,87	80	98	52	80,5	
16.02.2021	09:48:32	63,5	94	789,5	47,01	80	98	52	79,5	
16.02.2021	09:49:32	64,5	90	794	43,11	80	98	51	83,5	
16.02.2021	09:50:32	65,5	86	800,9	39,18	80	98	52	81	
16.02.2021	09:51:32	65,6	86	794,6	39,45	80	98	52	79,6	
16.02.2021	09:52:32	63,7	100	779,5	51,3	80	100	53	79,7	
16.02.2021	09:53:32	62,4	100	777,7	51,84	80	100	53	79,1	
16.02.2021	09:54:32	63	94	790,1	47,13	80	98	52	80	
16.02.2021	09:55:32	65,1	86	807,1	38,85	80	98	52	81,4	
16.02.2021	09:56:32	66,7	82	790,7	37,23	80	93	52	81,7	
16.02.2021	09:57:32	65,8	86	780,2	40,56	80	93	52	79,2	
16.02.2021	09:58:32	63	100	774,2	51,72	80	100	52	80,6	
16.02.2021	09:59:32	61,9	100	783,8	51,18	80	98	52	80,1	
16.02.2021	10:00:32	62,2	94	811,8	44,82	80	98	52	80,3	

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16.02.2025	10:01:32	62,8	94	803,5	45,3	80	98	51	83,3	
16.02.2025	10:02:32	62,8	94	793,4	46,2	80	98	52	78,9	
16.02.2025	10:03:32	62,6	100	789,7	50,61	80	100	51	82,1	
16.02.2025	10:04:32	62,9	100	805,9	49,29	80	100	53	78,9	
16.02.2025	10:05:32	63,9	94	812,4	44,55	80	98	52	80,1	
16.02.2025	10:06:32	65	86	826	36,24	80	98	52	81,7	
16.02.2025	10:07:32	66,1	82	817,1	33,63	80	93	52	81,5	
16.02.2025	10:08:32	66,4	82	786,6	35,85	80	93	52	81,2	
16.02.2025	10:09:32	65,1	86	772,7	39,66	80	98	52	79,4	
16.02.2025	10:10:32	62,8	100	777,5	50,07	80	100	52	79,4	
16.02.2025	10:11:32	62,8	100	797,7	48,51	80	100	52	79,3	
16.02.2025	10:12:32	64,5	90	802	40,65	80	98	51	81,3	
16.02.2025	10:13:32	66,1	82	792,5	35,43	80	93	52	79,2	
16.02.2025	10:14:32	66,1	82	777,7	36,45	80	93	52	81,2	
16.02.2025	10:15:32	63,9	100	771	50,25	80	100	52	79,9	
16.02.2025	10:16:32	62,3	100	740,3	53,73	80	100	52	80,7	
16.02.2025	10:17:32	61,7	100	737,9	54,96	80	100	52	82	
16.02.2025	10:18:32	62	100	769,4	52,89	80	100	52	79,8	
16.02.2025	10:19:32	62,7	100	792,3	51,09	80	100	52	80	
16.02.2025	10:20:32	62,9	100	790,9	51,33	80	100	53	79,2	
16.02.2025	10:21:32	62,8	100	806,7	50,04	80	100	53	77,9	
16.02.2025	10:22:32	64,1	90	809,4	42,18	80	98	52	80	
16.02.2025	10:23:32	66,5	82	810,1	35,82	80	93	52	79,3	
16.02.2025	10:24:32	67,1	78	794,7	34,23	80	89	52	80,3	
16.02.2025	10:25:32	67,3	78	779,3	35,16	80	89	52	81	
16.02.2025	10:26:32	65,6	86	755,4	42,3	80	98	52	79,9	
16.02.2025	10:27:32	62,9	100	765,7	52,41	80	100	52	81,8	
16.02.2025	10:28:32	62,3	100	772,4	52,32	80	100	51	82	
16.02.2025	10:29:32	62,6	100	790	51,06	80	100	52	79,6	
16.02.2025	10:30:32	64,1	90	806,5	42,18	80	98	52	80,6	
16.02.2025	10:31:32	65,3	86	800,6	39,24	80	98	51	83,6	
16.02.2025	10:32:32	65,3	86	809,7	38,04	80	98	52	82,6	
16.02.2025	10:33:32	63,8	100	794,5	49,68	80	100	52	81,9	
16.02.2025	10:34:32	62,4	100	780,2	51,24	80	100	52	81,6	
16.02.2025	10:35:32	62,3	100	784,9	51,03	80	100	52	79,5	
16.02.2025	10:36:32	62,7	100	805,7	49,32	80	100	52	80,9	
16.02.2025	10:37:32	63	94	819,1	44,07	80	98	52	80,5	
16.02.2025	10:38:32	63,1	94	824,1	43,17	80	98	52	79,8	
16.02.2025	10:39:32	63	100	802,4	48,78	80	100	52	81	
16.02.2025	10:40:32	62,9	100	800,1	49,11	80	100	53	79,1	
16.02.2025	10:41:32	63,2	94	807,9	44,46	80	98	52	82,8	
16.02.2025	10:42:32	65	86	809	37,47	80	98	51	82,6	
16.02.2025	10:43:32	66,3	82	804,2	34,68	80	93	52	80,6	
16.02.2025	10:44:32	66,9	82	777,3	36,72	80	93	52	81	
16.02.2025	10:45:32	65,9	86	755,8	41,31	80	93	52	79,7	
16.02.2025	10:46:32	63,3	100	759	52,05	80	100	52	80,4	
16.02.2025	10:47:32	62,4	100	769,2	51,75	80	100	51	83,4	
16.02.2025	10:48:32	63,3	94	782,6	46,98	80	98	52	79,9	
16.02.2025	10:49:32	65,1	86	787,4	39,9	80	98	52	80	
16.02.2025	10:50:32	66,5	82	790,6	36,66	80	93	52	81,3	
16.02.2025	10:51:32	65,3	86	808,6	37,35	80	98	53	78,7	
16.02.2025	10:52:32	63,1	100	809,4	47,55	80	100	52	79,3	
16.02.2025	10:53:32	62,5	100	811,9	47,22	80	100	53	78,9	
16.02.2025	10:54:32	62,7	100	810,9	47,25	80	100	53	79,5	
16.02.2025	10:55:32	62,9	100	814,4	46,83	80	100	53	78,4	
16.02.2025	10:56:32	62,9	100	803	47,79	80	100	52	80,7	
16.02.2025	10:57:32	62,9	100	804,8	47,76	80	100	52	80,3	
16.02.2025	10:58:32	63,9	94	811,7	42,99	80	98	52	80,2	
16.02.2025	10:59:32	65,1	86	807,5	36,42	80	98	53	78,6	
16.02.2025	11:00:32	65,6	86	792,4	37,47	80	98	52	81,2	

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16.02.2024	11:01:32	65	90	757,6	43,8	80	98	52	81,4	
16.02.2024	11:02:32	63	100	748,2	52,74	80	100	52	79,6	
16.02.2024	11:03:32	62,2	100	776,4	50,79	80	100	52	79,3	
16.02.2024	11:04:32	63,3	94	795	45,42	80	98	51	82,3	
16.02.2024	11:05:32	65	86	795,3	38,67	80	98	52	81,9	
16.02.2024	11:06:32	66,1	82	777,8	37,32	80	93	52	80	
16.02.2024	11:07:32	65,5	86	766,8	40,95	80	98	52	79,5	
16.02.2024	11:08:32	63	100	768,8	51,63	80	100	52	80,9	
16.02.2024	11:09:32	62	100	775,7	51,54	80	100	52	79,4	
16.02.2024	11:10:32	62,1	100	788,5	50,64	80	100	52	81	
16.02.2024	11:11:32	62,5	100	794	50,31	80	100	52	80,3	
16.02.2024	11:12:32	62,7	100	798,2	50,07	80	100	52	79,8	
16.02.2024	11:13:32	62,7	100	814,6	48,63	80	100	52	81,1	
16.02.2024	11:14:32	62,9	100	820,2	47,94	80	100	52	81,8	
16.02.2024	11:15:32	63,9	94	813,4	44,28	80	98	53	79,6	
16.02.2024	11:16:32	64,6	90	814	40,38	80	98	52	80,7	
16.02.2024	11:17:32	65,6	86	807,8	37,32	80	98	52	81,3	
16.02.2024	11:18:32	65,4	86	791,4	38,52	80	98	52	82,1	
16.02.2024	11:19:32	63,4	100	777,7	50,34	80	100	52	80,3	
16.02.2024	11:20:32	62,4	100	785,6	49,98	80	100	53	78,7	
16.02.2024	11:21:32	63,3	94	790,3	45,78	80	98	52	81,4	
16.02.2024	11:22:32	64,8	90	794,5	41,85	80	98	52	82,3	
16.02.2024	11:23:32	66,3	82	789,8	36,15	80	93	52	79,8	
16.02.2024	11:24:32	66,1	82	791,5	35,64	80	93	52	80,6	
16.02.2024	11:25:32	63,7	100	785,8	49,32	80	100	52	80,4	
16.02.2024	11:26:32	62,2	100	783,5	49,8	80	100	52	81,7	
16.02.2024	11:27:32	62,1	100	791	49,35	80	100	53	78,3	
16.02.2024	11:28:32	62,5	100	806,3	48,09	80	100	52	82,9	
16.02.2024	11:29:32	62,9	100	812,3	47,49	80	98	52	78,9	
16.02.2024	11:30:32	62,9	100	808	47,64	80	100	53	80	
16.02.2024	11:31:32	62,9	100	799,5	48,51	80	100	52	80,6	
16.02.2024	11:32:32	63,4	94	798,6	44,64	80	98	52	81,7	
16.02.2024	11:33:32	64,6	90	794	41,49	80	98	52	80,2	
16.02.2024	11:34:32	65,6	86	790,8	38,43	80	98	52	79,9	
16.02.2024	11:35:32	66,3	82	789	35,58	80	93	53	79,1	
16.02.2024	11:36:32	64,6	90	809,5	39,21	80	98	52	79,4	
16.02.2024	11:37:32	63	100	811,7	46,2	80	100	52	79,9	
16.02.2024	11:38:32	64,6	94	805,3	42,81	80	98	52	80,5	
16.02.2024	11:39:32	66,5	86	798,4	36,6	80	98	52	81,1	
16.02.2024	11:40:32	66,1	86	788	37,38	80	98	53	78,6	
16.02.2024	11:41:32	63,5	100	767,6	49,89	80	100	52	80,7	
16.02.2024	11:42:32	62,2	100	771,2	50,1	80	100	52	80,7	
16.02.2024	11:43:32	62,2	100	785,5	49,17	80	100	52	81,1	
16.02.2024	11:44:32	62,7	100	800,5	48	80	100	52	82,5	
16.02.2024	11:45:32	63,1	94	813	42,78	80	98	52	80,6	
16.02.2024	11:46:32	63,1	94	781,4	45,51	80	98	52	81,9	
16.02.2024	11:47:32	63,4	100	766,8	51,06	80	100	53	79	
16.02.2024	11:48:32	64,3	94	773,4	46,98	80	98	52	81,2	
16.02.2024	11:49:32	65,2	90	776,6	43,47	80	98	52	80,9	
16.02.2024	11:50:32	66	86	780,6	40,02	80	98	52	80,9	
16.02.2024	11:51:32	64,7	94	784,1	46,32	80	98	53	79,7	
16.02.2024	11:52:32	62,8	100	787,9	50,01	80	100	52	81,3	
16.02.2024	11:53:32	63,2	94	793,2	45,78	80	98	52	80,4	
16.02.2024	11:54:32	65,1	86	800,8	38,37	80	98	52	80,2	
16.02.2024	11:55:32	66,8	82	799,6	35,46	80	93	51	81,6	
16.02.2024	11:56:32	66,9	82	791,6	35,67	80	93	52	79,6	
16.02.2024	11:57:32	64,2	90	776,8	42,72	80	98	52	79,1	
16.02.2024	11:58:32	62,3	100	760,7	52,05	80	100	52	80,2	
16.02.2024	11:59:32	61,9	100	767,7	52,05	80	100	53	78,9	
16.02.2024	12:00:32	62,3	94	795,3	45,87	80	98	53	77,9	

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16.02.2025	12:01:32	62,9	94	801,4	45,27	80	98	53	78,2
16.02.2025	12:02:32	62,9	100	810,5	48,24	80	100	52	80,7
16.02.2025	12:03:32	63,4	94	801,2	45,03	80	98	52	82,6
16.02.2025	12:04:32	64,5	90	805	41,13	80	98	52	80,6
16.02.2025	12:05:32	65,4	86	800,8	38,01	80	98	53	79,4
16.02.2025	12:06:32	66,3	82	797	35,4	80	93	52	82
16.02.2025	12:07:32	66,3	82	789,8	35,61	80	93	52	79,7
16.02.2025	12:08:32	64	94	768,8	46,83	80	98	52	81,6
16.02.2025	12:09:32	62,3	100	766,4	51,51	80	100	52	80,1
16.02.2025	12:10:32	63,7	94	784,3	46,35	80	98	52	82
16.02.2025	12:11:32	65,6	86	782,6	39,84	80	98	52	80,4
16.02.2025	12:12:32	66,9	82	777,2	37,38	80	93	52	81,1
16.02.2025	12:13:32	66,4	82	773,5	37,41	80	93	52	79,3
16.02.2025	12:14:32	63,6	100	772,2	50,76	80	100	52	79,8
16.02.2025	12:15:32	62	100	761,4	52,32	80	100	52	81,2
16.02.2025	12:16:32	61,8	100	775,5	51,6	80	100	52	79,2
16.02.2025	12:17:32	62,4	94	797,6	45,87	80	98	52	80,5
16.02.2025	12:18:32	63	90	813,4	40,8	80	98	52	81
16.02.2025	12:19:32	63,1	94	807,8	44,43	80	98	53	78,8
16.02.2025	12:20:32	63,5	94	797	45,3	80	98	52	79,9
16.02.2025	12:21:32	64,7	90	829,8	38,61	80	98	51	82
16.02.2025	12:22:32	65,9	86	835,4	34,11	80	98	52	79,5
16.02.2025	12:23:32	66,9	82	804,1	33,42	80	93	52	80,3
16.02.2025	12:24:32	66,5	82	774,9	35,64	80	93	52	80,5
16.02.2025	12:25:32	63,8	100	761,4	50,19	80	98	52	79,8
16.02.2025	12:26:32	62,2	100	767,4	50,28	80	100	51	82,6
16.02.2025	12:27:32	63,5	94	779,9	45,63	80	98	52	81,8
16.02.2025	12:28:32	65,7	86	794,9	37,62	80	98	52	79,7
16.02.2025	12:29:32	67,4	78	790,1	32,52	80	89	52	78,2
16.02.2025	12:30:32	67,1	78	773,8	33,6	80	89	52	80,5
16.02.2025	12:31:32	63,9	100	744,1	52,08	80	98	52	80,9
16.02.2025	12:32:32	61,7	100	724,6	54,9	80	100	52	80,9
16.02.2025	12:33:32	61,6	100	752,8	53,37	80	100	52	80,2
16.02.2025	12:34:32	62,3	100	780,7	51,36	80	100	53	78,7
16.02.2025	12:35:32	62,8	100	804,2	49,44	80	100	52	80,1
16.02.2025	12:36:32	63	94	817,2	44,19	80	98	52	82,4
16.02.2025	12:37:32	63,8	94	823,8	43,17	80	98	52	80,3
16.02.2025	12:38:32	64,9	90	815,2	39,99	80	98	52	81,4
16.02.2025	12:39:32	65,6	86	800,2	37,77	80	98	52	81,8
16.02.2025	12:40:32	66,3	82	783,8	36,27	80	93	52	78,7
16.02.2025	12:41:32	66,4	82	771,3	37,14	80	93	52	80,5
16.02.2025	12:42:32	64,8	94	761,2	47,55	80	98	52	81,6
16.02.2025	12:43:32	62,6	100	764,1	51,75	80	100	52	80,3
16.02.2025	12:44:32	63,1	94	786,1	46,29	80	98	51	82,5
16.02.2025	12:45:32	65,4	86	808,4	37,53	80	98	52	80,7
16.02.2025	12:46:32	67,1	78	805	32,16	80	89	51	84,4
16.02.2025	12:47:32	67,2	78	795,4	32,31	80	89	52	80,2
16.02.2025	12:48:32	64,3	94	774,2	45,81	80	98	52	80,1
16.02.2025	12:49:32	62,1	100	761,9	51,33	80	100	52	80,2
16.02.2025	12:50:32	61,7	100	767	51,48	80	100	52	80,8
16.02.2025	12:51:32	62,3	94	790,8	45,72	80	98	52	79,5
16.02.2025	12:52:32	62,9	94	800,2	44,88	80	98	52	80,2
16.02.2025	12:53:32	63	94	807,9	43,98	80	98	53	79,8
16.02.2025	12:54:32	63,7	94	804,8	44,04	80	98	52	81
16.02.2025	12:55:32	64,8	90	791,1	41,7	80	98	53	77,6
16.02.2025	12:56:32	65,4	86	777,6	39,66	80	98	53	78,3
16.02.2025	12:57:32	65,9	86	778	39,6	80	93	52	79,4
16.02.2025	12:58:32	64,7	90	785,8	41,97	80	98	52	80,2
16.02.2025	12:59:32	62,8	100	779,3	50,1	80	100	51	82,3
16.02.2025	13:00:32	62,9	100	781,9	50,13	80	103	53	79,6

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16.02.2025	13:01:32	64,8	90	790,5	42	80	98	52	81,9
16.02.2025	13:02:32	66,7	82	795,3	35,46	80	93	52	81,6
16.02.2025	13:03:32	67,7	78	786,9	33,39	80	89	52	79,1
16.02.2025	13:04:32	65,4	86	766,7	40,05	80	98	53	79,5
16.02.2025	13:05:32	62,5	100	763,6	51,3	80	100	52	79,1
16.02.2025	13:06:32	62	94	796,7	44,82	80	98	52	82,7
16.02.2025	13:07:32	62,6	94	829,2	41,58	80	98	52	81,1
16.02.2025	13:08:32	63,2	90	832,7	37,14	80	98	52	81,6
16.02.2025	13:09:32	63,1	90	810,2	38,64	80	98	52	81,2
16.02.2025	13:10:32	63	94	789,6	43,89	80	98	52	79,5
16.02.2025	13:11:32	63,8	94	779,5	44,88	80	98	51	83,2
16.02.2025	13:12:32	64,9	90	781,5	41,22	80	98	53	79,4
16.02.2025	13:13:32	65,7	86	781,5	37,98	80	98	52	80,7
16.02.2025	13:14:32	66,4	82	778,5	35,28	80	93	52	81,3
16.02.2025	13:15:32	65,8	86	777	37,86	80	98	52	80,1
16.02.2025	13:16:32	63,3	100	737,7	52,35	80	100	52	79,1
16.02.2025	13:17:32	62,3	100	717,5	55,38	80	100	52	80,5
16.02.2025	13:18:32	63,8	94	739,5	50,55	80	98	53	78,8
16.02.2025	13:19:32	65,7	86	778,8	40,71	80	98	53	79,4
16.02.2025	13:20:32	67,6	78	791,2	34,14	80	89	53	77,5
16.02.2025	13:21:32	66,1	82	778,8	37,29	80	93	52	79,8
16.02.2025	13:22:32	63	100	760,2	52,47	80	100	53	78,3
16.02.2025	13:23:32	61,9	100	764,1	52,77	80	98	52	80,3
16.02.2025	13:24:32	62,1	94	783,3	47,46	80	98	52	79,2
16.02.2025	13:25:32	62,7	94	795,6	46,44	80	98	52	79,3
16.02.2025	13:26:32	63	94	813,3	44,64	80	98	52	80,7
16.02.2025	13:27:32	63,1	94	813,3	44,31	80	98	52	80
16.02.2025	13:28:32	63,9	94	802	45,09	80	98	52	80,8
16.02.2025	13:29:32	65,2	86	794,6	39	80	98	51	83,5
16.02.2025	13:30:32	66	82	783,2	37,17	80	93	52	81,2
16.02.2025	13:31:32	66,5	82	772,6	37,86	80	93	52	79,8
16.02.2025	13:32:32	65,8	86	762,1	41,46	80	98	52	79,4
16.02.2025	13:33:32	63,2	100	764,1	52,2	80	100	52	80,9
16.02.2025	13:34:32	62,6	100	776,8	51,6	80	100	52	82,2
16.02.2025	13:35:32	64,6	90	798,3	42,39	80	98	52	81,2
16.02.2025	13:36:32	66,6	82	799,5	36,06	80	93	52	81,5
16.02.2025	13:37:32	67,7	78	781,6	34,77	80	89	52	80,2
16.02.2025	13:38:32	66	0	759,6	0	0	40	42	83,4
16.02.2025	13:39:32	62,3	0	694,6	0	0	40	37	81,1
16.02.2025	13:40:32	60,6	0	617,9	0	0	40	38	79,2
16.02.2025	13:41:32	59,9	0	547,4	0	0	40	38	80,6
16.02.2025	13:42:32	59,4	0	489,6	0	0	40	38	79,5
16.02.2025	13:43:32	58,7	0	443,5	0	0	40	37	80,5
16.02.2025	13:44:32	58	0	404,1	0	0	40	37	80
16.02.2025	13:45:32	57,5	0	371,4	0	0	40	37	81
16.02.2025	13:46:32	58,2	0	343,6	0	0	40	37	80
16.02.2025	13:47:32	59,8	0	320,1	0	0	40	37	80
16.02.2025	13:48:32	60,8	0	300,2	0	0	40	37	80,2
16.02.2025	13:49:32	59,8	0	282,3	0	0	40	37	80,2
16.02.2025	13:50:32	59	0	266,7	0	0	40	37	80,1
16.02.2025	13:51:32	58,5	0	252,4	0	0	35	33	82
16.02.2025	13:52:32	58	100	238,7	0	0	100	38	80,9
16.02.2025	13:53:32	57,5	100	226,6	59,28	80	100	38	78,9
16.02.2025	13:54:32	58,5	100	236,1	67,11	80	100	41	78
16.02.2025	13:55:32	59,7	100	298	69,51	80	100	52	78,7
16.02.2025	13:56:32	61,1	100	404,7	66,72	80	100	52	80,2
16.02.2025	13:57:32	62,1	94	499	59,49	80	98	53	78,5
16.02.2025	13:58:32	62,7	94	577,1	56,22	80	98	52	80,8
16.02.2025	13:59:32	62,2	100	646,1	56,7	80	100	53	79,4
16.02.2025	14:00:32	61,6	100	689,1	54,84	80	100	52	79,5

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16.02.2025	14:01:32	61,7	100	737,1	51,96	80	100	53	79,8	
16.02.2025	14:02:32	62,3	100	774	49,38	80	100	52	81,9	
16.02.2025	14:03:32	63,2	94	807,5	42,66	80	98	53	79,9	
16.02.2025	14:04:32	64,9	0	812,3	0	0	40	46	83,1	
16.02.2025	14:05:32	65,5	0	762,9	0	0	40	38	83,3	
16.02.2025	14:06:32	65,8	0	675,8	0	0	40	37	82,3	
16.02.2025	14:07:32	64,8	0	590,5	0	0	30	37	79,1	
16.02.2025	14:08:32	61,7	100	520,5	0	0	85	38	79,4	
16.02.2025	14:09:32	59,6	100	466,7	66,57	80	100	42	78,4	
16.02.2025	14:10:32	58,7	100	468,1	71,49	80	100	52	79,9	
16.02.2025	14:11:32	59,1	100	544,3	69,15	80	100	52	80	
16.02.2025	14:12:32	60,7	100	670,6	60,72	80	100	53	79,8	
16.02.2025	14:13:32	63,6	90	766,4	45,84	80	98	53	78,5	
16.02.2025	14:14:32	65,3	82	789,4	37,8	80	93	53	78,7	
16.02.2025	14:15:32	63,8	90	761,4	46,2	80	98	52	82,8	
16.02.2025	14:16:32	62,3	100	752,9	54,96	80	100	52	80,7	
16.02.2025	14:17:32	62,1	100	760,8	54,99	80	100	52	81,2	
16.02.2025	14:18:32	62,5	100	787,1	53,1	80	100	52	79,4	
16.02.2025	14:19:32	62,9	100	800,8	52,08	80	100	53	78,8	
16.02.2025	14:20:32	63	94	812,6	46,95	80	98	52	80,3	
16.02.2025	14:21:32	63,3	94	815,1	46,44	80	98	53	78,8	
16.02.2025	14:22:32	64,5	90	821,8	41,97	80	98	52	80,2	
16.02.2025	14:23:32	65,4	86	815,2	38,88	80	98	52	82,1	
16.02.2025	14:24:32	66,5	82	797,7	37,2	80	93	53	78,9	
16.02.2025	14:25:32	65,7	86	781,8	41,01	80	98	52	82,5	
16.02.2025	14:26:32	63,4	100	765,8	53,22	80	100	52	79,3	
16.02.2025	14:27:32	62,3	100	765,8	53,79	80	100	52	80,7	
16.02.2025	14:28:32	63,4	94	789,7	48,12	80	98	52	80,8	
16.02.2025	14:29:32	65,5	86	809,6	39,51	80	98	52	79,5	
16.02.2025	14:30:32	66,9	82	807,2	36,42	80	93	53	79,5	
16.02.2025	14:31:32	66	82	791,7	37,2	80	93	52	81,2	
16.02.2025	14:32:32	63,2	100	775,9	51,96	80	100	52	79,8	
16.02.2025	14:33:32	62,1	100	779,2	52,05	80	100	52	80,9	
16.02.2025	14:34:32	62,2	100	798,4	50,61	80	100	52	80,9	
16.02.2025	14:35:32	62,8	100	812,6	49,26	80	100	52	81,1	
16.02.2025	14:36:32	63	94	812,4	45,15	80	98	52	81	
16.02.2025	14:37:32	62,8	100	819,2	48,3	80	100	52	79,7	
16.02.2025	14:38:32	63,6	94	822,4	43,77	80	98	51	82,3	
16.02.2025	14:39:32	64,6	90	819,6	40,08	80	98	53	78,9	
16.02.2025	14:40:32	65,5	86	814,9	36,78	80	98	52	80,7	
16.02.2025	14:41:32	66	82	795,1	35,46	80	93	52	80,1	
16.02.2025	14:42:32	64,5	90	780,9	42,48	80	98	52	80,8	
16.02.2025	14:43:32	62,4	100	778	50,43	80	100	53	78,9	
16.02.2025	14:44:32	62,6	100	791,5	49,44	80	100	51	82,3	
16.02.2025	14:45:32	64,3	90	796,2	41,7	80	98	52	81,5	
16.02.2025	14:46:32	66	82	794,9	35,79	80	93	53	78,6	
16.02.2025	14:47:32	66,9	82	786,1	36,24	80	93	52	79,1	
16.02.2025	14:48:32	65	86	773,6	39,84	80	98	52	81,3	
16.02.2025	14:49:32	62,6	100	772,7	50,82	80	100	52	79,3	
16.02.2025	14:50:32	61,9	100	784	50,16	80	100	52	80,8	
16.02.2025	14:51:32	62,2	94	800,7	44,82	80	98	52	80,9	
16.02.2025	14:52:32	62,8	94	806,3	44,16	80	98	52	79	
16.02.2025	14:53:32	62,9	100	835,9	45,03	80	98	52	81,2	
16.02.2025	14:54:32	63,1	94	839,3	40,17	80	98	52	81,1	
16.02.2025	14:55:32	63,4	94	825,4	40,83	80	98	53	79,5	
16.02.2025	14:56:32	64,3	90	812,8	38,07	80	98	53	76,9	
16.02.2025	14:57:32	65,2	86	797,8	35,97	80	98	52	80,9	
16.02.2025	14:58:32	65,9	86	787,1	36,78	80	98	52	81,3	
16.02.2025	14:59:32	66,2	82	768,1	35,61	80	93	51	82,1	
16.02.2025	15:00:32	64,7	94	761,3	45,66	80	98	52	79,5	

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16.02.2025	15:01:32	62,8	100	758,6	50,43	80	100	52	79,4
16.02.2025	15:02:32	62,8	100	765,2	50,49	80	100	52	80
16.02.2025	15:03:32	64,5	90	766,6	43,35	80	98	52	79,7
16.02.2025	15:04:32	65,8	86	758,2	41,22	80	98	52	80,1
16.02.2025	15:05:32	66,5	82	756,1	38,82	80	93	53	77,5
16.02.2025	15:06:32	64,7	94	756,6	48,3	80	98	52	81,8
16.02.2025	15:07:32	62,7	100	765	52,08	80	100	53	77,9
16.02.2025	15:08:32	62,3	100	780,7	51,09	80	100	53	78,8
16.02.2025	15:09:32	62,5	100	797,6	49,8	80	100	53	79,5
16.02.2025	15:10:32	62,8	100	794,6	50,25	80	100	52	81,6
16.02.2025	15:11:32	62,9	100	801,3	49,8	80	100	51	84,2
16.02.2025	15:12:32	63,1	100	812,9	48,78	80	100	52	81,1
16.02.2025	15:13:32	64,3	94	822,8	43,71	80	98	53	79,9
16.02.2025	15:14:32	65,4	90	821,3	39,9	80	98	52	80,2
16.02.2025	15:15:32	66,3	86	803,1	37,95	80	98	53	79,4
16.02.2025	15:16:32	65,8	90	788	42,27	80	98	52	81,2
16.02.2025	15:17:32	63,4	100	778	50,61	80	100	52	82,3
16.02.2025	15:18:32	62,5	100	781,4	50,7	80	100	52	81,4
16.02.2025	15:19:32	63,6	94	798,4	45,39	80	98	53	78,4
16.02.2025	15:20:32	65,5	86	801,2	38,37	80	98	52	80,3
16.02.2025	15:21:32	67	78	787,9	34,11	80	89	51	81,1
16.02.2025	15:22:32	66,8	82	765,8	38,16	80	93	52	81,1
16.02.2025	15:23:32	63,8	100	756,5	52,44	80	100	52	81,1
16.02.2025	15:24:32	62,1	100	763	52,53	80	100	52	80,4
16.02.2025	15:25:32	61,9	100	786,4	50,85	80	98	52	81,5
16.02.2025	15:26:32	62,5	94	794,3	46,26	80	98	52	81,7
16.02.2025	15:27:32	62,7	94	791,9	46,5	80	98	52	82,1
16.02.2025	15:28:32	62,7	100	785,2	51,18	80	100	53	79,2
16.02.2025	15:29:32	63	94	790,6	46,98	80	98	52	80,8
16.02.2025	15:30:32	64,3	90	795,2	43,08	80	98	52	81,1
16.02.2025	15:31:32	65,2	86	803,7	38,97	80	98	52	80,4
16.02.2025	15:32:32	66	82	801	36,15	80	93	52	80,2
16.02.2025	15:33:32	66,2	82	788,9	36,78	80	93	52	80,6
16.02.2025	15:34:32	64,3	94	767	48,03	80	98	51	83,8
16.02.2025	15:35:32	62,3	100	758,6	53,34	80	100	52	80,1
16.02.2025	15:36:32	62,9	100	776,1	52,29	80	100	52	81,2
16.02.2025	15:37:32	64,9	90	807,1	42,15	80	98	52	80
16.02.2025	15:38:32	67,1	78	837,7	30,33	80	89	52	79
16.02.2025	15:39:32	68	74	826,2	28,05	80	86	52	81,7
16.02.2025	15:40:32	65,6	86	800,6	36,75	80	98	52	81,5
16.02.2025	15:41:32	62,6	100	777,4	49,5	80	100	53	79,3
16.02.2025	15:42:32	61,9	100	778,2	49,77	80	100	52	80,7
16.02.2025	15:43:32	62,2	94	797,5	44,28	80	98	52	80,8
16.02.2025	15:44:32	62,9	94	809,3	43,02	80	98	52	81,5
16.02.2025	15:45:32	63,2	90	796,4	40,44	80	98	51	82,7
16.02.2025	15:46:32	63,3	90	795,1	40,53	80	98	53	77,3
16.02.2025	15:47:32	64,3	90	792,9	40,74	80	98	52	81,6
16.02.2025	15:48:32	65	86	757,9	40,86	80	98	52	80,4
16.02.2025	15:49:32	65,4	86	743,8	42,57	80	98	52	80,5
16.02.2025	15:50:32	66,2	82	747,1	39,99	80	93	52	82,5
16.02.2025	15:51:32	65,5	86	757,9	41,94	80	98	52	81,9
16.02.2025	15:52:32	63,1	100	765,1	52,2	80	100	53	78,1
16.02.2025	15:53:32	62,4	100	765,4	52,8	80	100	52	80,3
16.02.2025	15:54:32	64	90	790,4	43,47	80	98	52	81,8
16.02.2025	15:55:32	66,2	82	799,7	36,54	80	93	52	80,3
16.02.2025	15:56:32	67,6	78	792,6	34,23	80	89	52	79,7
16.02.2025	15:57:32	66,7	82	783	37,11	80	93	51	82,3
16.02.2025	15:58:32	63,6	100	773,6	51,21	80	100	52	81,6
16.02.2025	15:59:32	62	100	767,7	52,26	80	100	53	79,8
16.02.2025	16:00:32	62	94	786,2	47,04	80	98	52	80,7

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16.02.2025	16:01:32	62,6	94	809,9	44,79	80	98	52	79,8	
16.02.2025	16:02:32	63	90	803,9	41,64	80	98	52	79,6	
16.02.2025	16:03:32	62,9	100	792,5	50,13	80	100	52	80,1	
16.02.2025	16:04:32	63,4	94	801,6	45,48	80	98	52	81,4	
16.02.2025	16:05:32	64,4	90	798	42,3	80	98	53	78,7	
16.02.2025	16:06:32	65,3	86	801,4	38,64	80	98	52	80,7	
16.02.2025	16:07:32	66	82	787	37,02	80	93	53	79,3	
16.02.2025	16:08:32	66,8	82	780,6	37,26	80	93	52	80,9	
16.02.2025	16:09:32	67,1	78	766,7	35,88	80	89	52	81,1	
16.02.2025	16:10:32	67,6	78	759,5	36,42	80	89	52	81,6	
16.02.2025	16:11:32	68	74	756,7	34,5	80	86	51	82,5	
16.02.2025	16:12:32	68,4	74	752,5	34,71	80	86	52	81	
16.02.2025	16:13:32	66,4	86	748,8	42,36	80	98	51	82,9	
16.02.2025	16:14:32	63,1	100	745,4	53,85	80	100	53	79,7	
16.02.2025	16:15:32	61,9	100	758,2	53,49	80	100	52	80,4	
16.02.2025	16:16:32	62	94	779,1	48,21	80	98	52	81,7	
16.02.2025	16:17:32	62,7	94	793	47,1	80	98	52	82,1	
16.02.2025	16:18:32	63,6	90	803,9	42,54	80	98	52	81,8	
16.02.2025	16:19:32	65	82	802,2	36,45	80	93	52	81,7	
16.02.2025	16:20:32	66,6	78	791,3	34,5	80	89	52	79,6	
16.02.2025	16:21:32	67,9	74	776,1	33,24	80	86	52	80,8	
16.02.2025	16:22:32	68,7	70	753,4	32,88	80	82	52	80,2	
16.02.2025	16:23:32	69,8	66	758,8	30,15	80	78	51	84,4	
16.02.2025	16:24:32	71,1	54	772,1	23,73	80	68	51	79,9	
16.02.2025	16:25:32	72,5	50	760,9	22,41	80	59	49	82,1	
16.02.2025	16:26:32	73,3	46	733,2	22,68	80	55	48	81,8	
16.02.2025	16:27:32	73,7	46	706,4	24,33	80	55	48	80,5	
16.02.2025	16:28:32	74,1	42	692,5	24,03	80	52	48	79,9	
16.02.2025	16:29:32	74,7	38	682,4	23,46	80	48	48	79,6	
16.02.2025	16:30:32	75	34	680,1	22,26	80	44	47	81,1	
16.02.2025	16:31:32	75,3	34	675	22,23	80	44	47	80,3	
16.02.2025	16:32:32	75,8	34	675	21,72	80	44	45	82,5	
16.02.2025	16:33:32	76	30	645,5	23,34	81	41	42	82,3	
16.02.2025	16:34:32	75,8	34	621,5	26,4	80	44	43	79,8	
16.02.2025	16:35:32	75,8	34	618,9	27	80	44	43	79,5	
16.02.2025	16:36:32	76	30	629,3	25,59	81	41	42	81,5	
16.02.2025	16:37:32	76,1	30	636,9	24,96	81	41	38	79,6	
16.02.2025	16:38:32	76,2	30	640,6	24,63	81	41	38	78,8	
16.02.2025	16:39:32	76	30	647,6	23,88	81	41	37	81,5	
16.02.2025	16:40:32	74,1	38	651,3	25,08	80	48	41	79,1	
16.02.2025	16:41:32	70,6	54	662,2	28,89	80	64	46	79,1	
16.02.2025	16:42:32	68,1	62	669,7	31,8	80	74	48	80,1	
16.02.2025	16:43:32	65,6	74	679,5	37,26	80	86	50	78,8	
16.02.2025	16:44:32	66,1	70	696,2	34,74	80	82	52	81,3	
16.02.2025	16:45:32	68,4	62	714,8	29,94	80	74	51	81,1	
16.02.2025	16:46:32	70,4	54	716	26,91	80	68	49	81,9	
16.02.2025	16:47:32	72,3	42	709,5	23,58	80	52	48	80,8	
16.02.2025	16:48:32	74	34	705	21,27	80	44	47	81,5	
16.02.2025	16:49:32	75,3	30	691,7	20,88	81	41	44	83,8	
16.02.2025	16:50:32	76,4	30	672,6	22,02	81	41	38	82,6	
16.02.2025	16:51:32	77,3	30	659,6	22,71	81	41	37	82,1	
16.02.2025	16:52:32	78,1	0	657,7	0	0	40	38	80,1	
16.02.2025	16:53:32	78,8	0	649	0	0	35	37	80,7	
16.02.2025	16:54:32	78,2	0	611,8	0	0	30	38	79,8	
16.02.2025	16:55:32	76,7	0	558,7	0	0	26	37	81,2	
16.02.2025	16:56:32	74,6	0	506,3	0	0	22	35	82,1	
16.02.2025	16:57:32	72,9	0	461	0	0	17	32	81,3	
16.02.2025	16:58:32	71,4	0	422,5	0	0	13	27	81,5	
16.02.2025	16:59:32	70,1	0	389,2	0	0	11	27	81	
16.02.2025	17:00:32	68,9	0	361,3	0	0	11	28	80,1	

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16.02.2025	17:01:32	68,2	0	337,1	0	0	11	27	80,2	
16.02.2025	17:02:32	67,7	74	316,9	0	0	41	33	78	
16.02.2025	17:03:32	67,8	78	298,4	0	0	89	37	81,3	
16.02.2025	17:04:32	68	74	284,2	46,05	80	86	37	81,1	
16.02.2025	17:05:32	68,5	74	292,5	52,11	80	86	41	77	
16.02.2025	17:06:32	69,5	70	340,6	52,23	80	82	46	79,9	
16.02.2025	17:07:32	70,9	66	431,2	47,37	80	78	51	79,7	
16.02.2025	17:08:32	72,5	58	540,1	37,8	80	70	51	80,5	
16.02.2025	17:09:32	74,2	46	639,4	26,61	80	55	52	80,5	
16.02.2025	17:10:32	76,3	38	698,4	19,08	80	48	51	81,2	
16.02.2025	17:11:32	77,7	30	703,7	16,08	81	41	44	84,1	
16.02.2025	17:12:32	77,1	30	677,7	17,67	81	41	37	82,8	
16.02.2025	17:13:32	76,1	34	650,9	20,58	80	44	38	82,5	
16.02.2025	17:14:32	74,8	42	632,6	24,39	80	52	45	78,3	
16.02.2025	17:15:32	73,5	46	628,9	26,37	80	55	48	79,3	
16.02.2025	17:16:32	71,8	54	632,2	29,25	80	64	47	80,8	
16.02.2025	17:17:32	67,3	70	654,2	34,71	80	82	48	80,2	
16.02.2025	17:18:32	64,3	86	687,7	42,21	80	98	53	78,9	
16.02.2025	17:19:32	63,6	90	723,8	43,29	80	98	52	80,4	
16.02.2025	17:20:32	65,6	82	747,3	35,94	80	93	52	82,4	
16.02.2025	17:21:32	68,1	70	756,1	28,68	80	82	52	79,7	
16.02.2025	17:22:32	70,2	62	751,4	25,29	80	74	52	78,9	
16.02.2025	17:23:32	72,1	54	732,3	23,7	80	68	51	82,2	
16.02.2025	17:24:32	74	42	710,5	21,78	80	52	52	79,8	
16.02.2025	17:25:32	75,9	38	702	20,82	80	48	50	80,3	
16.02.2025	17:26:32	77,6	30	685,5	19,89	81	41	44	83,9	
16.02.2025	17:27:32	76,8	34	664,3	21,9	80	44	38	81,9	
16.02.2025	17:28:32	74,2	42	632,9	26,76	80	52	44	79,7	
16.02.2025	17:29:32	71,9	54	623,1	31,8	80	64	47	82,4	
16.02.2025	17:30:32	70,6	58	620,7	34,53	80	70	48	79,3	
16.02.2025	17:31:32	69,8	62	639,5	35,55	80	74	49	78,2	
16.02.2025	17:32:32	69,5	62	666,9	34,05	80	74	50	79,6	
16.02.2025	17:33:32	69,9	62	688,6	32,67	80	74	52	80,1	
16.02.2025	17:34:32	70,3	58	705	29,88	80	70	52	80,7	
16.02.2025	17:35:32	71,2	50	711,8	26,64	80	59	50	81	
16.02.2025	17:36:32	71,8	50	695	27,87	80	59	49	81,2	
16.02.2025	17:37:32	72	46	678,9	28,02	80	55	49	81,8	
16.02.2025	17:38:32	72,6	46	679	27,93	80	55	51	80,7	
16.02.2025	17:39:32	73,1	42	677,9	26,7	80	52	50	80,4	
16.02.2025	17:40:32	73,6	42	681,3	26,07	80	52	50	79,9	
16.02.2025	17:41:32	74,2	34	685,2	23,31	80	44	48	81,2	
16.02.2025	17:42:32	74,5	34	678,6	23,46	80	44	47	80,3	
16.02.2025	17:43:32	74,8	34	677,9	23,1	80	44	47	81,2	
16.02.2025	17:44:32	75,2	30	669	22,77	81	41	42	83,5	
16.02.2025	17:45:32	75,2	30	659,7	23,25	81	41	40	80,4	
16.02.2025	17:46:32	75,4	30	648,8	23,94	81	41	38	79,7	
16.02.2025	17:47:32	75,4	30	638,6	24,75	81	41	37	81,5	
16.02.2025	17:48:32	75,4	30	636,1	24,99	81	41	38	79,7	
16.02.2025	17:49:32	75,6	30	643	24,33	81	41	37	81,1	
16.02.2025	17:50:32	76,1	30	650,8	23,49	81	41	38	80,5	
16.02.2025	17:51:32	76,6	30	654,2	23,04	81	41	37	81,7	
16.02.2025	17:52:32	76,7	30	651,7	23,13	81	41	38	80,1	
16.02.2025	17:53:32	76,8	30	651,7	23,04	81	41	38	81,2	
16.02.2025	17:54:32	77	30	655	22,62	81	41	38	79,3	
16.02.2025	17:55:32	77	30	654,9	22,38	81	41	38	80,6	
16.02.2025	17:56:32	77,1	30	653,7	22,26	81	41	37	81,1	
16.02.2025	17:57:32	77,1	30	648,4	22,65	81	41	37	81,4	
16.02.2025	17:58:32	77,1	30	646,6	22,77	81	41	37	80,1	
16.02.2025	17:59:32	77,1	30	646,7	22,71	81	41	38	79,9	
16.02.2025	18:00:32	77,1	30	651,9	22,14	81	41	38	80,9	

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16.02.2025	18:01:32	77	30	650,2	22,14	81	41	38	79,1	
16.02.2025	18:02:32	77,1	30	650,1	22,11	81	41	37	81,7	
16.02.2025	18:03:32	77,3	30	671	19,92	81	41	37	80,8	
16.02.2025	18:04:32	77,5	30	686,4	17,94	81	41	38	80,4	
16.02.2025	18:05:32	77,8	30	684,4	17,43	81	41	37	82,4	
16.02.2025	18:06:32	77,6	30	670,5	18,12	81	41	38	80,2	
16.02.2025	18:07:32	77,5	30	656,5	19,05	81	41	37	81	
16.02.2025	18:08:32	77,2	30	642,8	20,16	81	41	37	81,3	
16.02.2025	18:09:32	77	30	640,4	20,37	81	41	39	78,4	
16.02.2025	18:10:32	76,8	34	648	20,49	80	44	41	79,7	
16.02.2025	18:11:32	77	30	650,9	19,38	81	41	38	79	
16.02.2025	18:12:32	77,1	30	643,9	19,95	81	41	37	81	
16.02.2025	18:13:32	76,7	34	625,4	22,44	80	44	38	80,6	
16.02.2025	18:14:32	76,7	34	611,3	24,12	80	44	41	79,8	
16.02.2025	18:15:32	77,6	30	604,6	24,45	81	41	37	81,3	
16.02.2025	18:16:32	78,6	0	599,3	0	0	37	37	81,1	
16.02.2025	18:17:32	79,3	0	587,2	0	0	32	37	81	
16.02.2025	18:18:32	79,8	0	546,9	0	0	28	37	82	
16.02.2025	18:19:32	79,4	0	500,9	0	0	24	37	80,5	
16.02.2025	18:20:32	77,9	0	456,6	0	0	20	35	81,9	
16.02.2025	18:21:32	76,2	0	418,9	0	0	15	28	82,8	
16.02.2025	18:22:32	74,5	0	386,7	0	0	11	28	80,4	
16.02.2025	18:23:32	73,1	0	358,1	0	0	11	28	80,9	
16.02.2025	18:24:32	71,7	0	334	0	0	11	28	79,9	
16.02.2025	18:25:32	70,7	0	313,3	0	0	0	25	83,9	
16.02.2025	18:26:32	70,3	0	296,5	0	0	0	23	79,6	
16.02.2025	18:27:32	70,3	0	281,7	0	0	0	23	79,7	
16.02.2025	18:28:32	70,6	0	268,6	0	0	0	22	80,2	
16.02.2025	18:29:32	70,8	0	256,7	0	0	0	22	81,4	
16.02.2025	18:30:32	71	0	245,4	0	0	0	23	80,7	
16.02.2025	18:31:32	71,2	0	235,3	0	0	0	23	79,4	
16.02.2025	18:32:32	71,5	0	226,5	0	0	0	23	79,3	
16.02.2025	18:33:32	71,4	0	218,7	0	0	0	23	84,2	
16.02.2025	18:34:32	67,2	0	211,4	0	0	21	26	75,9	
16.02.2025	18:35:32	63,5	94	203,4	0	0	81	38	80,7	
16.02.2025	18:36:32	61,5	100	195	60,84	80	100	38	80,5	
16.02.2025	18:37:32	60,3	100	205,1	69,12	80	100	43	77,3	
16.02.2025	18:38:32	60,9	100	259,2	72,75	80	100	52	79,3	
16.02.2025	18:39:32	61,5	100	376,3	69,48	80	100	53	80,1	
16.02.2025	18:40:32	63	90	542,2	52,29	80	98	52	80,3	
16.02.2025	18:41:32	65,6	82	680,9	36,39	80	93	52	81,3	
16.02.2025	18:42:32	68,8	70	746,3	23,55	80	82	53	79,1	
16.02.2025	18:43:32	71,4	58	732,9	19,56	80	70	52	80,9	
16.02.2025	18:44:32	73,2	50	706,8	19,08	80	59	51	81,1	
16.02.2025	18:45:32	74,5	42	679,2	19,11	80	52	52	80,1	
16.02.2025	18:46:32	75,7	38	657,5	19,83	80	48	50	82,4	
16.02.2025	18:47:32	76,3	34	631,6	21,36	80	44	47	82,1	
16.02.2025	18:48:32	76,7	30	619,6	21,93	81	41	44	82,1	
16.02.2025	18:49:32	77,4	30	612,9	22,86	81	41	42	80,4	
16.02.2025	18:50:32	77,8	30	611,4	23,4	81	41	40	82,8	
16.02.2025	18:51:32	78,5	0	612,7	0	0	36	38	81,1	
16.02.2025	18:52:32	79,2	0	589,6	0	0	31	38	80,7	
16.02.2025	18:53:32	79,7	0	546,5	0	0	27	37	79,9	
16.02.2025	18:54:32	78,9	0	498,4	0	0	23	38	79,9	
16.02.2025	18:55:32	77	0	452,8	0	0	18	36	81	
16.02.2025	18:56:32	74,9	0	414,6	0	0	14	28	80,9	
16.02.2025	18:57:32	73,1	0	380,7	0	0	11	27	81,4	
16.02.2025	18:58:32	71,4	0	352,5	0	0	11	27	80,2	
16.02.2025	18:59:32	70	0	328,4	0	0	11	27	81,5	
16.02.2025	19:00:32	68,5	0	307,4	0	0	0	23	83,2	

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16.02.2025	19:01:32	67	0	290,3	0	0	16	31	77,9
16.02.2025	19:02:32	65,7	0	273,7	0	0	16	31	82,8
16.02.2025	19:03:32	64,5	0	259	0	0	16	30	82,5
16.02.2025	19:04:32	63,4	0	245,8	0	0	16	32	79
16.02.2025	19:05:32	62,5	0	233,9	0	0	16	31	81,2
16.02.2025	19:06:32	61,6	0	223,2	0	0	16	32	81,4
16.02.2025	19:07:32	61,4	0	212,9	0	0	16	32	79,8
16.02.2025	19:08:32	61,6	0	203,8	0	0	26	28	84,9
16.02.2025	19:09:32	62	94	194,7	0	0	85	38	79,6
16.02.2025	19:10:32	62,5	94	185,1	55,44	80	98	39	81,8
16.02.2025	19:11:32	63,2	90	193,1	60,21	80	98	41	77,1
16.02.2025	19:12:32	64,3	86	238,4	61,53	80	98	48	78,8
16.02.2025	19:13:32	66,5	78	338	54,6	80	89	52	81,7
16.02.2025	19:14:32	68,9	70	488,3	41,97	80	82	52	79,7
16.02.2025	19:15:32	69,5	66	608	31,98	80	78	52	80,9
16.02.2025	19:16:32	69,2	66	663,6	28,35	80	78	51	81,3
16.02.2025	19:17:32	69,5	66	690,4	26,7	80	78	50	81,4
16.02.2025	19:18:32	69,1	66	689,1	27,42	80	78	47	82,2
16.02.2025	19:19:32	68,4	70	679,8	30,84	80	82	48	80,8
16.02.2025	19:20:32	68	74	670,9	34,56	80	86	48	80,3
16.02.2025	19:21:32	67,6	78	670	38,07	80	89	53	79,2
16.02.2025	19:22:32	67,6	78	690,8	37,41	80	89	52	79,5
16.02.2025	19:23:32	67,8	78	711,4	36,36	80	89	52	82,4
16.02.2025	19:24:32	69	70	741,4	29,94	80	82	51	82
16.02.2025	19:25:32	71	62	741	26,34	80	74	50	80,3
16.02.2025	19:26:32	73	50	733,7	22,59	80	59	48	79,8
16.02.2025	19:27:32	74	46	728	21,15	80	55	48	79,7
16.02.2025	19:28:32	73,3	50	704,2	23,97	80	59	48	79,8
16.02.2025	19:29:32	72,1	54	682,5	27,12	80	68	48	80,4
16.02.2025	19:30:32	71,1	58	668,4	30,24	80	70	47	80,6
16.02.2025	19:31:32	70,3	62	669,1	32,4	80	74	48	80,4
16.02.2025	19:32:32	70	62	686,3	31,44	80	74	47	82,1
16.02.2025	19:33:32	70,1	62	701	30,45	80	74	48	80,3
16.02.2025	19:34:32	70,3	62	688,6	31,83	80	74	47	80,7
16.02.2025	19:35:32	70,3	58	674,9	32,1	80	70	47	82,9
16.02.2025	19:36:32	70,3	58	670,1	33,06	80	70	47	80,5
16.02.2025	19:37:32	70,4	58	685,6	32,13	80	70	48	80,4
16.02.2025	19:38:32	70,7	58	696,8	31,38	80	70	47	81
16.02.2025	19:39:32	71,3	54	696,3	30,15	80	68	48	80,3
16.02.2025	19:40:32	71,7	54	699,3	29,85	80	68	47	82,3
16.02.2025	19:41:32	72,2	50	698,2	28,53	80	59	47	81,9
16.02.2025	19:42:32	72,6	46	695,3	27,33	80	55	48	79,3
16.02.2025	19:43:32	73	42	696,1	25,8	80	52	47	81,7
16.02.2025	19:44:32	73,3	42	692,1	25,68	80	52	47	80,8
16.02.2025	19:45:32	73,2	42	681,1	26,28	80	52	47	81,7
16.02.2025	19:46:32	73,4	42	680,9	25,95	80	52	47	81
16.02.2025	19:47:32	73,8	42	681,6	25,59	80	52	47	80,6
16.02.2025	19:48:32	73,6	38	672,8	25,08	80	48	47	80,9
16.02.2025	19:49:32	73,8	38	675,7	24,48	80	48	47	80,2
16.02.2025	19:50:32	73,4	38	682,1	23,52	80	48	47	81,2
16.02.2025	19:51:32	69,4	54	674,3	28,65	80	64	47	80,1
16.02.2025	19:52:32	65,6	70	668,5	36,18	80	82	47	79,9
16.02.2025	19:53:32	63,4	82	666,9	43,95	80	93	52	81
16.02.2025	19:54:32	62,4	86	684,7	46,56	80	98	51	82,3
16.02.2025	19:55:32	63,3	82	718,8	41,88	80	93	53	78,6
16.02.2025	19:56:32	65,8	74	739,6	35,88	80	86	51	82,4
16.02.2025	19:57:32	68,6	62	742,4	30,06	80	74	49	82,6
16.02.2025	19:58:32	70,9	54	739	27	80	68	48	79,8
16.02.2025	19:59:32	73,1	38	732,1	22,23	80	48	47	81
16.02.2025	20:00:32	75,1	30	716,9	20,79	81	41	44	84,2

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16.02.2025	20:01:32	77	30	692,3	22,05	81	41	37	81,6	
16.02.2025	20:02:32	77,5	30	675,4	22,86	81	41	37	81,9	
16.02.2025	20:03:32	76,5	34	658,8	24,69	80	44	37	82,2	
16.02.2025	20:04:32	75,3	38	651,2	26,19	80	48	41	79,9	
16.02.2025	20:05:32	74,4	42	652,2	27,24	80	52	43	78,9	
16.02.2025	20:06:32	73,6	46	667,3	27,03	80	55	46	80,1	
16.02.2025	20:07:32	73,2	42	680,8	24,78	80	52	48	79,8	
16.02.2025	20:08:32	73	42	690,7	23,52	80	52	47	80,3	
16.02.2025	20:09:32	72,8	46	710,9	22,29	80	55	47	80,3	
16.02.2025	20:10:32	73	42	712	20,49	80	52	46	81,3	
16.02.2025	20:11:32	73	42	693,2	21,6	80	52	46	79,6	
16.02.2025	20:12:32	73,1	42	679,4	22,5	80	52	45	81,5	
16.02.2025	20:13:32	73,4	38	669,2	22,23	80	48	43	82,4	
16.02.2025	20:14:32	73,4	38	661,8	22,71	80	48	43	80,3	
16.02.2025	20:15:32	73,7	38	661,6	22,56	80	48	44	78,7	
16.02.2025	20:16:32	74	34	662,4	21,42	80	44	43	80,4	
16.02.2025	20:17:32	74,2	34	652,3	22,11	80	44	41	81,2	
16.02.2025	20:18:32	74,4	30	649,8	21,42	81	41	40	82,4	
16.02.2025	20:19:32	74,5	30	630,9	23,01	81	41	37	81,8	
16.02.2025	20:20:32	74,7	30	608,9	25,29	81	41	38	79,3	
16.02.2025	20:21:32	74,6	30	598,9	26,7	81	41	38	78,4	
16.02.2025	20:22:32	74,6	30	598,6	27,3	81	41	38	79,4	
16.02.2025	20:23:32	74,7	30	611,1	26,7	81	41	38	79,1	
16.02.2025	20:24:32	75	30	632,9	24,96	81	41	38	80	
16.02.2025	20:25:32	75,4	30	645,1	23,82	81	41	38	79,7	
16.02.2025	20:26:32	75,6	30	656,3	22,68	81	41	38	78,7	
16.02.2025	20:27:32	76,1	30	662,8	21,84	81	41	38	79,1	
16.02.2025	20:28:32	76,1	30	669,3	20,82	81	41	38	80,5	
16.02.2025	20:29:32	76,4	30	666,2	20,7	81	41	37	80,4	
16.02.2025	20:30:32	76,6	30	657,5	21,12	81	41	38	80,2	
16.02.2025	20:31:32	76,6	30	645,5	22,08	81	41	37	82,3	
16.02.2025	20:32:32	76,5	30	635,6	22,95	81	41	37	81,4	
16.02.2025	20:33:32	76,6	30	629,7	23,52	81	41	38	79,4	
16.02.2025	20:34:32	76,6	30	634,8	23,07	81	41	37	81,4	
16.02.2025	20:35:32	76,6	30	640,8	22,53	81	41	38	80,7	
16.02.2025	20:36:32	76,6	30	651,2	21,54	81	41	38	80,7	
16.02.2025	20:37:32	76,5	30	648,4	21,66	81	41	37	82	
16.02.2025	20:38:32	76,5	30	647,5	21,72	81	41	38	78,7	
16.02.2025	20:39:32	76,5	30	644,6	21,96	81	41	39	77,3	
16.02.2025	20:40:32	76,3	30	642,7	22,11	81	41	37	80,5	
16.02.2025	20:41:32	76,4	30	645,2	21,87	81	41	37	83,3	
16.02.2025	20:42:32	76,3	30	646,4	21,75	81	41	38	78,2	
16.02.2025	20:43:32	76,2	30	643,3	22,02	81	41	38	79,4	
16.02.2025	20:44:32	76,1	30	635,5	22,71	81	41	37	80,6	
16.02.2025	20:45:32	76,1	30	634,1	22,83	81	41	37	81	
16.02.2025	20:46:32	77	30	638,2	22,47	81	41	38	80,1	
16.02.2025	20:47:32	78	0	641,8	0	0	40	38	79,1	
16.02.2025	20:48:32	79,1	0	629,8	0	0	35	37	82,6	
16.02.2025	20:49:32	79,8	0	596,5	0	0	30	37	80,2	
16.02.2025	20:50:32	79,6	0	547,8	0	0	26	36	81,4	
16.02.2025	20:51:32	78,2	0	501	0	0	22	33	81,6	
16.02.2025	20:52:32	76,5	0	457,8	0	0	17	31	81,1	
16.02.2025	20:53:32	74,9	0	418,5	0	0	13	27	81	
16.02.2025	20:54:32	73,4	0	385,1	0	0	11	28	79,9	
16.02.2025	20:55:32	72,2	0	356,3	0	0	11	27	80	
16.02.2025	20:56:32	71,3	0	332	0	0	11	27	81,3	
16.02.2025	20:57:32	70,5	0	311,6	0	0	0	22	84,2	
16.02.2025	20:58:32	70,5	0	294,5	0	0	0	23	80,9	
16.02.2025	20:59:32	70,7	0	280	0	0	0	23	79,1	
16.02.2025	21:00:32	71	0	266,8	0	0	0	23	80,2	

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16.02.2025	21:01:32	71,3	0	254,7	0	0	0	0	22	81,1
16.02.2025	21:02:32	71,5	0	244	0	0	0	0	23	80,9
16.02.2025	21:03:32	71,8	0	234,6	0	0	0	0	23	79,7
16.02.2025	21:04:32	72,1	0	226,3	0	0	0	0	23	80,8
16.02.2025	21:05:32	72,4	0	218,7	0	0	0	0	23	86,2
16.02.2025	21:06:32	72,7	0	211,9	0	0	0	0	23	85,4
16.02.2025	21:07:32	73,2	0	205,6	0	0	0	0	23	86
16.02.2025	21:08:32	73,2	0	199,6	0	0	0	0	23	86,1
16.02.2025	21:09:32	72,2	0	194,3	0	0	0	0	23	85,5
16.02.2025	21:10:32	70,8	0	189,1	0	0	0	0	23	85,3
16.02.2025	21:11:32	69,5	0	184,5	0	0	0	0	23	85,4
16.02.2025	21:12:32	68,1	0	179,9	0	0	0	0	23	86,5
16.02.2025	21:13:32	67	78	175,4	0	0	0	66	37	77,9
16.02.2025	21:14:32	66	82	168,6	45,21	80	93	38	80,1	
16.02.2025	21:15:32	65,5	86	169,9	57,06	80	98	38	79,9	
16.02.2025	21:16:32	66	82	204,5	59,97	80	93	43	80,1	
16.02.2025	21:17:32	67,1	78	280,9	58,41	80	89	52	79,9	
16.02.2025	21:18:32	69,1	70	421,3	47,76	80	82	51	84,5	
16.02.2025	21:19:32	71,4	62	584,7	32,97	80	74	51	81,5	
16.02.2025	21:20:32	74	46	689,4	19,2	80	55	48	82,1	
16.02.2025	21:21:32	76,1	38	715,7	12,36	80	48	47	80,6	
16.02.2025	21:22:32	77,6	30	709,1	9,3	81	41	41	84,6	
16.02.2025	21:23:32	78,3	0	666,4	0	0	37	38	78,1	
16.02.2025	21:24:32	78,4	0	608,9	0	0	33	38	79,7	
16.02.2025	21:25:32	77,6	0	549	0	0	28	38	79,9	
16.02.2025	21:26:32	75,5	0	493,6	0	0	24	34	82,2	
16.02.2025	21:27:32	73,2	0	443,7	0	0	20	31	81,6	
16.02.2025	21:28:32	71,2	0	401	0	0	15	28	80,3	
16.02.2025	21:29:32	69,5	0	364,9	0	0	11	27	81,2	
16.02.2025	21:30:32	67,7	0	334,6	0	0	21	28	79,9	
16.02.2025	21:31:32	66,2	82	308	0	0	81	37	81,3	
16.02.2025	21:32:32	65	86	283	50,88	80	98	38	78,7	
16.02.2025	21:33:32	64,7	90	282,7	61,56	80	98	41	78,7	
16.02.2025	21:34:32	65,5	86	325,5	61,62	80	98	49	78,6	
16.02.2025	21:35:32	67	78	427,4	53,28	80	89	51	82,3	
16.02.2025	21:36:32	69,4	70	567,9	40,32	80	82	52	80,3	
16.02.2025	21:37:32	71,9	62	660,3	30,18	80	74	50	81,9	
16.02.2025	21:38:32	74,1	46	688,4	22,65	80	55	48	80,5	
16.02.2025	21:39:32	75,5	42	683,2	21,81	80	52	48	79,5	
16.02.2025	21:40:32	76,6	38	669,4	21,72	80	48	47	81,6	
16.02.2025	21:41:32	75,8	38	650,8	23,25	80	48	45	80,9	
16.02.2025	21:42:32	74	42	641,1	25,38	80	52	45	80,5	
16.02.2025	21:43:32	72,7	50	649	27,42	80	59	46	81,8	
16.02.2025	21:44:32	71,7	54	653,1	28,83	80	68	45	81,4	
16.02.2025	21:45:32	70,9	58	656,7	30,57	80	68	45	80,4	
16.02.2025	21:46:32	70,2	58	668,6	30,27	80	70	45	81,8	
16.02.2025	21:47:32	69,6	62	680,1	31,41	80	74	45	79,8	
16.02.2025	21:48:32	69,3	62	686,4	31,47	80	74	45	80,2	
16.02.2025	21:49:32	69	62	692,2	31,47	80	74	45	79,5	
16.02.2025	21:50:32	69,1	62	695,2	31,65	80	74	45	81	
16.02.2025	21:51:32	70,5	54	701,8	28,5	80	68	47	79,7	
16.02.2025	21:52:32	72,2	46	707,9	25,29	80	55	47	80,5	
16.02.2025	21:53:32	73,7	42	709,9	23,43	80	52	47	80,8	
16.02.2025	21:54:32	75,1	34	700	21,54	80	44	46	82,4	
16.02.2025	21:55:32	74,7	34	674,5	23,25	80	44	40	82,9	
16.02.2025	21:56:32	73,4	38	654,4	25,71	80	48	42	79,1	
16.02.2025	21:57:32	72,1	42	653,4	26,91	80	52	43	79,5	
16.02.2025	21:58:32	71,3	46	658	27,75	80	55	43	80,6	
16.02.2025	21:59:32	70,5	50	658,1	29,25	80	59	44	80,3	
16.02.2025	22:00:32	70	50	666,3	28,77	80	59	45	79,9	

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16.02.2025	22:01:32	69,8	54	676,4	29,37	80	68	45	79	
16.02.2025	22:02:32	69,8	54	681,6	29,19	80	68	47	79,8	
16.02.2025	22:03:32	69,8	54	695,4	28,17	80	68	47	81,4	
16.02.2025	22:04:32	70	50	708,3	25,71	80	59	47	81,9	
16.02.2025	22:05:32	70,1	46	700,9	24,72	80	55	47	80,5	
16.02.2025	22:06:32	70,1	46	694,2	24,93	80	55	48	79,7	
16.02.2025	22:07:32	70,2	46	680,8	25,98	80	55	46	81,1	
16.02.2025	22:08:32	70,2	46	672,2	26,64	80	55	46	81,9	
16.02.2025	22:09:32	70,1	46	663,5	27,48	80	55	45	81	
16.02.2025	22:10:32	70,1	46	665,1	27,45	80	55	44	80,6	
16.02.2025	22:11:32	70,3	46	672,4	26,79	80	55	44	79,1	
16.02.2025	22:12:32	70,5	46	693	24,81	80	55	45	80,1	
16.02.2025	22:13:32	70,8	46	709,6	22,86	80	55	44	80,7	
16.02.2025	22:14:32	71,1	38	710,1	19,98	80	48	43	81,5	
16.02.2025	22:15:32	71,2	38	702,3	19,89	80	48	43	80,4	
16.02.2025	22:16:32	71	38	692,2	20,13	80	48	42	81,1	
16.02.2025	22:17:32	71	38	680,6	20,67	80	48	42	82	
16.02.2025	22:18:32	70,9	42	669,6	22,47	80	52	42	81,9	
16.02.2025	22:19:32	70,6	42	664,4	22,92	80	52	42	80,5	
16.02.2025	22:20:32	70,6	42	663,2	23,01	80	52	42	81,7	
16.02.2025	22:21:32	70,5	42	664,9	22,83	80	52	42	80,5	
16.02.2025	22:22:32	70,5	42	647,8	24,45	80	52	43	79,6	
16.02.2025	22:23:32	70,3	38	635,8	24,63	80	48	42	80,5	
16.02.2025	22:24:32	70,1	38	630,1	25,41	80	48	42	81,7	
16.02.2025	22:25:32	70,1	38	630,8	25,68	80	48	43	79,4	
16.02.2025	22:26:32	70,1	38	634,2	25,65	80	48	42	81,8	
16.02.2025	22:27:32	70,2	38	639,1	25,41	80	48	43	80,1	
16.02.2025	22:28:32	70,3	38	647,1	24,81	80	48	43	80,2	
16.02.2025	22:29:32	70,4	38	648,6	24,63	80	48	42	80,2	
16.02.2025	22:30:32	70,3	38	649,1	24,54	80	48	44	79	
16.02.2025	22:31:32	70,4	38	656,3	23,85	80	48	42	82,1	
16.02.2025	22:32:32	70,6	34	658,4	22,65	80	44	42	79,3	
16.02.2025	22:33:32	70,6	34	655,1	22,83	80	44	39	80,6	
16.02.2025	22:34:32	70,7	34	645,5	23,58	80	44	37	81,1	
16.02.2025	22:35:32	70,5	34	639,3	24,09	80	44	37	81	
16.02.2025	22:36:32	70,4	34	635,9	24,54	80	44	38	80,3	
16.02.2025	22:37:32	70,6	34	635,5	24,69	80	44	38	81,1	
16.02.2025	22:38:32	70,4	34	645,1	23,88	80	44	37	81,6	
16.02.2025	22:39:32	70,6	34	655,3	22,89	80	44	39	77,7	
16.02.2025	22:40:32	70,8	34	652,9	23,07	80	44	38	80	
16.02.2025	22:41:32	70,9	30	642,5	23,16	81	41	37	81,9	
16.02.2025	22:42:32	70,6	30	634,7	23,79	81	41	37	80,8	
16.02.2025	22:43:32	70,7	30	633,8	23,82	81	41	37	81,6	
16.02.2025	22:44:32	70,6	30	635,2	23,73	81	41	38	77,4	
16.02.2025	22:45:32	70,7	30	642,8	23,01	81	41	38	80,9	
16.02.2025	22:46:32	70,7	30	644,7	22,77	81	41	37	81,5	
16.02.2025	22:47:32	70,8	30	641,4	23,04	81	41	36	83,1	
16.02.2025	22:48:32	70,9	30	647,5	22,44	81	41	37	83	
16.02.2025	22:49:32	71,2	30	650,7	22,11	81	41	37	81,4	
16.02.2025	22:50:32	71,2	30	653,2	21,69	81	41	38	79,4	
16.02.2025	22:51:32	71,1	30	653,1	21,45	81	41	37	81,1	
16.02.2025	22:52:32	71,1	30	648,6	21,72	81	41	37	81,3	
16.02.2025	22:53:32	71,1	30	637,9	22,65	81	41	38	79,7	
16.02.2025	22:54:32	71	30	638,6	22,59	81	41	37	81,5	
16.02.2025	22:55:32	71	30	647	21,81	81	41	38	78,8	
16.02.2025	22:56:32	71,2	30	651,1	21,39	81	41	37	80,6	
16.02.2025	22:57:32	71,3	30	667,1	19,68	81	41	38	79,8	
16.02.2025	22:58:32	71,6	30	684,5	17,55	81	41	37	80,5	
16.02.2025	22:59:32	71,6	30	676,4	17,67	81	41	37	81,8	
16.02.2025	23:00:32	71,7	30	669	17,85	81	41	38	80,5	

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16.02.2025	23:01:32	71,6	30	661,6	18,15	81	41	37	81,4	
16.02.2025	23:02:32	71,6	30	655,1	18,45	81	41	37	80,7	
16.02.2025	23:03:32	71,6	30	647,4	18,99	81	41	37	81,8	
16.02.2025	23:04:32	71,4	30	636,2	19,98	81	41	38	79,7	
16.02.2025	23:05:32	71,2	30	633,2	20,25	81	41	37	82,6	
16.02.2025	23:06:32	71,1	30	625,5	21	81	41	38	80,8	
16.02.2025	23:07:32	70,9	30	610,4	23,43	80	44	37	82,3	
16.02.2025	23:08:32	71,7	30	609	23,25	81	41	37	82,3	
16.02.2025	23:09:32	72,8	30	611,5	23,46	81	41	38	79,1	
16.02.2025	23:10:32	73,8	30	621	22,92	81	41	38	79,8	
16.02.2025	23:11:32	74,8	30	632,1	22,05	81	41	38	78,8	
16.02.2025	23:12:32	75,7	30	636,1	21,69	81	41	38	79,9	
16.02.2025	23:13:32	76	30	638,7	21,45	81	41	37	82	
16.02.2025	23:14:32	75,1	34	638,7	22,29	80	44	38	80,4	
16.02.2025	23:15:32	73,8	42	641,2	24,18	80	52	40	79,4	
16.02.2025	23:16:32	73,1	42	638,8	24,69	80	52	43	79,5	
16.02.2025	23:17:32	72,3	46	643,3	25,68	80	55	43	81,8	
16.02.2025	23:18:32	71,8	50	651,4	26,52	80	59	42	82,6	
16.02.2025	23:19:32	71,5	50	661,8	26,01	80	59	43	79,9	
16.02.2025	23:20:32	71,2	50	659,2	26,61	80	59	43	80,6	
16.02.2025	23:21:32	71	50	654,2	27,42	80	59	43	80,2	
16.02.2025	23:22:32	70,9	50	664,2	26,85	80	59	43	81	
16.02.2025	23:23:32	70,7	50	666,4	26,88	80	59	43	80,7	
16.02.2025	23:24:32	70,9	50	670,9	26,67	80	59	44	80,7	
16.02.2025	23:25:32	71,8	46	674,3	25,17	80	55	45	78,9	
16.02.2025	23:26:32	73,2	38	675,1	22,83	80	48	45	80	
16.02.2025	23:27:32	74,1	30	668,4	21,48	81	41	42	85,1	
16.02.2025	23:28:32	74,9	30	661	21,75	81	41	37	81,6	
16.02.2025	23:29:32	75,5	30	653,3	22,14	81	41	38	79,8	
16.02.2025	23:30:32	75,9	34	654,1	22,56	80	44	38	79,1	
16.02.2025	23:31:32	74,8	38	651,6	23,52	80	44	38	80,7	
16.02.2025	23:32:32	73,3	42	648,6	24,87	80	52	40	81,5	
16.02.2025	23:33:32	72,1	46	651,2	25,89	80	55	43	79,5	
16.02.2025	23:34:32	71	50	660,2	26,64	80	59	43	80,7	
16.02.2025	23:35:32	70,3	54	664,9	27,93	80	68	43	79,1	
16.02.2025	23:36:32	69,8	58	666,1	29,67	80	70	42	81,8	
16.02.2025	23:37:32	69,4	58	673,8	29,49	80	70	43	80,1	
16.02.2025	23:38:32	69,1	58	689,4	28,53	80	70	43	80	
16.02.2025	23:39:32	69,1	58	689,1	28,89	80	70	43	80,4	
16.02.2025	23:40:32	69,4	58	689,5	29,19	80	70	43	80,3	
16.02.2025	23:41:32	69,5	58	698,8	28,59	80	70	43	80,2	
16.02.2025	23:42:32	69,9	58	728,1	25,89	80	70	43	79,1	
16.02.2025	23:43:32	70,3	50	731,5	22,47	80	59	44	79,6	
16.02.2025	23:44:32	70,3	50	723,4	22,56	80	59	44	79,6	
16.02.2025	23:45:32	70,4	50	716,8	22,62	80	59	44	79	
16.02.2025	23:46:32	70,5	50	709,8	22,83	80	59	45	80,7	
16.02.2025	23:47:32	70,5	50	695	23,91	80	59	45	81	
16.02.2025	23:48:32	70,5	50	681,8	25,02	80	59	46	79,8	
16.02.2025	23:49:32	70,4	50	680,3	25,11	80	59	47	77,4	
16.02.2025	23:50:32	70,4	50	683,4	24,78	80	59	47	80,2	
16.02.2025	23:51:32	70,3	50	676,6	25,38	80	59	47	81,2	
16.02.2025	23:52:32	70,1	46	648,9	26,85	80	55	46	80,9	
16.02.2025	23:53:32	69,8	50	632,9	30,09	80	59	46	79,9	
16.02.2025	23:54:32	69,6	50	635,2	30,63	80	59	47	79,9	
16.02.2025	23:55:32	69,6	50	651,3	29,76	80	59	47	80,8	
16.02.2025	23:56:32	69,8	50	664,5	28,95	80	59	47	81,4	
16.02.2025	23:57:32	70,1	46	682,8	26,13	80	55	47	80,6	
16.02.2025	23:58:32	70,5	46	693,9	24,87	80	55	47	80,1	
16.02.2025	23:59:32	70,9	46	686,6	25,29	80	55	47	80,7	
17.02.2025	00:00:32	70,9	38	676,8	24,9	80	48	47	79,1	

Appendix 14

Date	Time	Boiler Tem	Modulator	Flame cha	Auger time	Pause time	Fan %	Suction Fa	under pressure pa
17.02.2024	00:02:32	71,2	38	668,9	24	80	48	47	81,7
17.02.2024	00:03:32	71,3	38	660,3	24,54	80	48	47	80,1
17.02.2024	00:04:32	71,3	38	655,5	24,75	80	48	47	80,8
17.02.2024	00:05:32	71,4	38	653,4	24,93	80	48	47	81,4
17.02.2024	00:06:32	71,4	38	655,8	24,57	80	48	47	80,8
17.02.2024	00:07:32	71,6	38	664,5	23,64	80	48	47	80,6
17.02.2024	00:08:32	71,9	34	662,5	22,77	80	44	46	80,5
17.02.2024	00:09:32	71,9	34	660,8	22,71	80	41	37	84,4
17.02.2024	00:10:32	71,9	34	654,6	23,07	80	44	38	80,6
17.02.2024	00:11:32	72,1	30	649,3	22,62	81	41	38	79,6
17.02.2024	00:12:32	72,1	30	643,6	22,95	81	41	38	80,2
17.02.2024	00:13:32	72,3	30	641,9	22,95	81	41	38	80,8
17.02.2024	00:14:32	72,4	30	647,7	22,32	81	41	38	79,9
17.02.2024	00:15:32	72,5	30	650,2	21,99	81	41	37	81
17.02.2024	00:16:32	72,6	30	650	21,87	81	41	37	80,9
17.02.2024	00:17:32	72,7	30	647,5	22,02	81	41	37	81,5
17.02.2024	00:18:32	72,7	30	642,3	22,41	81	41	37	80,8
17.02.2024	00:19:32	72,7	30	639,1	22,65	81	41	38	78,7
17.02.2024	00:20:32	72,5	30	633,7	23,1	81	41	37	80,5
17.02.2024	00:21:32	72,5	30	632,7	23,19	81	41	37	81,5
17.02.2024	00:22:32	72,5	30	631,1	23,34	81	41	37	81,7
17.02.2024	00:23:32	72,7	30	642,1	22,32	81	41	37	80,3
17.02.2024	00:24:32	72,6	30	653	21,27	81	41	38	79,5
17.02.2024	00:25:32	72,8	30	657,2	20,64	81	41	38	79,9
17.02.2024	00:26:32	72,9	30	661,5	20,01	81	41	37	81,1
17.02.2024	00:27:32	73	30	680	17,88	81	41	37	80
17.02.2024	00:28:32	73,2	30	688,3	16,47	81	41	36	84
17.02.2024	00:29:32	73,4	30	680,5	16,53	81	41	37	81,1
17.02.2024	00:30:32	73,2	30	668,2	17,1	81	41	38	78,6
17.02.2024	00:31:32	73,2	30	661,1	17,4	81	41	38	79,9
17.02.2024	00:32:32	73,2	30	655,7	17,58	81	41	37	81,6
17.02.2024	00:33:32	73	30	644,3	18,51	81	41	37	80,5
17.02.2024	00:34:32	72,9	34	633,3	20,28	80	44	38	80
17.02.2024	00:35:32	72,9	30	629,4	20,67	80	41	37	81,9
17.02.2024	00:36:32	72,7	34	623,2	21,48	80	44	38	81,7
17.02.2024	00:37:32	72,3	34	609,4	23,16	80	44	38	80,1
17.02.2024	00:38:32	68,5	50	604,6	28,53	80	55	38	81
17.02.2024	00:39:32	63	74	610,8	39,09	80	86	43	78,7
17.02.2024	00:40:32	60,9	82	629,5	44,04	80	93	52	80,5
17.02.2024	00:41:32	61,3	86	664,9	45,45	80	98	52	81,5
17.02.2024	00:42:32	62,2	86	709,5	42,81	80	98	52	82,2
17.02.2024	00:43:32	62,9	86	737,3	41,13	80	98	52	79,4
17.02.2024	00:44:32	63,5	82	750,8	37,53	80	93	52	79,6
17.02.2024	00:45:32	65,4	74	753,3	32,85	80	86	50	82
17.02.2024	00:46:32	68,3	62	743	28,17	80	74	50	81,5
17.02.2024	00:47:32	71,2	50	735,2	24,3	80	59	47	80,8
17.02.2024	00:48:32	73,4	38	719	21,69	80	48	47	80,5
17.02.2024	00:49:32	75,5	30	700,2	20,73	81	41	42	85,3
17.02.2024	00:50:32	77,2	30	680,5	21,69	81	41	37	81
17.02.2024	00:51:32	78	0	661	0	0	40	38	79,4
17.02.2024	00:52:32	75,7	0	632,3	0	0	33	37	81
17.02.2024	00:53:32	72,7	0	586,7	0	0	29	37	80,1
17.02.2024	00:54:32	69,7	0	531,6	0	0	24	35	81,9
17.02.2024	00:55:32	67,4	0	481,1	0	0	35	34	78,2
17.02.2024	00:56:32	65,6	82	436,1	0	0	93	37	80,8
17.02.2024	00:57:32	64,5	90	399,8	56,16	80	98	38	80,5
17.02.2024	00:58:32	63,9	94	399,9	65,37	80	98	48	80,1
17.02.2024	00:59:32	64,3	90	452,7	62,64	80	98	52	80,3
17.02.2024	01:00:32	65,8	86	569,1	53,07	80	98	52	80,5

Appendix 14

17.02.2021	01:01:32	67,9	78	691,5	38,82	80	89	52	80,5	
17.02.2021	01:02:32	69,9	70	754,9	29,28	80	82	51	80,8	
17.02.2021	01:03:32	71,6	62	765,2	24,36	80	74	49	82,6	
17.02.2021	01:04:32	72,7	54	736,7	23,43	80	68	48	80,8	
17.02.2021	01:05:32	73,2	50	718,1	23,43	80	59	47	80,6	
17.02.2021	01:06:32	74	46	697	23,79	80	55	48	79,9	
17.02.2021	01:07:32	74,4	46	686,4	24,48	80	55	48	79,9	
17.02.2021	01:08:32	74,7	46	677,8	25,17	80	55	47	81,2	
17.02.2021	01:09:32	75	38	671,1	23,55	80	48	48	79,5	
17.02.2021	01:10:32	75,3	38	673,7	23,01	80	48	47	80,5	
17.02.2021	01:11:32	75,7	38	676,6	22,5	80	48	47	80,8	
17.02.2021	01:12:32	75,8	38	670,1	22,83	80	48	47	80,8	
17.02.2021	01:13:32	75,7	34	652,4	23,31	80	44	44	82,6	
17.02.2021	01:14:32	75,7	34	642,3	24,18	80	44	42	80,8	
17.02.2021	01:15:32	75,6	34	642,7	24,18	80	44	42	80,8	
17.02.2021	01:16:32	75,8	34	665,9	21,96	80	44	42	81,3	
17.02.2021	01:17:32	76,2	30	678,6	19,59	81	41	37	82,2	
17.02.2021	01:18:32	76,3	30	680,8	18,78	81	41	37	81,6	
17.02.2021	01:19:32	76,5	30	664,8	19,71	81	41	38	79,4	
17.02.2021	01:20:32	76,4	30	652,1	20,64	81	41	38	78,9	
17.02.2021	01:21:32	76,3	30	648,7	20,82	81	41	37	79,9	
17.02.2021	01:22:32	76,5	30	649,4	20,64	81	41	38	80,9	
17.02.2021	01:23:32	76,5	30	651,6	20,37	81	41	37	81,6	
17.02.2021	01:24:32	76,7	30	654,5	19,98	81	41	38	79,5	
17.02.2021	01:25:32	76,8	30	651,5	20,04	81	41	37	80,4	
17.02.2021	01:26:32	76,6	30	630,2	21,93	81	41	38	80,9	
17.02.2021	01:27:32	76,5	30	615,8	23,46	81	41	37	80	
17.02.2021	01:28:32	76,3	30	614,2	23,97	81	41	37	82,1	
17.02.2021	01:29:32	76,1	30	612,1	24,51	81	41	37	81,9	
17.02.2021	01:30:32	76	30	614,8	24,66	81	41	37	80,2	
17.02.2021	01:31:32	76,2	30	628,2	23,73	81	41	38	80	
17.02.2021	01:32:32	76,1	30	641,1	22,56	81	41	37	81,2	
17.02.2021	01:33:32	76,2	30	648,2	21,9	81	41	37	81,2	
17.02.2021	01:34:32	76,2	30	655,8	21,03	81	41	38	79,8	
17.02.2021	01:35:32	76,1	30	656	20,76	81	41	38	79,5	
17.02.2021	01:36:32	76,1	30	651,4	20,97	81	41	38	79,4	
17.02.2021	01:37:32	76	30	644,8	21,51	81	41	37	80,4	
17.02.2021	01:38:32	76,1	30	645,2	21,45	81	41	38	78,7	
17.02.2021	01:39:32	77,3	30	644,2	21,51	81	41	38	79,9	
17.02.2021	01:40:32	78,3	0	644,8	0	0	40	38	79,3	
17.02.2021	01:41:32	79,1	0	621,8	0	0	33	37	81,6	
17.02.2021	01:42:32	79,6	0	572,5	0	0	29	37	80,4	
17.02.2021	01:43:32	79,6	0	519,8	0	0	25	36	81,7	
17.02.2021	01:44:32	78,3	0	469,6	0	0	21	32	80,5	
17.02.2021	01:45:32	76,6	0	426,6	0	0	16	29	84,7	
17.02.2021	01:46:32	74,8	0	390,2	0	0	12	27	80,1	
17.02.2021	01:47:32	73,2	0	359,5	0	0	11	28	80,8	
17.02.2021	01:48:32	71,8	0	333,3	0	0	11	28	80,4	
17.02.2021	01:49:32	70,5	0	310,9	0	0	0	23	85,1	
17.02.2021	01:50:32	69,5	0	292,9	0	0	0	22	80	
17.02.2021	01:51:32	68,5	0	277,2	0	0	0	23	80	
17.02.2021	01:52:32	67,8	0	263,6	0	0	36	34	74,2	
17.02.2021	01:53:32	67,9	78	249,7	0	0	89	37	81,4	
17.02.2021	01:54:32	68,2	74	237,1	45,3	80	86	38	80,9	
17.02.2021	01:55:32	68,7	74	251,4	51,45	80	86	37	82	
17.02.2021	01:56:32	67,2	78	314,1	54,96	80	89	45	77,2	
17.02.2021	01:57:32	66	82	437	52,08	80	93	52	80,6	
17.02.2021	01:58:32	64,9	90	585,4	48,57	80	98	52	83,7	
17.02.2021	01:59:32	62,8	100	674,5	50,34	80	100	52	81,1	
17.02.2021	02:00:32	60,8	100	729,3	47,01	80	100	52	80,2	

Appendix 15**Raw data**

PE 56 Cat I_250305.DAT

Category: I run 1

Configuration file: C:\Datainsamling\Konfiguration\EPA pellematic_220321.KONF

Saved: 2025-03-05 07:46

In plain text: 2025-03-05 07:46

	301	302	304	305	306	308	317	1311	1313	1314	1315	1316	1317	1318	1319	1320	1101	1103
Measurement time	CO chimney	CO2 chimney	Pdyn	Pstat	Static pressure chimney	O2 chimney	Scale	Flue gas temp	Flue gas at pitot	filter temp 1	filter temp 2	gas meter temp 1	gas meter temp 2	gasmeter 1hr	Gas meter ambient	Filter temp 1 hr	Ambient temperature	T4 outlet load side
Minutes	VDC	VDC	VDC	VDC	VDC	VDC	VDC	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
0,250	0,209	0,634	0,982	0,090	-0,700	0,316	0,879	73,488	22,528	19,753	19,424	19,489	19,671	19,573	19,397	19,499	19,466	55,424
0,750	0,207	0,640	0,984	0,270	0,601	0,315	0,879	73,438	22,531	19,754	19,422	19,496	19,670	19,564	19,386	19,495	19,460	55,404
1,277	0,207	0,638	0,979	0,094	-0,010	0,317	0,878	73,336	22,487	19,754	19,420	19,526	19,670	19,562	19,390	19,500	19,465	55,400
1,788	0,207	0,633	0,979	0,102	0,766	0,322	0,877	73,219	22,459	19,753	19,432	19,524	19,670	19,574	19,404	19,502	19,475	55,386
2,347	0,207	0,629	0,972	0,164	-0,011	0,321	0,877	73,181	22,487	19,760	19,438	19,515	19,685	19,577	19,398	19,483	19,475	55,377
2,750	0,207	0,635	0,980	0,062	-0,687	0,319	0,877	73,214	22,491	19,760	19,449	19,536	19,687	19,580	19,416	19,506	19,483	55,383
3,285	0,207	0,636	0,971	0,146	-0,617	0,316	0,877	73,044	22,413	19,749	19,442	19,502	19,681	19,570	19,396	19,497	19,481	55,364
3,750	0,208	0,635	0,974	0,148	0,556	0,317	0,877	72,984	22,412	19,752	19,453	19,517	19,678	19,574	19,407	19,510	19,479	55,346
4,250	0,208	0,644	0,975	0,064	0,603	0,309	0,877	72,861	22,394	19,746	19,442	19,517	19,680	19,564	19,387	19,491	19,478	55,326
4,750	0,208	0,642	0,974	0,075	-0,010	0,315	0,877	72,774	22,402	19,742	19,432	19,504	19,679	19,559	19,400	19,491	19,480	54,884
5,250	0,208	0,639	0,971	0,045	0,724	0,313	0,877	72,842	22,394	19,731	19,439	19,511	19,681	19,562	19,383	19,481	19,472	54,555
5,750	0,208	0,650	0,972	0,125	-0,620	0,303	0,876	72,767	22,373	19,740	19,440	19,523	19,687	19,578	19,391	19,495	19,483	55,389
6,250	0,208	0,654	0,974	0,083	-0,011	0,305	0,876	72,674	22,376	19,742	19,445	19,533	19,695	19,570	19,399	19,497	19,481	56,402
6,750	0,209	0,643	0,976	0,108	-0,553	0,313	0,876	72,656	22,359	19,730	19,438	19,501	19,680	19,567	19,391	19,493	19,480	57,052
7,250	0,209	0,644	0,978	0,124	-0,605	0,309	0,876	72,607	22,373	19,742	19,439	19,516	19,695	19,563	19,398	19,492	19,483	57,339
7,750	0,210	0,644	0,972	0,060	-0,330	0,312	0,876	72,527	22,361	19,744	19,445	19,522	19,699	19,574	19,401	19,496	19,487	57,292
8,250	0,210	0,638	0,978	0,043	0,549	0,317	0,875	72,448	22,377	19,740	19,462	19,519	19,692	19,581	19,407	19,507	19,496	57,250
8,750	0,211	0,637	0,969	-0,010	-0,549	0,316	0,874	72,389	22,366	19,734	19,455	19,515	19,697	19,584	19,407	19,509	19,500	57,228
9,250	0,212	0,642	0,971	0,032	-0,010	0,312	0,875	72,346	22,344	19,748	19,458	19,555	19,716	19,589	19,407	19,509	19,500	57,211
9,750	0,213	0,638	0,975	0,017	-0,011	0,318	0,874	72,288	22,276	19,737	19,445	19,520	19,697	19,580	19,407	19,509	19,498	57,198
10,250	0,213	0,634	0,972	0,056	0,664	0,320	0,874	72,298	22,361	19,737	19,443	19,525	19,697	19,579	19,401	19,496	19,499	57,195
10,750	0,212	0,633	0,974	0,005	-0,027	0,321	0,874	72,185	22,349	19,723	19,448	19,526	19,697	19,560	19,399	19,499	19,493	57,180
11,250	0,215	0,630	0,976	0,066	-0,010	0,322	0,874	72,182	22,329	19,738	19,453	19,549	19,708	19,582	19,409	19,509	19,503	57,179
11,750	0,213	0,636	0,972	0,055	-0,028	0,316	0,874	72,140	22,329	19,730	19,451	19,554	19,700	19,579	19,420	19,502	19,505	57,148
12,250	0,213	0,638	0,974	0,009	-0,010	0,317	0,874	72,088	22,309	19,732	19,440	19,519	19,696	19,581	19,409	19,506	19,506	57,124
12,750	0,212	0,637	0,970	0,081	0,092	0,314	0,873	72,106	22,323	19,729	19,447	19,532	19,711	19,573	19,402	19,492	19,503	57,104
13,250	0,211	0,646	0,973	-0,004	-0,010	0,308	0,873	71,983	22,293	19,718	19,445	19,529	19,699	19,573	19,402	19,489	19,502	57,085
13,750	0,211	0,643	0,970	0,073	-0,011	0,315	0,873	72,001	22,370	19,713	19,451	19,526	19,696	19,582	19,407	19,501	19,507	57,089
14,250	0,211	0,633	0,975	-0,079	-0,783	0,318	0,873	72,009	22,310	19,722	19,455	19,533	19,698	19,588	19,408	19,488	19,508	57,062
14,750	0,211	0,641	0,969	-0,108	-0,011	0,313	0,873	71,894	22,349	19,717	19,455	19,518	19,709	19,577	19,413	19,492	19,508	57,036

PE 56 Cat I_250305.DAT

Category: I run 1

	1104	1105	1107	130	230	101	102	1	2	3	6	7	8	11	
Measure- ment time	T3 inlet load side	T2 inlet boiler	T1 outlet boiler	Flow load side	Flow boiler side	Heat output load side	Heat output boiler	CO chimney	CO2 chimney	O2 chimney	Pstat	Pdyn	Tunnel velocity	Våg	Time
Minutes	°C	°C	°C	m³/h	m³/h	W	W	ppm	%	%	Pa	Pa	m/s	kg	Clock
0,250	39,061	55,799	71,976	2,081	2,065	39263,273	38282,277	60,667	10,895	9,482	3,616	39,180	8,081	29,968	2025-03-05 09:31
0,750	39,059	55,786	71,959	0,429	0,437	8073,054	8095,099	51,036	10,983	9,445	10,802	39,485	8,112	29,968	2025-03-05 09:31
1,277	39,070	55,775	71,918	0,428	0,437	8061,906	8083,363	52,933	10,911	9,511	3,746	39,232	8,086	29,843	2025-03-05 09:32
1,788	39,067	55,756	71,910	0,428	0,437	8053,845	8085,759	54,594	10,748	9,671	4,064	39,139	8,077	29,843	2025-03-05 09:32
2,347	39,066	55,744	71,901	0,429	0,437	8058,569	8084,622	53,527	10,744	9,618	6,571	39,097	8,072	29,843	2025-03-05 09:33
2,750	39,074	55,739	71,845	0,428	0,438	8048,837	8073,844	52,492	10,875	9,562	2,468	39,272	8,090	29,843	2025-03-05 09:33
3,285	39,075	55,725	71,835	0,428	0,436	8040,303	8054,163	55,024	10,922	9,488	5,832	38,850	8,047	29,843	2025-03-05 09:34
3,750	39,081	55,721	71,816	0,428	0,437	8031,592	8061,328	55,831	10,853	9,500	5,915	39,088	8,071	29,843	2025-03-05 09:34
4,250	39,100	55,701	71,782	0,428	0,437	8008,915	8052,287	57,307	11,181	9,258	2,553	38,957	8,058	29,843	2025-03-05 09:35
4,750	39,114	55,709	71,771	0,428	0,438	7784,683	8054,143	60,677	10,970	9,456	2,983	38,955	8,058	29,749	2025-03-05 09:35
5,250	39,126	55,848	71,715	0,429	0,437	7622,986	7951,254	61,077	10,978	9,379	1,802	38,828	8,044	29,749	2025-03-05 09:36
5,750	39,150	56,146	71,726	0,428	0,438	8016,032	7808,497	53,339	11,348	9,085	5,019	38,936	8,056	29,749	2025-03-05 09:36
6,250	39,160	56,016	71,707	0,428	0,437	8507,873	7861,669	60,643	11,318	9,163	3,301	39,137	8,076	29,749	2025-03-05 09:37
6,750	39,164	55,485	71,684	0,428	0,437	8828,719	8110,987	67,164	11,013	9,385	4,326	39,022	8,065	29,749	2025-03-05 09:37
7,250	39,171	54,837	71,661	0,428	0,436	8963,594	8402,689	64,822	11,140	9,278	4,951	39,092	8,072	29,749	2025-03-05 09:38
7,750	39,170	54,305	71,631	0,428	0,436	8938,886	8651,184	75,764	11,064	9,373	2,410	38,917	8,054	29,749	2025-03-05 09:38
8,250	39,164	54,032	71,605	0,428	0,436	8921,524	8774,212	73,252	10,905	9,504	1,733	39,081	8,071	29,655	2025-03-05 09:39
8,750	39,184	53,906	71,598	0,428	0,435	8897,622	8830,386	76,597	10,920	9,476	-0,391	38,810	8,043	29,656	2025-03-05 09:39
9,250	39,186	53,834	71,584	0,428	0,435	8893,398	8851,217	82,702	11,086	9,368	1,279	38,900	8,052	29,656	2025-03-05 09:40
9,750	39,187	53,782	71,541	0,428	0,435	8877,414	8861,990	90,884	10,861	9,540	0,677	39,044	8,067	29,655	2025-03-05 09:40
10,250	39,190	53,759	71,504	0,428	0,435	8884,753	8851,877	87,101	10,842	9,589	2,247	38,787	8,040	29,655	2025-03-05 09:41
10,750	39,196	53,735	71,486	0,428	0,435	8879,610	8853,965	87,219	10,830	9,644	0,214	38,982	8,060	29,656	2025-03-05 09:41
11,250	39,204	53,725	71,434	0,428	0,435	8874,108	8835,746	98,851	10,782	9,649	2,656	39,054	8,068	29,655	2025-03-05 09:42
11,750	39,192	53,706	71,404	0,428	0,436	8856,674	8839,390	92,153	10,960	9,481	2,207	38,943	8,056	29,655	2025-03-05 09:42
12,250	39,185	53,686	71,344	0,428	0,435	8855,678	8810,800	85,829	10,967	9,496	0,345	38,984	8,061	29,562	2025-03-05 09:43
12,750	39,196	53,661	71,290	0,429	0,435	8847,764	8786,185	82,285	10,940	9,431	3,240	38,885	8,050	29,564	2025-03-05 09:43
13,250	39,226	53,646	71,239	0,429	0,435	8823,530	8776,472	75,975	11,180	9,248	-0,149	38,957	8,058	29,562	2025-03-05 09:44
13,750	39,269	53,629	71,181	0,429	0,435	8804,591	8759,999	76,368	11,010	9,454	2,920	38,798	8,041	29,562	2025-03-05 09:44
14,250	39,299	53,618	71,090	0,429	0,435	8772,971	8723,276	80,395	10,796	9,553	-3,140	38,909	8,053	29,562	2025-03-05 09:45
14,750	39,324	53,617	71,060	0,428	0,435	8738,968	8707,831	72,630	11,059	9,380	-4,313	38,932	8,055	29,562	2025-03-05 09:45

PE 56 Cat I_250305.DAT

Category: I run 1

	301	302	304	305	306	308	317	1311	1313	1314	1315	1316	1317	1318	1319	1320	1101	1103
Measure- ment time	CO chimney	CO2 chimney	Pdyn	Pstat	Static pressure chimney	O2 chimney	Scale	Flue gas temp	Flue gas at pitot	filter temp 1	filter temp 2	gas meter temp 1	gas meter temp 2	gasmeter 1hr	Gas meter ambient	Filter temp 1 hr	Ambient temperature	T4 outlet load side
Minutes	VDC	VDC	VDC	VDC	VDC	VDC	VDC	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
15,250	0,210	0,637	0,977	0,032	-0,028	0,319	0,873	71,822	22,384	19,723	19,443	19,528	19,701	19,575	19,404	19,500	19,509	57,019
15,750	0,210	0,631	0,970	0,020	-0,010	0,321	0,873	71,890	22,339	19,726	19,456	19,545	19,702	19,575	19,413	19,501	19,508	57,001
16,250	0,209	0,637	0,974	0,011	-0,010	0,312	0,873	71,934	22,351	19,732	19,451	19,553	19,712	19,587	19,416	19,498	19,513	56,971
16,750	0,210	0,647	0,976	-0,008	0,741	0,309	0,872	71,949	22,268	19,720	19,453	19,546	19,717	19,576	19,422	19,498	19,513	56,939
17,250	0,209	0,649	0,980	0,054	-0,010	0,306	0,871	71,886	22,328	19,727	19,469	19,559	19,719	19,577	19,404	19,501	19,513	56,904
17,750	0,210	0,645	0,977	0,025	0,779	0,313	0,871	71,759	22,322	19,717	19,453	19,533	19,715	19,578	19,401	19,491	19,520	56,866
18,250	0,210	0,639	0,976	0,071	1,318	0,317	0,871	71,685	22,321	19,721	19,465	19,546	19,731	19,580	19,427	19,508	19,524	56,851
18,750	0,211	0,633	0,978	0,008	-0,011	0,321	0,871	71,669	22,261	19,725	19,461	19,563	19,713	19,588	19,425	19,501	19,524	56,807
19,250	0,210	0,632	0,980	-0,053	-0,229	0,318	0,871	71,600	22,253	19,727	19,458	19,573	19,721	19,580	19,422	19,501	19,521	56,770
19,750	0,210	0,642	0,983	0,096	-0,618	0,312	0,871	71,504	22,259	19,713	19,461	19,542	19,716	19,593	19,423	19,506	19,523	56,748
20,250	0,210	0,635	0,980	0,069	0,706	0,322	0,871	71,503	22,273	19,737	19,453	19,558	19,722	19,586	19,414	19,510	19,526	56,723
20,750	0,210	0,628	0,971	0,032	-0,763	0,324	0,870	71,490	22,249	19,718	19,440	19,540	19,717	19,578	19,412	19,493	19,520	56,698
21,250	0,210	0,623	0,973	0,051	-0,029	0,331	0,870	71,441	22,267	19,721	19,455	19,573	19,722	19,597	19,418	19,507	19,528	56,674
21,750	0,210	0,619	0,970	0,032	-0,010	0,330	0,870	71,409	22,266	19,703	19,448	19,552	19,716	19,584	19,411	19,500	19,526	56,658
22,250	0,210	0,624	0,970	0,082	0,613	0,326	0,870	71,403	22,282	19,718	19,464	19,576	19,730	19,591	19,415	19,512	19,535	56,633
22,750	0,211	0,627	0,971	0,110	-0,010	0,324	0,870	71,403	22,190	19,698	19,454	19,558	19,708	19,578	19,417	19,501	19,526	56,609
23,250	0,213	0,630	0,972	0,045	-0,010	0,322	0,870	71,457	22,291	19,711	19,463	19,577	19,724	19,580	19,423	19,505	19,532	56,586
23,750	0,211	0,629	0,975	0,040	0,652	0,320	0,869	71,512	22,244	19,696	19,456	19,565	19,726	19,574	19,414	19,504	19,525	56,538
24,250	0,210	0,638	0,974	-0,027	-0,733	0,313	0,869	71,443	22,253	19,701	19,459	19,535	19,721	19,574	19,405	19,498	19,528	56,492
24,750	0,210	0,641	0,968	-0,010	-0,028	0,313	0,869	71,311	22,239	19,718	19,455	19,554	19,730	19,592	19,415	19,498	19,532	56,478
25,250	0,210	0,637	0,976	-0,151	0,526	0,320	0,868	71,319	22,232	19,723	19,462	19,573	19,742	19,588	19,427	19,508	19,536	56,441
25,750	0,211	0,629	0,975	0,094	-0,787	0,323	0,867	71,254	22,207	19,722	19,462	19,558	19,721	19,583	19,424	19,505	19,534	56,409
26,250	0,211	0,627	0,973	0,071	0,731	0,326	0,868	71,252	22,190	19,710	19,458	19,567	19,727	19,592	19,436	19,513	19,536	56,369
26,750	0,210	0,625	0,975	0,076	-0,010	0,325	0,868	71,240	22,183	19,709	19,460	19,557	19,728	19,590	19,411	19,504	19,538	56,348
27,250	0,211	0,631	0,974	0,014	-0,029	0,320	0,868	71,259	22,245	19,707	19,456	19,557	19,723	19,585	19,428	19,509	19,538	56,316
27,750	0,210	0,632	0,974	0,027	-0,905	0,321	0,868	71,178	22,195	19,705	19,453	19,573	19,727	19,582	19,408	19,509	19,536	56,297
28,250	0,211	0,634	0,976	0,033	-0,010	0,316	0,867	71,185	22,217	19,710	19,450	19,556	19,720	19,579	19,418	19,499	19,534	56,243
28,750	0,213	0,640	0,974	0,076	-0,685	0,314	0,867	71,249	22,217	19,720	19,469	19,591	19,742	19,581	19,432	19,513	19,544	56,241
29,250	0,215	0,638	0,970	0,080	0,820	0,315	0,867	71,245	22,198	19,700	19,452	19,558	19,724	19,579	19,425	19,506	19,540	56,209
29,750	0,215	0,640	0,971	0,004	0,639	0,313	0,867	71,155	22,213	19,701	19,455	19,572	19,729	19,577	19,424	19,505	19,538	56,171
30,250	0,213	0,643	0,972	0,043	-0,011	0,311	0,867	71,098	22,232	19,703	19,457	19,574	19,719	19,585	19,413	19,485	19,541	56,143
30,750	0,212	0,639	0,974	0,070	-0,150	0,316	0,867	71,028	22,222	19,707	19,453	19,566	19,730	19,584	19,420	19,510	19,538	56,117
31,250	0,212	0,635	0,980	-0,013	0,713	0,318	0,867	71,056	22,295	19,696	19,460	19,547	19,720	19,584	19,420	19,504	19,538	56,083

PE 56 Cat I_250305.DAT

Category: I run 1

	1104	1105	1107	130	230	101	102	1	2	3	6	7	8	11	
Measure- ment time	T3 inlet load side	T2 inlet boiler	T1 outlet boiler	Flow load side	Flow boiler side	Heat output load side	Heat output boiler	CO chimney	CO2 chimney	O2 chimney	Pstat	Pdyn	Tunnel velocity	Våg	Time
Minutes	°C	°C	°C	m³/h	m³/h	W	W	ppm	%	%	Pa	Pa	m/s	kg	Clock
15,250	39,353	53,619	70,997	0,428	0,435	8720,717	8665,477	73,446	10,883	9,565	1,296	39,083	8,071	29,562	2025-03-05 09:46
15,750	39,371	53,600	70,944	0,429	0,435	8711,541	8657,829	72,414	10,755	9,633	0,782	38,802	8,042	29,562	2025-03-05 09:46
16,250	39,385	53,590	70,871	0,429	0,435	8684,263	8625,201	65,910	11,007	9,349	0,434	38,973	8,059	29,562	2025-03-05 09:47
16,750	39,389	53,563	70,842	0,428	0,435	8665,007	8623,359	70,086	11,160	9,256	-0,317	38,956	8,058	29,468	2025-03-05 09:47
17,250	39,399	53,554	70,760	0,428	0,435	8631,995	8587,027	61,296	11,261	9,186	2,168	39,072	8,070	29,468	2025-03-05 09:48
17,750	39,394	53,535	70,729	0,429	0,435	8629,443	8575,094	74,721	11,045	9,377	0,981	39,073	8,070	29,468	2025-03-05 09:48
18,250	39,391	53,517	70,655	0,429	0,435	8622,630	8542,539	70,541	10,965	9,506	2,857	39,020	8,064	29,468	2025-03-05 09:49
18,750	39,389	53,482	70,615	0,428	0,435	8599,736	8536,349	76,618	10,801	9,643	0,310	39,105	8,073	29,468	2025-03-05 09:49
19,250	39,388	53,459	70,583	0,429	0,435	8584,143	8538,310	71,393	10,844	9,544	-2,131	39,184	8,081	29,468	2025-03-05 09:50
19,750	39,380	53,427	70,503	0,429	0,435	8581,740	8512,648	66,351	11,117	9,351	3,851	39,438	8,107	29,468	2025-03-05 09:50
20,250	39,383	53,397	70,490	0,428	0,435	8554,048	8525,654	73,894	10,768	9,670	2,750	39,220	8,085	29,345	2025-03-05 09:51
20,750	39,385	53,382	70,443	0,428	0,435	8545,018	8510,650	67,404	10,702	9,726	1,280	38,656	8,027	29,345	2025-03-05 09:51
21,250	39,380	53,362	70,382	0,428	0,435	8523,428	8479,742	68,446	10,495	9,924	2,032	38,980	8,060	29,345	2025-03-05 09:52
21,750	39,394	53,354	70,361	0,429	0,435	8527,472	8480,380	72,925	10,478	9,911	1,295	38,846	8,046	29,345	2025-03-05 09:52
22,250	39,395	53,328	70,319	0,428	0,435	8506,970	8468,172	69,895	10,634	9,786	3,267	38,803	8,042	29,345	2025-03-05 09:53
22,750	39,389	53,305	70,261	0,428	0,435	8494,803	8452,731	84,967	10,706	9,713	4,401	39,007	8,063	29,345	2025-03-05 09:53
23,250	39,384	53,284	70,187	0,428	0,435	8481,676	8423,508	89,783	10,760	9,663	1,805	39,019	8,064	29,345	2025-03-05 09:54
23,750	39,360	53,265	70,159	0,428	0,434	8465,662	8410,579	69,482	10,740	9,594	1,595	38,928	8,055	29,252	2025-03-05 09:54
24,250	39,334	53,244	70,127	0,428	0,434	8470,803	8407,597	70,958	10,995	9,404	-1,096	38,744	8,036	29,252	2025-03-05 09:55
24,750	39,317	53,211	70,056	0,428	0,435	8465,581	8394,500	72,223	11,031	9,392	-0,410	38,703	8,032	29,251	2025-03-05 09:55
25,250	39,292	53,177	70,025	0,428	0,435	8463,629	8397,006	73,057	10,851	9,614	-6,021	39,058	8,068	29,252	2025-03-05 09:56
25,750	39,287	53,148	69,972	0,427	0,435	8429,205	8387,011	78,074	10,722	9,687	3,751	39,087	8,071	29,252	2025-03-05 09:56
26,250	39,267	53,137	69,935	0,427	0,435	8408,600	8380,288	78,293	10,648	9,786	2,828	38,957	8,058	29,252	2025-03-05 09:57
26,750	39,255	53,124	69,907	0,427	0,435	8405,209	8371,756	71,379	10,658	9,741	3,044	39,103	8,073	29,252	2025-03-05 09:57
27,250	39,236	53,100	69,847	0,427	0,434	8395,591	8325,421	76,622	10,803	9,610	0,577	38,844	8,046	29,252	2025-03-05 09:58
27,750	39,232	53,081	69,790	0,426	0,435	8385,555	8329,447	72,428	10,803	9,620	1,089	39,086	8,071	29,251	2025-03-05 09:58
28,250	39,227	53,053	69,761	0,427	0,434	8370,472	8323,047	81,232	10,905	9,486	1,336	39,101	8,073	29,158	2025-03-05 09:59
28,750	39,218	53,028	69,711	0,427	0,434	8375,390	8310,656	90,447	10,996	9,419	3,042	38,915	8,053	29,251	2025-03-05 09:59
29,250	39,212	52,998	69,661	0,427	0,435	8370,875	8314,412	103,882	10,943	9,451	3,202	38,691	8,030	29,158	2025-03-05 10:00
29,750	39,196	52,981	69,626	0,427	0,435	8355,179	8300,071	99,067	10,996	9,402	0,166	38,648	8,026	29,158	2025-03-05 10:00
30,250	39,182	52,952	69,582	0,428	0,435	8360,634	8294,335	88,595	11,107	9,318	1,740	38,826	8,044	29,158	2025-03-05 10:01
30,750	39,173	52,915	69,560	0,427	0,435	8342,324	8309,403	85,641	10,922	9,474	2,800	38,927	8,055	29,158	2025-03-05 10:01
31,250	39,152	52,888	69,502	0,427	0,435	8327,636	8282,655	81,024	10,832	9,542	-0,505	39,141	8,077	29,158	2025-03-05 10:02

PE 56 Cat I_250305.DAT

Category: I run 1

	301	302	304	305	306	308	317	1311	1313	1314	1315	1316	1317	1318	1319	1320	1101	1103
Measure- ment time	CO chimney	CO2 chimney	Pdyn	Pstat	Static pressure chimney	O2 chimney	Scale	Flue gas temp	Flue gas at pitot	filter temp 1	filter temp 2	gas meter temp 1	gas meter temp 2	gasmeter 1hr	Gas meter ambient	Filter temp 1 hr	Ambient temperature	T4 outlet load side
Minutes	VDC	VDC	VDC	VDC	VDC	VDC	VDC	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
31,750	0,211	0,638	0,977	0,012	-0,011	0,315	0,867	71,018	22,296	19,707	19,457	19,555	19,731	19,581	19,429	19,511	19,544	56,033
32,250	0,214	0,636	0,974	0,051	-0,010	0,320	0,866	70,966	22,294	19,717	19,456	19,595	19,741	19,583	19,425	19,502	19,544	56,019
32,750	0,218	0,623	0,975	0,039	0,746	0,331	0,865	70,918	22,298	19,708	19,465	19,578	19,733	19,586	19,429	19,509	19,548	56,002
33,250	0,216	0,621	0,976	0,084	-0,010	0,325	0,865	70,906	22,247	19,698	19,449	19,547	19,721	19,589	19,417	19,495	19,542	55,969
33,750	0,216	0,629	0,971	0,028	-0,047	0,325	0,865	70,888	22,237	19,708	19,463	19,576	19,746	19,585	19,435	19,508	19,552	55,954
34,250	0,220	0,622	0,978	-0,032	0,692	0,332	0,865	70,858	22,217	19,719	19,468	19,577	19,732	19,595	19,436	19,497	19,551	55,929
34,750	0,218	0,616	0,975	0,070	-0,712	0,332	0,865	70,841	22,216	19,703	19,461	19,558	19,725	19,572	19,421	19,496	19,548	55,908
35,250	0,219	0,619	0,972	0,026	0,704	0,332	0,865	70,734	22,195	19,715	19,472	19,595	19,738	19,586	19,432	19,491	19,553	55,882
35,750	0,221	0,617	0,976	0,042	-0,683	0,333	0,864	70,689	22,201	19,726	19,471	19,596	19,747	19,593	19,445	19,505	19,558	55,852
36,250	0,219	0,620	0,978	0,094	-0,010	0,328	0,864	70,700	22,221	19,704	19,464	19,580	19,734	19,585	19,433	19,509	19,552	55,816
36,750	0,222	0,623	0,976	0,037	0,108	0,329	0,864	70,661	22,169	19,698	19,465	19,571	19,732	19,572	19,434	19,492	19,549	55,802
37,250	0,222	0,624	0,977	0,060	-0,011	0,326	0,864	70,691	22,216	19,720	19,488	19,594	19,748	19,594	19,445	19,521	19,566	55,763
37,750	0,220	0,626	0,973	0,015	-0,010	0,326	0,864	70,706	22,138	19,701	19,473	19,593	19,755	19,599	19,435	19,505	19,558	55,752
38,250	0,220	0,624	0,978	0,054	-0,011	0,330	0,864	70,745	22,155	19,715	19,473	19,588	19,745	19,569	19,441	19,504	19,559	55,723
38,750	0,218	0,617	0,975	0,057	-0,795	0,333	0,864	70,693	22,167	19,710	19,466	19,595	19,742	19,586	19,435	19,514	19,558	55,685
39,250	0,218	0,618	0,975	0,100	-0,011	0,334	0,863	70,660	22,158	19,695	19,463	19,567	19,725	19,579	19,427	19,497	19,556	55,663
39,750	0,216	0,620	0,970	0,008	0,822	0,329	0,863	70,575	22,198	19,707	19,465	19,585	19,732	19,583	19,440	19,504	19,560	55,634
40,250	0,216	0,622	0,980	0,072	-0,533	0,329	0,864	70,440	22,198	19,712	19,463	19,577	19,729	19,583	19,438	19,509	19,564	55,627
40,750	0,216	0,623	0,982	0,069	0,782	0,331	0,863	70,365	22,207	19,715	19,472	19,563	19,744	19,589	19,436	19,498	19,568	55,607
41,250	0,217	0,613	0,976	0,089	-0,011	0,340	0,862	70,358	22,183	19,711	19,476	19,579	19,744	19,590	19,440	19,494	19,566	55,579
41,750	0,218	0,602	0,970	0,020	-0,011	0,348	0,862	70,287	22,198	19,711	19,471	19,591	19,746	19,592	19,446	19,505	19,566	55,551
42,250	0,218	0,597	0,974	0,053	-0,011	0,349	0,862	70,329	22,157	19,711	19,468	19,580	19,743	19,588	19,445	19,499	19,567	55,544
42,750	0,217	0,601	0,975	0,028	0,648	0,345	0,862	70,282	22,117	19,701	19,470	19,575	19,743	19,574	19,427	19,498	19,562	55,507
43,250	0,215	0,609	0,980	0,033	-0,010	0,336	0,862	70,399	22,185	19,716	19,478	19,601	19,760	19,586	19,446	19,509	19,568	55,491
43,750	0,217	0,616	0,971	0,110	0,608	0,333	0,861	70,441	22,171	19,715	19,478	19,586	19,739	19,584	19,447	19,492	19,569	55,423
44,250	0,218	0,615	0,973	0,006	-0,011	0,336	0,861	70,242	22,144	19,701	19,471	19,590	19,742	19,585	19,449	19,497	19,568	55,410
44,750	0,221	0,610	0,978	0,079	-0,774	0,341	0,861	70,134	22,171	19,695	19,471	19,593	19,755	19,584	19,451	19,504	19,570	55,371
45,250	0,223	0,607	0,973	0,077	-0,648	0,339	0,860	70,000	22,102	19,701	19,470	19,588	19,743	19,577	19,445	19,494	19,566	55,359
45,750	0,222	0,612	0,974	0,054	-0,011	0,338	0,860	69,964	22,081	19,699	19,468	19,600	19,742	19,579	19,442	19,500	19,570	55,360
46,250	0,223	0,608	0,975	0,069	-0,011	0,343	0,860	69,943	22,114	19,696	19,470	19,599	19,751	19,584	19,441	19,498	19,574	55,330
46,750	0,223	0,604	0,971	-0,011	-0,011	0,342	0,860	69,921	22,172	19,700	19,480	19,580	19,744	19,591	19,463	19,508	19,577	55,309
47,250	0,223	0,608	0,972	-0,004	-0,571	0,339	0,860	69,916	22,163	19,706	19,476	19,609	19,747	19,590	19,457	19,509	19,575	55,303
47,750	0,222	0,613	0,973	0,037	-0,010	0,336	0,860	69,902	22,191	19,705	19,471	19,596	19,745	19,590	19,444	19,505	19,578	55,276

PE 56 Cat I_250305.DAT

Category: I run 1

	1104	1105	1107	130	230	101	102	1	2	3	6	7	8	11	
Measure- ment time	T3 inlet load side	T2 inlet boiler	T1 outlet boiler	Flow load side	Flow boiler side	Heat output load side	Heat output boiler	CO chimney	CO2 chimney	O2 chimney	Pstat	Pdyn	Tunnel velocity	Våg	Time
Minutes	°C	°C	°C	m³/h	m³/h	W	W	ppm	%	%	Pa	Pa	m/s	kg	Clock
31,750	39,152	52,875	69,446	0,427	0,435	8308,425	8260,005	73,258	10,984	9,458	0,460	38,989	8,061	29,158	2025-03-05 10:02
32,250	39,142	52,853	69,440	0,428	0,435	8317,311	8267,681	100,109	10,868	9,609	2,051	38,979	8,060	29,064	2025-03-05 10:03
32,750	39,124	52,810	69,381	0,427	0,435	8312,665	8258,465	123,193	10,506	9,919	1,557	39,005	8,063	29,064	2025-03-05 10:03
33,250	39,113	52,779	69,362	0,427	0,435	8303,439	8267,631	105,168	10,610	9,747	3,372	38,909	8,053	29,064	2025-03-05 10:04
33,750	39,109	52,766	69,313	0,427	0,435	8293,313	8248,359	111,995	10,712	9,738	1,125	38,876	8,049	29,064	2025-03-05 10:04
34,250	39,100	52,747	69,270	0,427	0,435	8288,985	8239,384	133,241	10,495	9,954	-1,296	39,275	8,091	29,064	2025-03-05 10:05
34,750	39,080	52,709	69,224	0,428	0,435	8295,566	8234,108	121,529	10,436	9,961	2,781	38,988	8,061	29,064	2025-03-05 10:05
35,250	39,078	52,690	69,207	0,427	0,435	8273,953	8233,663	123,391	10,474	9,965	1,042	38,987	8,061	29,064	2025-03-05 10:06
35,750	39,072	52,670	69,156	0,427	0,434	8263,647	8208,208	137,703	10,403	9,988	1,660	39,103	8,073	28,971	2025-03-05 10:06
36,250	39,054	52,638	69,101	0,428	0,434	8259,119	8202,779	125,066	10,550	9,846	3,776	39,125	8,075	28,971	2025-03-05 10:07
36,750	39,047	52,612	69,062	0,427	0,434	8253,084	8195,688	151,083	10,559	9,873	1,479	39,147	8,077	28,992	2025-03-05 10:07
37,250	39,039	52,588	69,020	0,427	0,434	8236,666	8186,196	142,748	10,632	9,772	2,395	38,897	8,052	28,971	2025-03-05 10:08
37,750	39,030	52,566	68,998	0,427	0,434	8236,407	8180,213	134,732	10,653	9,780	0,599	38,775	8,039	28,971	2025-03-05 10:08
38,250	39,023	52,538	68,952	0,428	0,434	8232,264	8174,260	133,464	10,577	9,892	2,164	39,021	8,064	28,971	2025-03-05 10:09
38,750	39,007	52,506	68,937	0,427	0,434	8203,838	8181,140	116,870	10,408	9,998	2,271	39,002	8,062	28,971	2025-03-05 10:09
39,250	39,005	52,484	68,873	0,427	0,434	8201,400	8159,973	121,220	10,435	10,006	4,017	39,040	8,066	28,845	2025-03-05 10:10
39,750	39,019	52,468	68,819	0,427	0,434	8179,058	8148,086	101,374	10,575	9,880	0,304	39,042	8,067	28,971	2025-03-05 10:10
40,250	39,016	52,450	68,785	0,428	0,434	8184,203	8136,013	112,297	10,539	9,855	2,898	39,338	8,097	28,970	2025-03-05 10:11
40,750	39,026	52,438	68,769	0,427	0,434	8163,376	8137,537	104,911	10,546	9,916	2,766	39,229	8,086	28,971	2025-03-05 10:11
41,250	39,020	52,423	68,695	0,427	0,434	8156,749	8106,016	122,151	10,240	10,215	3,566	38,937	8,056	28,845	2025-03-05 10:12
41,750	39,015	52,402	68,672	0,427	0,434	8136,486	8106,226	124,878	9,996	10,449	0,811	38,680	8,029	28,845	2025-03-05 10:12
42,250	39,018	52,391	68,628	0,427	0,434	8140,595	8088,542	117,120	9,916	10,478	2,107	39,059	8,068	28,845	2025-03-05 10:13
42,750	39,011	52,367	68,576	0,428	0,434	8128,472	8071,314	112,509	10,064	10,344	1,117	39,114	8,074	28,844	2025-03-05 10:13
43,250	39,011	52,349	68,545	0,427	0,434	8113,847	8069,355	106,405	10,307	10,081	1,337	39,201	8,083	28,845	2025-03-05 10:14
43,750	39,006	52,328	68,489	0,427	0,434	8084,275	8048,705	114,796	10,397	10,001	4,386	38,785	8,040	28,845	2025-03-05 10:14
44,250	39,006	52,304	68,445	0,427	0,434	8077,651	8033,560	125,723	10,351	10,075	0,253	39,223	8,085	28,787	2025-03-05 10:15
44,750	38,996	52,244	68,417	0,427	0,434	8064,609	8047,745	143,550	10,197	10,233	3,163	39,058	8,068	28,752	2025-03-05 10:15
45,250	38,991	52,228	68,370	0,427	0,434	8062,474	8034,321	148,185	10,224	10,170	3,082	38,664	8,027	28,751	2025-03-05 10:16
45,750	39,011	52,210	68,308	0,427	0,434	8050,158	8015,226	144,110	10,316	10,131	2,163	39,032	8,066	28,752	2025-03-05 10:16
46,250	39,021	52,184	68,267	0,427	0,434	8029,852	8005,979	151,948	10,152	10,300	2,761	38,970	8,059	28,752	2025-03-05 10:17
46,750	39,031	52,171	68,224	0,427	0,434	8018,533	7986,201	150,044	10,124	10,272	-0,424	38,604	8,021	28,752	2025-03-05 10:17
47,250	39,037	52,149	68,186	0,427	0,434	8012,956	7978,076	151,093	10,216	10,179	-0,166	38,879	8,050	28,751	2025-03-05 10:18
47,750	39,051	52,129	68,156	0,428	0,433	7998,582	7968,446	145,659	10,348	10,083	1,465	38,838	8,046	28,752	2025-03-05 10:18

PE 56 Cat I_250305.DAT

Category: I run 1

	301	302	304	305	306	308	317	1311	1313	1314	1315	1316	1317	1318	1319	1320	1101	1103
Measure- ment time	CO chimney	CO2 chimney	Pdyn	Pstat	Static pressure chimney	O2 chimney	Scale	Flue gas temp	Flue gas at pitot	filter temp 1	filter temp 2	gas meter temp 1	gas meter temp 2	gasmeter 1hr	Gas meter ambient	Filter temp 1 hr	Ambient temperature	T4 outlet load side
Minutes	VDC	VDC	VDC	VDC	VDC	VDC	VDC	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
48,250	0,221	0,613	0,975	0,142	-0,062	0,335	0,860	69,992	22,239	19,705	19,478	19,593	19,748	19,588	19,449	19,509	19,574	55,250
48,750	0,222	0,613	0,976	-0,003	0,741	0,337	0,860	70,048	22,207	19,705	19,466	19,596	19,750	19,579	19,436	19,494	19,574	55,230
49,250	0,220	0,612	0,976	0,079	0,520	0,334	0,859	70,107	22,222	19,690	19,457	19,581	19,737	19,581	19,438	19,499	19,574	55,180
49,750	0,221	0,626	0,974	0,024	-0,860	0,320	0,859	70,178	22,230	19,704	19,470	19,596	19,743	19,576	19,452	19,498	19,580	55,163
50,250	0,223	0,639	0,976	0,015	-0,011	0,314	0,859	70,158	22,231	19,702	19,476	19,598	19,748	19,592	19,451	19,506	19,581	55,140
50,750	0,220	0,637	0,977	-0,022	-0,011	0,315	0,859	70,071	22,206	19,697	19,468	19,592	19,745	19,579	19,457	19,502	19,576	55,119
51,250	0,220	0,637	0,978	0,070	-0,029	0,318	0,859	70,090	22,213	19,718	19,484	19,595	19,759	19,588	19,463	19,510	19,590	55,111
51,750	0,221	0,631	0,973	0,082	-0,010	0,320	0,859	70,060	22,150	19,706	19,478	19,583	19,747	19,580	19,452	19,500	19,585	55,090
52,250	0,222	0,631	0,971	0,030	-0,011	0,320	0,858	70,282	22,250	19,714	19,502	19,620	19,768	19,597	19,467	19,517	19,590	55,081
52,750	0,221	0,629	0,972	0,098	-0,011	0,325	0,857	70,320	22,231	19,716	19,491	19,612	19,761	19,594	19,471	19,511	19,591	55,083
53,250	0,224	0,619	0,974	0,142	0,800	0,332	0,857	70,316	22,280	19,711	19,487	19,604	19,766	19,592	19,454	19,512	19,588	55,075
53,750	0,227	0,615	0,971	0,069	-0,011	0,336	0,857	70,404	22,309	19,717	19,487	19,637	19,776	19,594	19,479	19,518	19,597	55,060
54,250	0,225	0,610	0,969	-0,007	-0,028	0,339	0,857	70,429	22,224	19,701	19,476	19,582	19,744	19,580	19,450	19,506	19,591	55,042
54,750	0,227	0,611	0,979	0,075	-0,010	0,337	0,857	70,450	22,241	19,716	19,475	19,612	19,763	19,582	19,467	19,512	19,594	55,024
55,250	0,226	0,612	0,980	0,032	-0,011	0,338	0,857	70,455	22,250	19,710	19,488	19,620	19,762	19,594	19,470	19,514	19,597	55,028
55,750	0,227	0,608	0,979	-0,033	-0,011	0,343	0,857	70,395	22,223	19,705	19,478	19,595	19,752	19,584	19,448	19,524	19,593	55,005
56,250	0,226	0,601	0,979	0,015	-0,011	0,347	0,857	70,414	22,244	19,729	19,491	19,612	19,776	19,592	19,462	19,515	19,597	55,021
56,750	0,224	0,599	0,976	0,011	-0,011	0,347	0,856	70,481	22,264	19,716	19,468	19,586	19,757	19,584	19,444	19,507	19,592	55,004
57,250	0,222	0,606	0,972	-0,007	-0,895	0,341	0,856	70,459	22,303	19,709	19,480	19,600	19,765	19,593	19,456	19,519	19,600	54,982
57,750	0,224	0,607	0,976	0,093	-1,246	0,341	0,856	70,428	22,308	19,712	19,490	19,601	19,770	19,590	19,475	19,509	19,603	54,994
58,250	0,226	0,611	0,981	0,038	-0,011	0,336	0,856	70,444	22,343	19,704	19,469	19,601	19,757	19,586	19,451	19,507	19,597	54,984
58,750	0,226	0,614	0,971	0,039	0,586	0,335	0,856	70,465	22,282	19,709	19,477	19,613	19,759	19,581	19,465	19,523	19,605	54,977
59,250	0,222	0,612	0,972	0,044	-0,772	0,337	0,856	70,459	22,303	19,711	19,473	19,613	19,775	19,603	19,463	19,522	19,605	54,973
59,750	0,224	0,615	0,982	0,048	-0,029	0,333	0,855	70,497	22,291	19,715	19,484	19,611	19,765	19,596	19,468	19,521	19,608	54,967
60,250	0,226	0,618	0,970	0,080	0,525	0,330	0,855	70,540	22,288	19,722	19,493	19,639	19,783	19,599	19,476	19,519	19,609	54,959
60,750	0,227	0,622	0,972	0,102	-0,010	0,328	0,854	70,587	22,318	19,715	19,488	19,617	19,755	19,595	19,472	19,517	19,606	54,931
61,250	0,224	0,626	0,971	0,020	-0,028	0,323	0,854	70,384	22,232	19,717	19,479	19,605	19,757	19,588	19,464	19,509	19,607	54,933
61,750	0,223	0,631	0,970	0,076	-0,758	0,320	0,854	70,338	22,265	19,724	19,483	19,637	19,766	19,590	19,472	19,518	19,609	54,935
62,250	0,224	0,632	0,983	0,128	0,587	0,320	0,854	70,289	22,280	19,722	19,489	19,618	19,770	19,601	19,481	19,526	19,617	54,915
62,750	0,221	0,636	0,973	0,081	0,767	0,315	0,854	70,187	22,269	19,725	19,491	19,621	19,766	19,594	19,474	19,516	19,611	54,908
63,250	0,221	0,637	0,971	-0,028	-1,099	0,317	0,854	70,131	22,273	19,728	19,491	19,617	19,772	19,585	19,472	19,527	19,613	54,902
63,750	0,221	0,633	0,971	0,050	-0,587	0,318	0,853	70,165	22,296	19,732	19,506	19,624	19,772	19,606	19,489	19,530	19,617	54,889
64,250	0,221	0,636	0,972	0,071	-0,011	0,318	0,853	70,044	22,302	19,724	19,490	19,603	19,767	19,597	19,484	19,519	19,616	54,872

PE 56 Cat I_250305.DAT

Category: I run 1

	1104	1105	1107	130	230	101	102	1	2	3	6	7	8	11	
Measure- ment time	T3 inlet load side	T2 inlet boiler	T1 outlet boiler	Flow load side	Flow boiler side	Heat output load side	Heat output boiler	CO chimney	CO2 chimney	O2 chimney	Pstat	Pdyn	Tunnel velocity	Våg	Time
Minutes	°C	°C	°C	m³/h	m³/h	W	W	ppm	%	%	Pa	Pa	m/s	kg	Clock
48,250	39,058	52,102	68,102	0,428	0,434	7990,924	7958,199	134,538	10,349	10,061	5,669	38,923	8,054	28,752	2025-03-05 10:19
48,750	39,053	52,082	68,044	0,428	0,434	7973,984	7937,962	142,286	10,302	10,124	-0,128	39,088	8,071	28,752	2025-03-05 10:19
49,250	39,049	52,059	68,003	0,428	0,434	7950,308	7931,986	132,814	10,346	10,024	3,173	39,027	8,065	28,752	2025-03-05 10:20
49,750	39,058	52,064	67,944	0,428	0,434	7934,386	7897,434	144,798	10,771	9,593	0,971	38,987	8,061	28,658	2025-03-05 10:20
50,250	39,055	52,057	67,901	0,428	0,434	7929,016	7886,629	152,626	10,975	9,429	0,586	39,125	8,075	28,657	2025-03-05 10:21
50,750	39,059	52,038	67,875	0,428	0,434	7920,599	7882,963	130,305	10,933	9,437	-0,896	39,074	8,070	28,658	2025-03-05 10:21
51,250	39,096	52,025	67,810	0,428	0,434	7903,420	7856,009	134,736	10,899	9,552	2,794	39,168	8,080	28,658	2025-03-05 10:22
51,750	39,112	51,990	67,796	0,428	0,434	7887,099	7865,615	138,919	10,802	9,597	3,277	38,892	8,051	28,658	2025-03-05 10:22
52,250	39,142	51,990	67,791	0,428	0,434	7865,202	7860,954	149,193	10,778	9,588	1,217	38,992	8,061	28,564	2025-03-05 10:23
52,750	39,166	51,982	67,765	0,428	0,434	7849,712	7849,225	141,441	10,669	9,752	3,904	38,782	8,040	28,564	2025-03-05 10:23
53,250	39,178	51,976	67,723	0,428	0,434	7844,650	7833,839	160,964	10,433	9,963	5,677	38,963	8,058	28,564	2025-03-05 10:24
53,750	39,189	51,969	67,706	0,429	0,434	7838,598	7828,049	178,371	10,324	10,073	2,744	38,703	8,031	28,564	2025-03-05 10:24
54,250	39,192	51,946	67,668	0,428	0,434	7818,856	7824,151	167,041	10,238	10,175	-0,293	38,650	8,026	28,564	2025-03-05 10:25
54,750	39,204	51,954	67,644	0,428	0,434	7804,665	7804,561	179,007	10,315	10,107	2,987	39,069	8,069	28,564	2025-03-05 10:25
55,250	39,214	51,956	67,645	0,428	0,434	7807,338	7806,190	171,474	10,269	10,138	1,286	39,256	8,089	28,564	2025-03-05 10:26
55,750	39,210	51,948	67,620	0,428	0,434	7797,768	7806,592	180,831	10,151	10,284	-1,307	39,157	8,078	28,564	2025-03-05 10:26
56,250	39,224	51,955	67,590	0,428	0,434	7799,885	7784,751	164,536	10,026	10,397	0,596	39,192	8,082	28,564	2025-03-05 10:27
56,750	39,227	51,945	67,571	0,429	0,434	7797,047	7783,400	153,442	9,970	10,404	0,435	38,961	8,058	28,471	2025-03-05 10:27
57,250	39,234	51,941	67,578	0,428	0,434	7774,560	7787,305	143,324	10,213	10,224	-0,268	38,978	8,060	28,471	2025-03-05 10:28
57,750	39,244	51,936	67,553	0,428	0,435	7771,044	7784,802	165,585	10,158	10,225	3,714	38,984	8,061	28,471	2025-03-05 10:28
58,250	39,252	51,934	67,534	0,429	0,434	7773,773	7772,616	173,573	10,304	10,082	1,526	39,396	8,103	28,471	2025-03-05 10:29
58,750	39,260	51,925	67,517	0,429	0,434	7766,427	7765,553	163,688	10,360	10,062	1,564	38,728	8,034	28,471	2025-03-05 10:29
59,250	39,270	51,920	67,508	0,428	0,434	7752,717	7765,442	145,861	10,278	10,107	1,763	39,009	8,063	28,470	2025-03-05 10:30
59,750	39,268	51,921	67,481	0,428	0,434	7747,315	7754,388	164,724	10,405	10,004	1,927	39,217	8,085	28,346	2025-03-05 10:30
60,250	39,272	51,926	67,493	0,429	0,434	7746,262	7753,191	176,825	10,472	9,905	3,210	38,651	8,026	28,346	2025-03-05 10:31
60,750	39,279	51,917	67,453	0,428	0,435	7720,056	7746,044	167,885	10,570	9,840	4,087	38,910	8,053	28,346	2025-03-05 10:31
61,250	39,275	51,925	67,448	0,428	0,435	7727,479	7740,869	151,111	10,711	9,693	0,803	38,976	8,060	28,346	2025-03-05 10:32
61,750	39,274	51,921	67,447	0,428	0,434	7729,553	7733,110	155,273	10,820	9,594	3,033	38,836	8,045	28,346	2025-03-05 10:32
62,250	39,277	51,913	67,427	0,428	0,434	7719,064	7729,685	154,537	10,785	9,586	5,125	39,259	8,089	28,346	2025-03-05 10:33
62,750	39,264	51,909	67,414	0,428	0,434	7720,153	7727,960	134,732	10,954	9,442	3,222	38,915	8,054	28,346	2025-03-05 10:33
63,250	39,244	51,908	67,397	0,428	0,435	7727,859	7722,551	143,109	10,900	9,508	-1,106	38,770	8,038	28,346	2025-03-05 10:34
63,750	39,233	51,902	67,409	0,428	0,434	7724,667	7729,357	140,819	10,811	9,546	1,991	38,811	8,043	28,346	2025-03-05 10:34
64,250	39,208	51,883	67,411	0,428	0,435	7733,087	7740,589	142,671	10,877	9,545	2,823	38,984	8,061	28,346	2025-03-05 10:35

PE 56 Cat I_250305.DAT

Category: I run 1

	301	302	304	305	306	308	317	1311	1313	1314	1315	1316	1317	1318	1319	1320	1101	1103
Measure- ment time	CO chimney	CO2 chimney	Pdyn	Pstat	Static pressure chimney	O2 chimney	Scale	Flue gas temp	Flue gas at pitot	filter temp 1	filter temp 2	gas meter temp 1	gas meter temp 2	gasmeter 1hr	Gas meter ambient	Filter temp 1 hr	Ambient temperature	T4 outlet load side
Minutes	VDC	VDC	VDC	VDC	VDC	VDC	VDC	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
64,750	0,224	0,630	0,974	0,046	-0,011	0,323	0,852	69,888	22,212	19,717	19,497	19,627	19,772	19,598	19,475	19,523	19,615	54,869
65,250	0,223	0,633	0,972	0,040	-0,010	0,316	0,852	69,844	22,188	19,725	19,508	19,633	19,792	19,612	19,488	19,533	19,625	54,859
65,750	0,224	0,640	0,977	0,111	0,706	0,313	0,852	69,767	22,224	19,731	19,500	19,627	19,780	19,608	19,484	19,537	19,631	54,831
66,250	0,224	0,640	0,984	0,083	0,629	0,311	0,852	69,738	22,174	19,716	19,497	19,611	19,765	19,597	19,467	19,517	19,619	54,839
66,750	0,224	0,648	0,975	0,068	-0,010	0,303	0,852	69,682	22,192	19,747	19,507	19,636	19,796	19,612	19,485	19,539	19,629	54,836
67,250	0,227	0,648	0,972	0,063	-0,708	0,310	0,851	69,672	22,208	19,740	19,510	19,635	19,791	19,599	19,488	19,534	19,628	54,785
67,750	0,228	0,641	0,971	0,039	0,634	0,311	0,851	69,605	22,173	19,731	19,497	19,640	19,785	19,596	19,480	19,526	19,624	54,798
68,250	0,225	0,644	0,973	0,003	-0,550	0,310	0,851	69,523	22,152	19,717	19,501	19,625	19,777	19,610	19,487	19,536	19,623	54,793
68,750	0,226	0,644	0,981	0,063	-0,011	0,308	0,851	69,522	22,126	19,725	19,495	19,608	19,759	19,601	19,482	19,529	19,626	54,777
69,250	0,226	0,651	0,982	0,111	0,576	0,300	0,851	69,407	22,122	19,744	19,509	19,644	19,788	19,607	19,501	19,538	19,634	54,764
69,750	0,231	0,660	0,975	0,096	-0,011	0,296	0,851	69,343	22,143	19,737	19,497	19,629	19,778	19,598	19,488	19,544	19,630	54,732
70,250	0,234	0,661	0,970	-0,002	-0,770	0,293	0,850	69,301	22,112	19,741	19,495	19,639	19,787	19,614	19,487	19,549	19,635	54,711
70,750	0,232	0,665	0,968	0,005	-0,029	0,292	0,850	69,245	22,115	19,736	19,509	19,667	19,790	19,607	19,494	19,537	19,633	54,723
71,250	0,229	0,669	0,967	0,087	-0,011	0,285	0,849	69,169	22,065	19,733	19,499	19,646	19,789	19,608	19,484	19,533	19,631	54,707
71,750	0,231	0,673	0,978	0,011	-0,573	0,286	0,849	69,129	22,052	19,737	19,506	19,644	19,799	19,609	19,489	19,529	19,636	54,686
72,250	0,231	0,670	0,970	0,037	0,598	0,289	0,849	68,957	22,067	19,731	19,498	19,650	19,797	19,611	19,490	19,533	19,633	54,679
72,750	0,235	0,664	0,973	0,021	-0,011	0,295	0,849	68,928	22,052	19,728	19,498	19,626	19,783	19,607	19,481	19,531	19,633	54,671
73,250	0,235	0,658	0,977	0,069	-0,029	0,295	0,849	68,904	21,972	19,730	19,506	19,637	19,786	19,616	19,494	19,538	19,642	54,635
73,750	0,232	0,665	0,980	0,068	-0,029	0,291	0,848	68,813	21,989	19,731	19,492	19,630	19,780	19,611	19,492	19,524	19,632	54,648
74,250	0,232	0,667	0,977	0,071	-0,715	0,289	0,848	68,750	21,995	19,727	19,496	19,656	19,790	19,603	19,480	19,528	19,633	54,619
74,750	0,233	0,670	0,971	0,077	-0,029	0,286	0,848	68,839	21,989	19,731	19,501	19,647	19,786	19,603	19,496	19,531	19,636	54,627
75,250	0,231	0,669	0,977	0,081	0,735	0,291	0,848	68,884	22,024	19,712	19,477	19,626	19,778	19,596	19,486	19,526	19,635	54,612
75,750	0,230	0,665	0,980	-0,029	-0,029	0,289	0,848	68,913	21,992	19,717	19,498	19,651	19,782	19,610	19,494	19,533	19,637	54,604
76,250	0,231	0,669	0,973	0,031	-0,010	0,288	0,848	68,888	21,968	19,730	19,487	19,639	19,783	19,605	19,487	19,534	19,639	54,590
76,750	0,232	0,669	0,982	0,000	-0,011	0,286	0,848	68,897	22,007	19,734	19,499	19,643	19,800	19,612	19,499	19,532	19,648	54,577
77,250	0,228	0,675	0,973	0,031	-0,660	0,280	0,847	68,922	22,013	19,720	19,487	19,654	19,790	19,612	19,486	19,525	19,645	54,561
77,750	0,227	0,685	0,976	0,044	0,605	0,274	0,847	68,829	22,039	19,731	19,501	19,656	19,809	19,606	19,503	19,526	19,644	54,557
78,250	0,233	0,681	0,976	0,071	0,674	0,280	0,846	68,833	22,041	19,708	19,483	19,617	19,777	19,607	19,491	19,517	19,641	54,544
78,750	0,237	0,681	0,979	0,003	-0,010	0,276	0,846	68,821	22,024	19,728	19,500	19,660	19,800	19,607	19,498	19,524	19,644	54,529
79,250	0,236	0,686	0,981	0,060	0,694	0,273	0,847	68,832	22,019	19,724	19,496	19,655	19,794	19,607	19,487	19,532	19,648	54,516
79,750	0,234	0,689	0,975	-0,003	0,026	0,270	0,846	68,829	22,077	19,715	19,479	19,621	19,781	19,612	19,496	19,526	19,645	54,504
80,250	0,237	0,690	0,972	0,025	-0,010	0,271	0,846	68,980	22,073	19,719	19,493	19,670	19,799	19,608	19,493	19,521	19,648	54,511
80,750	0,242	0,689	0,973	0,039	-0,010	0,271	0,845	69,039	22,056	19,723	19,483	19,645	19,789	19,624	19,504	19,523	19,649	54,473

PE 56 Cat I_250305.DAT

Category: I run 1

	1104	1105	1107	130	230	101	102	1	2	3	6	7	8	11	
Measure- ment time	T3 inlet load side	T2 inlet boiler	T1 outlet boiler	Flow load side	Flow boiler side	Heat output load side	Heat output boiler	CO chimney	CO2 chimney	O2 chimney	Pstat	Pdyn	Tunnel velocity	Våg	Time
Minutes	°C	°C	°C	m³/h	m³/h	W	W	ppm	%	%	Pa	Pa	m/s	kg	Clock
64,750	39,190	51,867	67,358	0,428	0,435	7725,842	7723,216	156,753	10,689	9,702	1,854	38,968	8,059	28,252	2025-03-05 10:35
65,250	39,188	51,870	67,368	0,428	0,435	7727,475	7726,955	144,818	10,919	9,480	1,604	38,811	8,043	28,252	2025-03-05 10:36
65,750	39,182	51,864	67,346	0,428	0,435	7713,523	7720,754	158,025	11,012	9,404	4,423	39,035	8,066	28,252	2025-03-05 10:36
66,250	39,162	51,850	67,355	0,428	0,435	7726,643	7735,996	157,608	11,007	9,342	3,339	39,480	8,112	28,252	2025-03-05 10:37
66,750	39,166	51,856	67,307	0,428	0,435	7720,791	7707,225	165,981	11,285	9,101	2,715	38,845	8,046	28,252	2025-03-05 10:37
67,250	39,164	51,851	67,272	0,427	0,435	7695,485	7691,705	183,187	11,126	9,286	2,510	38,849	8,047	28,158	2025-03-05 10:38
67,750	39,163	51,846	67,277	0,428	0,435	7704,305	7697,499	176,280	11,042	9,337	1,564	38,864	8,048	28,158	2025-03-05 10:38
68,250	39,148	51,829	67,238	0,427	0,435	7705,945	7683,390	162,430	11,114	9,291	0,115	38,953	8,057	28,158	2025-03-05 10:39
68,750	39,142	51,803	67,230	0,428	0,434	7704,680	7685,344	168,101	11,120	9,253	2,505	39,164	8,079	28,158	2025-03-05 10:39
69,250	39,138	51,802	67,217	0,428	0,434	7698,508	7683,097	167,885	11,362	8,996	4,458	39,270	8,090	28,158	2025-03-05 10:40
69,750	39,128	51,787	67,209	0,428	0,434	7691,694	7686,054	213,811	11,514	8,883	3,833	39,007	8,063	28,158	2025-03-05 10:40
70,250	39,124	51,767	67,168	0,428	0,434	7686,441	7669,715	220,961	11,562	8,797	-0,072	38,722	8,034	28,158	2025-03-05 10:41
70,750	39,110	51,754	67,137	0,428	0,434	7697,856	7666,595	202,293	11,615	8,754	0,180	38,733	8,035	28,065	2025-03-05 10:41
71,250	39,107	51,746	67,131	0,428	0,434	7691,198	7666,901	184,462	11,789	8,559	3,484	38,741	8,035	28,065	2025-03-05 10:42
71,750	39,098	51,732	67,114	0,428	0,435	7681,567	7668,572	205,674	11,783	8,590	0,445	39,143	8,077	28,065	2025-03-05 10:42
72,250	39,094	51,722	67,108	0,427	0,435	7675,779	7673,630	209,763	11,720	8,684	1,493	38,785	8,040	28,065	2025-03-05 10:43
72,750	39,096	51,704	67,064	0,428	0,435	7678,614	7657,520	229,581	11,564	8,846	0,823	39,113	8,074	28,065	2025-03-05 10:43
73,250	39,106	51,697	67,063	0,428	0,435	7651,657	7664,663	219,415	11,467	8,854	2,746	38,969	8,059	28,065	2025-03-05 10:44
73,750	39,084	51,683	67,035	0,428	0,434	7667,757	7651,977	211,323	11,637	8,724	2,716	39,287	8,092	27,971	2025-03-05 10:44
74,250	39,090	51,679	67,030	0,428	0,435	7655,705	7653,927	211,525	11,684	8,674	2,823	38,985	8,061	27,971	2025-03-05 10:45
74,750	39,091	51,661	67,013	0,428	0,434	7659,421	7649,425	208,818	11,776	8,593	3,089	38,972	8,059	27,971	2025-03-05 10:45
75,250	39,080	51,647	67,006	0,428	0,435	7668,552	7661,353	196,817	11,670	8,724	3,246	38,969	8,059	27,971	2025-03-05 10:46
75,750	39,087	51,644	66,982	0,428	0,435	7645,675	7652,437	192,655	11,674	8,685	-1,176	39,094	8,072	27,971	2025-03-05 10:46
76,250	39,080	51,631	66,945	0,428	0,435	7649,848	7644,836	206,271	11,723	8,647	1,238	38,932	8,055	27,971	2025-03-05 10:47
76,750	39,070	51,624	66,940	0,428	0,435	7651,119	7639,467	201,254	11,762	8,579	0,011	39,079	8,070	27,971	2025-03-05 10:47
77,250	39,066	51,609	66,916	0,428	0,434	7642,156	7629,933	173,743	11,921	8,407	1,247	38,805	8,042	27,846	2025-03-05 10:48
77,750	39,074	51,601	66,896	0,428	0,434	7638,826	7622,791	184,545	12,188	8,221	1,742	39,106	8,073	27,846	2025-03-05 10:48
78,250	39,067	51,578	66,861	0,428	0,434	7642,085	7616,768	229,404	11,973	8,395	2,839	39,225	8,085	27,846	2025-03-05 10:49
78,750	39,067	51,577	66,874	0,428	0,434	7622,655	7625,655	236,092	12,069	8,270	0,114	39,127	8,075	27,846	2025-03-05 10:49
79,250	39,065	51,578	66,835	0,428	0,435	7623,992	7606,211	235,276	12,141	8,200	2,387	38,997	8,062	27,971	2025-03-05 10:50
79,750	39,051	51,556	66,804	0,428	0,434	7619,058	7594,476	207,571	12,219	8,099	-0,107	38,984	8,061	27,846	2025-03-05 10:50
80,250	39,061	51,557	66,806	0,428	0,434	7614,443	7598,853	258,405	12,212	8,135	0,981	38,811	8,043	27,846	2025-03-05 10:51
80,750	39,046	51,543	66,792	0,428	0,435	7615,380	7610,750	260,900	12,231	8,119	1,545	38,962	8,058	27,752	2025-03-05 10:51

PE 56 Cat I_250305.DAT

Category: I run 1

	301	302	304	305	306	308	317	1311	1313	1314	1315	1316	1317	1318	1319	1320	1101	1103
Measure- ment time	CO chimney	CO2 chimney	Pdyn	Pstat	Static pressure chimney	O2 chimney	Scale	Flue gas temp	Flue gas at pitot	filter temp 1	filter temp 2	gas meter temp 1	gas meter temp 2	gasmeter 1hr	Gas meter ambient	Filter temp 1 hr	Ambient temperature	T4 outlet load side
Minutes	VDC	VDC	VDC	VDC	VDC	VDC	VDC	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
81,250	0,237	0,690	0,976	-0,006	-0,011	0,272	0,844	69,194	22,077	19,716	19,491	19,636	19,800	19,609	19,501	19,527	19,654	54,476
81,750	0,237	0,684	0,975	0,095	0,572	0,274	0,843	69,213	22,103	19,722	19,500	19,653	19,796	19,610	19,512	19,521	19,651	54,477
82,250	0,236	0,691	0,980	0,072	-0,011	0,267	0,844	69,247	22,090	19,721	19,492	19,663	19,798	19,612	19,495	19,529	19,651	54,462
82,750	0,235	0,695	0,974	-0,010	-0,029	0,266	0,844	69,228	22,096	19,722	19,495	19,662	19,799	19,619	19,509	19,525	19,651	54,456
83,250	0,233	0,700	0,968	0,062	0,496	0,258	0,843	69,341	22,048	19,719	19,491	19,650	19,798	19,604	19,491	19,516	19,647	54,464
83,750	0,233	0,711	0,975	0,035	-0,011	0,253	0,843	69,285	22,084	19,721	19,492	19,672	19,798	19,612	19,499	19,531	19,652	54,459
84,250	0,234	0,709	0,975	0,017	-0,011	0,256	0,843	69,274	22,091	19,730	19,493	19,664	19,798	19,615	19,499	19,532	19,651	54,452
84,750	0,231	0,711	0,972	0,014	-0,027	0,252	0,843	69,245	22,083	19,734	19,498	19,644	19,795	19,608	19,497	19,531	19,656	54,469
85,250	0,233	0,712	0,973	0,019	-0,651	0,253	0,843	69,230	22,118	19,721	19,491	19,657	19,789	19,608	19,496	19,524	19,650	54,470
85,750	0,231	0,713	0,977	-0,005	-0,011	0,247	0,843	69,193	22,130	19,717	19,485	19,642	19,789	19,618	19,499	19,532	19,657	54,455
86,250	0,232	0,723	0,969	0,057	-0,029	0,243	0,842	69,283	22,132	19,716	19,491	19,650	19,790	19,616	19,503	19,523	19,658	54,502
86,750	0,231	0,719	0,969	0,018	-0,011	0,249	0,841	69,342	22,160	19,719	19,478	19,648	19,804	19,615	19,505	19,546	19,659	54,500
87,250	0,227	0,714	0,971	-0,021	-0,010	0,248	0,842	69,327	22,215	19,713	19,489	19,649	19,800	19,616	19,501	19,538	19,656	54,514
87,750	0,226	0,715	0,977	0,076	0,920	0,250	0,841	69,340	22,220	19,718	19,492	19,665	19,808	19,612	19,508	19,541	19,659	54,523
88,250	0,224	0,717	0,976	0,010	-0,642	0,243	0,841	69,401	22,151	19,721	19,501	19,647	19,804	19,615	19,508	19,531	19,661	54,549
88,750	0,227	0,726	0,974	0,034	-0,010	0,239	0,840	69,482	22,193	19,718	19,501	19,647	19,794	19,606	19,503	19,534	19,659	54,563
89,250	0,228	0,731	0,974	-0,021	-0,140	0,233	0,840	69,513	22,207	19,735	19,497	19,671	19,812	19,618	19,512	19,538	19,661	54,578
89,750	0,225	0,737	0,968	-0,036	-0,011	0,234	0,840	69,377	22,163	19,721	19,498	19,667	19,800	19,608	19,491	19,539	19,660	54,578
90,250	0,229	0,723	0,976	0,141	0,730	0,243	0,840	69,484	22,169	19,719	19,508	19,661	19,806	19,620	19,511	19,541	19,665	54,597
90,750	0,227	0,725	0,973	0,022	-0,011	0,238	0,840	69,527	22,147	19,723	19,490	19,653	19,801	19,601	19,503	19,539	19,657	54,609
91,250	0,227	0,732	0,976	0,009	-0,547	0,234	0,840	69,596	22,158	19,710	19,497	19,648	19,798	19,612	19,491	19,529	19,658	54,633
91,750	0,225	0,736	0,972	0,046	-0,030	0,231	0,839	69,616	22,213	19,739	19,513	19,678	19,815	19,624	19,515	19,544	19,668	54,655
92,250	0,225	0,730	0,970	0,035	-0,010	0,240	0,837	69,513	22,148	19,744	19,509	19,678	19,808	19,619	19,509	19,545	19,667	54,661
92,750	0,227	0,722	0,972	0,032	-0,010	0,244	0,837	69,478	22,173	19,744	19,503	19,659	19,797	19,607	19,509	19,544	19,665	54,696
93,250	0,228	0,719	0,971	0,057	-0,011	0,245	0,837	69,432	22,158	19,738	19,497	19,658	19,799	19,610	19,501	19,534	19,661	54,696
93,750	0,227	0,719	0,977	0,019	-0,539	0,245	0,837	69,594	22,159	19,741	19,509	19,667	19,808	19,614	19,502	19,542	19,663	54,727
94,250	0,226	0,723	0,967	0,035	-0,010	0,240	0,837	69,595	22,124	19,737	19,509	19,663	19,799	19,603	19,500	19,537	19,663	54,759
94,750	0,226	0,732	0,970	0,086	0,907	0,231	0,836	69,644	22,133	19,743	19,524	19,684	19,813	19,615	19,507	19,543	19,668	54,770
95,250	0,228	0,738	0,976	0,046	-0,029	0,230	0,836	69,621	22,145	19,745	19,505	19,665	19,809	19,622	19,501	19,547	19,671	54,790
95,750	0,224	0,737	0,972	0,039	-0,030	0,230	0,837	69,669	22,106	19,733	19,511	19,648	19,797	19,613	19,496	19,534	19,671	54,807
96,250	0,226	0,733	0,974	-0,012	-0,010	0,235	0,836	69,754	22,094	19,740	19,509	19,653	19,805	19,604	19,500	19,533	19,668	54,829
96,750	0,227	0,734	0,975	0,030	-0,010	0,231	0,835	69,790	22,110	19,736	19,499	19,674	19,810	19,605	19,499	19,533	19,665	54,856
97,250	0,226	0,738	0,972	0,051	0,551	0,231	0,834	69,826	22,112	19,742	19,507	19,672	19,815	19,616	19,507	19,536	19,667	54,877

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Category: I run 1

	1104	1105	1107	130	230	101	102	1	2	3	6	7	8	11	
Measure- ment time	T3 inlet load side	T2 inlet boiler	T1 outlet boiler	Flow load side	Flow boiler side	Heat output load side	Heat output boiler	CO chimney	CO2 chimney	O2 chimney	Pstat	Pdyn	Tunnel velocity	Våg	Time
Minutes	°C	°C	°C	m³/h	m³/h	W	W	ppm	%	%	Pa	Pa	m/s	kg	Clock
81,250	39,049	51,531	66,784	0,428	0,434	7616,853	7599,747	229,352	12,243	8,151	-0,249	39,029	8,065	27,752	2025-03-05 10:52
81,750	39,053	51,528	66,800	0,428	0,435	7601,905	7616,622	242,190	12,110	8,212	3,781	39,061	8,069	27,659	2025-03-05 10:52
82,250	39,041	51,519	66,817	0,428	0,434	7609,451	7620,749	224,422	12,298	8,019	2,897	39,130	8,076	27,753	2025-03-05 10:53
82,750	39,042	51,511	66,788	0,428	0,434	7602,462	7611,931	230,825	12,360	7,993	-0,402	39,132	8,076	27,753	2025-03-05 10:53
83,250	39,035	51,504	66,808	0,428	0,434	7616,377	7623,079	207,018	12,589	7,741	2,469	38,683	8,029	27,658	2025-03-05 10:54
83,750	39,038	51,502	66,794	0,428	0,434	7605,418	7618,159	220,120	12,776	7,590	1,385	39,133	8,076	27,658	2025-03-05 10:54
84,250	39,044	51,495	66,824	0,429	0,434	7610,141	7637,730	217,414	12,681	7,676	0,698	39,036	8,066	27,752	2025-03-05 10:55
84,750	39,066	51,485	66,819	0,428	0,434	7594,631	7635,212	204,180	12,798	7,572	0,554	38,761	8,038	27,658	2025-03-05 10:55
85,250	39,074	51,492	66,835	0,428	0,434	7594,257	7645,565	213,880	12,778	7,585	0,754	38,921	8,054	27,659	2025-03-05 10:56
85,750	39,094	51,506	66,822	0,428	0,434	7570,433	7631,762	199,353	12,870	7,424	-0,210	39,050	8,067	27,658	2025-03-05 10:56
86,250	39,100	51,522	66,862	0,427	0,434	7586,238	7638,207	211,747	13,089	7,288	2,285	38,626	8,024	27,565	2025-03-05 10:57
86,750	39,110	51,542	66,878	0,427	0,434	7579,525	7642,208	194,350	12,910	7,475	0,708	38,814	8,043	27,565	2025-03-05 10:57
87,250	39,116	51,560	66,905	0,428	0,434	7585,724	7643,894	173,358	12,907	7,453	-0,836	38,892	8,051	27,565	2025-03-05 10:58
87,750	39,129	51,577	66,924	0,427	0,434	7583,335	7642,632	163,070	12,840	7,507	3,025	39,069	8,069	27,565	2025-03-05 10:58
88,250	39,126	51,577	66,925	0,428	0,434	7599,398	7644,102	160,311	13,012	7,296	0,381	38,992	8,061	27,565	2025-03-05 10:59
88,750	39,132	51,585	66,946	0,428	0,434	7605,949	7649,710	183,844	13,156	7,182	1,360	39,019	8,064	27,565	2025-03-05 10:59
89,250	39,145	51,593	66,985	0,428	0,434	7610,977	7666,589	174,195	13,323	6,985	-0,829	38,836	8,045	27,471	2025-03-05 11:00
89,750	39,150	51,596	67,034	0,428	0,434	7612,714	7694,321	169,647	13,411	7,018	-1,436	38,918	8,054	27,471	2025-03-05 11:00
90,250	39,162	51,605	67,018	0,428	0,434	7613,440	7673,257	184,660	13,024	7,299	5,653	39,154	8,078	27,471	2025-03-05 11:01
90,750	39,168	51,613	67,027	0,428	0,434	7610,190	7673,921	182,992	13,182	7,127	0,874	38,974	8,060	27,471	2025-03-05 11:01
91,250	39,173	51,630	67,075	0,428	0,434	7622,047	7693,890	172,086	13,302	7,010	0,364	39,105	8,073	27,471	2025-03-05 11:02
91,750	39,196	51,662	67,095	0,428	0,434	7625,727	7681,749	163,883	13,424	6,932	1,853	38,779	8,039	27,342	2025-03-05 11:02
92,250	39,197	51,668	67,120	0,428	0,434	7628,413	7699,793	171,106	13,158	7,208	1,396	38,783	8,040	27,342	2025-03-05 11:03
92,750	39,205	51,689	67,162	0,428	0,434	7636,152	7709,416	180,244	13,011	7,333	1,285	38,990	8,061	27,342	2025-03-05 11:03
93,250	39,220	51,701	67,196	0,428	0,434	7629,941	7715,987	179,834	12,990	7,359	2,280	38,933	8,055	27,342	2025-03-05 11:04
93,750	39,228	51,722	67,225	0,428	0,434	7650,105	7724,895	180,689	12,981	7,359	0,779	39,050	8,067	27,248	2025-03-05 11:04
94,250	39,230	51,730	67,241	0,428	0,434	7661,687	7730,418	167,583	13,101	7,214	1,402	38,636	8,025	27,342	2025-03-05 11:05
94,750	39,248	51,756	67,291	0,428	0,434	7650,998	7734,577	179,883	13,408	6,939	3,448	38,897	8,052	27,249	2025-03-05 11:05
95,250	39,248	51,774	67,307	0,428	0,434	7662,406	7735,401	178,639	13,449	6,896	1,856	38,963	8,058	27,249	2025-03-05 11:06
95,750	39,276	51,797	67,304	0,428	0,435	7658,589	7735,176	149,617	13,445	6,888	1,569	38,965	8,059	27,249	2025-03-05 11:06
96,250	39,279	51,815	67,359	0,428	0,435	7663,824	7751,323	171,520	13,291	7,048	-0,481	38,809	8,043	27,248	2025-03-05 11:07
96,750	39,293	51,844	67,387	0,428	0,434	7673,406	7746,450	176,036	13,405	6,923	1,181	39,022	8,065	27,154	2025-03-05 11:07
97,250	39,303	51,862	67,427	0,428	0,435	7682,743	7760,540	168,518	13,422	6,928	2,057	38,914	8,053	27,155	2025-03-05 11:08

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Category: I run 1

	301	302	304	305	306	308	317	1311	1313	1314	1315	1316	1317	1318	1319	1320	1101	1103
Measure- ment time	CO chimney	CO2 chimney	Pdyn	Pstat	Static pressure chimney	O2 chimney	Scale	Flue gas temp	Flue gas at pitot	filter temp 1	filter temp 2	gas meter temp 1	gas meter temp 2	gasmeter 1hr	Gas meter ambient	Filter temp 1 hr	Ambient temperature	T4 outlet load side
Minutes	VDC	VDC	VDC	VDC	VDC	VDC	VDC	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
97,750	0,223	0,740	0,966	0,123	0,644	0,224	0,834	69,762	22,054	19,734	19,484	19,648	19,793	19,608	19,495	19,528	19,661	54,881
98,250	0,223	0,747	0,974	0,038	-0,706	0,223	0,834	69,755	22,096	19,740	19,492	19,643	19,795	19,600	19,495	19,541	19,663	54,913
98,750	0,224	0,742	0,980	0,052	-0,011	0,225	0,833	69,773	22,165	19,751	19,517	19,662	19,815	19,606	19,507	19,543	19,675	54,942
99,250	0,220	0,752	0,967	0,048	-0,011	0,214	0,833	69,835	22,218	19,758	19,515	19,659	19,806	19,630	19,523	19,545	19,679	54,966
99,750	0,220	0,756	0,976	0,001	0,628	0,214	0,833	69,908	22,218	19,745	19,506	19,658	19,807	19,613	19,509	19,532	19,672	54,983
100,250	0,227	0,756	0,975	0,049	-0,011	0,217	0,832	70,030	22,247	19,758	19,521	19,696	19,813	19,619	19,518	19,545	19,679	55,030
100,750	0,227	0,747	0,974	0,068	-0,644	0,221	0,833	70,030	22,224	19,748	19,515	19,672	19,809	19,609	19,504	19,552	19,680	55,032
101,250	0,224	0,753	0,978	-0,015	-0,010	0,214	0,831	70,090	22,265	19,757	19,515	19,681	19,812	19,616	19,513	19,552	19,682	55,059
101,750	0,223	0,757	0,976	0,018	-0,553	0,213	0,832	69,977	22,257	19,750	19,513	19,670	19,820	19,624	19,509	19,551	19,682	55,072
102,250	0,221	0,753	0,975	0,035	0,652	0,215	0,831	70,111	22,265	19,749	19,518	19,671	19,822	19,617	19,510	19,550	19,680	55,087
102,750	0,221	0,754	0,979	0,146	-0,011	0,215	0,831	70,159	22,219	19,751	19,519	19,686	19,821	19,615	19,515	19,543	19,682	55,112
103,250	0,221	0,748	0,975	0,047	0,077	0,222	0,831	70,189	22,192	19,749	19,509	19,668	19,807	19,613	19,506	19,538	19,680	55,127
103,750	0,222	0,737	0,970	0,090	-0,742	0,231	0,830	70,126	22,161	19,745	19,521	19,682	19,817	19,619	19,519	19,541	19,685	55,153
104,250	0,219	0,733	0,976	-0,052	-0,011	0,232	0,829	70,134	22,167	19,750	19,522	19,697	19,823	19,620	19,511	19,550	19,688	55,184
104,750	0,222	0,732	0,967	0,022	-0,011	0,235	0,829	70,171	22,160	19,772	19,530	19,696	19,818	19,626	19,513	19,555	19,693	55,209
105,250	0,223	0,730	0,974	0,050	-0,010	0,234	0,829	70,156	22,118	19,727	19,497	19,642	19,797	19,609	19,502	19,533	19,677	55,218
105,750	0,222	0,733	0,976	-0,011	-0,011	0,234	0,829	70,209	22,122	19,748	19,520	19,673	19,816	19,627	19,514	19,542	19,693	55,245
106,250	0,223	0,730	0,974	0,039	-0,011	0,236	0,828	70,194	22,125	19,736	19,494	19,670	19,801	19,598	19,485	19,526	19,675	55,257
106,750	0,223	0,733	0,973	0,033	-0,011	0,232	0,829	70,195	22,150	19,741	19,494	19,679	19,811	19,617	19,505	19,534	19,682	55,271
107,250	0,226	0,742	0,972	-0,046	-0,724	0,222	0,829	70,201	22,110	19,727	19,496	19,662	19,799	19,612	19,485	19,526	19,680	55,297
107,750	0,226	0,753	0,975	-0,054	-0,010	0,215	0,828	70,254	22,100	19,741	19,501	19,665	19,807	19,605	19,493	19,531	19,682	55,312
108,250	0,222	0,754	0,972	-0,010	0,708	0,216	0,827	70,174	22,083	19,742	19,496	19,692	19,817	19,606	19,503	19,540	19,684	55,320
108,750	0,220	0,748	0,973	0,082	1,250	0,222	0,827	70,298	22,069	19,740	19,495	19,672	19,803	19,603	19,496	19,543	19,682	55,330
109,250	0,221	0,746	0,978	0,049	-0,766	0,223	0,826	70,309	22,045	19,738	19,497	19,661	19,799	19,606	19,501	19,536	19,685	55,351
109,750	0,221	0,741	0,972	0,072	-0,011	0,227	0,826	70,266	22,090	19,738	19,493	19,681	19,806	19,597	19,505	19,535	19,686	55,366
110,250	0,222	0,745	0,982	0,050	-0,011	0,218	0,826	70,247	22,045	19,738	19,487	19,668	19,790	19,606	19,491	19,530	19,682	55,381
110,750	0,220	0,754	0,976	0,101	0,520	0,216	0,826	70,306	22,063	19,739	19,501	19,684	19,812	19,610	19,508	19,541	19,691	55,402
111,250	0,221	0,752	0,976	0,013	-0,011	0,215	0,825	70,384	22,052	19,745	19,497	19,673	19,809	19,630	19,498	19,545	19,692	55,443
111,750	0,221	0,755	0,977	0,119	-0,011	0,216	0,825	70,343	22,061	19,736	19,487	19,671	19,812	19,617	19,504	19,542	19,688	55,447
112,250	0,223	0,750	0,973	0,010	-0,010	0,219	0,825	70,294	22,054	19,750	19,509	19,701	19,820	19,617	19,504	19,554	19,695	55,466
112,750	0,221	0,753	0,970	-0,003	-0,881	0,217	0,825	70,289	22,033	19,735	19,502	19,672	19,799	19,610	19,504	19,538	19,691	55,485
113,250	0,223	0,751	0,974	0,026	-0,011	0,219	0,824	70,404	22,078	19,740	19,511	19,661	19,806	19,618	19,499	19,544	19,694	55,483
113,750	0,226	0,754	0,980	0,039	-0,010	0,210	0,824	70,419	22,025	19,730	19,495	19,669	19,807	19,595	19,492	19,535	19,689	55,500

PE 56 Cat I_250305.DAT

Category: I run 1

	1104	1105	1107	130	230	101	102	1	2	3	6	7	8	11	
Measure- ment time	T3 inlet load side	T2 inlet boiler	T1 outlet boiler	Flow load side	Flow boiler side	Heat output load side	Heat output boiler	CO chimney	CO2 chimney	O2 chimney	Pstat	Pdyn	Tunnel velocity	Våg	Time
Minutes	°C	°C	°C	m³/h	m³/h	W	W	ppm	%	%	Pa	Pa	m/s	kg	Clock
97,750	39,305	51,868	67,444	0,428	0,434	7673,006	7763,641	146,083	13,590	6,724	4,913	38,878	8,050	27,155	2025-03-05 11:08
98,250	39,323	51,892	67,460	0,427	0,434	7678,084	7754,226	165,766	13,653	6,702	1,533	38,926	8,055	27,061	2025-03-05 11:09
98,750	39,346	51,923	67,514	0,427	0,435	7678,084	7772,478	143,655	13,531	6,756	2,066	39,060	8,068	27,061	2025-03-05 11:09
99,250	39,360	51,954	67,530	0,427	0,435	7685,274	7776,824	140,184	13,892	6,410	1,909	38,590	8,020	27,061	2025-03-05 11:10
99,750	39,364	51,976	67,590	0,427	0,435	7693,046	7798,662	132,529	13,881	6,422	0,030	39,195	8,082	27,061	2025-03-05 11:10
100,250	39,377	52,014	67,633	0,428	0,435	7710,703	7795,237	178,580	13,912	6,501	1,951	39,079	8,070	27,061	2025-03-05 11:11
100,750	39,375	52,024	67,654	0,427	0,435	7712,264	7794,942	174,202	13,680	6,616	2,720	38,959	8,058	27,061	2025-03-05 11:11
101,250	39,379	52,046	67,690	0,427	0,435	7719,731	7803,872	159,078	13,901	6,415	-0,599	39,064	8,069	26,967	2025-03-05 11:12
101,750	39,383	52,074	67,733	0,427	0,435	7722,528	7821,855	156,131	13,923	6,392	0,711	39,114	8,074	27,061	2025-03-05 11:12
102,250	39,376	52,098	67,774	0,428	0,435	7739,474	7825,334	136,195	13,805	6,453	1,398	38,895	8,051	26,968	2025-03-05 11:13
102,750	39,370	52,108	67,805	0,427	0,436	7744,924	7842,631	150,631	13,819	6,459	5,828	39,129	8,076	26,967	2025-03-05 11:13
103,250	39,368	52,126	67,845	0,428	0,436	7765,548	7852,948	133,384	13,621	6,662	1,893	38,908	8,053	26,967	2025-03-05 11:14
103,750	39,371	52,144	67,905	0,427	0,436	7773,036	7876,055	150,041	13,362	6,922	3,606	38,816	8,043	26,842	2025-03-05 11:14
104,250	39,367	52,161	67,934	0,427	0,436	7787,971	7880,172	121,084	13,348	6,959	-2,061	38,905	8,052	26,842	2025-03-05 11:15
104,750	39,367	52,176	67,969	0,427	0,435	7800,165	7889,516	150,659	13,276	7,045	0,898	38,709	8,032	26,842	2025-03-05 11:15
105,250	39,360	52,184	67,977	0,427	0,435	7807,333	7889,134	146,073	13,281	7,027	2,014	39,214	8,084	26,842	2025-03-05 11:16
105,750	39,373	52,210	67,993	0,427	0,435	7805,191	7873,681	146,747	13,291	7,021	-0,439	39,033	8,066	26,842	2025-03-05 11:16
106,250	39,371	52,240	68,041	0,427	0,435	7820,135	7888,874	149,700	13,217	7,080	1,559	38,847	8,046	26,749	2025-03-05 11:17
106,750	39,365	52,248	68,074	0,427	0,435	7827,768	7900,151	156,423	13,350	6,958	1,302	38,939	8,056	26,749	2025-03-05 11:17
107,250	39,371	52,267	68,122	0,427	0,436	7832,797	7921,205	162,653	13,660	6,650	-1,845	38,967	8,059	26,842	2025-03-05 11:18
107,750	39,361	52,287	68,130	0,427	0,435	7847,198	7912,756	166,607	13,872	6,460	-2,171	39,200	8,083	26,748	2025-03-05 11:18
108,250	39,352	52,298	68,178	0,427	0,435	7855,466	7932,021	139,753	13,856	6,484	-0,381	38,862	8,048	26,654	2025-03-05 11:19
108,750	39,335	52,301	68,211	0,427	0,435	7870,264	7944,456	130,312	13,628	6,674	3,293	38,953	8,057	26,699	2025-03-05 11:19
109,250	39,323	52,313	68,248	0,427	0,435	7889,786	7958,831	144,600	13,623	6,698	1,968	39,073	8,070	26,655	2025-03-05 11:20
109,750	39,316	52,332	68,303	0,427	0,436	7903,043	7980,142	135,142	13,479	6,799	2,893	38,903	8,052	26,655	2025-03-05 11:20
110,250	39,299	52,330	68,345	0,427	0,436	7908,946	8003,586	144,784	13,703	6,534	1,990	39,239	8,087	26,655	2025-03-05 11:21
110,750	39,313	52,351	68,390	0,427	0,436	7912,576	8017,241	134,201	13,827	6,477	4,051	38,947	8,057	26,655	2025-03-05 11:21
111,250	39,307	52,369	68,399	0,427	0,436	7944,994	8013,679	144,172	13,842	6,456	0,525	38,967	8,059	26,561	2025-03-05 11:22
111,750	39,305	52,378	68,424	0,427	0,436	7942,129	8020,977	139,496	13,863	6,476	4,750	38,986	8,061	26,561	2025-03-05 11:22
112,250	39,306	52,401	68,462	0,427	0,436	7947,637	8027,909	151,090	13,715	6,570	0,402	39,006	8,063	26,561	2025-03-05 11:23
112,750	39,305	52,426	68,493	0,427	0,436	7963,342	8028,224	140,601	13,812	6,511	-0,132	38,501	8,011	26,561	2025-03-05 11:23
113,250	39,291	52,432	68,538	0,427	0,436	7966,637	8051,283	161,777	13,733	6,564	1,020	38,998	8,062	26,467	2025-03-05 11:24
113,750	39,263	52,451	68,593	0,427	0,436	7987,573	8069,103	178,969	13,942	6,301	1,562	39,114	8,074	26,561	2025-03-05 11:24

PE 56 Cat I_250305.DAT

Category: I run 1

	301	302	304	305	306	308	317	1311	1313	1314	1315	1316	1317	1318	1319	1320	1101	1103
Measure- ment time	CO chimney	CO2 chimney	Pdyn	Pstat	Static pressure chimney	O2 chimney	Scale	Flue gas temp	Flue gas at pitot	filter temp 1	filter temp 2	gas meter temp 1	gas meter temp 2	gasmeter 1hr	Gas meter ambient	Filter temp 1 hr	Ambient temperature	T4 outlet load side
Minutes	VDC	VDC	VDC	VDC	VDC	VDC	VDC	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
114,250	0,226	0,765	0,968	0,100	-0,011	0,210	0,823	70,399	22,020	19,744	19,504	19,678	19,816	19,613	19,507	19,540	19,697	55,517
114,750	0,226	0,750	0,970	0,069	-1,372	0,221	0,823	70,430	21,987	19,728	19,481	19,683	19,802	19,594	19,496	19,528	19,682	55,530
115,250	0,224	0,747	0,976	-0,001	0,683	0,219	0,823	70,414	22,057	19,725	19,488	19,662	19,795	19,607	19,497	19,520	19,690	55,541
115,750	0,225	0,748	0,977	0,031	-0,030	0,222	0,822	70,477	22,038	19,717	19,483	19,672	19,800	19,598	19,500	19,523	19,682	55,575
116,250	0,225	0,745	0,976	0,067	-0,011	0,224	0,822	70,488	22,075	19,736	19,497	19,684	19,821	19,605	19,501	19,537	19,694	55,585
116,750	0,227	0,744	0,976	0,053	-0,011	0,223	0,821	70,456	22,073	19,721	19,491	19,654	19,809	19,598	19,494	19,530	19,692	55,589
117,250	0,226	0,749	0,976	-0,002	0,629	0,219	0,821	70,506	22,080	19,724	19,484	19,675	19,803	19,610	19,501	19,537	19,699	55,604
117,750	0,227	0,750	0,966	0,058	0,566	0,218	0,821	70,586	22,116	19,723	19,488	19,675	19,811	19,589	19,504	19,537	19,691	55,622
118,250	0,225	0,756	0,974	0,032	0,596	0,212	0,820	70,708	22,160	19,708	19,492	19,673	19,808	19,607	19,502	19,539	19,694	55,637
118,750	0,227	0,765	0,975	0,065	-0,785	0,205	0,820	70,670	22,152	19,715	19,492	19,680	19,804	19,593	19,498	19,533	19,689	55,667
119,250	0,227	0,769	0,970	0,043	-0,029	0,203	0,820	70,661	22,167	19,718	19,512	19,680	19,799	19,603	19,490	19,536	19,690	55,680
119,750	0,227	0,767	0,969	0,035	-0,029	0,206	0,820	70,849	22,158	19,731	19,500	19,660	19,814	19,609	19,513	19,546	19,700	55,684
120,250	0,227	0,763	0,977	0,015	-0,648	0,208	0,819	70,876	22,147	19,741	19,505	19,676	19,821	19,606	19,503	19,552	19,702	55,681
120,750	0,226	0,764	0,974	0,083	-0,028	0,203	0,820	70,903	22,156	19,733	19,498	19,671	19,816	19,612	19,495	19,539	19,697	55,734
121,250	0,225	0,774	0,974	0,016	-1,078	0,200	0,818	70,890	22,133	19,732	19,496	19,662	19,812	19,613	19,503	19,539	19,700	55,733
121,750	0,226	0,770	0,969	-0,026	-0,011	0,198	0,818	70,954	22,112	19,732	19,497	19,691	19,814	19,599	19,489	19,533	19,695	55,763
122,250	0,225	0,780	0,975	0,055	-0,011	0,193	0,819	70,956	22,124	19,745	19,504	19,688	19,810	19,611	19,508	19,552	19,703	55,785
122,750	0,229	0,781	0,971	0,035	0,718	0,192	0,817	70,951	22,165	19,725	19,496	19,659	19,807	19,616	19,496	19,546	19,699	55,791
123,250	0,234	0,781	0,966	0,101	0,533	0,192	0,817	70,996	22,110	19,730	19,497	19,680	19,804	19,604	19,500	19,529	19,693	55,821
123,750	0,240	0,780	0,969	0,107	-0,509	0,196	0,817	71,050	22,115	19,745	19,513	19,697	19,818	19,615	19,498	19,545	19,704	55,853
124,250	0,228	0,772	0,974	0,029	0,609	0,199	0,817	71,115	22,117	19,735	19,506	19,688	19,827	19,613	19,504	19,543	19,702	55,869
124,750	0,225	0,771	0,976	0,007	-0,679	0,201	0,817	71,010	22,123	19,726	19,493	19,657	19,808	19,612	19,494	19,528	19,700	55,878
125,250	0,224	0,766	0,975	0,032	-0,678	0,203	0,817	71,096	22,100	19,730	19,508	19,680	19,818	19,618	19,502	19,537	19,705	55,884
125,750	0,225	0,773	0,974	0,007	0,788	0,197	0,815	71,182	22,114	19,737	19,503	19,673	19,816	19,613	19,511	19,545	19,710	55,924
126,250	0,224	0,783	0,972	0,110	-0,029	0,188	0,815	71,240	22,070	19,727	19,505	19,677	19,816	19,603	19,504	19,537	19,704	55,939
126,750	0,226	0,788	0,973	0,140	-0,792	0,188	0,815	71,320	22,111	19,720	19,497	19,685	19,820	19,605	19,499	19,532	19,700	55,960
127,250	0,227	0,786	0,972	0,057	0,720	0,188	0,815	71,334	22,076	19,716	19,489	19,686	19,809	19,599	19,493	19,530	19,696	55,979
127,750	0,230	0,785	0,975	-0,032	-0,079	0,189	0,815	71,341	22,110	19,729	19,500	19,689	19,817	19,611	19,492	19,541	19,704	56,000
128,250	0,233	0,786	0,978	0,029	0,043	0,186	0,813	71,399	22,091	19,713	19,490	19,662	19,810	19,606	19,479	19,538	19,692	56,022
128,750	0,238	0,792	0,976	0,070	0,531	0,183	0,813	71,399	22,092	19,729	19,488	19,685	19,811	19,596	19,491	19,533	19,700	56,041
129,250	0,227	0,791	0,978	0,053	-0,700	0,185	0,813	71,423	22,071	19,718	19,494	19,667	19,802	19,590	19,474	19,525	19,692	56,065
129,750	0,217	0,782	0,973	-0,088	-0,011	0,191	0,813	71,486	22,111	19,716	19,499	19,681	19,812	19,594	19,493	19,531	19,696	56,081
130,250	0,217	0,783	0,974	0,048	-0,011	0,190	0,813	71,532	22,100	19,722	19,503	19,677	19,813	19,603	19,502	19,540	19,700	56,107

PE 56 Cat I_250305.DAT

Category: I run 1

	1104	1105	1107	130	230	101	102	1	2	3	6	7	8	11	
Measure- ment time	T3 inlet load side	T2 inlet boiler	T1 outlet boiler	Flow load side	Flow boiler side	Heat output load side	Heat output boiler	CO chimney	CO2 chimney	O2 chimney	Pstat	Pdyn	Tunnel velocity	Våg	Time
Minutes	°C	°C	°C	m³/h	m³/h	W	W	ppm	%	%	Pa	Pa	m/s	kg	Clock
114,250	39,237	52,462	68,608	0,427	0,435	8005,619	8063,247	166,610	14,112	6,285	3,985	38,570	8,018	26,468	2025-03-05 11:25
114,750	39,220	52,475	68,681	0,426	0,436	8016,198	8103,498	170,182	13,648	6,635	2,767	39,044	8,067	26,467	2025-03-05 11:25
115,250	39,192	52,479	68,695	0,427	0,436	8049,008	8110,465	162,771	13,710	6,566	-0,046	39,030	8,065	26,467	2025-03-05 11:26
115,750	39,190	52,494	68,766	0,427	0,436	8061,053	8134,073	163,466	13,658	6,646	1,257	39,126	8,075	26,343	2025-03-05 11:26
116,250	39,180	52,503	68,786	0,427	0,436	8067,383	8147,378	168,629	13,601	6,718	2,666	39,122	8,075	26,343	2025-03-05 11:27
116,750	39,158	52,503	68,803	0,427	0,436	8082,283	8150,188	169,994	13,616	6,677	2,133	39,039	8,066	26,343	2025-03-05 11:27
117,250	39,161	52,521	68,845	0,427	0,436	8088,963	8165,481	171,051	13,751	6,567	-0,089	39,220	8,085	26,343	2025-03-05 11:28
117,750	39,151	52,522	68,889	0,427	0,436	8099,368	8182,778	171,447	13,757	6,536	2,314	38,559	8,017	26,343	2025-03-05 11:28
118,250	39,149	52,536	68,903	0,427	0,436	8115,033	8180,375	162,156	13,950	6,350	1,295	39,055	8,068	26,249	2025-03-05 11:29
118,750	39,134	52,548	68,946	0,427	0,436	8131,661	8194,260	178,173	14,172	6,145	2,585	38,952	8,057	26,249	2025-03-05 11:29
119,250	39,126	52,562	68,981	0,427	0,436	8142,309	8213,020	176,043	14,240	6,078	1,710	38,716	8,033	26,250	2025-03-05 11:30
119,750	39,125	52,570	69,027	0,427	0,436	8145,735	8227,944	175,199	14,137	6,188	1,390	38,574	8,018	26,249	2025-03-05 11:30
120,250	39,122	52,582	69,062	0,427	0,436	8150,140	8242,131	179,643	14,083	6,253	0,599	39,096	8,072	26,155	2025-03-05 11:31
120,750	39,106	52,595	69,113	0,426	0,436	8170,641	8256,565	166,944	14,148	6,082	3,326	38,979	8,060	26,249	2025-03-05 11:31
121,250	39,103	52,610	69,129	0,427	0,436	8175,603	8262,455	170,370	14,333	5,990	0,626	38,955	8,058	26,155	2025-03-05 11:32
121,750	39,094	52,627	69,185	0,427	0,436	8196,742	8280,766	161,159	14,312	5,951	-1,037	38,718	8,033	26,155	2025-03-05 11:32
122,250	39,094	52,646	69,204	0,427	0,436	8208,035	8280,341	164,314	14,520	5,796	2,198	39,115	8,074	26,176	2025-03-05 11:33
122,750	39,084	52,649	69,241	0,427	0,436	8216,027	8298,739	191,797	14,570	5,755	1,389	38,839	8,046	26,062	2025-03-05 11:33
123,250	39,082	52,668	69,294	0,427	0,436	8233,414	8318,811	232,503	14,513	5,764	4,042	38,592	8,020	26,062	2025-03-05 11:34
123,750	39,082	52,690	69,344	0,427	0,436	8252,147	8329,776	250,181	14,452	5,874	4,269	38,906	8,052	26,062	2025-03-05 11:34
124,250	39,076	52,699	69,380	0,427	0,436	8257,841	8345,286	164,484	14,309	5,961	1,156	39,054	8,068	26,062	2025-03-05 11:35
124,750	39,071	52,711	69,406	0,427	0,437	8261,973	8359,257	163,059	14,256	6,041	0,275	39,123	8,075	26,062	2025-03-05 11:35
125,250	39,065	52,731	69,435	0,426	0,436	8267,125	8350,199	152,011	14,148	6,085	1,271	38,924	8,054	26,062	2025-03-05 11:36
125,750	39,074	52,753	69,486	0,427	0,436	8285,446	8371,175	160,530	14,351	5,917	0,268	38,871	8,049	25,968	2025-03-05 11:36
126,250	39,062	52,767	69,524	0,427	0,437	8299,947	8391,462	156,972	14,668	5,636	4,414	38,962	8,058	25,968	2025-03-05 11:37
126,750	39,065	52,784	69,595	0,426	0,436	8303,621	8411,979	178,569	14,672	5,637	5,584	38,927	8,055	25,968	2025-03-05 11:37
127,250	39,051	52,802	69,608	0,426	0,436	8317,765	8402,640	171,846	14,648	5,654	2,287	39,016	8,064	25,968	2025-03-05 11:38
127,750	39,062	52,816	69,643	0,427	0,436	8331,617	8415,197	203,773	14,645	5,667	-1,271	39,269	8,090	25,968	2025-03-05 11:38
128,250	39,050	52,829	69,680	0,427	0,436	8350,971	8428,402	216,517	14,696	5,571	1,164	39,034	8,066	25,843	2025-03-05 11:39
128,750	39,052	52,843	69,694	0,427	0,436	8357,544	8425,996	252,009	14,785	5,497	2,782	39,059	8,068	25,843	2025-03-05 11:39
129,250	39,047	52,853	69,735	0,427	0,436	8372,967	8446,899	146,531	14,752	5,559	2,105	38,879	8,050	25,843	2025-03-05 11:40
129,750	39,051	52,879	69,784	0,427	0,436	8380,615	8454,635	107,444	14,527	5,718	-3,511	38,879	8,050	25,843	2025-03-05 11:40
130,250	39,044	52,885	69,810	0,427	0,436	8391,849	8470,925	110,588	14,562	5,710	1,909	39,034	8,066	25,749	2025-03-05 11:41

PE 56 Cat I_250305.DAT

Category: I run 1

	301	302	304	305	306	308	317	1311	1313	1314	1315	1316	1317	1318	1319	1320	1101	1103
Measure- ment time	CO chimney	CO2 chimney	Pdyn	Pstat	Static pressure chimney	O2 chimney	Scale	Flue gas temp	Flue gas at pitot	filter temp 1	filter temp 2	gas meter temp 1	gas meter temp 2	gasmeter 1hr	Gas meter ambient	Filter temp 1 hr	Ambient temperature	T4 outlet load side
Minutes	VDC	VDC	VDC	VDC	VDC	VDC	VDC	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	
130,750	0,216	0,786	0,974	0,070	-0,011	0,185	0,812	71,603	22,115	19,726	19,503	19,676	19,803	19,601	19,486	19,542	19,699	56,124
131,250	0,217	0,792	0,974	0,015	-0,753	0,181	0,812	71,590	22,171	19,711	19,494	19,659	19,803	19,599	19,495	19,539	19,696	56,147
131,750	0,220	0,794	0,973	0,017	0,806	0,182	0,811	71,606	22,175	19,729	19,490	19,679	19,813	19,605	19,502	19,548	19,704	56,183
132,250	0,220	0,785	0,974	0,039	-0,796	0,190	0,811	71,685	22,192	19,738	19,504	19,704	19,816	19,605	19,500	19,541	19,704	56,210
132,750	0,218	0,783	0,974	0,016	-0,011	0,191	0,810	71,681	22,108	19,735	19,499	19,698	19,818	19,602	19,496	19,532	19,701	56,225
133,250	0,216	0,784	0,975	0,027	-0,011	0,188	0,810	71,729	22,121	19,711	19,496	19,677	19,819	19,608	19,478	19,535	19,702	56,253
133,750	0,215	0,785	0,976	0,049	-0,011	0,189	0,810	71,691	22,142	19,722	19,504	19,701	19,813	19,597	19,496	19,541	19,700	56,285
134,250	0,223	0,787	0,968	-0,058	-0,011	0,184	0,810	71,773	22,169	19,722	19,496	19,705	19,815	19,604	19,489	19,536	19,702	56,294
134,750	0,220	0,792	0,972	0,037	-0,011	0,182	0,810	71,736	22,091	19,728	19,497	19,674	19,800	19,604	19,481	19,539	19,701	56,314
135,250	0,221	0,795	0,979	0,039	1,258	0,180	0,809	71,801	21,903	19,705	19,486	19,662	19,798	19,581	19,471	19,535	19,695	56,345
135,750	0,219	0,795	0,972	0,076	-0,011	0,179	0,809	71,748	22,000	19,722	19,497	19,675	19,804	19,599	19,484	19,531	19,700	56,358
136,250	0,218	0,798	0,975	-0,001	-0,030	0,176	0,809	71,850	22,100	19,722	19,496	19,690	19,805	19,591	19,498	19,530	19,702	56,402
136,750	0,219	0,803	0,980	0,067	-0,011	0,174	0,808	71,996	22,112	19,709	19,493	19,665	19,804	19,596	19,494	19,530	19,703	56,413
137,250	0,220	0,800	0,973	0,079	-0,011	0,175	0,807	72,083	22,127	19,722	19,492	19,677	19,814	19,612	19,494	19,532	19,703	56,433
137,750	0,216	0,797	0,972	0,037	-0,708	0,180	0,807	72,170	22,175	19,714	19,488	19,669	19,806	19,591	19,486	19,512	19,695	56,449
138,250	0,216	0,793	0,977	0,076	-0,011	0,180	0,807	72,132	22,142	19,712	19,486	19,678	19,799	19,593	19,485	19,520	19,693	56,484
138,750	0,214	0,795	0,972	0,084	1,287	0,184	0,807	72,238	22,155	19,718	19,502	19,686	19,822	19,602	19,497	19,535	19,702	56,515
139,250	0,219	0,786	0,974	0,077	-0,030	0,189	0,806	72,301	22,192	19,725	19,497	19,678	19,810	19,602	19,490	19,527	19,700	56,547
139,750	0,226	0,791	0,978	0,097	0,626	0,182	0,806	72,416	22,212	19,729	19,501	19,681	19,814	19,594	19,489	19,539	19,703	56,570
140,250	0,221	0,791	0,969	0,071	-0,978	0,187	0,806	72,438	22,222	19,718	19,497	19,685	19,808	19,588	19,488	19,535	19,698	56,584
140,750	0,222	0,786	0,968	0,042	-0,011	0,190	0,806	72,465	22,227	19,725	19,498	19,703	19,812	19,595	19,491	19,538	19,700	56,623
141,250	0,218	0,779	0,970	0,075	-0,010	0,199	0,806	72,563	22,197	19,722	19,496	19,680	19,799	19,593	19,489	19,522	19,699	56,654
141,750	0,220	0,769	0,971	-0,048	0,243	0,204	0,804	72,506	22,211	19,710	19,498	19,690	19,810	19,598	19,483	19,539	19,700	56,692
142,250	0,219	0,767	0,972	0,004	0,626	0,208	0,804	72,448	22,179	19,714	19,500	19,685	19,811	19,594	19,489	19,530	19,701	56,721
142,750	0,219	0,758	0,973	0,002	-0,011	0,212	0,804	72,514	22,189	19,715	19,500	19,673	19,814	19,603	19,491	19,534	19,706	56,735
143,250	0,218	0,757	0,977	0,034	-0,029	0,214	0,803	72,561	22,117	19,714	19,499	19,681	19,814	19,598	19,486	19,535	19,705	56,767
143,750	0,218	0,757	0,975	0,017	-0,011	0,210	0,803	72,500	22,133	19,722	19,493	19,698	19,808	19,583	19,484	19,531	19,698	56,786
144,250	0,217	0,761	0,980	0,092	-0,010	0,210	0,803	72,669	22,194	19,718	19,500	19,671	19,800	19,575	19,484	19,533	19,697	56,819
144,750	0,218	0,759	0,973	-0,018	0,731	0,209	0,803	72,644	22,183	19,726	19,499	19,670	19,806	19,596	19,494	19,544	19,706	56,837
145,250	0,218	0,761	0,979	0,019	-0,011	0,212	0,803	72,563	22,172	19,726	19,501	19,685	19,818	19,595	19,485	19,533	19,701	56,860
145,750	0,215	0,747	0,973	0,092	-0,010	0,222	0,802	72,579	22,146	19,727	19,499	19,691	19,813	19,596	19,492	19,542	19,712	56,903
146,250	0,215	0,749	0,979	0,077	0,652	0,219	0,801	72,560	22,147	19,737	19,509	19,690	19,815	19,567	19,504	19,542	19,710	56,912
146,750	0,217	0,747	0,976	0,035	0,511	0,224	0,800	72,620	22,283	19,733	19,507	19,701	19,815	19,595	19,496	19,538	19,704	56,920

PE 56 Cat I_250305.DAT

Category: I run 1

	1104	1105	1107	130	230	101	102	1	2	3	6	7	8	11	
Measure- ment time	T3 inlet load side	T2 inlet boiler	T1 outlet boiler	Flow load side	Flow boiler side	Heat output load side	Heat output boiler	CO chimney	CO2 chimney	O2 chimney	Pstat	Pdyn	Tunnel velocity	Våg	Time
Minutes	°C	°C	°C	m³/h	m³/h	W	W	ppm	%	%	Pa	Pa	m/s	kg	Clock
130,750	39,055	52,910	69,844	0,427	0,436	8391,570	8471,908	107,385	14,721	5,552	2,788	39,050	8,067	25,749	2025-03-05 11:41
131,250	39,060	52,924	69,898	0,427	0,436	8406,186	8495,854	117,912	14,861	5,421	0,605	39,032	8,066	25,749	2025-03-05 11:42
131,750	39,079	52,945	69,953	0,427	0,436	8418,940	8513,190	135,663	14,883	5,463	0,669	38,978	8,060	25,749	2025-03-05 11:42
132,250	39,093	52,973	69,984	0,427	0,437	8419,833	8516,529	134,923	14,566	5,712	1,560	38,926	8,055	25,749	2025-03-05 11:43
132,750	39,102	52,996	70,012	0,426	0,436	8416,266	8514,331	107,944	14,572	5,724	0,637	38,933	8,055	25,656	2025-03-05 11:43
133,250	39,108	53,015	70,037	0,426	0,436	8426,502	8518,277	104,727	14,651	5,643	1,097	38,972	8,059	25,656	2025-03-05 11:44
133,750	39,117	53,050	70,093	0,427	0,437	8440,508	8534,636	110,748	14,582	5,678	1,941	38,973	8,059	25,656	2025-03-05 11:44
134,250	39,122	53,073	70,118	0,427	0,437	8446,512	8535,152	163,275	14,729	5,533	-2,315	38,849	8,047	25,656	2025-03-05 11:45
134,750	39,130	53,087	70,158	0,426	0,437	8439,909	8547,101	125,928	14,827	5,453	1,486	39,048	8,067	25,562	2025-03-05 11:45
135,250	39,129	53,106	70,186	0,426	0,437	8460,670	8559,886	136,205	14,881	5,409	1,553	38,988	8,061	25,562	2025-03-05 11:46
135,750	39,134	53,127	70,232	0,427	0,436	8471,214	8559,432	124,618	14,882	5,379	3,047	38,959	8,058	25,562	2025-03-05 11:46
136,250	39,144	53,141	70,276	0,427	0,436	8495,882	8576,796	118,819	14,980	5,265	-0,049	39,166	8,079	25,562	2025-03-05 11:47
136,750	39,150	53,151	70,301	0,427	0,436	8487,408	8582,570	122,342	15,095	5,219	2,694	39,181	8,081	25,468	2025-03-05 11:47
137,250	39,158	53,173	70,344	0,427	0,436	8500,442	8590,876	129,371	15,024	5,253	3,151	38,670	8,028	25,468	2025-03-05 11:48
137,750	39,147	53,183	70,393	0,427	0,437	8520,267	8615,585	104,282	14,895	5,399	1,475	38,857	8,047	25,468	2025-03-05 11:48
138,250	39,166	53,215	70,444	0,427	0,437	8526,150	8627,567	104,174	14,856	5,413	3,023	39,033	8,066	25,468	2025-03-05 11:49
138,750	39,170	53,232	70,488	0,427	0,437	8540,695	8639,083	94,651	14,831	5,506	3,364	38,958	8,058	25,468	2025-03-05 11:49
139,250	39,173	53,248	70,548	0,427	0,437	8554,010	8661,064	129,638	14,607	5,683	3,071	38,914	8,053	25,345	2025-03-05 11:50
139,750	39,178	53,270	70,568	0,427	0,436	8566,172	8652,469	162,844	14,862	5,474	3,868	39,347	8,098	25,346	2025-03-05 11:50
140,250	39,183	53,297	70,645	0,427	0,436	8567,984	8681,348	126,341	14,728	5,609	2,851	38,616	8,022	25,346	2025-03-05 11:51
140,750	39,192	53,325	70,698	0,427	0,437	8578,377	8698,931	156,110	14,640	5,697	1,678	38,812	8,043	25,346	2025-03-05 11:51
141,250	39,196	53,345	70,713	0,427	0,437	8595,358	8697,321	121,505	14,393	5,965	3,014	38,880	8,050	25,345	2025-03-05 11:52
141,750	39,207	53,380	70,765	0,427	0,437	8610,258	8710,938	127,505	14,186	6,113	-1,913	38,878	8,050	25,252	2025-03-05 11:52
142,250	39,204	53,391	70,836	0,427	0,437	8625,212	8735,970	124,017	14,131	6,242	0,142	38,916	8,054	25,252	2025-03-05 11:53
142,750	39,218	53,419	70,861	0,428	0,437	8630,811	8738,435	126,529	13,941	6,352	0,096	38,762	8,038	25,252	2025-03-05 11:53
143,250	39,222	53,446	70,923	0,427	0,437	8636,342	8756,884	118,169	13,891	6,426	1,358	39,232	8,086	25,158	2025-03-05 11:54
143,750	39,218	53,466	70,937	0,427	0,437	8645,910	8751,027	121,310	14,014	6,299	0,670	39,030	8,065	25,158	2025-03-05 11:54
144,250	39,221	53,498	70,979	0,427	0,437	8668,347	8754,822	116,053	14,024	6,313	3,665	39,171	8,080	25,158	2025-03-05 11:55
144,750	39,238	53,511	71,016	0,427	0,437	8667,245	8769,221	116,745	13,999	6,261	-0,735	38,848	8,047	25,158	2025-03-05 11:55
145,250	39,234	53,542	71,036	0,427	0,437	8682,578	8762,095	118,343	14,012	6,371	0,753	39,336	8,097	25,158	2025-03-05 11:56
145,750	39,243	53,558	71,069	0,427	0,438	8684,053	8787,609	103,031	13,605	6,665	3,693	38,839	8,046	25,064	2025-03-05 11:56
146,250	39,253	53,597	71,113	0,427	0,438	8683,716	8792,525	100,724	13,762	6,575	3,074	39,166	8,079	25,064	2025-03-05 11:57
146,750	39,249	53,636	71,142	0,427	0,437	8692,197	8778,495	109,969	13,610	6,707	1,401	38,990	8,061	25,064	2025-03-05 11:57

PE 56 Cat I_250305.DAT

Category: I run 1

	301	302	304	305	306	308	317	1311	1313	1314	1315	1316	1317	1318	1319	1320	1101	1103
Measure- ment time	CO chimney	CO2 chimney	Pdyn	Pstat	Static pressure chimney	O2 chimney	Scale	Flue gas temp	Flue gas at pitot	filter temp 1	filter temp 2	gas meter temp 1	gas meter temp 2	gasmeter 1hr	Gas meter ambient	Filter temp 1 hr	Ambient temperature	T4 outlet load side
Minutes	VDC	VDC	VDC	VDC	VDC	VDC	VDC	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
147,250	0,214	0,753	0,978	0,083	-0,010	0,212	0,801	72,668	22,271	19,726	19,494	19,669	19,809	19,585	19,487	19,543	19,706	56,952
147,750	0,214	0,767	0,976	0,004	-0,030	0,203	0,800	72,669	22,264	19,735	19,505	19,681	19,811	19,592	19,490	19,541	19,705	56,968
148,250	0,216	0,768	0,975	-0,037	-0,010	0,207	0,800	72,741	22,290	19,743	19,499	19,701	19,809	19,584	19,482	19,544	19,704	56,999
148,750	0,216	0,764	0,973	0,062	-0,028	0,205	0,800	72,885	22,310	19,741	19,498	19,678	19,805	19,603	19,490	19,545	19,710	57,015
149,250	0,216	0,763	0,976	0,091	-0,011	0,211	0,800	72,893	22,263	19,735	19,496	19,667	19,807	19,596	19,487	19,540	19,704	57,017
149,750	0,217	0,757	0,972	0,045	0,684	0,213	0,800	72,919	22,282	19,742	19,498	19,673	19,808	19,603	19,491	19,549	19,711	57,056
150,250	0,215	0,761	0,977	-0,011	0,615	0,208	0,799	72,900	22,273	19,729	19,490	19,658	19,804	19,586	19,477	19,537	19,702	57,064
150,750	0,217	0,759	0,975	0,010	-0,010	0,215	0,799	72,913	22,284	19,735	19,505	19,692	19,824	19,596	19,504	19,544	19,709	57,088
151,250	0,219	0,753	0,972	-0,003	-0,011	0,217	0,799	72,917	22,252	19,740	19,491	19,673	19,805	19,588	19,480	19,530	19,702	57,108
151,750	0,219	0,755	0,975	-0,022	-0,011	0,214	0,798	72,983	22,227	19,739	19,485	19,682	19,806	19,593	19,483	19,524	19,700	57,115
152,250	0,221	0,762	0,975	0,051	-0,011	0,206	0,798	73,040	22,239	19,735	19,492	19,677	19,806	19,595	19,484	19,548	19,708	57,143
152,750	0,224	0,767	0,969	0,061	-0,010	0,203	0,798	73,072	22,250	19,736	19,500	19,694	19,804	19,592	19,488	19,535	19,705	57,148
153,250	0,221	0,762	0,968	0,016	-0,757	0,216	0,797	73,048	22,237	19,723	19,496	19,677	19,804	19,589	19,494	19,536	19,702	57,163
153,750	0,218	0,742	0,973	0,107	-0,011	0,228	0,797	73,062	22,206	19,749	19,510	19,692	19,801	19,593	19,494	19,553	19,710	57,195
154,250	0,217	0,736	0,974	0,102	-0,010	0,231	0,796	73,031	22,188	19,739	19,515	19,691	19,808	19,594	19,486	19,549	19,702	57,203
154,750	0,217	0,736	0,976	-0,074	-0,029	0,232	0,796	73,045	22,203	19,725	19,517	19,671	19,800	19,582	19,488	19,528	19,698	57,226
155,250	0,216	0,733	0,968	0,006	-0,010	0,233	0,796	73,057	22,185	19,735	19,542	19,673	19,807	19,600	19,494	19,552	19,710	57,228
155,750	0,216	0,736	0,967	0,016	-0,010	0,232	0,795	73,125	22,183	19,740	19,579	19,694	19,808	19,600	19,486	19,583	19,714	57,259
156,250	0,215	0,737	0,966	0,064	-0,011	0,229	0,795	73,188	22,177	19,736	19,589	19,677	19,816	19,596	19,482	19,586	19,703	57,256
156,750	0,215	0,741	0,967	-0,030	-0,011	0,227	0,795	73,264	22,192	19,757	19,604	19,673	19,786	19,574	19,475	19,599	19,698	57,272
157,250	0,216	0,741	0,963	-0,002	-0,011	0,228	0,795	73,209	22,231	19,765	19,605	19,673	19,810	19,586	19,481	19,615	19,703	57,274
157,750	0,218	0,738	0,966	0,036	-0,010	0,229	0,794	73,245	22,192	19,777	19,628	19,683	19,796	19,592	19,486	19,605	19,706	57,290
158,250	0,217	0,741	0,969	0,005	0,496	0,226	0,795	73,308	22,202	19,795	19,645	19,703	19,799	19,593	19,460	19,615	19,708	57,277
158,750	0,217	0,742	0,965	0,054	-0,010	0,226	0,794	73,283	22,205	20,019	19,771	19,682	19,796	19,600	19,309	19,798	19,710	57,271
159,250	0,218	0,745	0,961	-0,028	-0,030	0,222	0,793	73,225	22,140	20,088	19,937	19,671	19,780	19,603	19,385	19,883	19,709	57,283
159,750	0,217	0,746	0,971	0,040	-0,664	0,223	0,793	73,177	22,192	20,140	20,028	19,706	19,779	19,609	19,605	19,942	19,709	57,294
160,250	0,216	0,742	0,970	0,040	-0,532	0,226	0,792	73,218	22,166	20,167	20,055	19,700	19,781	19,615	19,682	19,973	19,712	57,299
160,750	0,217	0,740	0,970	0,001	-0,011	0,229	0,793	73,189	22,195	20,189	20,092	19,685	19,777	19,647	19,589	20,008	19,713	57,304
161,250	0,217	0,733	0,972	0,090	-0,568	0,238	0,792	73,147	22,241	20,215	20,111	19,695	19,770	19,655	19,545	20,041	19,710	57,319
161,750	0,217	0,723	0,972	-0,039	-0,011	0,241	0,792	73,148	22,232	20,235	20,136	19,699	19,765	19,692	19,506	20,056	19,710	57,305
162,250	0,216	0,728	0,974	0,089	0,684	0,234	0,792	73,268	22,245	20,250	20,162	19,694	19,762	19,712	19,465	20,068	19,706	57,320
162,750	0,215	0,737	0,971	0,038	-0,029	0,229	0,791	73,419	22,265	20,258	20,175	19,683	19,760	19,751	19,425	20,098	19,707	57,320
163,250	0,216	0,743	0,971	0,117	0,815	0,225	0,791	73,374	22,285	20,280	20,192	19,689	19,751	19,803	19,432	20,122	19,713	57,286

PE 56 Cat I_250305.DAT

Category: I run 1

	1104	1105	1107	130	230	101	102	1	2	3	6	7	8	11	
Measure- ment time	T3 inlet load side	T2 inlet boiler	T1 outlet boiler	Flow load side	Flow boiler side	Heat output load side	Heat output boiler	CO chimney	CO2 chimney	O2 chimney	Pstat	Pdyn	Tunnel velocity	Våg	Time
Minutes	°C	°C	°C	m³/h	m³/h	W	W	ppm	%	%	Pa	Pa	m/s	kg	Clock
147,250	39,256	53,652	71,170	0,427	0,437	8698,934	8787,143	90,815	13,951	6,353	3,306	39,172	8,080	25,065	2025-03-05 11:58
147,750	39,263	53,673	71,197	0,427	0,437	8709,477	8786,868	96,558	14,252	6,093	0,147	39,037	8,066	24,971	2025-03-05 11:58
148,250	39,267	53,692	71,210	0,427	0,437	8728,531	8786,887	103,458	14,120	6,199	-1,487	39,017	8,064	24,971	2025-03-05 11:59
148,750	39,275	53,696	71,236	0,427	0,438	8732,579	8799,600	109,125	14,150	6,155	2,468	38,934	8,055	24,971	2025-03-05 11:59
149,250	39,277	53,708	71,287	0,427	0,438	8735,877	8830,564	102,169	14,020	6,332	3,644	39,017	8,064	24,971	2025-03-05 12:00
149,750	39,286	53,729	71,307	0,427	0,437	8747,984	8808,828	116,032	13,917	6,403	1,786	38,898	8,052	24,971	2025-03-05 12:00
150,250	39,280	53,737	71,307	0,427	0,438	8751,532	8818,531	99,470	14,121	6,249	-0,434	38,988	8,061	24,846	2025-03-05 12:01
150,750	39,295	53,767	71,375	0,427	0,438	8761,683	8835,810	118,756	13,914	6,437	0,417	39,123	8,075	24,846	2025-03-05 12:01
151,250	39,297	53,776	71,392	0,427	0,438	8767,314	8838,411	128,381	13,805	6,510	-0,136	38,984	8,061	24,846	2025-03-05 12:02
151,750	39,297	53,798	71,421	0,427	0,438	8761,925	8848,756	124,677	13,898	6,434	-0,896	39,154	8,078	24,846	2025-03-05 12:02
152,250	39,310	53,829	71,448	0,427	0,438	8776,095	8848,416	143,081	14,154	6,185	2,020	38,912	8,053	24,846	2025-03-05 12:03
152,750	39,313	53,840	71,475	0,428	0,438	8788,483	8856,567	156,281	14,213	6,090	2,430	38,762	8,038	24,846	2025-03-05 12:03
153,250	39,321	53,841	71,501	0,427	0,438	8781,670	8859,765	131,984	13,911	6,494	0,625	38,724	8,034	24,752	2025-03-05 12:04
153,750	39,329	53,863	71,528	0,427	0,438	8792,393	8863,766	116,241	13,496	6,844	4,295	38,844	8,046	24,752	2025-03-05 12:04
154,250	39,333	53,886	71,534	0,427	0,438	8799,828	8860,960	113,517	13,387	6,917	4,071	39,119	8,075	24,752	2025-03-05 12:05
154,750	39,331	53,890	71,544	0,427	0,438	8813,780	8866,495	112,078	13,374	6,964	-2,963	38,962	8,058	24,752	2025-03-05 12:05
155,250	39,341	53,902	71,573	0,427	0,438	8796,579	8875,495	108,486	13,319	6,982	0,254	38,605	8,021	24,750	2025-03-05 12:06
155,750	39,340	53,918	71,586	0,427	0,438	8817,574	8863,392	112,075	13,410	6,949	0,642	38,700	8,031	24,752	2025-03-05 12:06
156,250	39,339	53,928	71,596	0,427	0,438	8820,094	8872,843	97,576	13,454	6,864	2,568	38,673	8,028	24,658	2025-03-05 12:07
156,750	39,344	53,945	71,617	0,427	0,438	8825,716	8874,109	104,070	13,513	6,817	-1,211	38,604	8,021	24,658	2025-03-05 12:07
157,250	39,349	53,948	71,611	0,427	0,438	8819,357	8872,280	112,266	13,502	6,839	-0,075	38,591	8,020	24,658	2025-03-05 12:08
157,750	39,347	53,962	71,649	0,427	0,438	8827,863	8872,530	118,124	13,429	6,869	1,434	38,664	8,027	24,565	2025-03-05 12:08
158,250	39,339	53,970	71,678	0,427	0,438	8826,399	8886,923	116,046	13,543	6,787	0,207	38,918	8,054	24,658	2025-03-05 12:09
158,750	39,331	53,973	71,650	0,427	0,437	8824,400	8864,439	116,206	13,551	6,769	2,143	38,386	7,999	24,565	2025-03-05 12:09
159,250	39,315	53,980	71,671	0,427	0,438	8840,524	8884,473	115,390	13,677	6,659	-1,106	38,643	8,025	24,565	2025-03-05 12:10
159,750	39,315	53,988	71,704	0,427	0,438	8840,567	8890,221	108,500	13,633	6,678	1,588	38,723	8,034	24,565	2025-03-05 12:10
160,250	39,311	53,991	71,695	0,427	0,438	8848,633	8889,196	108,701	13,540	6,776	1,599	38,971	8,059	24,471	2025-03-05 12:11
160,750	39,317	53,989	71,728	0,427	0,438	8847,541	8908,657	115,629	13,491	6,864	0,054	38,644	8,025	24,564	2025-03-05 12:11
161,250	39,309	53,988	71,737	0,427	0,438	8860,069	8910,631	120,845	13,233	7,140	3,592	38,766	8,038	24,471	2025-03-05 12:12
161,750	39,308	53,992	71,729	0,427	0,438	8856,796	8905,918	113,117	13,093	7,230	-1,555	38,850	8,047	24,471	2025-03-05 12:12
162,250	39,304	54,002	71,748	0,427	0,438	8870,254	8910,574	104,515	13,284	7,020	3,575	39,004	8,063	24,471	2025-03-05 12:13
162,750	39,278	53,989	71,728	0,427	0,438	8875,419	8903,052	103,910	13,444	6,856	1,524	38,739	8,035	24,346	2025-03-05 12:13
163,250	39,277	54,003	71,768	0,427	0,438	8860,608	8912,720	105,359	13,614	6,738	4,699	38,847	8,046	24,471	2025-03-05 12:14

PE 56 Cat I_250305.DAT

Category: I run 1

	301	302	304	305	306	308	317	1311	1313	1314	1315	1316	1317	1318	1319	1320	1101	1103
Measure- ment time	CO chimney	CO2 chimney	Pdyn	Pstat	Static pressure chimney	O2 chimney	Scale	Flue gas temp	Flue gas at pitot	filter temp 1	filter temp 2	gas meter temp 1	gas meter temp 2	gasmeter 1hr	Gas meter ambient	Filter temp 1 hr	Ambient temperature	T4 outlet load side
Minutes	VDC	VDC	VDC	VDC	VDC	VDC	VDC	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
163,750	0,216	0,744	0,964	0,004	-0,010	0,223	0,792	73,440	22,275	20,295	20,211	19,683	19,760	19,831	19,405	20,139	19,708	57,307
164,250	0,216	0,744	0,967	0,113	-0,010	0,227	0,790	73,350	22,281	20,321	20,233	19,702	19,762	19,893	19,435	20,174	19,715	57,323
164,750	0,218	0,735	0,968	0,013	-0,009	0,232	0,790	73,341	22,287	20,323	20,255	19,704	19,765	19,945	19,444	20,198	19,714	57,333
165,250	0,217	0,735	0,965	0,017	-0,948	0,233	0,790	73,429	22,287	20,343	20,270	19,715	19,770	20,005	19,463	20,206	19,716	57,324
165,750	0,218	0,728	0,968	0,058	0,579	0,239	0,790	73,547	22,261	20,346	20,270	19,694	19,768	20,063	19,470	20,220	19,707	57,322
166,250	0,218	0,729	0,967	0,041	-0,011	0,238	0,790	73,463	22,254	20,365	20,297	19,702	19,760	20,143	19,471	20,229	19,712	57,329
166,750	0,218	0,724	0,966	0,022	-0,545	0,242	0,789	73,463	22,219	20,371	20,303	19,710	19,763	20,220	19,489	20,258	19,715	57,313
167,250	0,218	0,727	0,969	0,049	-0,027	0,236	0,789	73,524	22,223	20,387	20,322	19,706	19,772	20,302	19,509	20,270	19,713	57,314
167,750	0,218	0,733	0,965	0,006	-0,010	0,234	0,788	73,578	22,213	20,391	20,325	19,718	19,782	20,381	19,502	20,294	19,711	57,335
168,250	0,218	0,730	0,968	-0,011	-0,010	0,237	0,788	73,536	22,247	20,414	20,348	19,699	19,766	20,484	19,527	20,321	19,716	57,298
168,750	0,219	0,729	0,971	0,113	-0,011	0,236	0,788	73,544	22,245	20,422	20,361	19,710	19,760	20,571	19,532	20,331	19,714	57,326
169,250	0,219	0,732	0,960	0,007	-0,746	0,233	0,788	73,582	22,267	20,440	20,378	19,696	19,774	20,666	19,549	20,357	19,718	57,287
169,750	0,219	0,733	0,967	0,047	-0,011	0,234	0,787	73,586	22,262	20,453	20,389	19,714	19,756	20,767	19,571	20,376	19,715	57,262
170,250	0,219	0,736	0,972	0,040	-0,010	0,227	0,787	73,650	22,266	20,475	20,409	19,715	19,764	20,870	19,587	20,385	19,716	57,272
170,750	0,219	0,747	0,966	-0,003	0,749	0,220	0,787	73,685	22,273	20,479	20,417	19,710	19,768	20,975	19,583	20,399	19,715	57,276
171,250	0,221	0,752	0,963	-0,023	-0,010	0,219	0,787	73,694	22,216	20,483	20,420	19,697	19,759	21,090	19,610	20,399	19,718	57,277
171,750	0,222	0,742	0,968	0,064	-0,698	0,226	0,786	73,741	22,268	20,511	20,431	19,706	19,771	21,205	19,629	20,435	19,722	57,287
172,250	0,219	0,742	0,965	0,030	-0,656	0,225	0,786	73,668	22,243	20,529	20,442	19,716	19,765	21,323	19,646	20,442	19,724	57,269
172,750	0,219	0,742	0,967	0,027	-0,010	0,229	0,785	73,655	22,221	20,532	20,448	19,706	19,758	21,438	19,646	20,441	19,719	57,282
173,250	0,222	0,734	0,967	-0,007	-0,028	0,234	0,785	73,669	22,252	20,550	20,457	19,718	19,766	21,562	19,659	20,461	19,720	57,267
173,750	0,223	0,730	0,971	-0,029	-0,028	0,238	0,785	73,707	22,250	20,563	20,474	19,723	19,781	21,689	19,680	20,470	19,724	57,275
174,250	0,225	0,728	0,966	-0,016	-0,733	0,238	0,785	73,582	22,223	20,577	20,487	19,732	19,774	21,827	19,698	20,491	19,724	57,267
174,750	0,224	0,726	0,970	0,004	-0,010	0,241	0,785	73,646	22,247	20,594	20,489	19,732	19,764	21,951	19,709	20,474	19,722	57,270
175,250	0,220	0,726	0,968	-0,010	0,995	0,237	0,784	73,683	22,243	20,594	20,493	19,725	19,781	22,085	19,727	20,486	19,723	57,276
175,750	0,217	0,736	0,968	-0,070	0,611	0,231	0,784	73,611	22,274	20,602	20,496	19,703	19,770	22,204	19,731	20,484	19,718	57,264
176,250	0,218	0,732	0,968	0,038	0,510	0,237	0,784	73,658	22,293	20,624	20,515	19,726	19,780	22,351	19,748	20,489	19,724	57,275
176,750	0,217	0,730	0,967	0,034	-0,171	0,235	0,784	73,610	22,269	20,623	20,522	19,707	19,744	22,486	19,771	20,496	19,718	57,258
177,250	0,218	0,728	0,961	-0,055	-0,011	0,242	0,784	73,636	22,236	20,639	20,524	19,712	19,779	22,640	19,795	20,505	19,722	57,270
177,750	0,217	0,722	0,961	-0,021	0,657	0,242	0,783	73,606	22,231	20,651	20,542	19,730	19,774	22,765	19,812	20,510	19,722	57,267
178,250	0,217	0,724	0,964	0,130	-0,010	0,243	0,782	73,709	22,309	20,675	20,569	19,721	19,783	22,911	19,827	20,523	19,728	57,248
178,750	0,218	0,717	0,964	0,066	-0,010	0,249	0,782	73,733	22,334	20,684	20,571	19,731	19,778	23,044	19,852	20,540	19,727	57,252
179,250	0,218	0,712	0,969	-0,045	-0,011	0,253	0,782	73,600	22,313	20,698	20,568	19,740	19,776	23,198	19,862	20,530	19,725	57,203
179,750	0,219	0,710	0,969	0,061	-0,011	0,257	0,782	73,518	22,312	20,711	20,584	19,738	19,772	23,344	19,887	20,540	19,731	57,254

PE 56 Cat I_250305.DAT

Category: I run 1

	1104	1105	1107	130	230	101	102	1	2	3	6	7	8	11	
Measure- ment time	T3 inlet load side	T2 inlet boiler	T1 outlet boiler	Flow load side	Flow boiler side	Heat output load side	Heat output boiler	CO chimney	CO2 chimney	O2 chimney	Pstat	Pdyn	Tunnel velocity	Våg	Time
Minutes	°C	°C	°C	m³/h	m³/h	W	W	ppm	%	%	Pa	Pa	m/s	kg	Clock
163,750	39,264	54,003	71,802	0,427	0,438	8880,062	8937,474	105,355	13,601	6,704	0,161	38,511	8,012	24,471	2025-03-05 12:14
164,250	39,257	54,002	71,760	0,427	0,438	8884,837	8914,271	117,721	13,565	6,824	4,524	38,628	8,024	24,346	2025-03-05 12:15
164,750	39,249	54,010	71,793	0,427	0,438	8894,627	8929,762	119,705	13,340	6,973	0,500	38,767	8,038	24,346	2025-03-05 12:15
165,250	39,244	54,004	71,792	0,427	0,438	8897,387	8926,944	115,205	13,344	7,000	0,663	38,631	8,024	24,346	2025-03-05 12:16
165,750	39,228	54,002	71,820	0,427	0,438	8895,166	8942,304	122,203	13,157	7,165	2,328	38,751	8,036	24,346	2025-03-05 12:16
166,250	39,230	54,010	71,817	0,426	0,438	8896,180	8945,880	121,929	13,240	7,129	1,630	38,665	8,028	24,346	2025-03-05 12:17
166,750	39,224	54,008	71,823	0,427	0,438	8893,814	8943,021	121,918	13,072	7,255	0,877	38,596	8,020	24,253	2025-03-05 12:17
167,250	39,218	54,019	71,791	0,427	0,438	8895,833	8923,127	118,982	13,219	7,089	1,972	38,865	8,048	24,346	2025-03-05 12:18
167,750	39,203	54,022	71,848	0,427	0,438	8916,267	8945,498	119,833	13,333	7,018	0,221	38,523	8,013	24,253	2025-03-05 12:18
168,250	39,171	54,009	71,852	0,427	0,438	8916,120	8956,494	119,990	13,247	7,105	-0,455	38,752	8,037	24,253	2025-03-05 12:19
168,750	39,144	54,004	71,836	0,427	0,438	8940,533	8953,249	127,373	13,230	7,088	4,534	38,794	8,041	24,253	2025-03-05 12:19
169,250	39,133	53,996	71,812	0,427	0,438	8924,159	8942,066	126,727	13,321	6,978	0,268	38,442	8,004	24,253	2025-03-05 12:20
169,750	39,111	53,991	71,810	0,426	0,438	8915,908	8954,353	127,783	13,300	7,015	1,885	38,871	8,049	24,159	2025-03-05 12:20
170,250	39,095	53,996	71,837	0,426	0,438	8933,557	8960,602	123,367	13,460	6,820	1,584	38,612	8,022	24,253	2025-03-05 12:21
170,750	39,078	53,988	71,799	0,426	0,439	8934,581	8957,463	132,814	13,692	6,600	-0,103	38,548	8,015	24,165	2025-03-05 12:21
171,250	39,065	53,982	71,820	0,427	0,439	8952,805	8970,620	136,619	13,796	6,575	-0,915	38,548	8,015	24,159	2025-03-05 12:22
171,750	39,058	53,976	71,822	0,427	0,439	8962,043	8973,056	144,144	13,538	6,794	2,554	38,731	8,034	24,065	2025-03-05 12:22
172,250	39,056	53,975	71,835	0,426	0,438	8934,887	8975,422	124,833	13,557	6,752	1,212	38,564	8,017	24,065	2025-03-05 12:23
172,750	39,034	53,966	71,848	0,426	0,438	8959,000	8984,017	133,019	13,505	6,865	1,092	38,534	8,014	24,065	2025-03-05 12:23
173,250	39,032	53,972	71,832	0,426	0,438	8946,645	8974,110	141,629	13,343	7,016	-0,264	38,819	8,044	24,066	2025-03-05 12:24
173,750	39,018	53,964	71,849	0,426	0,438	8964,928	8985,281	155,266	13,200	7,153	-1,159	38,904	8,052	24,065	2025-03-05 12:24
174,250	39,013	53,959	71,839	0,426	0,438	8960,235	8980,485	158,206	13,241	7,138	-0,623	38,731	8,034	24,065	2025-03-05 12:25
174,750	39,015	53,963	71,833	0,426	0,438	8956,640	8983,557	150,030	13,129	7,218	0,144	38,776	8,039	24,065	2025-03-05 12:25
175,250	39,016	53,961	71,845	0,426	0,438	8962,331	8984,696	129,475	13,178	7,116	-0,418	38,650	8,026	23,971	2025-03-05 12:26
175,750	39,014	53,961	71,862	0,426	0,438	8951,724	8997,007	110,175	13,450	6,928	-2,788	38,831	8,045	23,971	2025-03-05 12:26
176,250	39,021	53,972	71,854	0,426	0,438	8961,534	8984,449	121,074	13,274	7,103	1,529	38,622	8,023	24,065	2025-03-05 12:27
176,750	39,014	53,965	71,849	0,426	0,438	8953,437	8983,631	112,047	13,294	7,053	1,351	38,677	8,029	23,971	2025-03-05 12:27
177,250	39,023	53,965	71,851	0,426	0,438	8948,325	8984,310	125,274	13,103	7,257	-2,211	38,561	8,017	23,971	2025-03-05 12:28
177,750	39,018	53,969	71,849	0,426	0,438	8957,050	8980,823	116,025	13,060	7,275	-0,843	38,333	7,993	23,847	2025-03-05 12:28
178,250	39,021	53,969	71,831	0,426	0,439	8945,404	8982,529	114,118	13,104	7,279	5,187	38,647	8,026	23,846	2025-03-05 12:29
178,750	39,017	53,969	71,826	0,426	0,439	8943,600	8980,059	119,392	12,901	7,457	2,639	38,768	8,038	23,846	2025-03-05 12:29
179,250	39,015	53,968	71,828	0,426	0,438	8924,865	8974,983	122,544	12,780	7,585	-1,800	38,841	8,046	23,846	2025-03-05 12:30
179,750	39,011	53,975	71,803	0,425	0,439	8942,011	8967,268	133,825	12,720	7,718	2,445	38,871	8,049	23,846	2025-03-05 12:30

PE 56 Cat I_250305.DAT

Category: I run 1

	301	302	304	305	306	308	317	1311	1313	1314	1315	1316	1317	1318	1319	1320	1101	1103
Measure- ment time	CO chimney	CO2 chimney	Pdyn	Pstat	Static pressure chimney	O2 chimney	Scale	Flue gas temp	Flue gas at pitot	filter temp 1	filter temp 2	gas meter temp 1	gas meter temp 2	gasmeter 1hr	Gas meter ambient	Filter temp 1 hr	Ambient temperature	T4 outlet load side
Minutes	VDC	VDC	VDC	VDC	VDC	VDC	VDC	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
180,250	0,223	0,699	0,972	0,008	-0,010	0,264	0,782	73,523	22,292	20,722	20,584	19,749	19,790	23,477	19,906	20,552	19,725	57,259
180,750	0,221	0,699	0,964	0,004	-0,010	0,261	0,782	73,534	22,300	20,719	20,591	19,739	19,773	23,642	19,929	20,547	19,722	57,254
181,250	0,219	0,707	0,970	0,039	-0,010	0,257	0,781	73,437	22,282	20,716	20,585	19,728	19,774	23,782	19,947	20,548	19,726	57,267
181,750	0,225	0,701	0,969	-0,057	-0,010	0,263	0,780	73,473	22,279	20,728	20,604	19,738	19,789	23,942	19,974	20,569	19,727	57,273
182,250	0,221	0,700	0,971	0,015	0,062	0,260	0,780	73,516	22,252	20,747	20,598	19,746	19,780	24,073	19,985	20,563	19,727	57,252
182,750	0,220	0,703	0,967	0,074	-0,662	0,260	0,780	73,573	22,220	20,751	20,607	19,742	19,792	24,226	20,006	20,560	19,729	57,256
183,250	0,220	0,701	0,966	0,009	-0,010	0,262	0,780	73,598	22,210	20,749	20,608	19,737	19,778	24,372	20,036	20,568	19,729	57,263
183,750	0,220	0,702	0,964	0,020	-0,028	0,260	0,780	73,542	22,162	20,741	20,610	19,749	19,782	24,514	20,049	20,561	19,725	57,254
184,250	0,219	0,703	0,963	0,082	0,721	0,261	0,780	73,465	22,178	20,746	20,601	19,749	19,782	24,664	20,067	20,559	19,724	57,253
184,750	0,220	0,699	0,968	-0,009	-0,010	0,264	0,779	73,546	22,180	20,749	20,604	19,743	19,774	24,806	20,079	20,578	19,724	57,245
185,250	0,220	0,696	0,965	0,056	-0,011	0,265	0,779	73,627	22,207	20,770	20,623	19,769	19,796	24,961	20,109	20,581	19,732	57,217
185,750	0,218	0,703	0,965	0,062	-0,010	0,257	0,779	73,689	22,184	20,761	20,608	19,740	19,782	25,088	20,135	20,580	19,729	57,238
186,250	0,218	0,709	0,970	-0,019	0,649	0,256	0,779	73,596	22,207	20,767	20,617	19,734	19,782	25,232	20,128	20,588	19,731	57,221
186,750	0,219	0,706	0,974	0,002	-0,030	0,255	0,779	73,560	22,190	20,785	20,636	19,783	19,804	25,381	20,156	20,603	19,734	57,222
187,250	0,218	0,708	0,974	0,050	-0,030	0,257	0,779	73,523	22,055	20,767	20,612	19,752	19,782	25,514	20,192	20,567	19,730	57,212
187,750	0,221	0,701	0,972	0,002	-0,515	0,261	0,778	73,539	22,153	20,791	20,632	19,776	19,805	25,657	20,202	20,592	19,740	57,205
188,250	0,219	0,703	0,964	0,043	-0,010	0,260	0,777	73,609	22,115	20,796	20,648	19,793	19,803	25,794	20,221	20,587	19,740	57,170
188,750	0,221	0,700	0,970	-0,022	-0,011	0,262	0,778	73,729	22,089	20,774	20,616	19,742	19,785	25,932	20,236	20,577	19,734	57,185
189,250	0,221	0,703	0,970	0,014	0,634	0,256	0,777	73,751	22,190	20,784	20,622	19,750	19,786	26,068	20,253	20,587	19,736	57,201
189,750	0,219	0,711	0,974	0,026	-0,656	0,250	0,777	73,709	22,162	20,791	20,640	19,776	19,794	26,214	20,269	20,595	19,738	57,184
190,250	0,219	0,715	0,969	-0,052	-0,011	0,250	0,777	73,660	22,164	20,793	20,636	19,777	19,806	26,341	20,293	20,597	19,738	57,165
190,750	0,222	0,711	0,969	0,052	-0,011	0,254	0,776	73,607	22,198	20,788	20,628	19,764	19,789	26,469	20,307	20,603	19,736	57,147
191,250	0,221	0,706	0,966	0,149	0,501	0,258	0,776	73,560	22,200	20,802	20,657	19,794	19,805	26,601	20,339	20,605	19,743	57,118
191,750	0,222	0,702	0,966	0,109	0,584	0,259	0,776	73,611	22,213	20,801	20,639	19,803	19,810	26,742	20,354	20,599	19,740	57,145
192,250	0,219	0,704	0,968	-0,010	-0,695	0,258	0,776	73,535	22,165	20,792	20,644	19,772	19,800	26,861	20,360	20,590	19,739	57,127
192,750	0,219	0,701	0,973	-0,037	-0,817	0,262	0,776	73,528	22,197	20,804	20,652	19,787	19,805	27,001	20,389	20,598	19,740	57,134
193,250	0,219	0,704	0,964	0,026	-0,724	0,258	0,776	73,542	22,212	20,789	20,652	19,758	19,807	27,105	20,397	20,578	19,738	57,116
193,750	0,222	0,705	0,967	0,052	-0,010	0,257	0,776	73,650	22,220	20,791	20,663	19,777	19,803	27,247	20,419	20,603	19,738	57,121
194,250	0,218	0,712	0,972	0,039	0,643	0,251	0,776	73,670	22,254	20,810	20,652	19,772	19,801	27,358	20,427	20,594	19,738	57,130
194,750	0,218	0,714	0,975	0,087	0,491	0,252	0,773	73,592	22,226	20,806	20,671	19,814	19,828	27,493	20,449	20,601	19,740	57,136
195,250	0,219	0,709	0,968	-0,016	-0,516	0,254	0,773	73,555	22,208	20,808	20,651	19,800	19,822	27,608	20,466	20,594	19,745	57,132
195,750	0,221	0,710	0,973	0,031	-0,011	0,255	0,773	73,575	22,217	20,827	20,675	19,801	19,824	27,728	20,503	20,583	19,744	57,148
196,250	0,224	0,711	0,967	0,093	-0,011	0,250	0,773	73,627	22,263	20,817	20,680	19,799	19,818	27,852	20,497	20,598	19,747	57,136

PE 56 Cat I_250305.DAT

Category: I run 1

	1104	1105	1107	130	230	101	102	1	2	3	6	7	8	11	
Measure- ment time	T3 inlet load side	T2 inlet boiler	T1 outlet boiler	Flow load side	Flow boiler side	Heat output load side	Heat output boiler	CO chimney	CO2 chimney	O2 chimney	Pstat	Pdyn	Tunnel velocity	Våg	Time
Minutes	°C	°C	°C	m³/h	m³/h	W	W	ppm	%	%	Pa	Pa	m/s	kg	Clock
180,250	39,007	53,964	71,792	0,426	0,438	8958,701	8958,151	149,756	12,444	7,933	0,323	38,974	8,060	23,846	2025-03-05 12:31
180,750	39,021	53,956	71,800	0,426	0,438	8949,035	8962,400	136,240	12,510	7,826	0,155	38,508	8,011	23,846	2025-03-05 12:31
181,250	39,037	53,945	71,779	0,426	0,438	8947,918	8950,794	129,583	12,708	7,698	1,549	38,792	8,041	23,846	2025-03-05 12:32
181,750	39,052	53,945	71,775	0,426	0,438	8939,381	8956,916	166,238	12,456	7,884	-2,278	38,728	8,034	23,753	2025-03-05 12:32
182,250	39,070	53,947	71,757	0,426	0,438	8928,295	8942,917	137,456	12,546	7,804	0,600	38,753	8,037	23,753	2025-03-05 12:33
182,750	39,084	53,952	71,750	0,426	0,438	8923,448	8941,913	133,676	12,571	7,791	2,961	38,573	8,018	23,753	2025-03-05 12:33
183,250	39,086	53,954	71,741	0,426	0,438	8919,258	8933,544	133,234	12,509	7,858	0,357	38,604	8,021	23,753	2025-03-05 12:34
183,750	39,092	53,961	71,731	0,426	0,438	8909,823	8918,571	128,836	12,566	7,788	0,807	38,572	8,018	23,753	2025-03-05 12:34
184,250	39,100	53,959	71,723	0,426	0,438	8903,803	8914,564	123,374	12,571	7,829	3,282	38,521	8,013	23,753	2025-03-05 12:35
184,750	39,098	53,949	71,710	0,426	0,438	8906,134	8914,159	133,651	12,456	7,926	-0,380	38,682	8,029	23,659	2025-03-05 12:35
185,250	39,106	53,941	71,679	0,426	0,438	8893,405	8904,348	131,157	12,357	7,965	2,251	38,543	8,015	23,659	2025-03-05 12:36
185,750	39,114	53,936	71,683	0,426	0,438	8897,948	8908,763	121,706	12,629	7,716	2,487	38,631	8,024	23,753	2025-03-05 12:36
186,250	39,116	53,926	71,661	0,426	0,438	8896,048	8905,153	129,277	12,702	7,685	-0,777	38,755	8,037	23,659	2025-03-05 12:37
186,750	39,125	53,926	71,637	0,426	0,438	8885,291	8895,092	121,390	12,669	7,654	0,070	39,096	8,072	23,659	2025-03-05 12:37
187,250	39,131	53,919	71,617	0,426	0,438	8885,458	8885,726	128,176	12,665	7,717	1,990	39,017	8,064	23,659	2025-03-05 12:38
187,750	39,131	53,921	71,603	0,426	0,438	8882,682	8882,215	137,870	12,521	7,825	0,088	38,914	8,053	23,565	2025-03-05 12:38
188,250	39,136	53,911	71,592	0,426	0,438	8861,060	8871,129	124,625	12,601	7,789	1,739	38,443	8,004	23,565	2025-03-05 12:39
188,750	39,134	53,902	71,567	0,426	0,438	8870,598	8869,016	146,674	12,503	7,855	-0,896	38,843	8,046	23,565	2025-03-05 12:39
189,250	39,145	53,894	71,564	0,426	0,438	8870,758	8868,709	137,797	12,640	7,677	0,570	38,883	8,050	23,565	2025-03-05 12:40
189,750	39,144	53,890	71,521	0,426	0,437	8863,163	8843,799	122,943	12,801	7,500	1,030	39,024	8,065	23,565	2025-03-05 12:40
190,250	39,140	53,884	71,528	0,427	0,438	8868,035	8855,908	130,719	12,859	7,488	-2,094	38,630	8,024	23,565	2025-03-05 12:41
190,750	39,142	53,869	71,515	0,427	0,438	8850,383	8859,940	148,554	12,734	7,635	2,062	38,681	8,029	23,471	2025-03-05 12:41
191,250	39,147	53,865	71,491	0,427	0,438	8839,440	8855,680	134,214	12,659	7,733	5,979	38,539	8,014	23,471	2025-03-05 12:42
191,750	39,152	53,862	71,496	0,427	0,438	8850,020	8861,035	144,996	12,560	7,783	4,368	38,679	8,029	23,471	2025-03-05 12:42
192,250	39,154	53,858	71,477	0,427	0,438	8837,863	8857,003	128,228	12,634	7,744	-0,402	38,897	8,052	23,471	2025-03-05 12:43
192,750	39,157	53,857	71,469	0,426	0,438	8832,545	8840,833	127,581	12,481	7,855	-1,498	38,895	8,051	23,471	2025-03-05 12:43
193,250	39,150	53,845	71,444	0,426	0,438	8827,697	8842,181	132,553	12,639	7,726	1,027	38,704	8,032	23,471	2025-03-05 12:44
193,750	39,164	53,843	71,431	0,427	0,438	8827,691	8835,468	143,318	12,596	7,699	2,064	38,728	8,034	23,471	2025-03-05 12:44
194,250	39,192	53,847	71,436	0,427	0,438	8826,762	8835,295	120,448	12,796	7,527	1,549	39,020	8,064	23,471	2025-03-05 12:45
194,750	39,213	53,841	71,411	0,427	0,438	8813,498	8822,459	126,751	12,815	7,570	3,482	38,864	8,048	23,343	2025-03-05 12:45
195,250	39,232	53,845	71,445	0,427	0,438	8798,607	8842,865	130,941	12,732	7,618	-0,639	38,869	8,049	23,344	2025-03-05 12:46
195,750	39,254	53,854	71,380	0,426	0,438	8794,677	8804,574	152,970	12,729	7,637	1,254	38,947	8,057	23,344	2025-03-05 12:46
196,250	39,267	53,861	71,358	0,426	0,438	8781,597	8788,366	154,436	12,829	7,491	3,733	38,632	8,024	23,344	2025-03-05 12:47

PE 56 Cat I_250305.DAT

Category: I run 1

	301	302	304	305	306	308	317	1311	1313	1314	1315	1316	1317	1318	1319	1320	1101	1103
Measure- ment time	CO chimney	CO2 chimney	Pdyn	Pstat	Static pressure chimney	O2 chimney	Scale	Flue gas temp	Flue gas at pitot	filter temp 1	filter temp 2	gas meter temp 1	gas meter temp 2	gasmeter 1hr	Gas meter ambient	Filter temp 1 hr	Ambient temperature	T4 outlet load side
Minutes	VDC	VDC	VDC	VDC	VDC	VDC	VDC	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	
196,750	0,221	0,722	0,972	-0,004	-0,010	0,243	0,773	73,551	22,305	20,827	20,690	19,777	19,807	27,968	20,528	20,603	19,745	57,134
197,250	0,221	0,721	0,973	0,021	-0,757	0,247	0,773	73,540	22,168	20,820	20,671	19,787	19,811	28,085	20,539	20,604	19,741	57,120
197,750	0,222	0,712	0,973	-0,017	-0,708	0,255	0,772	73,551	22,225	20,829	20,675	19,791	19,822	28,198	20,555	20,607	19,748	57,133
198,250	0,222	0,707	0,974	0,033	0,745	0,254	0,772	73,551	22,194	20,827	20,669	19,786	19,817	28,314	20,561	20,611	19,744	57,113
198,750	0,221	0,716	0,975	0,050	-0,765	0,248	0,772	73,649	22,235	20,838	20,690	19,805	19,825	28,429	20,593	20,614	19,748	57,109
199,250	0,222	0,714	0,968	0,085	-0,580	0,252	0,772	73,597	22,185	20,846	20,678	19,794	19,829	28,547	20,612	20,604	19,755	57,064
199,750	0,221	0,711	0,966	0,035	-0,011	0,254	0,771	73,561	22,198	20,844	20,680	19,801	19,832	28,649	20,622	20,599	19,745	57,111
200,250	0,221	0,707	0,968	0,026	0,712	0,256	0,772	73,505	22,170	20,821	20,679	19,801	19,825	28,757	20,635	20,585	19,746	57,090
200,750	0,222	0,708	0,966	0,048	-0,549	0,253	0,771	73,490	22,132	20,825	20,661	19,807	19,817	28,855	20,641	20,590	19,742	57,088
201,250	0,221	0,714	0,970	-0,026	-0,648	0,251	0,771	73,442	22,171	20,830	20,661	19,826	19,838	28,971	20,671	20,600	19,746	57,084
201,750	0,223	0,708	0,973	0,113	-0,011	0,257	0,770	73,534	22,168	20,838	20,677	19,832	19,834	29,064	20,680	20,595	19,748	57,099
202,250	0,222	0,706	0,973	0,084	-0,529	0,258	0,771	73,545	22,179	20,841	20,673	19,819	19,837	29,171	20,701	20,607	19,746	57,075
202,750	0,221	0,707	0,977	0,031	-0,792	0,254	0,771	73,475	22,174	20,841	20,676	19,827	19,832	29,259	20,716	20,603	19,746	57,064
203,250	0,223	0,709	0,971	0,042	1,279	0,254	0,770	73,485	22,157	20,834	20,674	19,821	19,837	29,357	20,729	20,613	19,746	57,051
203,750	0,221	0,711	0,974	-0,024	-0,898	0,253	0,769	73,473	22,155	20,848	20,677	19,841	19,830	29,442	20,742	20,606	19,749	57,040
204,250	0,222	0,707	0,968	0,050	0,669	0,258	0,769	73,363	22,162	20,818	20,662	19,819	19,844	29,545	20,756	20,590	19,747	57,027
204,750	0,224	0,697	0,970	0,125	-0,011	0,266	0,769	73,338	22,133	20,825	20,677	19,817	19,839	29,630	20,782	20,589	19,749	57,013
205,250	0,222	0,690	0,976	0,024	-0,046	0,271	0,769	73,319	22,153	20,821	20,675	19,820	19,842	29,724	20,791	20,589	19,748	56,995
205,750	0,221	0,690	0,976	0,119	-0,011	0,270	0,768	73,275	22,137	20,812	20,661	19,824	19,838	29,828	20,810	20,595	19,750	56,994
206,250	0,222	0,691	0,975	0,061	-0,723	0,269	0,769	73,297	22,131	20,814	20,665	19,805	19,831	29,910	20,821	20,586	19,748	56,988
206,750	0,220	0,692	0,971	-0,039	0,636	0,268	0,768	73,338	22,094	20,818	20,675	19,835	19,835	29,990	20,844	20,588	19,751	56,996
207,250	0,221	0,694	0,967	0,002	-0,642	0,266	0,768	73,274	22,103	20,814	20,669	19,822	19,834	30,086	20,855	20,571	19,749	56,959
207,750	0,222	0,695	0,971	-0,006	-0,010	0,266	0,768	73,266	22,135	20,808	20,666	19,829	19,834	30,160	20,864	20,582	19,746	56,962
208,250	0,224	0,692	0,967	0,056	-0,010	0,270	0,767	73,230	22,145	20,801	20,678	19,837	19,847	30,244	20,876	20,598	19,752	56,956
208,750	0,224	0,689	0,971	0,043	-0,027	0,273	0,768	73,222	22,125	20,810	20,682	19,828	19,844	30,323	20,895	20,607	19,750	56,919
209,250	0,225	0,687	0,971	0,025	-0,587	0,272	0,767	73,215	22,212	20,816	20,687	19,835	19,844	30,408	20,907	20,616	19,752	56,937
209,750	0,223	0,693	0,973	0,079	-0,011	0,266	0,768	73,197	22,210	20,825	20,683	19,829	19,852	30,481	20,919	20,617	19,752	56,912
210,250	0,223	0,696	0,969	0,014	-0,011	0,265	0,768	73,166	22,214	20,821	20,690	19,841	19,853	30,557	20,938	20,623	19,753	56,905
210,750	0,225	0,693	0,973	0,008	-0,011	0,268	0,767	73,123	22,184	20,827	20,695	19,850	19,857	30,629	20,961	20,623	19,754	56,874
211,250	0,226	0,692	0,970	0,025	-0,029	0,268	0,765	73,152	22,225	20,831	20,695	19,845	19,849	30,708	20,970	20,622	19,751	56,874
211,750	0,225	0,689	0,973	-0,016	-0,027	0,273	0,765	73,080	22,199	20,833	20,710	19,847	19,847	30,780	20,977	20,623	19,751	56,843
212,250	0,227	0,684	0,972	-0,012	0,593	0,276	0,766	72,934	22,077	20,642	20,533	19,675	19,664	-41,583	20,843	20,427	19,563	56,892
212,750	0,226	0,679	0,975	0,026	-0,030	0,283	0,765	73,070	22,238	20,830	20,743	19,853	19,855	20,978	30,890	20,626	19,751	56,850

PE 56 Cat I_250305.DAT

Category: I run 1

	1104	1105	1107	130	230	101	102	1	2	3	6	7	8	11	
Measure- ment time	T3 inlet load side	T2 inlet boiler	T1 outlet boiler	Flow load side	Flow boiler side	Heat output load side	Heat output boiler	CO chimney	CO2 chimney	O2 chimney	Pstat	Pdyn	Tunnel velocity	Våg	Time
Minutes	°C	°C	°C	m³/h	m³/h	W	W	ppm	%	%	Pa	Pa	m/s	kg	Clock
196,750	39,278	53,866	71,367	0,427	0,439	8777,979	8801,892	135,552	13,082	7,298	-0,141	38,862	8,048	23,344	2025-03-05 12:47
197,250	39,282	53,866	71,342	0,427	0,438	8775,770	8784,973	136,389	13,016	7,397	0,840	38,877	8,050	23,344	2025-03-05 12:48
197,750	39,294	53,870	71,355	0,426	0,439	8768,015	8792,363	148,154	12,739	7,645	-0,699	38,963	8,058	23,250	2025-03-05 12:48
198,250	39,290	53,863	71,313	0,427	0,438	8765,192	8763,658	142,675	12,682	7,623	1,312	38,885	8,050	23,250	2025-03-05 12:49
198,750	39,299	53,870	71,342	0,426	0,438	8744,038	8775,709	141,320	12,937	7,432	2,011	39,047	8,067	23,250	2025-03-05 12:49
199,250	39,303	53,875	71,301	0,426	0,438	8723,249	8756,183	147,101	12,828	7,547	3,387	38,526	8,013	23,250	2025-03-05 12:50
199,750	39,300	53,881	71,274	0,426	0,439	8753,192	8747,506	136,417	12,745	7,617	1,396	38,788	8,040	23,156	2025-03-05 12:50
200,250	39,312	53,875	71,299	0,426	0,439	8726,918	8763,138	143,318	12,658	7,675	1,034	38,828	8,044	23,250	2025-03-05 12:51
200,750	39,309	53,876	71,276	0,426	0,438	8725,560	8745,824	144,422	12,736	7,593	1,915	38,555	8,016	23,156	2025-03-05 12:51
201,250	39,317	53,889	71,264	0,426	0,438	8721,740	8731,475	134,513	12,892	7,524	-1,039	38,731	8,034	23,156	2025-03-05 12:52
201,750	39,319	53,882	71,254	0,426	0,439	8728,665	8734,429	154,651	12,664	7,696	4,502	38,919	8,054	23,156	2025-03-05 12:52
202,250	39,297	53,883	71,245	0,426	0,438	8728,206	8726,383	146,253	12,630	7,728	3,345	38,971	8,059	23,156	2025-03-05 12:53
202,750	39,286	53,888	71,245	0,426	0,439	8721,414	8726,533	136,855	12,717	7,611	1,255	39,175	8,080	23,156	2025-03-05 12:53
203,250	39,257	53,865	71,226	0,426	0,438	8733,156	8722,312	161,385	12,697	7,627	1,696	38,939	8,056	23,063	2025-03-05 12:54
203,750	39,252	53,859	71,213	0,426	0,439	8737,831	8734,481	136,831	12,768	7,582	-0,973	39,176	8,080	23,063	2025-03-05 12:54
204,250	39,238	53,845	71,201	0,426	0,438	8731,702	8719,532	152,556	12,617	7,743	2,006	38,687	8,030	23,063	2025-03-05 12:55
204,750	39,232	53,833	71,210	0,426	0,438	8732,824	8726,088	150,048	12,372	7,980	4,988	38,994	8,062	23,063	2025-03-05 12:55
205,250	39,224	53,819	71,214	0,426	0,439	8718,886	8746,340	142,682	12,193	8,129	0,965	38,959	8,058	23,063	2025-03-05 12:56
205,750	39,222	53,813	71,170	0,426	0,439	8725,664	8730,684	141,643	12,230	8,108	4,767	39,163	8,079	22,969	2025-03-05 12:56
206,250	39,218	53,796	71,170	0,426	0,439	8727,219	8738,264	148,144	12,283	8,071	2,423	38,959	8,058	23,063	2025-03-05 12:57
206,750	39,216	53,800	71,161	0,427	0,439	8741,506	8728,165	134,729	12,321	8,035	-1,558	38,950	8,057	22,969	2025-03-05 12:57
207,250	39,210	53,782	71,135	0,426	0,439	8723,255	8730,343	138,085	12,348	7,995	0,062	38,650	8,026	22,969	2025-03-05 12:58
207,750	39,201	53,769	71,095	0,427	0,438	8730,559	8709,498	145,437	12,379	7,970	-0,251	38,764	8,038	22,969	2025-03-05 12:58
208,250	39,192	53,759	71,108	0,427	0,439	8734,668	8727,466	159,484	12,251	8,109	2,257	38,669	8,028	22,969	2025-03-05 12:59
208,750	39,184	53,746	71,068	0,426	0,439	8713,791	8710,412	159,057	12,234	8,178	1,722	38,846	8,046	22,969	2025-03-05 12:59
209,250	39,182	53,742	71,063	0,426	0,439	8721,244	8716,480	161,784	12,179	8,155	1,017	38,763	8,038	22,844	2025-03-05 13:00
209,750	39,176	53,739	71,033	0,426	0,438	8714,874	8694,800	147,734	12,378	7,969	3,150	38,778	8,039	22,969	2025-03-05 13:00
210,250	39,176	53,731	71,048	0,426	0,438	8709,977	8703,991	152,348	12,386	7,948	0,562	38,757	8,037	22,969	2025-03-05 13:01
210,750	39,164	53,716	71,019	0,426	0,438	8698,095	8698,460	172,249	12,289	8,041	0,335	38,780	8,040	22,844	2025-03-05 13:01
211,250	39,159	53,705	71,014	0,426	0,438	8698,400	8701,018	164,112	12,319	8,049	0,982	38,769	8,038	22,844	2025-03-05 13:02
211,750	39,158	53,694	70,988	0,426	0,438	8684,629	8692,709	171,996	12,159	8,196	-0,626	38,901	8,052	22,844	2025-03-05 13:02
212,250	39,138	53,687	70,953	0,426	0,439	8713,295	8693,994	170,231	12,083	8,272	-0,476	38,832	8,045	22,844	2025-03-05 13:03
212,750	39,142	53,674	70,919	0,426	0,439	8690,029	8678,827	174,153	11,885	8,489	1,038	38,959	8,058	22,844	2025-03-05 13:03

PE 56 Cat I_250305.DAT

Category: I run 1

	301	302	304	305	306	308	317	1311	1313	1314	1315	1316	1317	1318	1319	1320	1101	1103
Measure- ment time	CO chimney	CO2 chimney	Pdyn	Pstat	Static pressure chimney	O2 chimney	Scale	Flue gas temp	Flue gas at pitot	filter temp 1	filter temp 2	gas meter temp 1	gas meter temp 2	gasmeter 1hr	Gas meter ambient	Filter temp 1 hr	Ambient temperature	T4 outlet load side
Minutes	VDC	VDC	VDC	VDC	VDC	VDC	VDC	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
213,250	0,228	0,671	0,965	0,070	0,635	0,285	0,765	73,063	22,196	20,833	20,755	19,854	19,858	21,004	30,970	20,621	19,757	56,828
213,750	0,226	0,676	0,966	0,060	-0,010	0,281	0,765	73,091	22,190	20,836	20,749	19,865	19,871	21,023	31,039	20,621	19,763	56,813
214,250	0,225	0,681	0,973	0,012	-0,535	0,278	0,764	73,072	22,134	20,830	20,732	19,852	19,864	21,026	31,101	20,620	19,769	56,802
214,750	0,228	0,677	0,970	0,079	-0,615	0,283	0,764	73,002	22,142	20,832	20,729	19,846	19,865	21,040	31,178	20,621	19,772	56,788
215,250	0,227	0,674	0,969	0,041	-0,028	0,284	0,764	73,002	22,127	20,821	20,714	19,876	19,871	21,046	31,238	20,620	19,770	56,778
215,750	0,223	0,675	0,972	-0,076	0,671	0,283	0,764	72,980	22,123	20,822	20,708	19,874	19,854	21,053	31,297	20,614	19,769	56,758
216,250	0,224	0,675	0,977	0,065	-0,090	0,281	0,763	72,970	22,158	20,812	20,697	19,856	19,860	21,065	31,363	20,610	19,777	56,733
216,750	0,229	0,678	0,970	0,036	-0,011	0,282	0,763	72,938	22,100	20,809	20,697	19,861	19,867	21,080	31,434	20,607	19,778	56,723
217,250	0,229	0,675	0,971	0,011	-0,011	0,283	0,763	72,817	22,137	20,806	20,699	19,881	19,861	21,098	31,502	20,616	19,781	56,704
217,750	0,227	0,676	0,971	0,065	-0,225	0,280	0,764	72,706	22,123	20,799	20,692	19,857	19,870	21,101	31,559	20,597	19,782	56,679
218,250	0,226	0,684	0,969	0,058	-0,011	0,275	0,763	72,773	22,108	20,803	20,699	19,896	19,877	21,108	31,624	20,610	19,781	56,668
218,750	0,227	0,685	0,967	0,058	-0,011	0,273	0,763	72,730	22,060	20,803	20,688	19,874	19,875	21,128	31,671	20,602	19,785	56,650
219,250	0,227	0,684	0,971	0,039	-0,011	0,276	0,763	72,805	22,094	20,794	20,682	19,865	19,870	21,136	31,738	20,602	19,792	56,628
219,750	0,224	0,687	0,972	-0,008	-0,509	0,269	0,763	72,753	22,138	20,826	20,695	19,868	19,871	21,152	31,791	20,604	19,791	56,622
220,250	0,222	0,694	0,975	0,044	0,534	0,266	0,763	72,703	22,087	20,854	20,693	19,888	19,892	21,164	31,846	20,603	19,794	56,602
220,750	0,224	0,694	0,979	0,048	-0,766	0,269	0,762	72,771	22,169	20,867	20,696	19,888	19,889	21,173	31,909	20,602	19,795	56,590
221,250	0,226	0,687	0,978	-0,020	-0,028	0,273	0,761	72,786	22,085	20,849	20,678	19,891	19,885	21,163	31,940	20,601	19,791	56,574
221,750	0,225	0,686	0,977	-0,025	-0,011	0,274	0,761	72,714	22,068	20,860	20,684	19,891	19,889	21,192	31,992	20,589	19,797	56,567
222,250	0,227	0,682	0,976	0,078	0,569	0,280	0,761	72,744	22,107	20,854	20,691	19,872	19,880	21,203	32,039	20,591	19,799	56,553
222,750	0,228	0,675	0,972	0,058	-0,011	0,283	0,761	72,699	22,096	20,870	20,676	19,877	19,883	21,197	32,089	20,582	19,796	56,533
223,250	0,225	0,674	0,972	0,011	-0,010	0,282	0,761	72,576	22,071	20,868	20,698	19,895	19,905	21,224	32,146	20,601	19,805	56,527
223,750	0,225	0,678	0,971	0,102	-0,011	0,280	0,761	72,529	22,083	20,869	20,678	19,887	19,885	21,232	32,180	20,579	19,799	56,512
224,250	0,225	0,677	0,971	0,054	-0,010	0,281	0,761	72,483	22,066	20,849	20,674	19,878	19,884	21,231	32,212	20,568	19,796	56,492
224,750	0,224	0,679	0,976	0,089	-0,011	0,280	0,760	72,469	22,061	20,863	20,686	19,908	19,893	21,247	32,279	20,576	19,801	56,492
225,250	0,225	0,674	0,976	0,072	-0,019	0,284	0,760	72,505	22,112	20,862	20,676	19,890	19,898	21,254	32,333	20,575	19,803	56,464
225,750	0,223	0,674	0,970	0,038	-0,010	0,284	0,759	72,440	22,119	20,873	20,682	19,922	19,909	21,268	32,380	20,578	19,807	56,441
226,250	0,222	0,675	0,973	0,053	-0,555	0,282	0,760	72,433	22,073	20,867	20,681	19,913	19,910	21,266	32,414	20,577	19,807	56,416
226,750	0,222	0,679	0,970	-0,008	0,509	0,278	0,760	72,435	22,094	20,856	20,678	19,908	19,899	21,276	32,448	20,572	19,800	56,427
227,250	0,225	0,678	0,974	0,009	-1,293	0,281	0,760	72,337	22,149	20,877	20,691	19,926	19,913	21,300	32,502	20,587	19,811	56,408
227,750	0,226	0,681	0,976	-0,003	-0,011	0,275	0,760	72,302	22,102	20,868	20,693	19,914	19,910	21,309	32,533	20,572	19,806	56,399
228,250	0,227	0,685	0,967	0,015	-0,010	0,273	0,758	72,360	22,085	20,858	20,679	19,903	19,904	21,303	32,575	20,566	19,804	56,369
228,750	0,227	0,687	0,972	0,140	-0,011	0,273	0,758	72,371	22,084	20,850	20,666	19,889	19,899	21,310	32,601	20,561	19,799	56,362
229,250	0,227	0,688	0,970	0,038	0,046	0,272	0,758	72,398	22,099	20,859	20,684	19,916	19,917	21,329	32,651	20,577	19,811	56,351

PE 56 Cat I_250305.DAT

Category: I run 1

	1104	1105	1107	130	230	101	102	1	2	3	6	7	8	11	
Measure- ment time	T3 inlet load side	T2 inlet boiler	T1 outlet boiler	Flow load side	Flow boiler side	Heat output load side	Heat output boiler	CO chimney	CO2 chimney	O2 chimney	Pstat	Pdyn	Tunnel velocity	Våg	Time
Minutes	°C	°C	°C	m³/h	m³/h	W	W	ppm	%	%	Pa	Pa	m/s	kg	Clock
213,250	39,143	53,666	70,903	0,426	0,439	8679,239	8668,035	181,255	11,776	8,545	2,800	38,498	8,010	22,844	2025-03-05 13:04
213,750	39,133	53,659	70,890	0,426	0,438	8674,066	8660,369	171,040	11,917	8,415	2,411	38,631	8,024	22,750	2025-03-05 13:04
214,250	39,133	53,638	70,842	0,426	0,438	8673,849	8649,637	170,863	12,039	8,345	0,496	38,824	8,044	22,750	2025-03-05 13:05
214,750	39,125	53,629	70,822	0,426	0,438	8664,481	8642,945	190,758	11,882	8,481	3,153	39,016	8,064	22,750	2025-03-05 13:05
215,250	39,118	53,624	70,817	0,426	0,438	8665,784	8642,943	170,804	11,855	8,506	1,643	38,653	8,026	22,750	2025-03-05 13:06
215,750	39,109	53,610	70,808	0,426	0,438	8665,227	8641,568	147,716	11,889	8,490	-3,059	38,896	8,052	22,750	2025-03-05 13:06
216,250	39,100	53,588	70,745	0,426	0,439	8657,977	8629,969	168,007	11,901	8,435	2,582	39,294	8,093	22,656	2025-03-05 13:07
216,750	39,099	53,570	70,729	0,426	0,438	8655,035	8625,549	190,309	11,941	8,456	1,459	38,737	8,035	22,656	2025-03-05 13:07
217,250	39,098	53,558	70,696	0,426	0,438	8649,580	8610,025	188,913	11,867	8,481	0,429	38,873	8,049	22,750	2025-03-05 13:08
217,750	39,094	53,536	70,671	0,426	0,439	8639,677	8619,174	173,733	11,909	8,394	2,585	38,858	8,048	22,750	2025-03-05 13:08
218,250	39,090	53,534	70,650	0,426	0,439	8631,430	8610,914	170,957	12,111	8,256	2,304	38,574	8,018	22,656	2025-03-05 13:09
218,750	39,086	53,515	70,649	0,426	0,438	8615,281	8613,917	175,793	12,165	8,189	2,311	38,667	8,028	22,657	2025-03-05 13:09
219,250	39,085	53,499	70,605	0,426	0,439	8609,673	8603,248	175,623	12,058	8,280	1,571	39,031	8,065	22,656	2025-03-05 13:10
219,750	39,071	53,486	70,575	0,426	0,438	8617,491	8592,254	154,238	12,273	8,081	-0,316	38,863	8,048	22,656	2025-03-05 13:10
220,250	39,074	53,475	70,582	0,426	0,439	8612,782	8607,339	141,865	12,357	7,984	1,779	38,877	8,050	22,657	2025-03-05 13:11
220,750	39,068	53,462	70,515	0,426	0,439	8605,812	8576,401	160,923	12,304	8,082	1,904	39,174	8,080	22,563	2025-03-05 13:11
221,250	39,062	53,443	70,524	0,426	0,438	8597,941	8588,105	170,811	12,175	8,177	-0,801	39,221	8,085	22,563	2025-03-05 13:12
221,750	39,053	53,433	70,506	0,426	0,439	8599,762	8588,262	165,005	12,142	8,218	-0,986	39,078	8,070	22,563	2025-03-05 13:12
222,250	39,050	53,411	70,491	0,426	0,439	8599,911	8598,655	186,762	11,981	8,402	3,140	38,839	8,046	22,563	2025-03-05 13:13
222,750	39,044	53,405	70,475	0,426	0,439	8583,804	8586,832	177,579	11,880	8,476	2,325	38,866	8,048	22,563	2025-03-05 13:13
223,250	39,044	53,401	70,424	0,426	0,439	8582,090	8565,599	155,892	11,872	8,453	0,450	38,711	8,032	22,563	2025-03-05 13:14
223,750	39,033	53,387	70,433	0,426	0,438	8590,862	8570,453	165,325	11,957	8,396	4,081	38,784	8,040	22,563	2025-03-05 13:14
224,250	39,031	53,378	70,390	0,426	0,438	8575,290	8548,658	158,372	11,922	8,416	2,168	38,880	8,050	22,563	2025-03-05 13:15
224,750	39,027	53,366	70,378	0,426	0,439	8574,433	8555,541	158,014	11,978	8,396	3,549	39,023	8,065	22,469	2025-03-05 13:15
225,250	39,012	53,340	70,319	0,426	0,439	8569,337	8539,657	168,685	11,804	8,510	2,861	39,060	8,069	22,469	2025-03-05 13:16
225,750	39,024	53,331	70,314	0,426	0,438	8556,426	8532,257	152,973	11,847	8,523	1,539	38,800	8,042	22,469	2025-03-05 13:16
226,250	39,018	53,311	70,273	0,426	0,439	8545,932	8529,519	140,364	11,920	8,446	2,133	38,996	8,062	22,469	2025-03-05 13:17
226,750	39,025	53,295	70,255	0,426	0,439	8542,848	8532,364	152,747	12,006	8,349	-0,322	38,821	8,044	22,469	2025-03-05 13:17
227,250	39,040	53,293	70,220	0,426	0,439	8533,144	8513,081	169,744	11,922	8,426	0,353	39,163	8,079	22,469	2025-03-05 13:18
227,750	39,046	53,281	70,183	0,426	0,439	8527,959	8499,692	171,228	12,102	8,248	-0,107	39,011	8,063	22,469	2025-03-05 13:18
228,250	39,047	53,256	70,153	0,426	0,439	8511,117	8498,633	180,036	12,129	8,193	0,602	38,681	8,029	22,344	2025-03-05 13:19
228,750	39,047	53,250	70,104	0,426	0,438	8503,683	8464,977	175,401	12,155	8,176	5,590	38,740	8,035	22,344	2025-03-05 13:19
229,250	39,055	53,244	70,101	0,426	0,438	8499,894	8471,264	172,086	12,223	8,174	1,501	38,722	8,033	22,344	2025-03-05 13:20

PE 56 Cat I_250305.DAT

Category: I run 1

	301	302	304	305	306	308	317	1311	1313	1314	1315	1316	1317	1318	1319	1320	1101	1103
Measure- ment time	CO chimney	CO2 chimney	Pdyn	Pstat	Static pressure chimney	O2 chimney	Scale	Flue gas temp	Flue gas at pitot	filter temp 1	filter temp 2	gas meter temp 1	gas meter temp 2	gasmeter 1hr	Gas meter ambient	Filter temp 1 hr	Ambient temperature	T4 outlet load side
Minutes	VDC	VDC	VDC	VDC	VDC	VDC	VDC	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
229,750	0,230	0,677	0,973	-0,036	-1,284	0,285	0,758	72,381	22,096	20,861	20,671	19,920	19,922	21,342	32,678	20,574	19,807	56,341
230,250	0,232	0,668	0,967	0,025	-0,010	0,290	0,758	72,317	22,114	20,864	20,674	19,918	19,909	21,341	32,731	20,577	19,808	56,311
230,750	0,230	0,668	0,976	0,043	-0,010	0,286	0,758	72,360	22,125	20,862	20,684	19,935	19,920	21,351	32,754	20,579	19,811	56,310
231,250	0,228	0,672	0,974	0,027	0,666	0,284	0,756	72,358	22,110	20,859	20,674	19,929	19,916	21,362	32,789	20,575	19,809	56,284
231,750	0,228	0,674	0,970	0,009	0,811	0,281	0,757	72,349	22,132	20,862	20,671	19,913	19,908	21,367	32,807	20,563	19,803	56,259
232,250	0,228	0,683	0,970	0,043	-0,030	0,273	0,756	72,172	22,103	20,863	20,669	19,949	19,931	21,387	32,849	20,572	19,807	56,257
232,750	0,230	0,686	0,970	0,024	-0,509	0,274	0,756	72,104	22,076	20,861	20,665	19,942	19,922	21,386	32,889	20,568	19,807	56,253
233,250	0,231	0,685	0,971	0,005	0,817	0,273	0,756	72,062	22,097	20,864	20,676	19,933	19,925	21,394	32,910	20,567	19,807	56,233
233,750	0,232	0,687	0,972	-0,002	-0,010	0,273	0,756	72,053	22,077	20,855	20,675	19,952	19,921	21,395	32,943	20,569	19,804	56,231
234,250	0,233	0,682	0,972	0,020	-1,090	0,279	0,756	71,989	22,095	20,871	20,673	19,946	19,928	21,410	32,971	20,575	19,807	56,225
234,750	0,231	0,680	0,970	0,004	0,729	0,277	0,756	71,882	22,017	20,866	20,678	19,950	19,931	21,432	33,004	20,575	19,814	56,208
235,250	0,232	0,680	0,970	-0,002	-0,010	0,280	0,755	71,752	22,041	20,869	20,675	19,960	19,929	21,415	33,024	20,563	19,807	56,209
235,750	0,231	0,678	0,970	0,069	0,588	0,279	0,755	71,748	22,021	20,863	20,678	19,959	19,942	21,431	33,062	20,572	19,811	56,198
236,250	0,232	0,680	0,972	0,040	-0,010	0,277	0,755	71,707	22,014	20,858	20,666	19,943	19,920	21,436	33,072	20,561	19,801	56,188
236,750	0,232	0,682	0,974	0,037	0,638	0,276	0,755	71,704	22,061	20,863	20,678	19,938	19,935	21,445	33,104	20,563	19,811	56,178
237,250	0,233	0,682	0,972	0,077	-0,010	0,279	0,755	71,758	22,033	20,843	20,658	19,954	19,923	21,443	33,115	20,555	19,806	56,155
237,750	0,236	0,677	0,971	-0,009	-0,719	0,280	0,755	71,773	22,086	20,865	20,687	19,967	19,952	21,460	33,157	20,570	19,809	56,157
238,250	0,231	0,686	0,972	0,072	-0,028	0,271	0,754	71,777	21,976	20,841	20,658	19,951	19,916	21,454	33,169	20,555	19,803	56,119
238,750	0,231	0,692	0,968	0,007	-0,300	0,267	0,754	71,786	22,081	20,848	20,681	19,968	19,939	21,465	33,198	20,569	19,806	56,114
239,250	0,232	0,695	0,966	0,049	-0,011	0,265	0,753	71,803	22,051	20,855	20,667	19,948	19,927	21,475	33,218	20,567	19,807	56,114
239,750	0,230	0,699	0,974	0,105	-0,748	0,262	0,753	71,724	22,080	20,844	20,670	19,967	19,946	21,480	33,250	20,573	19,808	56,096
240,250	0,229	0,704	0,973	0,076	-0,011	0,257	0,752	71,684	22,020	20,838	20,667	19,962	19,940	21,487	33,269	20,573	19,808	56,080
240,750	0,230	0,708	0,976	0,036	-0,010	0,257	0,753	71,630	22,072	20,849	20,670	19,966	19,942	21,495	33,286	20,576	19,806	56,070
241,250	0,232	0,704	0,972	0,090	0,705	0,257	0,753	71,649	22,057	20,842	20,679	19,952	19,939	21,491	33,317	20,559	19,803	56,057
241,750	0,231	0,706	0,970	0,011	-0,796	0,260	0,752	71,626	22,044	20,848	20,678	19,967	19,946	21,516	33,337	20,573	19,810	56,045
242,250	0,233	0,697	0,976	0,025	0,203	0,264	0,752	71,520	22,053	20,849	20,675	19,968	19,948	21,508	33,359	20,571	19,809	56,041
242,750	0,233	0,693	0,975	0,062	-0,011	0,269	0,752	71,570	22,009	20,855	20,661	19,984	19,947	21,510	33,379	20,566	19,807	56,035
243,250	0,234	0,688	0,971	0,070	0,512	0,271	0,752	71,545	22,050	20,842	20,665	19,963	19,954	21,518	33,393	20,568	19,809	56,017
243,750	0,231	0,690	0,971	-0,030	0,518	0,270	0,752	71,502	22,014	20,859	20,657	19,995	19,954	21,527	33,408	20,566	19,807	55,995
244,250	0,228	0,691	0,969	0,039	-0,011	0,271	0,752	71,480	22,012	20,843	20,662	19,964	19,952	21,533	33,436	20,563	19,806	56,004
244,750	0,229	0,688	0,976	-0,018	-1,218	0,271	0,752	71,455	22,031	20,851	20,665	19,987	19,955	21,529	33,451	20,563	19,806	55,974
245,250	0,228	0,692	0,974	0,007	-0,010	0,268	0,751	71,534	22,084	20,854	20,668	19,988	19,957	21,525	33,471	20,567	19,799	55,971
245,750	0,227	0,691	0,969	-0,013	-1,189	0,271	0,751	71,480	22,025	20,846	20,670	19,992	19,954	21,547	33,482	20,565	19,803	55,950

PE 56 Cat I_250305.DAT

Category: I run 1

	1104	1105	1107	130	230	101	102	1	2	3	6	7	8	11	
Measure- ment time	T3 inlet load side	T2 inlet boiler	T1 outlet boiler	Flow load side	Flow boiler side	Heat output load side	Heat output boiler	CO chimney	CO2 chimney	O2 chimney	Pstat	Pdyn	Tunnel velocity	Våg	Time
Minutes	°C	°C	°C	m³/h	m³/h	W	W	ppm	%	%	Pa	Pa	m/s	kg	Clock
229,750	39,059	53,234	70,066	0,426	0,438	8485,869	8463,200	200,601	11,823	8,539	-1,424	38,870	8,049	22,344	2025-03-05 13:20
230,250	39,057	53,219	70,025	0,427	0,438	8481,891	8446,556	212,157	11,650	8,695	0,990	38,741	8,035	22,344	2025-03-05 13:21
230,750	39,058	53,209	70,045	0,427	0,438	8481,809	8461,082	187,363	11,760	8,589	1,716	39,138	8,077	22,344	2025-03-05 13:21
231,250	39,060	53,188	69,972	0,427	0,438	8467,856	8436,596	178,350	11,837	8,510	1,061	38,956	8,058	22,251	2025-03-05 13:22
231,750	39,053	53,168	69,964	0,426	0,438	8455,249	8442,294	184,528	11,876	8,440	0,349	38,747	8,036	22,344	2025-03-05 13:22
232,250	39,067	53,164	69,958	0,426	0,438	8446,497	8442,159	181,509	12,146	8,194	1,730	38,811	8,043	22,251	2025-03-05 13:23
232,750	39,088	53,150	69,946	0,426	0,438	8432,649	8427,923	196,400	12,129	8,217	0,979	38,726	8,034	22,251	2025-03-05 13:23
233,250	39,089	53,135	69,895	0,426	0,438	8414,233	8417,014	202,901	12,135	8,194	0,203	38,716	8,033	22,251	2025-03-05 13:24
233,750	39,118	53,142	69,881	0,426	0,438	8408,861	8409,848	212,140	12,163	8,188	-0,097	38,755	8,037	22,251	2025-03-05 13:24
234,250	39,120	53,126	69,847	0,426	0,438	8407,751	8397,867	214,655	11,989	8,365	0,780	38,862	8,048	22,251	2025-03-05 13:25
234,750	39,132	53,120	69,836	0,426	0,438	8382,970	8397,135	199,558	12,028	8,316	0,157	38,910	8,053	22,251	2025-03-05 13:25
235,250	39,139	53,126	69,810	0,426	0,438	8385,371	8385,679	208,575	11,971	8,393	-0,095	38,719	8,033	22,157	2025-03-05 13:26
235,750	39,145	53,122	69,772	0,426	0,438	8377,119	8369,084	199,333	11,977	8,365	2,758	38,692	8,030	22,157	2025-03-05 13:26
236,250	39,143	53,111	69,742	0,426	0,438	8372,341	8355,220	205,159	12,005	8,325	1,610	38,920	8,054	22,157	2025-03-05 13:27
236,750	39,154	53,108	69,685	0,426	0,439	8365,438	8336,272	213,192	12,060	8,288	1,470	39,072	8,070	22,157	2025-03-05 13:27
237,250	39,144	53,093	69,713	0,426	0,438	8351,939	8357,506	216,041	12,037	8,356	3,073	38,677	8,029	22,157	2025-03-05 13:28
237,750	39,154	53,091	69,677	0,426	0,438	8353,586	8335,033	226,847	11,925	8,401	-0,361	38,905	8,052	22,157	2025-03-05 13:28
238,250	39,151	53,069	69,639	0,426	0,438	8333,186	8326,066	192,686	12,210	8,129	2,889	38,768	8,038	22,157	2025-03-05 13:29
238,750	39,163	53,065	69,626	0,426	0,438	8328,562	8315,952	211,681	12,326	8,009	0,294	38,721	8,033	22,063	2025-03-05 13:29
239,250	39,163	53,060	69,592	0,427	0,438	8333,431	8303,882	210,298	12,372	7,964	1,947	38,604	8,021	22,064	2025-03-05 13:30
239,750	39,172	53,033	69,560	0,427	0,438	8323,111	8298,731	198,523	12,493	7,859	4,220	39,044	8,067	22,064	2025-03-05 13:30
240,250	39,174	53,029	69,546	0,427	0,438	8312,656	8297,736	186,713	12,648	7,696	3,029	38,831	8,045	21,970	2025-03-05 13:31
240,750	39,171	53,018	69,513	0,426	0,438	8303,646	8284,181	201,459	12,694	7,703	1,439	38,977	8,060	22,063	2025-03-05 13:31
241,250	39,172	53,012	69,519	0,426	0,438	8293,481	8292,680	204,784	12,635	7,703	3,583	38,878	8,050	22,063	2025-03-05 13:32
241,750	39,174	52,998	69,507	0,426	0,438	8291,303	8292,038	204,385	12,618	7,793	0,451	38,731	8,034	21,971	2025-03-05 13:32
242,250	39,176	52,988	69,488	0,427	0,438	8290,895	8288,122	206,719	12,423	7,931	1,000	39,103	8,073	22,063	2025-03-05 13:33
242,750	39,177	52,975	69,445	0,426	0,438	8280,685	8269,239	220,245	12,256	8,079	2,493	39,033	8,066	21,970	2025-03-05 13:33
243,250	39,170	52,973	69,429	0,426	0,438	8279,025	8264,065	222,639	12,179	8,136	2,795	39,005	8,063	21,969	2025-03-05 13:34
243,750	39,172	52,966	69,417	0,427	0,438	8268,816	8260,169	197,543	12,241	8,094	-1,186	38,841	8,046	21,970	2025-03-05 13:34
244,250	39,172	52,957	69,380	0,427	0,438	8276,253	8248,299	178,361	12,275	8,125	1,563	39,004	8,063	21,970	2025-03-05 13:35
244,750	39,176	52,948	69,366	0,427	0,438	8260,607	8249,997	183,812	12,199	8,141	-0,739	39,096	8,072	21,969	2025-03-05 13:35
245,250	39,173	52,939	69,363	0,427	0,438	8257,729	8251,452	179,806	12,309	8,037	0,296	39,077	8,070	21,845	2025-03-05 13:36
245,750	39,170	52,928	69,331	0,426	0,438	8246,883	8238,245	170,575	12,255	8,133	-0,506	38,681	8,029	21,844	2025-03-05 13:36

PE 56 Cat I_250305.DAT

Category: I run 1

	301	302	304	305	306	308	317	1311	1313	1314	1315	1316	1317	1318	1319	1320	1101	1103
Measure- ment time	CO chimney	CO2 chimney	Pdyn	Pstat	Static pressure chimney	O2 chimney	Scale	Flue gas temp	Flue gas at pitot	filter temp 1	filter temp 2	gas meter temp 1	gas meter temp 2	gasmeter 1hr	Gas meter ambient	Filter temp 1 hr	Ambient temperature	T4 outlet load side
Minutes	VDC	VDC	VDC	VDC	VDC	VDC	VDC	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	
246,250	0,230	0,682	0,969	-0,044	-0,011	0,280	0,750	71,432	22,134	20,861	20,670	19,977	19,952	21,534	33,505	20,555	19,803	55,944
246,750	0,231	0,679	0,971	0,023	-0,011	0,278	0,750	71,336	22,179	20,875	20,691	20,010	19,966	21,552	33,518	20,578	19,808	55,938
247,250	0,231	0,682	0,969	0,083	-0,619	0,277	0,750	71,312	22,183	20,884	20,691	19,969	19,955	21,547	33,521	20,556	19,801	55,927
247,750	0,231	0,682	0,977	0,004	-0,011	0,278	0,750	71,343	22,170	20,887	20,691	19,992	19,966	21,556	33,539	20,575	19,804	55,915
248,250	0,230	0,683	0,975	0,071	-0,028	0,274	0,750	71,360	22,139	20,885	20,701	19,999	19,959	21,570	33,558	20,576	19,804	55,912
248,750	0,230	0,685	0,970	0,031	-0,011	0,273	0,750	71,311	22,051	20,874	20,677	19,977	19,960	21,557	33,576	20,572	19,798	55,888
249,250	0,229	0,688	0,971	-0,024	-0,011	0,272	0,750	71,271	22,078	20,870	20,680	19,969	19,962	21,577	33,577	20,552	19,803	55,870
249,750	0,228	0,689	0,973	0,086	-0,011	0,271	0,748	71,308	22,070	20,866	20,683	19,993	19,961	21,588	33,587	20,554	19,801	55,855
250,250	0,229	0,688	0,972	0,000	-0,011	0,270	0,748	71,219	22,078	20,866	20,677	19,989	19,974	21,609	33,612	20,563	19,807	55,853
250,750	0,230	0,688	0,972	0,005	-0,710	0,274	0,748	71,187	22,004	20,864	20,672	20,003	19,980	21,613	33,625	20,575	19,804	55,839
251,250	0,232	0,683	0,972	-0,020	0,014	0,274	0,747	71,254	21,996	20,850	20,656	19,988	19,967	21,617	33,628	20,558	19,807	55,832
251,750	0,232	0,682	0,967	0,004	-0,011	0,280	0,748	71,222	22,001	20,843	20,646	20,001	19,974	21,615	33,641	20,546	19,805	55,809
252,250	0,232	0,674	0,972	0,061	-0,011	0,283	0,748	71,080	21,966	20,837	20,648	20,004	19,976	21,625	33,659	20,554	19,802	55,806
252,750	0,234	0,672	0,970	0,066	-0,535	0,286	0,747	71,056	21,990	20,839	20,651	20,013	19,982	21,641	33,671	20,553	19,809	55,811
253,250	0,235	0,671	0,970	0,047	-0,010	0,286	0,747	71,064	22,007	20,832	20,647	20,008	19,977	21,628	33,674	20,546	19,803	55,792
253,750	0,235	0,670	0,976	0,052	0,557	0,285	0,747	71,039	21,966	20,810	20,637	19,990	19,956	21,642	33,692	20,539	19,805	55,777
254,250	0,232	0,678	0,969	0,033	0,672	0,277	0,747	71,057	21,906	20,814	20,637	20,006	19,980	21,644	33,703	20,531	19,803	55,771
254,750	0,229	0,683	0,974	0,056	-0,028	0,276	0,746	70,967	21,911	20,811	20,626	20,004	19,974	21,649	33,705	20,526	19,802	55,763
255,250	0,234	0,681	0,970	0,017	0,653	0,277	0,747	70,995	22,002	20,806	20,630	20,002	19,980	21,645	33,729	20,535	19,800	55,733
255,750	0,233	0,684	0,967	0,029	-0,011	0,275	0,747	71,015	22,003	20,834	20,641	20,020	19,986	21,665	33,743	20,549	19,810	55,719
256,250	0,232	0,684	0,970	-0,018	-0,011	0,275	0,746	70,969	22,005	20,812	20,635	20,012	19,993	21,668	33,765	20,547	19,811	55,702
256,750	0,232	0,682	0,978	0,026	0,650	0,278	0,745	70,982	21,935	20,798	20,625	20,017	19,986	21,660	33,785	20,536	19,803	55,708
257,250	0,232	0,679	0,972	0,051	0,495	0,279	0,745	70,927	21,948	20,809	20,627	20,011	19,981	21,656	33,780	20,534	19,799	55,680
257,750	0,234	0,674	0,971	0,062	-0,010	0,284	0,745	70,843	21,933	20,811	20,638	20,044	19,989	21,668	33,803	20,542	19,802	55,668
258,250	0,233	0,676	0,974	0,059	-0,010	0,280	0,745	70,861	21,950	20,800	20,628	20,046	20,004	21,682	33,814	20,537	19,805	55,665
258,750	0,229	0,682	0,970	-0,023	-0,010	0,272	0,745	70,855	21,874	20,804	20,611	20,030	19,993	21,662	33,829	20,548	19,802	55,655
259,250	0,227	0,690	0,969	0,108	0,598	0,270	0,744	70,826	21,924	20,809	20,612	20,040	20,000	21,673	33,837	20,533	19,797	55,632
259,750	0,230	0,686	0,976	0,061	-0,011	0,273	0,745	70,823	21,909	20,810	20,625	20,055	20,002	21,672	33,856	20,544	19,801	55,640
260,250	0,230	0,686	0,974	0,057	-0,543	0,272	0,744	70,818	21,904	20,811	20,627	20,023	20,001	21,683	33,864	20,522	19,803	55,628
260,750	0,231	0,686	0,978	0,035	-0,010	0,273	0,744	70,707	21,909	20,808	20,617	20,029	19,999	21,681	33,877	20,524	19,805	55,598
261,250	0,232	0,685	0,971	-0,013	-0,010	0,274	0,744	70,744	21,998	20,818	20,636	20,039	19,998	21,683	33,879	20,535	19,801	55,591
261,750	0,234	0,684	0,981	0,036	0,642	0,275	0,744	70,681	22,025	20,825	20,635	20,024	19,989	21,682	33,900	20,547	19,803	55,572
262,250	0,236	0,679	0,979	0,022	-0,010	0,281	0,744	70,659	22,028	20,829	20,640	20,040	20,006	21,690	33,910	20,548	19,805	55,581

PE 56 Cat I_250305.DAT

Category: I run 1

	1104	1105	1107	130	230	101	102	1	2	3	6	7	8	11	
Measure- ment time	T3 inlet load side	T2 inlet boiler	T1 outlet boiler	Flow load side	Flow boiler side	Heat output load side	Heat output boiler	CO chimney	CO2 chimney	O2 chimney	Pstat	Pdyn	Tunnel velocity	Våg	Time
Minutes	°C	°C	°C	m³/h	m³/h	W	W	ppm	%	%	Pa	Pa	m/s	kg	Clock
246,250	39,168	52,916	69,304	0,427	0,438	8246,104	8230,414	211,528	11,973	8,394	-1,774	38,805	8,042	21,845	2025-03-05 13:37
246,750	39,180	52,918	69,301	0,426	0,438	8236,397	8228,035	196,404	12,010	8,330	0,934	38,747	8,036	21,845	2025-03-05 13:37
247,250	39,172	52,899	69,278	0,426	0,438	8231,069	8223,632	199,333	12,037	8,307	3,304	38,860	8,048	21,845	2025-03-05 13:38
247,750	39,176	52,893	69,268	0,426	0,438	8223,158	8220,007	204,805	12,024	8,333	0,165	39,122	8,075	21,845	2025-03-05 13:38
248,250	39,174	52,893	69,254	0,426	0,438	8222,826	8216,836	193,245	12,109	8,235	2,839	38,940	8,056	21,845	2025-03-05 13:39
248,750	39,161	52,880	69,218	0,426	0,438	8215,953	8206,134	193,895	12,115	8,191	1,239	38,696	8,031	21,844	2025-03-05 13:39
249,250	39,158	52,861	69,190	0,426	0,438	8211,153	8204,145	190,198	12,175	8,173	-0,959	38,818	8,043	21,845	2025-03-05 13:40
249,750	39,159	52,861	69,148	0,427	0,438	8207,952	8177,597	182,763	12,232	8,131	3,456	38,963	8,058	21,751	2025-03-05 13:40
250,250	39,151	52,839	69,156	0,426	0,438	8200,625	8193,707	183,454	12,241	8,093	0,010	38,857	8,047	21,751	2025-03-05 13:41
250,750	39,152	52,837	69,155	0,426	0,438	8189,463	8195,635	202,887	12,132	8,226	0,187	38,837	8,045	21,751	2025-03-05 13:41
251,250	39,150	52,827	69,138	0,426	0,438	8183,495	8190,218	204,412	12,110	8,225	-0,787	39,004	8,063	21,751	2025-03-05 13:42
251,750	39,153	52,825	69,109	0,426	0,438	8169,858	8175,221	214,891	11,996	8,403	0,157	38,686	8,030	21,751	2025-03-05 13:42
252,250	39,150	52,818	69,082	0,426	0,438	8175,028	8162,703	208,363	11,853	8,489	2,452	38,882	8,050	21,751	2025-03-05 13:43
252,750	39,152	52,810	69,086	0,426	0,438	8183,495	8176,721	226,826	11,748	8,576	2,636	38,740	8,035	21,735	2025-03-05 13:43
253,250	39,144	52,794	69,039	0,427	0,438	8188,541	8159,177	224,258	11,795	8,570	1,881	38,701	8,031	21,657	2025-03-05 13:44
253,750	39,145	52,777	69,054	0,426	0,438	8163,156	8172,625	232,284	11,736	8,555	2,085	39,134	8,076	21,657	2025-03-05 13:44
254,250	39,140	52,771	69,004	0,426	0,438	8168,445	8146,343	201,681	12,009	8,312	1,334	38,800	8,042	21,657	2025-03-05 13:45
254,750	39,134	52,762	68,981	0,426	0,438	8164,622	8139,641	192,148	12,068	8,282	2,255	39,068	8,069	21,657	2025-03-05 13:45
255,250	39,130	52,750	68,963	0,426	0,438	8158,428	8135,773	225,137	12,029	8,298	0,674	38,631	8,024	21,657	2025-03-05 13:46
255,750	39,134	52,743	68,963	0,426	0,437	8140,880	8131,995	213,401	12,124	8,240	1,158	38,596	8,020	21,657	2025-03-05 13:46
256,250	39,130	52,729	68,932	0,426	0,438	8137,443	8132,356	203,314	12,087	8,254	-0,718	39,004	8,063	21,563	2025-03-05 13:47
256,750	39,122	52,720	68,907	0,426	0,437	8143,519	8121,781	214,064	12,019	8,340	1,054	39,058	8,068	21,563	2025-03-05 13:47
257,250	39,114	52,705	68,889	0,426	0,438	8128,089	8126,457	204,138	11,991	8,370	2,058	38,845	8,046	21,563	2025-03-05 13:48
257,750	39,119	52,706	68,874	0,426	0,438	8124,192	8118,220	224,714	11,822	8,516	2,479	38,880	8,050	21,563	2025-03-05 13:48
258,250	39,116	52,700	68,861	0,426	0,437	8121,033	8104,331	203,530	11,957	8,400	2,368	39,131	8,076	21,563	2025-03-05 13:49
258,750	39,110	52,682	68,849	0,426	0,437	8125,432	8111,732	183,361	12,124	8,168	-0,909	38,772	8,039	21,563	2025-03-05 13:49
259,250	39,104	52,670	68,820	0,426	0,437	8116,799	8097,734	179,594	12,230	8,099	4,329	38,711	8,032	21,469	2025-03-05 13:50
259,750	39,108	52,664	68,800	0,426	0,437	8111,280	8096,135	198,478	12,116	8,200	2,435	39,182	8,081	21,563	2025-03-05 13:50
260,250	39,109	52,651	68,784	0,426	0,438	8105,750	8102,768	191,373	12,165	8,171	2,269	38,884	8,050	21,469	2025-03-05 13:51
260,750	39,108	52,640	68,767	0,426	0,437	8099,511	8090,646	210,027	12,162	8,203	1,402	39,280	8,091	21,469	2025-03-05 13:51
261,250	39,111	52,633	68,759	0,426	0,438	8093,776	8091,939	208,335	12,132	8,216	-0,508	38,939	8,056	21,469	2025-03-05 13:52
261,750	39,106	52,617	68,718	0,426	0,438	8088,426	8089,136	221,368	12,094	8,265	1,439	39,279	8,091	21,469	2025-03-05 13:52
262,250	39,107	52,613	68,703	0,426	0,438	8093,163	8078,639	243,993	11,916	8,441	0,871	38,998	8,062	21,469	2025-03-05 13:53

PE 56 Cat I_250305.DAT

Category: I run 1

	301	302	304	305	306	308	317	1311	1313	1314	1315	1316	1317	1318	1319	1320	1101	1103
Measure- ment time	CO chimney	CO2 chimney	Pdyn	Pstat	Static pressure chimney	O2 chimney	Scale	Flue gas temp	Flue gas at pitot	filter temp 1	filter temp 2	gas meter temp 1	gas meter temp 2	gasmeter 1hr	Gas meter ambient	Filter temp 1 hr	Ambient temperature	T4 outlet load side
Minutes	VDC	VDC	VDC	VDC	VDC	VDC	VDC	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
262,750	0,240	0,676	0,976	0,069	-0,609	0,279	0,744	70,614	21,994	20,820	20,631	20,030	19,998	21,694	33,909	20,532	19,798	55,569
263,250	0,235	0,679	0,968	0,005	0,714	0,279	0,744	70,721	22,009	20,837	20,643	20,056	20,003	21,706	33,940	20,541	19,805	55,555
263,750	0,235	0,682	0,965	0,000	-0,010	0,276	0,744	70,724	21,982	20,834	20,631	20,053	20,014	21,697	33,941	20,546	19,803	55,549
264,250	0,237	0,682	0,973	0,041	0,717	0,277	0,742	70,756	22,006	20,827	20,631	20,023	20,000	21,687	33,948	20,530	19,799	55,532
264,750	0,233	0,682	0,964	0,083	-0,010	0,275	0,742	70,722	21,937	20,830	20,623	20,055	20,003	21,689	33,952	20,533	19,797	55,532
265,250	0,235	0,683	0,966	0,027	-0,010	0,278	0,742	70,511	21,941	20,838	20,623	20,035	20,002	21,699	33,970	20,541	19,803	55,514
265,750	0,241	0,677	0,976	-0,021	-0,539	0,279	0,742	70,489	21,987	20,832	20,641	20,041	20,002	21,705	33,976	20,541	19,800	55,506
266,250	0,237	0,683	0,982	0,022	0,669	0,272	0,742	70,548	22,031	20,852	20,667	20,055	20,018	21,703	33,994	20,548	19,805	55,521
266,750	0,232	0,695	0,977	0,070	-0,559	0,265	0,741	70,626	22,179	20,879	20,665	20,078	20,015	21,710	33,989	20,559	19,799	55,490
267,250	0,235	0,695	0,978	0,049	0,853	0,265	0,740	70,720	22,158	20,868	20,681	20,053	20,016	21,708	33,996	20,560	19,802	55,502
267,750	0,230	0,695	0,973	0,120	-0,620	0,268	0,740	70,616	22,137	20,869	20,673	20,030	20,000	21,711	33,996	20,566	19,795	55,480
268,250	0,233	0,686	0,967	-0,007	-0,010	0,273	0,740	70,613	22,197	20,885	20,702	20,045	20,001	21,723	34,001	20,559	19,799	55,488
268,750	0,234	0,686	0,968	0,032	-0,550	0,270	0,741	70,597	22,119	20,882	20,698	20,043	20,001	21,723	34,006	20,561	19,800	55,481
269,250	0,233	0,688	0,968	0,026	-0,028	0,273	0,740	70,553	21,969	20,869	20,682	20,048	20,000	21,733	33,989	20,550	19,796	55,457
269,750	0,236	0,681	0,974	-0,014	-0,010	0,278	0,740	70,508	21,956	20,868	20,668	20,086	20,017	21,740	33,999	20,563	19,801	55,465
270,250	0,237	0,675	0,969	0,074	0,591	0,284	0,739	70,590	22,021	20,856	20,650	20,074	20,014	21,752	34,003	20,573	19,804	55,461
270,750	0,235	0,674	0,967	0,005	-0,562	0,279	0,739	70,622	21,993	20,837	20,634	20,057	20,019	21,744	33,996	20,550	19,799	55,435
271,250	0,232	0,682	0,969	0,054	-0,029	0,274	0,739	70,565	21,940	20,829	20,623	20,085	20,013	21,757	34,001	20,540	19,793	55,426
271,750	0,232	0,689	0,975	0,107	0,619	0,271	0,739	70,562	21,918	20,825	20,613	20,083	20,038	21,761	34,013	20,529	19,797	55,426
272,250	0,234	0,685	0,975	0,040	-0,010	0,274	0,739	70,572	21,966	20,825	20,612	20,061	20,019	21,766	34,019	20,535	19,802	55,424
272,750	0,233	0,688	0,973	0,077	-0,608	0,272	0,738	70,519	21,995	20,832	20,604	20,074	20,019	21,766	34,013	20,535	19,796	55,433
273,250	0,234	0,691	0,974	-0,020	-0,010	0,267	0,739	70,533	22,035	20,836	20,616	20,068	20,025	21,765	34,021	20,545	19,799	55,423
273,750	0,232	0,695	0,969	0,072	-0,010	0,264	0,738	70,515	21,946	20,804	20,588	20,051	20,013	21,760	34,023	20,525	19,796	55,419
274,250	0,232	0,700	0,976	0,115	-0,011	0,261	0,737	70,583	21,917	20,817	20,602	20,048	20,025	21,759	34,034	20,521	19,796	55,418
274,750	0,230	0,705	0,971	0,035	-0,010	0,254	0,737	70,569	21,892	20,807	20,591	20,066	20,028	21,769	34,035	20,510	19,793	55,416
275,250	0,230	0,710	0,971	0,035	-0,011	0,255	0,737	70,598	21,901	20,802	20,592	20,043	20,021	21,757	34,050	20,521	19,796	55,416
275,750	0,230	0,706	0,972	0,007	0,564	0,256	0,736	70,577	21,970	20,807	20,605	20,072	20,035	21,786	34,073	20,525	19,799	55,418
276,250	0,229	0,704	0,979	0,050	-0,048	0,259	0,737	70,520	21,945	20,807	20,608	20,070	20,026	21,760	34,066	20,527	19,795	55,404
276,750	0,230	0,697	0,975	-0,016	-0,594	0,267	0,736	70,585	21,966	20,823	20,621	20,085	20,032	21,785	34,079	20,539	19,799	55,416
277,250	0,231	0,688	0,976	0,000	-0,755	0,270	0,736	70,589	22,003	20,813	20,622	20,063	20,029	21,774	34,075	20,531	19,795	55,403
277,750	0,230	0,690	0,979	0,012	-0,028	0,271	0,736	70,466	21,948	20,817	20,614	20,086	20,029	21,760	34,073	20,525	19,789	55,408
278,250	0,231	0,686	0,972	0,066	-0,027	0,275	0,736	70,539	21,946	20,816	20,619	20,090	20,028	21,776	34,075	20,525	19,794	55,406
278,750	0,234	0,690	0,974	0,006	-0,796	0,263	0,736	70,611	21,909	20,807	20,589	20,075	20,029	21,761	34,084	20,518	19,793	55,418

PE 56 Cat I_250305.DAT

Category: I run 1

	1104	1105	1107	130	230	101	102	1	2	3	6	7	8	11	
Measure- ment time	T3 inlet load side	T2 inlet boiler	T1 outlet boiler	Flow load side	Flow boiler side	Heat output load side	Heat output boiler	CO chimney	CO2 chimney	O2 chimney	Pstat	Pdyn	Tunnel velocity	Våg	Time
Minutes	°C	°C	°C	m³/h	m³/h	W	W	ppm	%	%	Pa	Pa	m/s	kg	Clock
262,750	39,104	52,601	68,685	0,426	0,438	8082,263	8072,138	248,837	11,961	8,370	2,775	38,997	8,062	21,469	2025-03-05 13:53
263,250	39,118	52,609	68,654	0,426	0,438	8074,236	8056,809	224,328	11,944	8,364	0,199	38,617	8,023	21,469	2025-03-05 13:54
263,750	39,118	52,597	68,659	0,426	0,438	8073,668	8066,919	232,270	12,072	8,270	0,008	38,820	8,044	21,469	2025-03-05 13:54
264,250	39,111	52,583	68,633	0,426	0,438	8065,016	8064,561	234,411	12,018	8,315	1,652	38,866	8,048	21,347	2025-03-05 13:55
264,750	39,124	52,575	68,602	0,426	0,438	8058,483	8044,937	207,098	12,045	8,250	3,305	38,358	7,996	21,347	2025-03-05 13:55
265,250	39,123	52,565	68,596	0,426	0,438	8047,882	8048,148	238,771	12,012	8,350	1,064	38,672	8,028	21,347	2025-03-05 13:56
265,750	39,120	52,557	68,565	0,426	0,438	8042,574	8035,541	268,818	11,930	8,380	-0,820	39,173	8,080	21,347	2025-03-05 13:56
266,250	39,133	52,558	68,574	0,426	0,438	8050,922	8037,687	225,558	12,127	8,155	0,868	39,326	8,096	21,347	2025-03-05 13:57
266,750	39,138	52,550	68,522	0,426	0,438	8031,545	8024,219	217,508	12,419	7,939	2,806	39,081	8,071	21,347	2025-03-05 13:57
267,250	39,146	52,543	68,531	0,426	0,438	8027,277	8033,145	223,838	12,386	7,947	1,949	39,276	8,091	21,254	2025-03-05 13:58
267,750	39,154	52,541	68,503	0,426	0,438	8012,841	8017,990	197,654	12,340	8,036	4,816	38,765	8,038	21,253	2025-03-05 13:58
268,250	39,158	52,539	68,497	0,427	0,438	8026,177	8015,134	219,467	12,120	8,204	-0,289	38,661	8,027	21,254	2025-03-05 13:59
268,750	39,158	52,527	68,491	0,426	0,438	8020,144	8012,414	217,532	12,182	8,113	1,269	38,702	8,031	21,347	2025-03-05 13:59
269,250	39,155	52,515	68,493	0,427	0,438	8018,806	8019,531	214,752	12,185	8,185	1,045	38,712	8,032	21,253	2025-03-05 14:00
269,750	39,168	52,512	68,452	0,427	0,437	8011,889	7997,875	225,565	11,994	8,343	-0,560	38,877	8,050	21,253	2025-03-05 14:00
270,250	39,170	52,499	68,448	0,427	0,437	8009,235	8001,852	247,951	11,847	8,506	2,947	38,673	8,028	21,160	2025-03-05 14:01
270,750	39,166	52,492	68,437	0,426	0,438	7992,913	8002,208	217,803	11,922	8,377	0,206	38,710	8,032	21,159	2025-03-05 14:01
271,250	39,170	52,495	68,426	0,426	0,437	7981,322	7994,278	207,991	12,084	8,210	2,142	38,779	8,039	21,159	2025-03-05 14:02
271,750	39,179	52,497	68,440	0,426	0,438	7975,041	8004,680	212,317	12,229	8,142	4,265	39,044	8,067	21,159	2025-03-05 14:02
272,250	39,186	52,495	68,408	0,425	0,438	7961,573	7989,801	219,332	12,102	8,221	1,593	38,936	8,056	21,159	2025-03-05 14:03
272,750	39,190	52,494	68,379	0,426	0,437	7977,777	7964,779	225,360	12,190	8,160	3,061	38,975	8,060	21,066	2025-03-05 14:03
273,250	39,208	52,490	68,392	0,426	0,438	7960,377	7980,194	212,143	12,337	7,998	-0,799	38,955	8,058	21,159	2025-03-05 14:04
273,750	39,205	52,486	68,361	0,426	0,438	7958,561	7975,177	202,894	12,397	7,917	2,890	38,876	8,049	21,066	2025-03-05 14:04
274,250	39,220	52,498	68,357	0,426	0,438	7953,726	7975,143	210,437	12,523	7,845	4,611	38,983	8,061	21,066	2025-03-05 14:05
274,750	39,218	52,497	68,357	0,426	0,439	7948,331	7980,074	179,587	12,704	7,619	1,408	38,649	8,026	21,066	2025-03-05 14:05
275,250	39,224	52,509	68,357	0,426	0,438	7946,127	7965,513	201,403	12,683	7,652	1,404	38,662	8,027	21,066	2025-03-05 14:06
275,750	39,236	52,513	68,335	0,426	0,439	7938,092	7959,186	188,336	12,638	7,689	0,292	38,947	8,057	20,972	2025-03-05 14:06
276,250	39,242	52,515	68,355	0,426	0,439	7927,759	7969,162	188,833	12,598	7,764	1,985	39,216	8,085	21,066	2025-03-05 14:07
276,750	39,246	52,525	68,333	0,426	0,438	7930,671	7949,367	197,853	12,345	8,023	-0,636	38,987	8,061	20,972	2025-03-05 14:07
277,250	39,244	52,514	68,319	0,426	0,438	7932,341	7948,790	199,308	12,217	8,110	0,012	39,251	8,088	20,972	2025-03-05 14:08
277,750	39,264	52,515	68,355	0,426	0,438	7927,730	7959,893	201,622	12,239	8,120	0,474	39,086	8,071	20,972	2025-03-05 14:08
278,250	39,256	52,507	68,321	0,426	0,439	7929,215	7959,697	205,813	12,129	8,239	2,646	38,700	8,031	20,972	2025-03-05 14:09
278,750	39,268	52,505	68,312	0,426	0,439	7933,777	7952,897	210,527	12,350	7,893	0,243	38,887	8,051	20,972	2025-03-05 14:09

PE 56 Cat I_250305.DAT

Category: I run 1

	301	302	304	305	306	308	317	1311	1313	1314	1315	1316	1317	1318	1319	1320	1101	1103
Measure- ment time	CO chimney	CO2 chimney	Pdyn	Pstat	Static pressure chimney	O2 chimney	Scale	Flue gas temp	Flue gas at pitot	filter temp 1	filter temp 2	gas meter temp 1	gas meter temp 2	gasmeter 1hr	Gas meter ambient	Filter temp 1 hr	Ambient temperature	T4 outlet load side
Minutes	VDC	VDC	VDC	VDC	VDC	VDC	VDC	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	
279,250	0,227	0,711	0,975	0,023	0,628	0,250	0,736	70,634	21,935	20,807	20,604	20,075	20,037	21,776	34,088	20,535	19,796	55,408
279,750	0,227	0,709	0,973	0,003	-0,011	0,255	0,736	70,686	21,959	20,805	20,608	20,096	20,045	21,770	34,087	20,530	19,796	55,414
280,250	0,229	0,704	0,975	0,068	0,710	0,259	0,734	70,802	21,899	20,802	20,582	20,065	20,029	21,775	34,097	20,523	19,787	55,404
280,750	0,229	0,703	0,974	0,147	-0,011	0,261	0,734	70,651	21,919	20,815	20,591	20,075	20,032	21,777	34,094	20,528	19,795	55,406
281,250	0,231	0,700	0,971	0,009	-1,307	0,260	0,735	70,640	21,948	20,816	20,611	20,084	20,040	21,785	34,111	20,542	19,793	55,411
281,750	0,228	0,705	0,977	0,069	-0,011	0,259	0,735	70,692	21,965	20,833	20,621	20,087	20,043	21,788	34,126	20,536	19,792	55,424
282,250	0,228	0,700	0,976	0,001	-0,011	0,261	0,734	70,698	21,926	20,830	20,622	20,100	20,049	21,785	34,128	20,540	19,793	55,421
282,750	0,227	0,704	0,972	0,107	0,828	0,258	0,733	70,643	21,875	20,811	20,595	20,087	20,032	21,780	34,138	20,529	19,792	55,412
283,250	0,229	0,705	0,972	-0,002	-0,641	0,258	0,732	70,657	21,878	20,819	20,599	20,085	20,038	21,786	34,130	20,531	19,796	55,429
283,750	0,232	0,703	0,971	0,124	-0,010	0,259	0,732	70,723	21,893	20,821	20,615	20,098	20,037	21,785	34,146	20,529	19,790	55,428
284,250	0,232	0,702	0,977	0,014	-0,010	0,259	0,732	70,689	21,937	20,824	20,621	20,085	20,045	21,779	34,151	20,525	19,792	55,432
284,750	0,233	0,704	0,973	0,002	-0,010	0,260	0,732	70,740	21,940	20,826	20,623	20,102	20,038	21,790	34,157	20,533	19,792	55,438
285,250	0,234	0,699	0,978	0,030	0,708	0,263	0,732	70,823	21,933	20,818	20,609	20,091	20,033	21,779	34,156	20,524	19,783	55,441
285,750	0,233	0,697	0,975	0,078	-0,508	0,261	0,732	70,697	21,938	20,820	20,624	20,105	20,052	21,787	34,171	20,524	19,787	55,426
286,250	0,234	0,703	0,977	0,041	-0,027	0,259	0,731	70,735	21,936	20,808	20,620	20,078	20,034	21,788	34,176	20,528	19,790	55,452
286,750	0,236	0,700	0,971	0,033	-0,010	0,261	0,731	70,689	22,012	20,834	20,634	20,117	20,049	21,793	34,198	20,532	19,793	55,467
287,250	0,232	0,702	0,976	0,009	-0,011	0,259	0,731	70,722	22,015	20,832	20,636	20,120	20,053	21,802	34,202	20,536	19,795	55,462
287,750	0,232	0,705	0,977	0,049	-0,011	0,254	0,731	70,694	21,972	20,822	20,627	20,109	20,062	21,809	34,204	20,531	19,793	55,464
288,250	0,233	0,710	0,972	-0,015	-0,011	0,252	0,731	70,708	21,926	20,816	20,617	20,101	20,032	21,789	34,212	20,513	19,789	55,463
288,750	0,233	0,710	0,973	0,056	-0,011	0,254	0,729	70,716	21,926	20,815	20,630	20,116	20,060	21,823	34,228	20,537	19,797	55,475
289,250	0,234	0,704	0,975	0,069	-0,690	0,260	0,730	70,710	21,905	20,817	20,628	20,137	20,066	21,800	34,227	20,533	19,794	55,479
289,750	0,233	0,700	0,974	0,052	0,527	0,262	0,729	70,668	21,907	20,819	20,623	20,130	20,065	21,801	34,222	20,516	19,793	55,485
290,250	0,233	0,699	0,977	0,088	-0,011	0,263	0,729	70,747	22,002	20,827	20,634	20,136	20,059	21,802	34,244	20,523	19,791	55,494
290,750	0,235	0,702	0,973	-0,022	-0,615	0,254	0,729	70,800	21,924	20,814	20,610	20,115	20,059	21,799	34,250	20,529	19,791	55,510
291,250	0,235	0,718	0,975	0,080	-0,562	0,247	0,728	70,870	21,915	20,829	20,619	20,138	20,070	21,796	34,255	20,525	19,791	55,507
291,750	0,236	0,715	0,973	0,046	0,833	0,246	0,728	70,904	21,945	20,815	20,618	20,130	20,057	21,794	34,251	20,514	19,784	55,515
292,250	0,235	0,725	0,973	-0,037	-0,010	0,241	0,728	70,914	21,900	20,794	20,613	20,094	20,052	21,789	34,253	20,511	19,781	55,511
292,750	0,236	0,724	0,975	0,025	0,635	0,241	0,728	70,925	21,907	20,796	20,608	20,100	20,051	21,788	34,269	20,529	19,789	55,514
293,250	0,234	0,724	0,976	0,030	-0,732	0,242	0,728	70,886	22,000	20,830	20,616	20,130	20,069	21,804	34,282	20,527	19,792	55,528
293,750	0,229	0,722	0,973	-0,023	-0,011	0,244	0,728	70,834	21,965	20,816	20,614	20,147	20,067	21,802	34,295	20,527	19,791	55,538
294,250	0,227	0,716	0,977	0,063	0,766	0,249	0,727	70,809	21,942	20,811	20,609	20,125	20,066	21,791	34,286	20,523	19,787	55,528
294,750	0,223	0,718	0,978	0,041	-0,011	0,244	0,726	70,781	21,928	20,813	20,611	20,128	20,071	21,800	34,295	20,512	19,791	55,541
295,250	0,224	0,714	0,978	0,083	-0,580	0,254	0,726	70,950	21,917	20,799	20,598	20,126	20,058	21,788	34,287	20,498	19,781	55,547

PE 56 Cat I_250305.DAT

Category: I run 1

	1104	1105	1107	130	230	101	102	1	2	3	6	7	8	11	
Measure- ment time	T3 inlet load side	T2 inlet boiler	T1 outlet boiler	Flow load side	Flow boiler side	Heat output load side	Heat output boiler	CO chimney	CO2 chimney	O2 chimney	Pstat	Pdyn	Tunnel velocity	Våg	Time
Minutes	°C	°C	°C	m³/h	m³/h	W	W	ppm	%	%	Pa	Pa	m/s	kg	Clock
279,250	39,273	52,511	68,307	0,426	0,438	7914,645	7938,661	169,671	12,852	7,515	0,930	39,057	8,068	20,972	2025-03-05 14:10
279,750	39,273	52,519	68,322	0,426	0,439	7928,390	7951,231	177,916	12,688	7,665	0,109	38,987	8,061	20,972	2025-03-05 14:10
280,250	39,266	52,507	68,313	0,426	0,438	7922,833	7942,555	192,186	12,564	7,769	2,720	38,918	8,054	20,890	2025-03-05 14:11
280,750	39,277	52,509	68,308	0,426	0,438	7925,526	7945,022	193,308	12,573	7,823	5,864	38,861	8,048	20,847	2025-03-05 14:11
281,250	39,276	52,499	68,347	0,426	0,438	7928,113	7965,473	194,847	12,503	7,787	0,371	38,721	8,033	20,847	2025-03-05 14:12
281,750	39,284	52,502	68,315	0,426	0,438	7928,446	7945,563	181,523	12,588	7,772	2,742	39,116	8,074	20,847	2025-03-05 14:12
282,250	39,285	52,504	68,343	0,426	0,438	7918,373	7953,406	177,287	12,508	7,824	0,059	39,016	8,064	20,847	2025-03-05 14:13
282,750	39,277	52,505	68,330	0,426	0,438	7920,412	7955,502	174,167	12,618	7,725	4,280	38,761	8,037	20,754	2025-03-05 14:13
283,250	39,287	52,514	68,335	0,426	0,438	7922,115	7953,114	187,478	12,634	7,736	-0,096	38,951	8,057	20,754	2025-03-05 14:14
283,750	39,288	52,512	68,362	0,426	0,438	7928,060	7964,554	208,776	12,561	7,770	4,969	38,937	8,056	20,753	2025-03-05 14:14
284,250	39,293	52,519	68,378	0,426	0,439	7925,856	7977,385	206,250	12,542	7,778	0,549	39,026	8,065	20,753	2025-03-05 14:15
284,750	39,293	52,525	68,407	0,426	0,437	7934,656	7968,842	220,106	12,579	7,786	0,087	38,893	8,051	20,753	2025-03-05 14:15
285,250	39,284	52,521	68,387	0,426	0,438	7935,151	7977,301	218,685	12,480	7,881	1,216	39,082	8,071	20,754	2025-03-05 14:16
285,750	39,289	52,533	68,376	0,426	0,439	7924,870	7971,169	209,398	12,469	7,843	3,131	38,820	8,044	20,753	2025-03-05 14:16
286,250	39,286	52,536	68,417	0,426	0,439	7932,491	7989,421	222,198	12,600	7,765	1,646	38,972	8,059	20,659	2025-03-05 14:17
286,750	39,298	52,548	68,406	0,426	0,438	7940,748	7969,723	227,879	12,489	7,824	1,338	38,836	8,045	20,660	2025-03-05 14:17
287,250	39,292	52,549	68,428	0,426	0,438	7946,812	7982,539	208,339	12,580	7,784	0,367	38,891	8,051	20,660	2025-03-05 14:18
287,750	39,295	52,548	68,427	0,427	0,438	7950,723	7984,858	206,240	12,712	7,621	1,958	39,002	8,062	20,660	2025-03-05 14:18
288,250	39,289	52,543	68,427	0,426	0,438	7948,744	7982,604	209,416	12,767	7,565	-0,592	38,873	8,049	20,659	2025-03-05 14:19
288,750	39,293	52,552	68,465	0,426	0,438	7948,843	8001,412	219,874	12,729	7,631	2,242	39,004	8,063	20,566	2025-03-05 14:19
289,250	39,296	52,570	68,465	0,426	0,439	7950,715	7994,525	216,524	12,555	7,802	2,758	38,992	8,061	20,566	2025-03-05 14:20
289,750	39,290	52,572	68,506	0,426	0,439	7952,844	8018,535	209,054	12,493	7,848	2,094	38,966	8,059	20,566	2025-03-05 14:20
290,250	39,295	52,584	68,509	0,426	0,438	7954,879	8005,972	215,478	12,465	7,885	3,518	39,107	8,073	20,566	2025-03-05 14:21
290,750	39,297	52,587	68,521	0,427	0,439	7972,629	8020,018	223,254	12,635	7,626	-0,865	38,813	8,043	20,566	2025-03-05 14:21
291,250	39,290	52,586	68,527	0,426	0,439	7967,210	8028,463	224,116	12,962	7,415	3,202	39,095	8,072	20,472	2025-03-05 14:22
291,750	39,291	52,595	68,518	0,426	0,439	7971,229	8009,503	220,951	12,890	7,386	1,832	38,914	8,053	20,566	2025-03-05 14:22
292,250	39,289	52,595	68,514	0,426	0,439	7969,906	8008,669	235,693	13,164	7,217	-1,482	38,919	8,054	20,472	2025-03-05 14:23
292,750	39,289	52,604	68,520	0,426	0,438	7968,907	8001,496	223,258	13,103	7,234	1,000	39,063	8,069	20,566	2025-03-05 14:23
293,250	39,289	52,611	68,544	0,426	0,439	7975,382	8015,047	219,464	13,079	7,248	1,197	38,984	8,061	20,472	2025-03-05 14:24
293,750	39,293	52,624	68,586	0,426	0,439	7976,865	8036,604	182,304	13,038	7,335	-0,901	38,820	8,044	20,472	2025-03-05 14:24
294,250	39,296	52,631	68,593	0,426	0,439	7969,051	8031,104	174,549	12,855	7,456	2,501	39,169	8,080	20,348	2025-03-05 14:25
294,750	39,299	52,637	68,565	0,426	0,439	7975,549	8014,198	146,233	13,006	7,326	1,640	39,124	8,075	20,348	2025-03-05 14:25
295,250	39,292	52,635	68,605	0,427	0,438	7990,340	8030,554	168,049	12,728	7,626	3,326	39,255	8,089	20,348	2025-03-05 14:26

PE 56 Cat I_250305.DAT

Category: I run 1

	301	302	304	305	306	308	317	1311	1313	1314	1315	1316	1317	1318	1319	1320	1101	1103
Measure- ment time	CO chimney	CO2 chimney	Pdyn	Pstat	Static pressure chimney	O2 chimney	Scale	Flue gas temp	Flue gas at pitot	filter temp 1	filter temp 2	gas meter temp 1	gas meter temp 2	gasmeter 1hr	Gas meter ambient	Filter temp 1 hr	Ambient temperature	T4 outlet load side
Minutes	VDC	VDC	VDC	VDC	VDC	VDC	VDC	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	
295,750	0,223	0,707	0,972	-0,097	-0,010	0,256	0,726	70,931	21,944	20,822	20,612	20,115	20,068	21,798	34,298	20,510	19,795	55,577
296,250	0,223	0,703	0,971	0,016	-0,768	0,258	0,726	70,827	21,974	20,815	20,616	20,128	20,064	21,796	34,316	20,504	19,785	55,563
296,750	0,225	0,702	0,971	0,014	0,082	0,259	0,726	70,799	21,970	20,807	20,598	20,109	20,053	21,787	34,312	20,512	19,785	55,575
297,250	0,224	0,706	0,971	0,070	-0,618	0,255	0,725	70,791	21,919	20,814	20,617	20,124	20,069	21,792	34,322	20,502	19,786	55,594
297,750	0,224	0,708	0,972	0,063	0,610	0,257	0,724	70,858	21,900	20,811	20,608	20,128	20,071	21,798	34,336	20,508	19,789	55,608
298,250	0,226	0,696	0,971	0,018	0,731	0,266	0,724	70,966	21,905	20,811	20,613	20,158	20,079	21,798	34,345	20,514	19,792	55,608
298,750	0,226	0,689	0,975	-0,001	-0,560	0,270	0,724	70,979	21,890	20,799	20,608	20,130	20,058	21,796	34,328	20,503	19,785	55,602
299,250	0,228	0,686	0,973	0,018	-0,010	0,275	0,724	70,870	21,922	20,803	20,602	20,148	20,068	21,798	34,344	20,512	19,787	55,613
299,750	0,229	0,681	0,978	0,050	-0,734	0,277	0,724	70,742	22,006	20,811	20,615	20,159	20,074	21,795	34,349	20,528	19,789	55,638
300,250	0,229	0,681	0,975	0,003	-0,010	0,279	0,723	70,764	21,947	20,805	20,604	20,133	20,073	21,789	34,341	20,509	19,781	55,628
300,750	0,233	0,677	0,972	0,036	-1,188	0,280	0,723	70,853	21,974	20,816	20,615	20,148	20,077	21,786	34,362	20,517	19,783	55,646
301,250	0,236	0,681	0,974	0,131	-0,573	0,274	0,723	70,810	21,944	20,831	20,616	20,161	20,090	21,801	34,350	20,515	19,787	55,652
301,750	0,235	0,689	0,971	0,034	0,832	0,270	0,723	70,780	21,968	20,819	20,615	20,159	20,079	21,796	34,359	20,509	19,783	55,667
302,250	0,234	0,690	0,975	0,003	-0,010	0,271	0,723	70,834	21,965	20,823	20,620	20,150	20,069	21,799	34,364	20,528	19,781	55,641
302,750	0,234	0,694	0,980	0,055	-0,010	0,261	0,723	70,889	22,031	20,838	20,617	20,159	20,077	21,799	34,361	20,529	19,784	55,660
303,250	0,233	0,707	0,975	0,013	0,784	0,252	0,722	70,960	21,979	20,807	20,617	20,124	20,059	21,791	34,367	20,522	19,777	55,658
303,750	0,228	0,716	0,976	-0,041	0,599	0,247	0,721	70,933	21,968	20,823	20,634	20,145	20,077	21,799	34,368	20,521	19,785	55,651
304,250	0,228	0,714	0,976	-0,035	0,715	0,249	0,721	70,811	22,087	20,831	20,636	20,139	20,073	21,795	34,365	20,528	19,779	55,639
304,750	0,228	0,709	0,976	0,053	0,582	0,256	0,721	70,860	22,041	20,841	20,649	20,162	20,086	21,807	34,385	20,529	19,789	55,641
305,250	0,232	0,698	0,971	0,047	-0,548	0,265	0,721	70,841	21,992	20,835	20,640	20,146	20,073	21,803	34,380	20,523	19,781	55,618
305,750	0,234	0,692	0,966	0,052	-0,010	0,265	0,721	70,835	22,010	20,825	20,641	20,150	20,078	21,805	34,381	20,517	19,783	55,624
306,250	0,229	0,699	0,975	0,081	-1,233	0,263	0,720	70,861	22,043	20,833	20,651	20,171	20,086	21,805	34,399	20,521	19,785	55,635
306,750	0,232	0,692	0,973	0,013	-0,016	0,270	0,720	70,885	22,013	20,841	20,649	20,178	20,086	21,811	34,394	20,531	19,784	55,627
307,250	0,232	0,690	0,977	0,102	-0,011	0,269	0,720	70,887	21,962	20,829	20,633	20,143	20,074	21,805	34,385	20,506	19,782	55,637
307,750	0,230	0,694	0,973	0,003	-0,608	0,266	0,720	70,978	21,994	20,844	20,657	20,181	20,083	21,801	34,392	20,518	19,782	55,639
308,250	0,232	0,697	0,976	0,070	-0,029	0,266	0,720	70,928	21,949	20,827	20,648	20,143	20,082	21,815	34,400	20,517	19,783	55,639
308,750	0,237	0,690	0,971	-0,038	-0,029	0,269	0,719	70,998	21,962	20,828	20,664	20,170	20,086	21,805	34,419	20,516	19,785	55,639
309,250	0,234	0,699	0,977	0,026	1,248	0,258	0,718	70,938	22,006	20,841	20,647	20,160	20,092	21,807	34,421	20,521	19,787	55,640
309,750	0,234	0,705	0,973	0,042	0,672	0,259	0,718	70,968	21,989	20,824	20,644	20,164	20,085	21,811	34,419	20,520	19,782	55,640
310,250	0,234	0,701	0,973	0,049	-0,010	0,259	0,719	70,919	22,037	20,819	20,637	20,137	20,072	21,807	34,414	20,514	19,776	55,624
310,750	0,231	0,707	0,977	0,036	-0,010	0,255	0,718	70,960	22,005	20,827	20,636	20,163	20,088	21,797	34,416	20,520	19,776	55,626
311,250	0,234	0,702	0,978	-0,034	-0,010	0,263	0,718	71,065	22,048	20,823	20,637	20,166	20,091	21,797	34,441	20,520	19,777	55,623
311,750	0,236	0,699	0,978	0,086	0,782	0,261	0,718	71,033	22,040	20,826	20,626	20,168	20,081	21,811	34,441	20,514	19,778	55,619

PE 56 Cat I_250305.DAT

Category: I run 1

	1104	1105	1107	130	230	101	102	1	2	3	6	7	8	11	
Measure- ment time	T3 inlet load side	T2 inlet boiler	T1 outlet boiler	Flow load side	Flow boiler side	Heat output load side	Heat output boiler	CO chimney	CO2 chimney	O2 chimney	Pstat	Pdyn	Tunnel velocity	Våg	Time
Minutes	°C	°C	°C	m³/h	m³/h	W	W	ppm	%	%	Pa	Pa	m/s	kg	Clock
295,750	39,297	52,632	68,596	0,426	0,438	7986,576	8020,838	153,366	12,644	7,693	-3,881	38,810	8,043	20,348	2025-03-05 14:26
296,250	39,292	52,654	68,640	0,426	0,439	7990,834	8044,842	149,599	12,581	7,744	0,659	38,755	8,037	20,348	2025-03-05 14:27
296,750	39,289	52,652	68,646	0,426	0,438	7999,310	8042,772	170,147	12,522	7,784	0,573	38,853	8,047	20,348	2025-03-05 14:27
297,250	39,287	52,662	68,678	0,426	0,439	8005,649	8056,237	154,200	12,674	7,636	2,790	38,773	8,039	20,347	2025-03-05 14:28
297,750	39,291	52,670	68,680	0,426	0,438	8010,984	8046,218	162,177	12,686	7,723	2,516	38,822	8,044	20,254	2025-03-05 14:28
298,250	39,284	52,674	68,684	0,426	0,439	8011,818	8054,400	172,875	12,394	7,992	0,702	38,797	8,041	20,254	2025-03-05 14:29
298,750	39,283	52,674	68,694	0,426	0,439	8008,798	8062,997	170,550	12,231	8,102	-0,020	38,896	8,051	20,254	2025-03-05 14:29
299,250	39,290	52,688	68,721	0,426	0,439	8008,046	8063,949	182,332	12,118	8,242	0,711	39,055	8,068	20,254	2025-03-05 14:30
299,750	39,288	52,701	68,744	0,426	0,439	8025,913	8069,024	190,080	12,019	8,310	2,011	39,228	8,086	20,254	2025-03-05 14:30
300,250	39,283	52,700	68,699	0,426	0,439	8018,927	8048,561	195,125	11,980	8,361	0,106	38,915	8,053	20,160	2025-03-05 14:31
300,750	39,280	52,709	68,746	0,426	0,438	8030,309	8062,009	227,545	11,915	8,413	1,445	38,726	8,034	20,160	2025-03-05 14:31
301,250	39,290	52,721	68,756	0,426	0,438	8023,651	8061,767	223,028	12,124	8,216	5,246	38,946	8,057	20,160	2025-03-05 14:32
301,750	39,283	52,729	68,743	0,426	0,439	8037,192	8056,370	224,509	12,245	8,091	1,353	38,682	8,029	20,160	2025-03-05 14:32
302,250	39,283	52,732	68,751	0,426	0,438	8023,560	8055,964	218,675	12,220	8,122	0,135	39,097	8,072	20,160	2025-03-05 14:33
302,750	39,285	52,733	68,759	0,426	0,438	8040,070	8057,457	222,580	12,458	7,841	2,205	39,298	8,093	20,160	2025-03-05 14:33
303,250	39,275	52,719	68,761	0,426	0,439	8043,240	8067,547	208,290	12,723	7,558	0,506	38,993	8,062	20,160	2025-03-05 14:34
303,750	39,273	52,723	68,734	0,426	0,438	8038,187	8051,905	185,247	12,945	7,408	-1,643	38,885	8,050	20,066	2025-03-05 14:34
304,250	39,239	52,720	68,736	0,426	0,439	8047,969	8055,406	179,560	12,882	7,463	-1,395	39,019	8,064	20,067	2025-03-05 14:35
304,750	39,228	52,723	68,779	0,426	0,438	8051,364	8069,572	186,717	12,658	7,693	2,139	38,803	8,042	20,067	2025-03-05 14:35
305,250	39,200	52,714	68,769	0,426	0,438	8057,202	8069,188	211,712	12,398	7,960	1,879	38,886	8,050	20,067	2025-03-05 14:36
305,750	39,191	52,711	68,816	0,426	0,438	8061,256	8094,311	219,269	12,326	7,952	2,065	38,709	8,032	20,067	2025-03-05 14:36
306,250	39,186	52,709	68,814	0,426	0,438	8077,410	8096,614	189,900	12,467	7,891	3,229	39,021	8,064	19,973	2025-03-05 14:37
306,750	39,168	52,702	68,808	0,426	0,438	8078,883	8095,723	211,090	12,246	8,089	0,505	38,874	8,049	19,972	2025-03-05 14:37
307,250	39,161	52,688	68,832	0,426	0,439	8083,137	8119,479	206,042	12,269	8,073	4,061	39,146	8,077	19,973	2025-03-05 14:38
307,750	39,150	52,692	68,836	0,426	0,439	8092,484	8119,423	192,391	12,392	7,973	0,124	39,041	8,067	19,972	2025-03-05 14:38
308,250	39,143	52,690	68,835	0,426	0,438	8092,239	8115,840	212,341	12,398	7,994	2,789	38,912	8,053	19,973	2025-03-05 14:39
308,750	39,138	52,698	68,853	0,426	0,438	8094,870	8118,545	247,798	12,234	8,067	-1,531	38,946	8,057	19,972	2025-03-05 14:39
309,250	39,130	52,696	68,831	0,426	0,438	8097,649	8114,280	212,574	12,552	7,752	1,042	38,967	8,059	19,847	2025-03-05 14:40
309,750	39,120	52,688	68,841	0,426	0,438	8104,888	8119,121	226,246	12,602	7,768	1,696	38,889	8,051	19,848	2025-03-05 14:40
310,250	39,108	52,682	68,853	0,426	0,438	8104,556	8131,861	214,638	12,531	7,774	1,941	38,885	8,050	19,972	2025-03-05 14:41
310,750	39,105	52,692	68,851	0,426	0,438	8107,588	8122,550	203,499	12,720	7,640	1,449	39,117	8,074	19,848	2025-03-05 14:41
311,250	39,094	52,683	68,889	0,426	0,438	8117,465	8147,853	232,653	12,443	7,905	-1,367	39,169	8,080	19,847	2025-03-05 14:42
311,750	39,080	52,672	68,870	0,426	0,439	8123,530	8149,706	228,546	12,527	7,837	3,454	38,942	8,056	19,847	2025-03-05 14:42

PE 56 Cat I_250305.DAT

Category: I run 1

	301	302	304	305	306	308	317	1311	1313	1314	1315	1316	1317	1318	1319	1320	1101	1103
Measure- ment time	CO chimney	CO2 chimney	Pdyn	Pstat	Static pressure chimney	O2 chimney	Scale	Flue gas temp	Flue gas at pitot	filter temp 1	filter temp 2	gas meter temp 1	gas meter temp 2	gasmeter 1hr	Gas meter ambient	Filter temp 1 hr	Ambient temperature	T4 outlet load side
Minutes	VDC	VDC	VDC	VDC	VDC	VDC	VDC	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	
312,250	0,234	0,698	0,978	-0,059	-0,027	0,265	0,718	70,991	21,956	20,819	20,631	20,168	20,092	21,808	34,441	20,523	19,781	55,639
312,750	0,237	0,692	0,977	-0,002	-0,011	0,270	0,716	70,858	21,962	20,815	20,605	20,166	20,076	21,801	34,434	20,516	19,771	55,638
313,250	0,240	0,687	0,976	0,047	-0,010	0,270	0,716	70,893	21,915	20,821	20,613	20,154	20,066	21,808	34,442	20,513	19,779	55,644
313,750	0,239	0,694	0,976	0,065	-0,028	0,266	0,716	70,977	21,928	20,810	20,623	20,172	20,080	21,810	34,448	20,511	19,775	55,630
314,250	0,241	0,694	0,974	0,100	-0,614	0,267	0,716	70,948	21,916	20,809	20,615	20,153	20,086	21,803	34,457	20,507	19,773	55,643
314,750	0,239	0,698	0,972	-0,013	0,626	0,262	0,716	70,930	21,934	20,807	20,618	20,178	20,092	21,807	34,460	20,516	19,781	55,649
315,250	0,237	0,699	0,974	0,012	-0,010	0,263	0,715	70,928	21,983	20,819	20,620	20,173	20,090	21,822	34,462	20,517	19,779	55,647
315,750	0,242	0,696	0,977	0,076	0,594	0,267	0,715	70,930	22,060	20,822	20,633	20,156	20,088	21,820	34,467	20,524	19,778	55,651
316,250	0,241	0,693	0,974	0,013	-0,010	0,267	0,715	70,818	22,002	20,824	20,626	20,182	20,088	21,824	34,473	20,525	19,781	55,660
316,750	0,241	0,691	0,976	-0,031	-0,011	0,269	0,715	70,882	22,036	20,839	20,645	20,187	20,107	21,822	34,492	20,540	19,787	55,673
317,250	0,242	0,691	0,974	0,007	-0,744	0,269	0,715	70,803	22,004	20,825	20,627	20,174	20,089	21,818	34,475	20,530	19,778	55,665
317,750	0,242	0,685	0,973	0,001	-0,010	0,276	0,715	70,810	22,058	20,848	20,635	20,200	20,101	21,823	34,475	20,541	19,780	55,666
318,250	0,242	0,680	0,973	0,097	-0,552	0,278	0,713	70,859	22,037	20,831	20,635	20,166	20,095	21,816	34,479	20,535	19,777	55,667
318,750	0,241	0,678	0,971	-0,063	-0,011	0,278	0,713	70,960	22,104	20,849	20,662	20,177	20,099	21,828	34,490	20,535	19,787	55,676
319,250	0,237	0,688	0,979	-0,057	-0,011	0,269	0,714	70,897	22,083	20,840	20,641	20,182	20,103	21,811	34,491	20,538	19,777	55,669
319,750	0,238	0,688	0,974	0,054	-0,031	0,272	0,713	70,891	22,002	20,840	20,641	20,185	20,098	21,809	34,496	20,538	19,777	55,668
320,250	0,243	0,684	0,977	0,015	-0,011	0,276	0,713	70,885	21,954	20,825	20,638	20,191	20,105	21,816	34,495	20,539	19,776	55,675
320,750	0,243	0,684	0,974	0,043	-0,011	0,271	0,713	70,935	21,919	20,808	20,631	20,172	20,093	21,817	34,499	20,534	19,777	55,669
321,250	0,241	0,692	0,973	-0,071	-0,028	0,269	0,713	70,820	21,936	20,831	20,634	20,201	20,104	21,830	34,513	20,527	19,783	55,673
321,750	0,242	0,690	0,978	0,016	-0,631	0,270	0,712	70,900	21,962	20,817	20,632	20,167	20,102	21,831	34,507	20,534	19,783	55,677
322,250	0,240	0,689	0,970	0,032	-0,011	0,270	0,712	70,883	21,909	20,815	20,625	20,199	20,101	21,829	34,516	20,528	19,774	55,664
322,750	0,242	0,692	0,969	0,035	-0,011	0,266	0,712	70,842	21,974	20,832	20,625	20,178	20,105	21,828	34,519	20,543	19,781	55,679
323,250	0,240	0,697	0,973	-0,018	-0,011	0,263	0,712	70,835	21,924	20,818	20,616	20,178	20,112	21,830	34,500	20,485	19,775	55,679
323,750	0,237	0,700	0,971	-0,072	-0,010	0,260	0,712	70,882	21,992	20,825	20,627	20,176	20,111	21,821	34,429	20,349	19,774	55,682
324,250	0,235	0,702	0,974	0,072	-0,011	0,262	0,712	70,944	22,046	20,834	20,633	20,210	20,110	21,826	34,396	20,340	19,777	55,669
324,750	0,234	0,700	0,971	0,011	-0,601	0,259	0,710	70,909	21,976	20,826	20,614	20,181	20,095	21,825	34,355	20,337	19,777	55,665
325,250	0,235	0,705	0,974	0,090	0,639	0,257	0,709	70,965	21,905	20,842	20,619	20,206	20,114	21,835	34,319	20,370	19,775	55,675
325,750	0,238	0,704	0,977	0,001	-0,010	0,256	0,709	70,876	21,969	20,843	20,629	20,172	20,102	21,823	34,284	20,400	19,774	55,664
326,250	0,237	0,709	0,974	-0,004	-0,010	0,254	0,709	70,957	22,007	20,851	20,640	20,218	20,108	21,830	34,266	-4989,689	19,773	55,685
326,750	0,238	0,708	0,976	0,061	-0,010	0,254	0,709	70,897	21,954	20,851	20,622	20,202	20,111	21,838	34,225	19,879	19,775	55,679
327,250	0,241	0,709	0,982	0,017	0,586	0,256	0,709	71,003	21,982	20,851	20,617	20,197	20,107	21,838	34,179	19,942	19,773	55,690
327,750	0,243	0,706	0,976	0,073	-0,028	0,256	0,709	71,016	21,982	20,843	20,620	20,174	20,100	21,839	34,079	19,978	19,769	55,674
328,250	0,240	0,704	0,971	0,015	-0,538	0,260	0,708	71,034	21,951	20,857	20,621	20,226	20,123	21,836	33,879	20,020	19,773	55,694

PE 56 Cat I_250305.DAT

Category: I run 1

	1104	1105	1107	130	230	101	102	1	2	3	6	7	8	11	
Measure- ment time	T3 inlet load side	T2 inlet boiler	T1 outlet boiler	Flow load side	Flow boiler side	Heat output load side	Heat output boiler	CO chimney	CO2 chimney	O2 chimney	Pstat	Pdyn	Tunnel velocity	Våg	Time
Minutes	°C	°C	°C	m³/h	m³/h	W	W	ppm	%	%	Pa	Pa	m/s	kg	Clock
312,250	39,080	52,676	68,919	0,426	0,438	8123,683	8168,874	215,055	12,409	7,940	-2,369	39,141	8,077	19,848	2025-03-05 14:43
312,750	39,068	52,678	68,911	0,426	0,439	8130,477	8164,628	237,906	12,264	8,113	-0,088	38,992	8,061	19,754	2025-03-05 14:43
313,250	39,061	52,677	68,902	0,426	0,438	8142,202	8156,947	250,723	12,213	8,103	1,878	39,015	8,064	19,754	2025-03-05 14:44
313,750	39,066	52,676	68,927	0,426	0,438	8130,276	8170,169	255,560	12,381	7,988	2,616	39,030	8,065	19,754	2025-03-05 14:44
314,250	39,070	52,671	68,926	0,426	0,438	8134,485	8171,404	262,481	12,326	8,011	4,002	38,937	8,056	19,754	2025-03-05 14:45
314,750	39,077	52,678	68,938	0,426	0,438	8137,786	8168,233	243,413	12,490	7,875	-0,538	38,979	8,060	19,754	2025-03-05 14:45
315,250	39,082	52,681	68,931	0,426	0,438	8132,510	8168,290	238,969	12,476	7,875	0,462	38,820	8,044	19,660	2025-03-05 14:46
315,750	39,074	52,678	68,954	0,426	0,438	8142,401	8179,132	280,513	12,336	8,001	3,056	39,196	8,082	19,660	2025-03-05 14:46
316,250	39,080	52,689	68,950	0,426	0,438	8137,327	8173,644	260,181	12,338	8,002	0,528	38,928	8,055	19,660	2025-03-05 14:47
316,750	39,087	52,698	68,938	0,426	0,439	8142,734	8167,875	266,904	12,256	8,071	-1,239	39,119	8,075	19,660	2025-03-05 14:47
317,250	39,078	52,697	68,935	0,426	0,439	8136,276	8170,477	268,440	12,259	8,071	0,284	39,040	8,066	19,660	2025-03-05 14:48
317,750	39,078	52,715	68,959	0,426	0,439	8152,357	8173,902	274,648	12,053	8,273	0,058	38,906	8,053	19,660	2025-03-05 14:48
318,250	39,067	52,702	68,946	0,426	0,438	8144,120	8167,536	262,505	11,984	8,343	3,895	38,725	8,034	19,566	2025-03-05 14:49
318,750	39,074	52,706	68,961	0,426	0,438	8155,005	8171,878	266,904	11,933	8,336	-2,531	38,891	8,051	19,566	2025-03-05 14:49
319,250	39,071	52,702	68,977	0,426	0,438	8149,065	8184,425	238,559	12,274	8,064	-2,265	39,186	8,082	19,660	2025-03-05 14:50
319,750	39,070	52,702	68,952	0,426	0,439	8143,449	8174,999	244,841	12,187	8,149	2,174	38,911	8,053	19,566	2025-03-05 14:50
320,250	39,072	52,706	68,944	0,426	0,439	8144,962	8166,180	289,933	12,040	8,270	0,615	38,847	8,046	19,566	2025-03-05 14:51
320,750	39,078	52,708	68,936	0,426	0,438	8139,432	8159,908	267,665	12,170	8,130	1,706	38,948	8,057	19,566	2025-03-05 14:51
321,250	39,096	52,719	68,924	0,426	0,439	8134,426	8150,681	274,628	12,289	8,064	-2,844	38,876	8,049	19,566	2025-03-05 14:52
321,750	39,106	52,707	68,911	0,425	0,438	8124,076	8147,593	255,977	12,252	8,090	0,647	39,097	8,072	19,472	2025-03-05 14:52
322,250	39,118	52,718	68,905	0,426	0,438	8123,666	8139,504	264,784	12,211	8,101	1,262	38,522	8,013	19,472	2025-03-05 14:53
322,750	39,123	52,721	68,886	0,426	0,438	8120,378	8128,325	266,320	12,344	7,981	1,420	38,799	8,041	19,566	2025-03-05 14:53
323,250	39,130	52,725	68,922	0,425	0,438	8114,324	8144,638	257,221	12,435	7,899	-0,734	38,959	8,058	19,472	2025-03-05 14:54
323,750	39,136	52,726	68,899	0,426	0,439	8114,649	8134,010	229,731	12,537	7,794	-2,892	38,944	8,056	19,472	2025-03-05 14:54
324,250	39,136	52,727	68,914	0,426	0,439	8113,580	8141,915	228,059	12,496	7,856	2,861	39,100	8,073	19,472	2025-03-05 14:55
324,750	39,135	52,721	68,882	0,426	0,439	8116,532	8130,615	221,757	12,548	7,756	0,435	38,807	8,042	19,339	2025-03-05 14:55
325,250	39,138	52,729	68,906	0,426	0,439	8123,317	8139,540	229,081	12,616	7,705	3,581	38,910	8,053	19,338	2025-03-05 14:56
325,750	39,138	52,714	68,872	0,427	0,439	8127,180	8127,698	250,310	12,608	7,672	0,022	39,047	8,067	19,339	2025-03-05 14:56
326,250	39,150	52,704	68,921	0,427	0,438	8130,215	8155,281	242,346	12,724	7,631	-0,160	39,013	8,064	19,339	2025-03-05 14:57
326,750	39,151	52,704	68,926	0,427	0,438	8130,989	8157,599	252,381	12,699	7,626	2,448	38,971	8,059	19,338	2025-03-05 14:57
327,250	39,155	52,706	68,927	0,427	0,439	8129,548	8157,706	270,663	12,695	7,666	0,663	39,373	8,101	19,245	2025-03-05 14:58
327,750	39,152	52,704	68,946	0,427	0,439	8123,678	8169,347	262,689	12,663	7,676	2,938	38,805	8,042	19,339	2025-03-05 14:58
328,250	39,162	52,723	68,944	0,427	0,438	8136,120	8157,290	267,738	12,561	7,806	0,589	38,873	8,049	19,245	2025-03-05 14:59

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Category: I run 1

	301	302	304	305	306	308	317	1311	1313	1314	1315	1316	1317	1318	1319	1320	1101	1103
Measure- ment time	CO chimney	CO2 chimney	Pdyn	Pstat	Static pressure chimney	O2 chimney	Scale	Flue gas temp	Flue gas at pitot	filter temp 1	filter temp 2	gas meter temp 1	gas meter temp 2	gasmeter 1hr	Gas meter ambient	Filter temp 1 hr	Ambient temperature	T4 outlet load side
Minutes	VDC	VDC	VDC	VDC	VDC	VDC	VDC	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	
328,750	0,242	0,699	0,975	-0,010	0,705	0,262	0,708	70,881	21,919	20,842	20,608	20,185	20,102	21,832	33,666	19,998	19,770	55,681
329,250	0,238	0,700	0,975	0,100	0,718	0,261	0,708	71,015	21,926	20,848	20,622	20,176	20,100	21,827	33,502	20,008	19,769	55,708
329,750	0,240	0,695	0,976	0,005	-0,010	0,267	0,707	70,941	21,964	20,850	20,635	20,210	20,112	21,834	33,346	20,029	19,770	55,710
330,250	0,239	0,694	0,976	0,062	-0,010	0,266	0,708	70,948	21,997	20,856	20,626	20,200	20,109	21,832	33,195	20,022	19,765	55,708
330,750	0,237	0,697	0,977	0,087	-0,010	0,262	0,706	70,899	21,896	20,860	20,627	20,217	20,132	21,840	33,058	20,020	19,773	55,717
331,250	0,238	0,701	0,954	0,013	-0,691	0,260	0,706	70,944	21,923	20,859	20,625	20,195	20,113	21,833	32,885	20,016	19,773	55,714
331,750	0,237	0,704	0,940	-0,006	-0,011	0,256	0,706	71,007	21,937	20,866	20,628	20,200	20,125	21,827	32,743	20,006	19,772	55,717
332,250	0,232	0,714	0,906	0,071	-0,010	0,248	0,706	70,954	22,014	20,864	20,637	20,194	20,118	21,840	32,609	20,015	19,774	55,726
332,750	0,230	0,723	0,680	0,004	-0,010	0,242	0,706	71,054	22,014	20,869	20,640	20,215	20,123	21,838	32,461	20,016	19,771	55,722
333,250	0,231	0,721	0,578	0,051	1,387	0,245	0,706	71,087	21,911	20,860	20,648	20,210	20,135	21,846	32,336	20,013	19,774	55,733
333,750	0,228	0,718	0,633	0,019	-0,656	0,246	0,705	71,012	22,040	20,871	20,655	20,203	20,128	21,855	32,195	20,002	19,775	55,737
334,250	0,229	0,718	0,944	-0,013	-0,011	0,247	0,705	70,979	22,007	20,883	20,673	20,223	20,144	21,856	32,066	19,995	19,776	55,735
334,750	0,230	0,713	2,415	0,059	-0,011	0,250	0,705	70,961	21,954	20,872	20,646	20,208	20,129	21,850	31,922	19,982	19,772	55,732
335,250	0,229	0,711	3,829	-0,006	-0,030	0,255	0,706	70,976	21,964	20,879	20,643	20,221	20,136	21,862	31,799	19,991	19,773	55,745
335,750	0,231	0,699	4,291	0,055	-0,205	0,265	0,705	71,036	21,934	20,862	20,646	20,226	20,131	21,853	31,673	19,984	19,772	55,751
336,250	0,231	0,691	3,591	-0,005	-0,010	0,270	0,704	70,927	21,990	20,870	20,655	20,210	20,130	21,845	31,561	19,977	19,773	55,766
336,750	0,232	0,686	2,600	0,078	0,808	0,275	0,705	70,830	21,990	20,874	20,649	20,224	20,133	21,848	31,492	19,988	19,773	55,762
337,250	0,238	0,677	2,452	0,061	-0,011	0,281	0,703	70,769	21,911	20,847	20,642	20,195	20,129	21,847	31,474	19,966	19,769	55,760
337,750	0,235	0,680	2,399	0,042	-0,011	0,274	0,704	70,768	21,930	20,850	20,645	20,212	20,138	21,857	31,460	19,971	19,772	55,767
338,250	0,235	0,688	2,376	0,000	-0,607	0,270	0,704	70,812	21,957	20,858	20,648	20,228	20,144	21,850	31,437	19,977	19,770	55,772
338,750	0,240	0,691	2,305	0,006	-0,028	0,267	0,704	70,778	21,971	20,863	20,644	20,221	20,138	21,853	31,414	19,954	19,769	55,778
339,250	0,240	0,696	2,218	0,027	-0,047	0,263	0,703	70,753	21,918	20,850	20,648	20,205	20,140	21,835	31,377	19,959	19,769	55,773
339,750	0,241	0,701	2,202	0,030	0,698	0,259	0,702	70,741	21,885	20,830	20,627	20,211	20,135	21,862	31,349	19,953	19,767	55,763
340,250	0,242	0,702	2,211	0,011	-0,010	0,261	0,703	70,653	21,887	20,838	20,623	20,222	20,134	21,858	31,311	19,948	19,768	55,769
340,750	0,240	0,699	2,164	0,101	0,697	0,260	0,701	70,593	21,864	20,827	20,620	20,215	20,128	21,850	31,265	19,932	19,766	55,767
341,250	0,232	0,705	2,135	0,011	-0,813	0,254	0,701	70,592	21,946	20,822	20,617	20,194	20,125	21,853	31,230	19,951	19,767	55,745
341,750	0,232	0,711	2,131	0,006	-0,010	0,253	0,701	70,642	21,875	20,821	20,605	20,198	20,127	21,853	31,184	19,936	19,763	55,738
342,250	0,234	0,703	2,092	0,038	-0,010	0,262	0,701	70,581	21,847	20,818	20,623	20,215	20,132	21,857	31,140	19,937	19,771	55,751
342,750	0,239	0,694	2,096	0,009	-0,740	0,267	0,701	70,549	21,909	20,834	20,636	20,232	20,138	21,854	31,101	19,954	19,772	55,736
343,250	0,240	0,693	2,089	0,013	-0,048	0,265	0,701	70,629	21,825	20,815	20,616	20,208	20,142	21,854	31,049	19,929	19,771	55,737
343,750	0,235	0,699	2,069	-0,061	-0,011	0,261	0,700	70,660	21,909	20,828	20,619	20,227	20,142	21,855	31,003	19,948	19,769	55,728
344,250	0,235	0,703	1,966	0,071	-0,028	0,258	0,700	70,740	21,862	20,826	20,616	20,250	20,152	21,845	30,944	19,942	19,770	55,745
344,750	0,237	0,705	2,000	0,063	-0,010	0,256	0,700	70,789	21,896	20,820	20,612	20,227	20,139	21,859	30,902	19,943	19,773	55,732

PE 56 Cat I_250305.DAT

Category: I run 1

	1104	1105	1107	130	230	101	102	1	2	3	6	7	8	11	
Measure- ment time	T3 inlet load side	T2 inlet boiler	T1 outlet boiler	Flow load side	Flow boiler side	Heat output load side	Heat output boiler	CO chimney	CO2 chimney	O2 chimney	Pstat	Pdyn	Tunnel velocity	Våg	Time
Minutes	°C	°C	°C	m³/h	m³/h	W	W	ppm	%	%	Pa	Pa	m/s	kg	Clock
328,750	39,162	52,707	68,923	0,427	0,439	8129,451	8157,700	271,542	12,455	7,856	-0,386	38,960	8,058	19,245	2025-03-05 14:59
329,250	39,172	52,717	68,951	0,427	0,439	8135,665	8164,868	247,162	12,533	7,818	3,991	38,937	8,056	19,245	2025-03-05 15:00
329,750	39,175	52,725	68,936	0,427	0,439	8135,474	8159,655	266,887	12,328	8,016	0,186	39,078	8,070	19,245	2025-03-05 15:00
330,250	39,169	52,725	68,938	0,427	0,439	8138,245	8155,873	244,438	12,382	7,974	2,499	39,096	8,072	19,245	2025-03-05 15:01
330,750	39,168	52,732	68,956	0,427	0,439	8135,693	8160,151	235,828	12,460	7,860	3,463	39,053	8,068	19,151	2025-03-05 15:01
331,250	39,170	52,741	68,958	0,426	0,439	8129,042	8158,342	246,582	12,528	7,801	0,511	38,440	8,004	19,151	2025-03-05 15:02
331,750	39,176	52,747	68,968	0,426	0,439	8124,628	8158,048	243,726	12,628	7,682	-0,237	37,706	7,927	19,151	2025-03-05 15:02
332,250	39,178	52,755	69,020	0,426	0,439	8133,391	8184,831	198,902	12,904	7,432	2,822	33,751	7,500	19,151	2025-03-05 15:03
332,750	39,175	52,761	68,981	0,426	0,439	8126,417	8158,438	195,959	13,122	7,257	0,161	27,554	6,777	19,151	2025-03-05 15:03
333,250	39,179	52,768	68,971	0,426	0,439	8135,570	8154,285	203,478	12,994	7,338	2,043	19,513	5,703	19,124	2025-03-05 15:04
333,750	39,180	52,769	68,992	0,426	0,439	8126,223	8161,416	183,176	12,913	7,386	0,744	31,420	7,236	19,058	2025-03-05 15:04
334,250	39,183	52,777	68,973	0,426	0,438	8132,609	8143,509	198,033	12,959	7,419	-0,524	50,685	9,191	19,058	2025-03-05 15:05
334,750	39,177	52,776	69,002	0,426	0,438	8126,023	8158,309	185,741	12,813	7,513	2,341	94,637	12,559	19,058	2025-03-05 15:05
335,250	39,182	52,788	69,031	0,426	0,438	8135,979	8166,764	196,209	12,742	7,655	-0,226	163,269	16,496	19,058	2025-03-05 15:06
335,750	39,187	52,793	69,014	0,426	0,438	8130,717	8151,233	201,428	12,407	7,943	2,208	179,859	17,314	19,058	2025-03-05 15:06
336,250	39,190	52,789	69,037	0,426	0,438	8142,181	8169,141	205,389	12,221	8,112	-0,203	112,102	13,669	19,058	2025-03-05 15:07
336,750	39,186	52,786	69,048	0,426	0,438	8141,002	8169,972	215,868	12,103	8,252	3,135	104,087	13,171	19,058	2025-03-05 15:07
337,250	39,185	52,789	69,059	0,426	0,439	8145,408	8183,538	256,192	11,859	8,433	2,428	97,449	12,744	18,964	2025-03-05 15:08
337,750	39,184	52,792	69,050	0,427	0,439	8152,464	8176,252	213,203	12,083	8,226	1,689	93,988	12,516	19,058	2025-03-05 15:08
338,250	39,185	52,795	69,040	0,426	0,438	8139,875	8168,619	242,440	12,203	8,114	-0,019	94,101	12,523	19,057	2025-03-05 15:09
338,750	39,187	52,803	69,018	0,426	0,438	8141,453	8149,357	254,715	12,310	8,006	0,226	91,048	12,319	18,964	2025-03-05 15:09
339,250	39,185	52,806	69,028	0,426	0,439	8148,913	8160,243	253,030	12,408	7,898	1,095	89,513	12,214	18,964	2025-03-05 15:10
339,750	39,193	52,812	69,020	0,427	0,439	8150,602	8155,041	270,239	12,578	7,774	1,212	85,466	11,935	18,964	2025-03-05 15:10
340,250	39,182	52,797	68,990	0,427	0,438	8157,351	8140,564	269,871	12,523	7,829	0,445	88,579	12,150	18,964	2025-03-05 15:11
340,750	39,184	52,792	68,993	0,426	0,439	8145,869	8154,082	253,423	12,493	7,809	4,030	87,065	12,046	18,839	2025-03-05 15:11
341,250	39,185	52,796	68,987	0,426	0,439	8135,456	8147,755	203,936	12,686	7,620	0,452	84,370	11,858	18,839	2025-03-05 15:12
341,750	39,177	52,784	68,981	0,426	0,438	8129,784	8137,080	209,610	12,765	7,583	0,233	85,871	11,963	18,839	2025-03-05 15:12
342,250	39,188	52,797	68,998	0,426	0,439	8135,583	8154,085	228,462	12,466	7,870	1,518	84,458	11,864	18,839	2025-03-05 15:13
342,750	39,184	52,796	69,002	0,426	0,439	8127,143	8156,856	259,750	12,343	8,003	0,351	82,637	11,736	18,839	2025-03-05 15:13
343,250	39,185	52,792	68,973	0,426	0,439	8131,029	8141,104	256,387	12,346	7,960	0,507	83,350	11,786	18,745	2025-03-05 15:14
343,750	39,186	52,790	68,988	0,426	0,438	8119,303	8144,856	225,249	12,498	7,826	-2,458	83,299	11,783	18,745	2025-03-05 15:14
344,250	39,190	52,797	68,983	0,426	0,439	8124,446	8142,291	228,285	12,577	7,750	2,838	81,127	11,628	18,745	2025-03-05 15:15
344,750	39,182	52,798	68,963	0,426	0,439	8123,326	8129,129	238,584	12,626	7,683	2,500	77,934	11,397	18,745	2025-03-05 15:15

PE 56 Cat I_250305.DAT

Category: I run 1

	301	302	304	305	306	308	317	1311	1313	1314	1315	1316	1317	1318	1319	1320	1101	1103
Measure- ment time	CO chimney	CO2 chimney		Pstat	Static pressure chimney	O2 chimney	Scale	Flue gas temp	Flue gas at pitot	filter temp 1	filter temp 2	gas meter temp 1	gas meter temp 2	gasmeter 1hr	Gas meter ambient	Filter temp 1 hr	Ambient temperature	T4 outlet load side
Minutes	VDC	VDC	VDC	VDC	VDC	VDC	VDC	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	
345,250	0,232	0,711	2,017	0,061	-0,010	0,248	0,700	70,739	21,918	20,832	20,624	20,238	20,151	21,842	30,842	19,944	19,773	55,739
345,750	0,234	0,713	1,972	-0,018	-0,011	0,252	0,700	70,720	21,858	20,825	20,611	20,230	20,144	21,855	30,787	19,946	19,770	55,730
346,250	0,238	0,705	1,967	-0,026	-0,688	0,258	0,700	70,713	21,884	20,817	20,610	20,226	20,128	21,845	30,719	19,937	19,766	55,710
346,750	0,239	0,702	1,979	0,044	-0,305	0,259	0,698	70,804	21,941	20,820	20,613	20,220	20,151	21,849	30,676	19,934	19,769	55,713
347,250	0,238	0,703	1,904	-0,012	-0,009	0,258	0,698	70,722	21,933	20,809	20,606	20,191	20,134	21,845	30,607	19,919	19,765	55,702
347,750	0,237	0,704	1,946	-0,009	-0,090	0,258	0,698	70,741	21,905	20,818	20,608	20,200	20,132	21,847	30,560	19,929	19,768	55,698
348,250	0,237	0,703	1,953	0,086	-0,703	0,261	0,698	70,856	21,930	20,826	20,612	20,222	20,155	21,854	30,510	19,950	19,774	55,710
348,750	0,240	0,696	1,922	0,003	-0,011	0,267	0,698	70,889	21,952	20,817	20,616	20,210	20,152	21,863	30,469	19,950	19,777	55,712
349,250	0,241	0,691	1,922	0,070	-0,011	0,267	0,698	70,737	21,997	20,839	20,608	20,223	20,140	21,863	30,386	19,948	19,767	55,704
349,750	0,241	0,698	1,925	0,057	-0,639	0,259	0,698	70,623	21,908	20,834	20,614	20,219	20,146	21,863	30,341	19,942	19,776	55,705
350,250	0,242	0,709	1,895	0,018	0,055	0,254	0,697	70,616	21,876	20,826	20,616	20,219	20,145	21,857	30,273	19,926	19,767	55,690
350,750	0,243	0,709	1,847	0,050	0,714	0,251	0,697	70,580	21,841	20,804	20,605	20,209	20,138	21,853	30,217	19,933	19,765	55,698
351,250	0,247	0,712	1,854	0,003	-0,028	0,253	0,698	70,483	21,875	20,814	20,609	20,215	20,146	21,849	30,154	19,953	19,769	55,679
351,750	0,247	0,705	1,868	0,054	-0,810	0,257	0,698	70,416	21,803	20,804	20,603	20,221	20,146	21,864	30,097	19,935	19,771	55,685
352,250	0,246	0,706	1,832	0,021	-0,010	0,252	0,697	70,380	21,879	20,794	20,593	20,225	20,141	21,850	30,028	19,944	19,768	55,698
352,750	0,241	0,715	1,846	0,008	0,553	0,247	0,696	70,363	21,899	20,802	20,592	20,211	20,142	21,852	29,958	19,939	19,768	55,668
353,250	0,241	0,717	1,853	0,048	-0,011	0,245	0,696	70,379	21,881	20,799	20,595	20,222	20,140	21,848	29,897	19,936	19,765	55,665
353,750	0,239	0,723	1,821	-0,042	-0,011	0,239	0,695	70,365	21,813	20,792	20,571	20,207	20,135	21,849	29,829	19,918	19,761	55,659
354,250	0,239	0,725	1,832	0,067	-0,010	0,241	0,695	70,378	21,843	20,775	20,572	20,196	20,145	21,852	29,783	19,932	19,763	55,658
354,750	0,240	0,720	1,835	0,007	0,734	0,246	0,694	70,435	21,857	20,795	20,588	20,215	20,155	21,859	29,730	19,946	19,768	55,663
355,250	0,237	0,716	1,811	-0,003	0,601	0,245	0,695	70,411	21,851	20,802	20,578	20,208	20,139	21,862	29,665	19,931	19,767	55,660
355,750	0,238	0,721	1,820	0,006	-0,029	0,242	0,695	70,456	21,830	20,791	20,582	20,240	20,148	21,862	29,610	19,936	19,767	55,653
356,250	0,241	0,722	1,822	-0,056	-1,090	0,243	0,694	70,417	21,819	20,779	20,582	20,211	20,159	21,849	29,539	19,931	19,767	55,669
356,750	0,239	0,722	1,793	0,016	0,682	0,240	0,693	70,421	21,876	20,787	20,582	20,203	20,140	21,849	29,477	19,931	19,772	55,662
357,250	0,235	0,729	1,800	0,079	-0,029	0,236	0,693	70,418	21,811	20,778	20,567	20,226	20,155	21,864	29,420	19,934	19,769	55,633
357,750	0,239	0,727	1,752	0,001	-0,506	0,239	0,693	70,310	21,804	20,765	20,565	20,199	20,136	21,849	29,348	19,925	19,765	55,655
358,250	0,240	0,728	1,787	-0,052	-0,010	0,235	0,693	70,239	21,814	20,773	20,582	20,198	20,157	21,851	29,299	19,927	19,773	55,632
358,750	0,239	0,729	1,748	0,019	0,588	0,240	0,693	70,224	21,781	20,771	20,564	20,214	20,139	21,850	29,225	19,918	19,763	55,650
359,250	0,248	0,719	1,753	0,033	0,591	0,243	0,693	70,272	21,796	20,760	20,569	20,219	20,146	21,856	29,167	19,912	19,765	55,647
359,750	0,242	0,728	1,774	-0,100	-0,010	0,235	0,692	70,240	21,817	20,773	20,559	20,217	20,149	21,864	29,118	19,934	19,767	55,657
360,250	0,243	0,728	1,753	0,044	-0,543	0,240	0,692	70,163	21,856	20,766	20,576	20,206	20,143	21,855	29,039	19,923	19,765	55,640
360,750	0,243	0,719	1,751	-0,012	0,721	0,246	0,692	70,115	21,787	20,759	20,574	20,224	20,154	21,856	28,985	19,917	19,761	55,637
361,250	0,241	0,717	1,763	0,094	-0,010	0,246	0,692	70,134	21,812	20,777	20,571	20,240	20,151	21,857	28,933	19,921	19,767	55,649

PE 56 Cat I_250305.DAT

Category: I run 1

	1104	1105	1107	130	230	101	102	1	2	3	6	7	8	11	
Measure- ment time	T3 inlet load side	T2 inlet boiler	T1 outlet boiler	Flow load side	Flow boiler side	Heat output load side	Heat output boiler	CO chimney	CO2 chimney	O2 chimney	Pstat	Pdyn	Tunnel velocity	Våg	Time
Minutes	°C	°C	°C	m³/h	m³/h	W	W	ppm	%	%	Pa	Pa	m/s	kg	Clock
345,250	39,186	52,800	68,942	0,426	0,439	8127,018	8124,626	204,152	12,857	7,452	2,437	81,421	11,649	18,745	2025-03-05 15:16
345,750	39,172	52,789	68,938	0,426	0,439	8126,819	8133,095	232,260	12,787	7,567	-0,712	80,041	11,550	18,745	2025-03-05 15:16
346,250	39,179	52,787	68,931	0,426	0,439	8112,518	8124,482	242,770	12,588	7,731	-1,037	77,497	11,365	18,745	2025-03-05 15:17
346,750	39,186	52,785	68,924	0,426	0,439	8107,062	8117,848	248,868	12,520	7,777	1,768	79,376	11,502	18,651	2025-03-05 15:17
347,250	39,174	52,774	68,938	0,426	0,439	8113,637	8135,007	244,025	12,585	7,727	-0,462	75,021	11,182	18,651	2025-03-05 15:18
347,750	39,177	52,774	68,919	0,426	0,439	8119,004	8120,464	234,609	12,590	7,739	-0,350	76,811	11,315	18,651	2025-03-05 15:18
348,250	39,180	52,776	68,931	0,426	0,439	8117,776	8136,211	248,184	12,516	7,831	3,439	78,074	11,407	18,652	2025-03-05 15:19
348,750	39,177	52,765	68,916	0,426	0,438	8117,327	8121,553	263,937	12,344	8,021	0,127	77,153	11,340	18,651	2025-03-05 15:19
349,250	39,176	52,766	68,916	0,426	0,439	8112,845	8122,453	271,292	12,280	8,018	2,784	75,955	11,251	18,651	2025-03-05 15:20
349,750	39,177	52,767	68,913	0,425	0,439	8099,041	8124,687	259,118	12,515	7,767	2,291	76,807	11,314	18,651	2025-03-05 15:20
350,250	39,179	52,778	68,919	0,426	0,439	8100,335	8129,427	283,015	12,731	7,628	0,712	76,046	11,258	18,558	2025-03-05 15:21
350,750	39,171	52,768	68,892	0,426	0,439	8107,780	8110,404	277,765	12,781	7,538	1,988	75,412	11,211	18,558	2025-03-05 15:21
351,250	39,174	52,765	68,891	0,426	0,439	8104,453	8111,431	307,593	12,746	7,590	0,100	72,711	11,008	18,558	2025-03-05 15:22
351,750	39,168	52,763	68,895	0,426	0,439	8112,295	8117,281	299,189	12,599	7,706	2,161	75,032	11,183	18,558	2025-03-05 15:22
352,250	39,166	52,759	68,895	0,426	0,438	8110,161	8113,317	290,416	12,699	7,568	0,824	74,180	11,119	18,558	2025-03-05 15:23
352,750	39,160	52,745	68,880	0,426	0,438	8098,955	8110,648	264,586	12,876	7,414	0,307	73,007	11,031	18,508	2025-03-05 15:23
353,250	39,162	52,748	68,877	0,426	0,439	8097,832	8122,172	262,484	12,927	7,355	1,916	74,214	11,122	18,464	2025-03-05 15:24
353,750	39,155	52,748	68,884	0,426	0,439	8100,519	8118,044	243,785	13,122	7,181	-1,687	73,341	11,056	18,464	2025-03-05 15:24
354,250	39,151	52,743	68,842	0,426	0,439	8101,449	8101,812	256,376	13,093	7,216	2,700	72,205	10,970	18,464	2025-03-05 15:25
354,750	39,151	52,742	68,876	0,426	0,439	8098,966	8126,852	256,699	12,936	7,367	0,279	73,427	11,062	18,347	2025-03-05 15:25
355,250	39,148	52,739	68,877	0,426	0,439	8103,301	8120,308	234,150	12,915	7,338	-0,100	72,640	11,003	18,464	2025-03-05 15:26
355,750	39,151	52,741	68,891	0,425	0,439	8087,793	8122,928	249,042	13,020	7,256	0,241	72,028	10,957	18,464	2025-03-05 15:26
356,250	39,148	52,746	68,884	0,426	0,439	8101,667	8125,347	264,548	13,025	7,285	-2,235	72,846	11,019	18,339	2025-03-05 15:27
356,750	39,152	52,744	68,869	0,426	0,439	8099,220	8115,433	241,568	13,067	7,204	0,636	72,248	10,973	18,339	2025-03-05 15:27
357,250	39,152	52,744	68,870	0,426	0,439	8083,430	8122,044	227,000	13,260	7,074	3,143	71,568	10,922	18,339	2025-03-05 15:28
357,750	39,146	52,739	68,868	0,426	0,438	8096,465	8109,958	263,322	13,128	7,167	0,026	68,290	10,668	18,339	2025-03-05 15:28
358,250	39,146	52,741	68,862	0,426	0,439	8093,985	8118,114	242,777	13,236	7,052	-2,077	71,921	10,948	18,339	2025-03-05 15:29
358,750	39,143	52,745	68,868	0,425	0,439	8091,206	8119,067	266,411	13,144	7,203	0,754	70,925	10,872	18,339	2025-03-05 15:29
359,250	39,137	52,745	68,854	0,425	0,439	8090,170	8110,769	310,119	12,969	7,295	1,300	68,957	10,720	18,339	2025-03-05 15:30
359,750	39,134	52,751	68,884	0,426	0,439	8102,668	8122,626	259,972	13,266	7,057	-3,990	71,101	10,886	18,246	2025-03-05 15:30
360,250	39,126	52,737	68,858	0,425	0,439	8097,203	8118,506	288,692	13,128	7,202	1,742	70,852	10,867	18,246	2025-03-05 15:31
360,750	39,117	52,736	68,851	0,425	0,439	8090,776	8117,025	275,698	12,940	7,378	-0,494	68,824	10,710	18,246	2025-03-05 15:31
361,250	39,118	52,749	68,876	0,426	0,439	8107,798	8118,792	263,325	12,927	7,391	3,780	70,673	10,853	18,246	2025-03-05 15:32

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Category: I run 1

	301	302	304	305	306	308	317	1311	1313	1314	1315	1316	1317	1318	1319	1320	1101	1103
Measure- ment time	CO chimney	CO2 chimney	Pdyn	Pstat	Static pressure chimney	O2 chimney	Scale	Flue gas temp	Flue gas at pitot	filter temp 1	filter temp 2	gas meter temp 1	gas meter temp 2	gasmeter 1hr	Gas meter ambient	Filter temp 1 hr	Ambient temperature	T4 outlet load side
Minutes	VDC	VDC	VDC	VDC	VDC	VDC	VDC	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	
361,750	0,242	0,714	1,738	0,044	0,827	0,249	0,692	70,206	21,871	20,780	20,571	20,208	20,152	21,855	28,870	19,929	19,773	55,651
362,250	0,241	0,716	1,740	-0,019	-0,011	0,247	0,691	70,221	21,851	20,766	20,575	20,219	20,153	21,858	28,809	19,924	19,767	55,642
362,750	0,240	0,715	1,744	0,028	-0,010	0,247	0,691	70,136	21,892	20,780	20,578	20,211	20,156	21,854	28,753	19,929	19,767	55,639
363,250	0,238	0,718	1,724	0,178	-0,011	0,247	0,690	70,158	21,837	20,770	20,569	20,232	20,161	21,856	28,704	19,928	19,771	55,637
363,750	0,239	0,711	1,723	-0,017	-0,011	0,252	0,690	70,075	21,816	20,759	20,563	20,219	20,157	21,851	28,628	19,923	19,767	55,626
364,250	0,239	0,712	1,726	0,038	-0,029	0,251	0,690	70,060	21,864	20,783	20,568	20,242	20,151	21,856	28,572	19,917	19,764	55,610
364,750	0,240	0,711	1,708	0,039	-0,255	0,253	0,690	70,060	21,858	20,774	20,569	20,239	20,163	21,849	28,512	19,905	19,765	55,604
365,250	0,236	0,713	1,705	-0,007	-0,068	0,244	0,690	70,209	21,849	20,766	20,561	20,208	20,150	21,855	28,453	19,912	19,767	55,614
365,750	0,229	0,732	1,668	-0,042	-0,796	0,231	0,690	70,211	21,908	20,785	20,565	20,234	20,164	21,861	28,398	19,914	19,765	55,606
366,250	0,230	0,734	1,698	0,007	0,587	0,234	0,689	70,279	21,870	20,781	20,574	20,217	20,158	21,855	28,343	19,909	19,769	55,599
366,750	0,230	0,727	1,661	-0,042	0,768	0,238	0,689	70,212	21,861	20,774	20,552	20,222	20,151	21,868	28,271	19,899	19,769	55,590
367,250	0,230	0,726	1,672	0,021	-0,566	0,239	0,689	70,144	21,860	20,765	20,547	20,209	20,147	21,853	28,203	19,895	19,763	55,572
367,750	0,232	0,725	1,688	-0,031	-0,011	0,239	0,689	70,249	21,876	20,780	20,562	20,249	20,178	21,870	28,166	19,911	19,771	55,571
368,250	0,230	0,727	1,662	0,006	-0,638	0,236	0,689	70,045	21,842	20,779	20,560	20,227	20,160	21,861	28,099	19,895	19,773	55,588
368,750	0,228	0,729	1,667	0,017	0,735	0,237	0,687	70,029	21,808	20,765	20,545	20,232	20,166	21,865	28,046	19,910	19,767	55,573
369,250	0,229	0,725	1,676	0,029	-0,011	0,240	0,687	70,016	21,773	20,763	20,544	20,221	20,157	21,851	27,984	19,912	19,767	55,568
369,750	0,229	0,726	1,638	-0,022	-0,027	0,239	0,687	69,976	21,785	20,752	20,538	20,229	20,151	21,860	27,928	19,928	19,763	55,569
370,250	0,233	0,723	2,270	0,003	-0,017	0,243	0,687	70,052	21,782	20,749	20,536	20,203	20,147	21,849	27,871	19,870	19,766	55,569
370,750	0,232	0,725	2,335	0,055	-0,011	0,239	0,687	70,016	21,813	20,761	20,544	20,221	20,156	21,848	27,814	19,879	19,764	55,563
371,250	0,230	0,725	2,293	0,037	-0,010	0,241	0,687	70,053	21,785	20,758	20,553	20,238	20,166	21,858	27,751	19,947	19,763	55,565
371,750	0,232	0,721	2,292	0,065	-0,544	0,243	0,687	70,127	21,776	20,758	20,554	20,226	20,162	21,859	27,688	19,973	19,764	55,552
372,250	0,231	0,720	2,222	0,068	0,695	0,241	0,685	70,112	21,792	20,760	20,553	20,222	20,157	21,859	27,644	20,006	19,768	55,567
372,750	0,229	0,726	2,270	0,018	-0,622	0,239	0,685	69,980	21,828	20,761	20,559	20,226	20,162	21,847	27,601	20,010	19,765	55,530
373,250	0,229	0,723	2,218	0,021	0,239	0,246	0,686	69,964	21,836	20,764	20,571	20,227	20,167	21,849	27,543	20,002	19,768	55,551
373,750	0,232	0,712	2,236	-0,054	0,248	0,252	0,685	69,902	21,755	20,755	20,553	20,216	20,160	21,849	27,479	19,987	19,767	55,541
374,250	0,231	0,711	1,875	0,084	0,659	0,251	0,685	69,855	21,783	20,749	20,544	20,205	20,156	21,843	27,428	20,000	19,766	55,534
374,750	0,230	0,712	0,364	0,049	-0,011	0,250	0,685	69,846	21,795	20,757	20,551	20,218	20,153	21,855	27,376	19,999	19,762	55,532
375,250	0,229	0,714	0,128	0,047	-0,011	0,249	0,685	69,896	21,830	20,766	20,564	20,205	20,171	21,855	27,323	20,005	19,769	55,533
375,750	0,230	0,711	0,926	0,075	0,510	0,252	0,685	69,892	21,790	20,780	20,573	20,231	20,186	21,848	27,296	20,020	19,771	55,541
376,250	0,235	0,709	0,970	0,081	-0,010	0,253	0,684	69,858	21,772	20,768	20,555	20,224	20,174	21,849	27,228	20,019	19,765	55,535
376,750	0,235	0,710	0,971	0,021	-0,507	0,252	0,684	69,837	21,706	20,766	20,541	20,233	20,160	21,853	27,186	20,000	19,766	55,529
377,250	0,236	0,707	0,974	0,034	0,515	0,255	0,684	69,773	21,773	20,764	20,548	20,236	20,178	21,861	27,127	20,009	19,767	55,534
377,750	0,241	0,708	0,972	0,071	-0,010	0,253	0,684	69,793	21,807	20,765	20,546	20,225	20,178	21,859	27,091	20,006	19,769	55,526

PE 56 Cat I_250305.DAT

Category: I run 1

	1104	1105	1107	130	230	101	102	1	2	3	6	7	8	11	
Measure- ment time	T3 inlet load side	T2 inlet boiler	T1 outlet boiler	Flow load side	Flow boiler side	Heat output load side	Heat output boiler	CO chimney	CO2 chimney	O2 chimney	Pstat	Pdyn	Tunnel velocity	Våg	Time
Minutes	°C	°C	°C	m³/h	m³/h	W	W	ppm	%	%	Pa	Pa	m/s	kg	Clock
361,750	39,111	52,735	68,862	0,425	0,439	8105,367	8118,853	270,246	12,801	7,469	1,766	69,984	10,800	18,246	2025-03-05 15:32
362,250	39,110	52,737	68,862	0,426	0,439	8107,736	8120,202	265,135	12,902	7,418	-0,760	68,719	10,702	18,246	2025-03-05 15:33
362,750	39,098	52,720	68,833	0,426	0,439	8111,953	8109,685	248,805	12,881	7,397	1,103	70,127	10,811	18,152	2025-03-05 15:33
363,250	39,106	52,731	68,866	0,426	0,439	8108,981	8117,774	247,780	12,937	7,424	7,124	69,549	10,766	18,152	2025-03-05 15:34
363,750	39,100	52,715	68,809	0,426	0,439	8106,741	8100,210	249,038	12,746	7,548	-0,662	68,408	10,678	18,152	2025-03-05 15:34
364,250	39,104	52,717	68,849	0,426	0,439	8098,368	8123,453	252,391	12,795	7,537	1,521	69,386	10,754	18,152	2025-03-05 15:35
364,750	39,090	52,707	68,837	0,425	0,439	8093,723	8121,718	257,651	12,761	7,592	1,558	68,831	10,711	18,152	2025-03-05 15:35
365,250	39,089	52,703	68,808	0,425	0,439	8098,139	8101,378	217,150	12,923	7,318	-0,300	67,475	10,605	18,152	2025-03-05 15:36
365,750	39,086	52,706	68,810	0,426	0,439	8102,987	8104,561	184,313	13,400	6,926	-1,661	64,954	10,405	18,152	2025-03-05 15:36
366,250	39,087	52,697	68,803	0,426	0,439	8099,767	8105,987	200,795	13,311	7,027	0,275	68,121	10,655	18,058	2025-03-05 15:37
366,750	39,086	52,688	68,788	0,426	0,439	8097,391	8105,688	192,603	13,154	7,129	-1,694	67,194	10,583	18,058	2025-03-05 15:37
367,250	39,068	52,669	68,782	0,426	0,439	8098,174	8105,433	204,798	13,123	7,163	0,824	65,802	10,472	18,058	2025-03-05 15:38
367,750	39,072	52,669	68,788	0,426	0,438	8096,717	8099,904	207,512	13,118	7,185	-1,220	67,811	10,631	18,058	2025-03-05 15:38
368,250	39,071	52,660	68,773	0,426	0,439	8105,554	8106,563	186,303	13,216	7,093	0,239	67,173	10,581	18,058	2025-03-05 15:39
368,750	39,071	52,662	68,779	0,426	0,439	8095,941	8105,906	178,698	13,205	7,117	0,663	65,824	10,474	17,965	2025-03-05 15:39
369,250	39,066	52,652	68,796	0,426	0,439	8104,671	8121,037	189,816	13,080	7,200	1,161	67,473	10,604	17,964	2025-03-05 15:40
369,750	39,064	52,652	68,773	0,425	0,439	8089,774	8113,442	189,670	13,165	7,184	-0,895	65,578	10,455	17,964	2025-03-05 15:40
370,250	39,061	52,645	68,763	0,426	0,438	8096,670	8105,876	217,372	13,033	7,296	0,130	89,824	12,236	17,965	2025-03-05 15:41
370,750	39,059	52,647	68,771	0,425	0,438	8090,756	8108,523	202,463	13,178	7,163	2,207	94,274	12,535	17,965	2025-03-05 15:41
371,250	39,061	52,651	68,755	0,426	0,438	8097,720	8096,004	198,245	13,085	7,237	1,497	92,706	12,430	17,964	2025-03-05 15:42
371,750	39,052	52,643	68,761	0,426	0,439	8093,836	8109,057	207,501	13,040	7,300	2,598	90,408	12,275	17,964	2025-03-05 15:42
372,250	39,057	52,645	68,784	0,425	0,438	8092,875	8114,805	193,103	13,014	7,236	2,710	85,458	11,934	17,840	2025-03-05 15:43
372,750	39,053	52,642	68,761	0,426	0,439	8083,098	8108,904	189,660	13,159	7,169	0,700	91,351	12,339	17,840	2025-03-05 15:43
373,250	39,045	52,634	68,769	0,426	0,439	8094,902	8117,837	197,630	13,011	7,367	0,848	89,931	12,243	17,965	2025-03-05 15:44
373,750	39,047	52,633	68,734	0,426	0,439	8090,410	8104,803	206,657	12,764	7,574	-2,160	87,824	12,098	17,839	2025-03-05 15:44
374,250	39,041	52,629	68,744	0,426	0,438	8096,852	8101,004	200,580	12,794	7,544	3,342	58,762	9,896	17,840	2025-03-05 15:45
374,750	39,038	52,619	68,753	0,426	0,439	8106,155	8119,136	200,590	12,821	7,503	1,960	-8,606	-9999,000	17,840	2025-03-05 15:45
375,250	39,039	52,611	68,729	0,426	0,439	8100,320	8114,482	186,303	12,856	7,477	1,882	25,409	6,508	17,746	2025-03-05 15:46
375,750	39,031	52,605	68,716	0,426	0,439	8100,689	8109,526	204,357	12,749	7,570	2,992	38,223	7,982	17,746	2025-03-05 15:46
376,250	39,031	52,607	68,726	0,426	0,439	8100,870	8108,557	228,685	12,733	7,576	3,233	38,679	8,029	17,746	2025-03-05 15:47
376,750	39,027	52,605	68,734	0,426	0,439	8099,943	8115,998	224,297	12,752	7,574	0,831	38,906	8,053	17,746	2025-03-05 15:47
377,250	39,029	52,612	68,712	0,426	0,439	8105,140	8099,120	233,716	12,665	7,662	1,362	39,042	8,067	17,746	2025-03-05 15:48
377,750	39,036	52,604	68,709	0,426	0,438	8093,549	8097,076	267,727	12,725	7,592	2,835	39,008	8,063	17,746	2025-03-05 15:48

PE 56 Cat I_250305.DAT

Category: I run 1

	301	302	304	305	306	308	317	1311	1313	1314	1315	1316	1317	1318	1319	1320	1101	1103
Measure- ment time	CO chimney	CO2 chimney	Pdyn	Pstat	Static pressure chimney	O2 chimney	Scale	Flue gas temp	Flue gas at pitot	filter temp 1	filter temp 2	gas meter temp 1	gas meter temp 2	gasmeter 1hr	Gas meter ambient	Filter temp 1 hr	Ambient temperature	T4 outlet load side
Minutes	VDC	VDC	VDC	VDC	VDC	VDC	VDC	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
378,250	0,239	0,714	0,973	-0,057	-0,011	0,247	0,684	69,822	21,829	20,764	20,548	20,219	20,181	21,845	27,025	19,983	19,762	55,530
378,750	0,241	0,718	0,973	0,034	-0,011	0,246	0,682	69,766	21,834	20,764	20,540	20,206	20,166	21,857	26,967	19,980	19,760	55,537
379,250	0,240	0,719	0,970	0,051	-0,010	0,243	0,682	69,803	21,848	20,768	20,547	20,222	20,160	21,862	26,930	19,976	19,763	55,549
379,750	0,238	0,724	0,973	-0,026	0,676	0,239	0,682	69,802	21,852	20,766	20,546	20,209	20,172	21,858	26,880	19,962	19,762	55,538
380,250	0,237	0,726	0,971	-0,016	-0,570	0,238	0,682	69,884	21,870	20,779	20,562	20,215	20,169	21,844	26,825	19,961	19,758	55,527
380,750	0,238	0,727	0,973	-0,001	-0,678	0,237	0,682	69,875	21,871	20,774	20,565	20,214	20,170	21,848	26,778	19,957	19,758	55,542
381,250	0,236	0,730	0,966	0,050	-0,010	0,234	0,682	69,863	21,820	20,761	20,551	20,211	20,160	21,846	26,724	19,946	19,754	55,528
381,750	0,237	0,731	0,967	0,056	1,274	0,233	0,682	69,943	21,811	20,773	20,552	20,222	20,166	21,855	26,683	19,966	19,760	55,535
382,250	0,238	0,734	0,966	0,102	-0,533	0,230	0,682	69,926	21,811	20,775	20,552	20,230	20,171	21,856	26,627	19,968	19,758	55,535
382,750	0,235	0,736	0,969	0,009	-0,029	0,230	0,682	69,909	21,781	20,773	20,557	20,217	20,165	21,855	26,598	19,973	19,761	55,549
383,250	0,235	0,731	0,970	-0,025	-0,011	0,236	0,681	69,952	21,864	20,782	20,565	20,223	20,175	21,856	26,547	19,992	19,765	55,544
383,750	0,237	0,725	0,976	0,039	-0,029	0,237	0,681	69,896	21,858	20,773	20,562	20,213	20,172	21,849	26,486	19,994	19,758	55,536
384,250	0,234	0,729	0,972	0,043	-0,029	0,235	0,681	69,962	21,816	20,780	20,564	20,209	20,165	21,832	26,454	19,970	19,755	55,542
384,750	0,234	0,731	0,971	0,040	-0,031	0,235	0,679	69,977	21,834	20,775	20,568	20,202	20,165	21,849	26,416	19,987	19,759	55,546
385,250	0,236	0,728	0,969	0,000	-0,656	0,235	0,680	69,890	21,749	20,772	20,561	20,200	20,160	21,849	26,356	19,975	19,758	55,553
385,750	0,234	0,730	0,970	0,004	-0,010	0,237	0,679	69,851	21,759	20,780	20,562	20,231	20,179	21,852	26,331	19,980	19,760	55,545
386,250	0,234	0,721	0,971	0,010	-0,028	0,245	0,679	69,824	21,774	20,766	20,559	20,227	20,173	21,846	26,271	19,983	19,757	55,549
386,750	0,232	0,717	0,967	-0,018	-0,011	0,247	0,679	69,849	21,855	20,772	20,556	20,201	20,169	21,845	26,217	19,968	19,753	55,550
387,250	0,231	0,716	0,966	0,032	-0,011	0,245	0,679	69,926	21,801	20,774	20,557	20,227	20,177	21,845	26,177	19,988	19,756	55,557
387,750	0,231	0,719	0,969	-0,015	0,561	0,244	0,678	69,855	21,830	20,763	20,559	20,205	20,151	21,840	26,136	19,987	19,754	55,550
388,250	0,230	0,721	0,970	0,005	-0,011	0,243	0,677	69,792	21,861	20,782	20,565	20,222	20,184	21,843	26,100	19,995	19,754	55,534
388,750	0,230	0,724	0,975	0,008	1,640	0,238	0,677	69,802	21,766	20,770	20,549	20,219	20,177	21,846	26,050	19,994	19,756	55,543
389,250	0,233	0,726	0,972	0,013	-0,026	0,239	0,677	69,798	21,827	20,769	20,562	20,243	20,183	21,849	26,024	19,994	19,757	55,546
389,750	0,233	0,724	0,973	0,027	-0,030	0,240	0,677	69,757	21,865	20,780	20,568	20,226	20,180	21,839	25,974	19,998	19,757	55,530
390,250	0,234	0,722	0,970	-0,018	-0,011	0,243	0,677	69,661	21,818	20,770	20,545	20,205	20,167	21,842	25,923	19,995	19,754	55,529
390,750	0,236	0,717	0,969	-0,005	-0,011	0,248	0,677	69,747	21,725	20,756	20,549	20,207	20,167	21,841	25,876	19,990	19,754	55,531
391,250	0,238	0,712	0,966	0,067	-0,545	0,252	0,677	69,729	21,708	20,761	20,537	20,209	20,179	21,832	25,847	19,993	19,754	55,539
391,750	0,240	0,706	0,972	0,004	0,597	0,258	0,676	69,709	21,742	20,755	20,541	20,205	20,168	21,846	25,809	19,994	19,758	55,536
392,250	0,241	0,705	0,971	0,001	-0,553	0,255	0,676	69,635	21,794	20,766	20,541	20,228	20,173	21,830	25,755	19,995	19,755	55,539
392,750	0,239	0,712	0,974	0,002	-0,010	0,249	0,676	69,518	21,772	20,763	20,551	20,206	20,170	21,845	25,720	19,989	19,760	55,523
393,250	0,243	0,715	0,973	0,048	0,823	0,250	0,676	69,508	21,751	20,754	20,547	20,219	20,172	21,841	25,685	19,975	19,751	55,535
393,750	0,251	0,707	0,965	0,018	-0,668	0,255	0,676	69,486	21,765	20,773	20,558	20,243	20,196	21,850	25,640	19,984	19,759	55,517
394,250	0,245	0,710	0,971	0,023	-0,581	0,250	0,675	69,442	21,769	20,769	20,533	20,225	20,178	21,841	25,600	19,968	19,754	55,516

PE 56 Cat I_250305.DAT

Category: I run 1

	1104	1105	1107	130	230	101	102	1	2	3	6	7	8	11	
Measure- ment time	T3 inlet load side	T2 inlet boiler	T1 outlet boiler	Flow load side	Flow boiler side	Heat output load side	Heat output boiler	CO chimney	CO2 chimney	O2 chimney	Pstat	Pdyn	Tunnel velocity	Våg	Time
Minutes	°C	°C	°C	m³/h	m³/h	W	W	ppm	%	%	Pa	Pa	m/s	kg	Clock
378,250	39,072	52,605	68,695	0,426	0,438	8074,193	8091,626	247,791	12,944	7,401	-2,264	38,783	8,040	17,746	2025-03-05 15:49
378,750	39,090	52,602	68,671	0,426	0,438	8075,652	8080,740	265,820	12,959	7,366	1,376	38,969	8,059	17,652	2025-03-05 15:49
379,250	39,116	52,605	68,665	0,426	0,438	8062,842	8073,594	253,221	12,985	7,290	2,050	38,658	8,027	17,652	2025-03-05 15:50
379,750	39,121	52,607	68,660	0,426	0,438	8057,674	8071,423	249,865	13,129	7,185	-1,029	38,902	8,052	17,652	2025-03-05 15:50
380,250	39,130	52,613	68,621	0,426	0,439	8045,430	8053,062	239,661	13,176	7,144	-0,656	38,888	8,051	17,652	2025-03-05 15:51
380,750	39,148	52,618	68,628	0,425	0,439	8037,917	8056,354	238,809	13,177	7,112	-0,053	38,839	8,046	17,652	2025-03-05 15:51
381,250	39,152	52,624	68,618	0,426	0,439	8044,654	8048,605	237,399	13,270	7,018	1,996	38,533	8,014	17,652	2025-03-05 15:52
381,750	39,166	52,630	68,624	0,426	0,439	8030,803	8047,041	232,430	13,300	6,986	2,235	38,721	8,033	17,652	2025-03-05 15:52
382,250	39,171	52,633	68,631	0,426	0,439	8038,651	8047,563	244,834	13,348	6,914	4,091	38,762	8,038	17,559	2025-03-05 15:53
382,750	39,178	52,631	68,623	0,426	0,439	8032,903	8044,082	224,707	13,413	6,886	0,370	38,584	8,019	17,558	2025-03-05 15:53
383,250	39,180	52,626	68,623	0,426	0,439	8026,221	8048,342	229,727	13,237	7,094	-0,986	38,628	8,024	17,559	2025-03-05 15:54
383,750	39,195	52,631	68,615	0,426	0,439	8024,764	8042,786	230,801	13,160	7,106	1,553	39,017	8,064	17,559	2025-03-05 15:54
384,250	39,196	52,632	68,620	0,426	0,439	8030,962	8042,038	218,824	13,227	7,046	1,717	38,903	8,052	17,559	2025-03-05 15:55
384,750	39,206	52,633	68,647	0,426	0,438	8021,763	8052,538	223,862	13,280	7,037	1,599	38,709	8,032	17,465	2025-03-05 15:55
385,250	39,208	52,634	68,635	0,427	0,439	8041,615	8056,216	226,645	13,207	7,064	0,007	38,876	8,049	17,558	2025-03-05 15:56
385,750	39,221	52,639	68,624	0,427	0,439	8033,313	8046,125	220,503	13,197	7,114	0,165	38,787	8,040	17,464	2025-03-05 15:56
386,250	39,224	52,627	68,633	0,427	0,439	8035,146	8054,311	224,522	12,959	7,338	0,407	38,886	8,050	17,465	2025-03-05 15:57
386,750	39,224	52,623	68,629	0,427	0,439	8036,648	8052,031	204,107	12,901	7,396	-0,712	38,711	8,032	17,464	2025-03-05 15:57
387,250	39,230	52,625	68,625	0,427	0,439	8034,186	8051,222	196,574	12,921	7,356	1,266	38,576	8,018	17,464	2025-03-05 15:58
387,750	39,220	52,621	68,625	0,427	0,438	8032,723	8047,469	207,915	12,966	7,330	-0,615	38,878	8,050	17,342	2025-03-05 15:58
388,250	39,212	52,627	68,636	0,427	0,439	8031,098	8058,344	201,198	13,036	7,280	0,218	38,686	8,030	17,342	2025-03-05 15:59
388,750	39,201	52,621	68,651	0,427	0,439	8039,842	8065,410	189,858	13,137	7,151	0,305	38,914	8,053	17,342	2025-03-05 15:59
389,250	39,198	52,630	68,620	0,427	0,439	8046,392	8045,011	221,955	13,122	7,168	0,500	39,004	8,063	17,342	2025-03-05 16:00
389,750	39,192	52,620	68,622	0,427	0,439	8039,426	8055,801	207,821	13,094	7,215	1,074	39,019	8,064	17,342	2025-03-05 16:00
390,250	39,191	52,616	68,611	0,427	0,439	8034,353	8053,233	222,407	13,035	7,283	-0,735	38,763	8,038	17,342	2025-03-05 16:01
390,750	39,186	52,613	68,620	0,427	0,439	8036,041	8058,126	237,510	12,902	7,438	-0,212	38,683	8,029	17,249	2025-03-05 16:01
391,250	39,181	52,609	68,627	0,426	0,439	8037,686	8056,545	248,413	12,786	7,555	2,676	38,775	8,039	17,248	2025-03-05 16:02
391,750	39,186	52,609	68,625	0,426	0,439	8030,556	8057,021	261,577	12,599	7,740	0,157	38,817	8,043	17,249	2025-03-05 16:02
392,250	39,184	52,621	68,617	0,426	0,439	8034,417	8046,901	254,656	12,677	7,636	0,043	38,685	8,030	17,292	2025-03-05 16:03
392,750	39,180	52,611	68,619	0,426	0,439	8024,522	8053,398	252,391	12,833	7,471	0,062	38,953	8,057	17,248	2025-03-05 16:03
393,250	39,179	52,621	68,591	0,427	0,439	8040,935	8035,181	286,872	12,861	7,487	1,930	38,808	8,042	17,249	2025-03-05 16:04
393,750	39,180	52,620	68,626	0,426	0,439	8025,448	8050,044	336,761	12,626	7,654	0,714	38,697	8,031	17,249	2025-03-05 16:04
394,250	39,160	52,613	68,616	0,426	0,438	8033,463	8037,002	278,425	12,827	7,489	0,938	38,788	8,040	17,154	2025-03-05 16:05

PE 56 Cat I_250305.DAT

Category: I run 1

	301	302	304	305	306	308	317	1311	1313	1314	1315	1316	1317	1318	1319	1320	1101	1103
Measure- ment time	CO chimney	CO2 chimney	Pdyn	Pstat	Static pressure chimney	O2 chimney	Scale	Flue gas temp	Flue gas at pitot	filter temp 1	filter temp 2	gas meter temp 1	gas meter temp 2	gasmeter 1hr	Gas meter ambient	Filter temp 1 hr	Ambient temperature	T4 outlet load side
Minutes	VDC	VDC	VDC	VDC	VDC	VDC	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	
394,750	0,245	0,715	0,968	0,019	0,709	0,248	0,675	69,317	21,792	20,773	20,533	20,226	20,177	21,834	25,566	19,953	19,751	55,516
395,250	0,248	0,715	0,970	0,046	-0,029	0,247	0,675	69,415	21,786	20,762	20,545	20,223	20,177	21,842	25,533	19,962	19,758	55,516
395,750	0,244	0,718	0,975	0,074	-0,011	0,244	0,674	69,433	21,806	20,766	20,542	20,210	20,172	21,833	25,478	19,981	19,752	55,492
396,250	0,246	0,722	0,971	0,088	-0,664	0,239	0,674	69,457	21,746	20,747	20,533	20,212	20,183	21,833	25,434	19,966	19,751	55,482
396,750	0,247	0,730	0,970	-0,030	-0,011	0,234	0,674	69,493	21,701	20,745	20,536	20,218	20,180	21,837	25,397	19,949	19,744	55,463
397,250	0,249	0,728	0,969	-0,017	-0,011	0,238	0,673	69,407	21,693	20,747	20,522	20,203	20,164	21,839	25,367	19,940	19,754	55,461
397,750	0,248	0,726	0,969	0,039	-0,532	0,239	0,674	69,309	21,738	20,775	20,516	20,234	20,180	21,842	25,341	19,938	19,755	55,465
398,250	0,247	0,726	0,966	0,037	-0,011	0,237	0,673	69,440	21,722	20,718	20,483	20,246	20,183	21,829	25,297	19,932	19,749	55,455
398,750	0,245	0,733	0,960	-0,018	1,662	0,233	0,673	69,433	21,711	20,509	20,213	20,207	20,171	21,777	25,243	19,915	19,745	55,433
399,250	0,248	0,731	0,970	0,057	0,759	0,232	0,673	69,353	21,750	20,466	20,142	20,208	20,172	21,750	25,213	19,921	19,748	55,439

PE 56 Cat I_250305.DAT

Category: I run 1

	1104	1105	1107	130	230	101	102	1	2	3	6	7	8	11	
Measure- ment time	T3 inlet load side	T2 inlet boiler	T1 outlet boiler	Flow load side	Flow boiler side	Heat output load side	Heat output boiler	CO chimney	CO2 chimney	O2 chimney	Pstat	Pdyn	Tunnel velocity	Våg	Time
Minutes	°C	°C	°C	m³/h	m³/h	W	W	ppm	%	%	Pa	Pa	m/s	kg	Clock
394,750	39,148	52,620	68,600	0,426	0,438	8039,461	8029,756	300,227	12,881	7,447	0,774	38,798	8,041	17,249	2025-03-05 16:05
395,250	39,136	52,613	68,584	0,426	0,439	8033,686	8033,980	295,460	12,894	7,398	1,856	38,831	8,045	17,155	2025-03-05 16:06
395,750	39,122	52,606	68,578	0,426	0,439	8028,676	8033,934	276,288	12,984	7,318	2,965	39,019	8,064	17,155	2025-03-05 16:06
396,250	39,108	52,600	68,570	0,426	0,438	8034,629	8031,716	294,779	13,096	7,160	3,527	38,723	8,034	17,155	2025-03-05 16:07
396,750	39,107	52,591	68,571	0,426	0,439	8026,058	8041,124	307,531	13,280	7,031	-1,217	38,934	8,055	17,155	2025-03-05 16:07
397,250	39,102	52,582	68,547	0,426	0,439	8023,798	8036,799	314,740	13,159	7,143	-0,662	38,655	8,027	17,061	2025-03-05 16:08
397,750	39,096	52,582	68,555	0,426	0,439	8038,900	8036,979	310,116	13,127	7,168	1,573	38,904	8,052	17,155	2025-03-05 16:08
398,250	39,086	52,568	68,539	0,426	0,439	8041,310	8037,525	287,667	13,166	7,098	1,479	38,710	8,032	17,061	2025-03-05 16:09
398,750	39,076	52,555	68,534	0,426	0,439	8039,274	8047,450	300,325	13,344	6,984	-0,709	38,265	7,986	17,061	2025-03-05 16:09
399,250	39,077	52,548	68,524	0,426	0,439	8027,530	8044,922	309,886	13,277	6,967	2,264	38,926	8,055	17,061	2025-03-05 16:10

Appendix 16**Manuals**

Please read carefully prior
to installing and servicing.
SAVE THESE INSTRUCTIONS

Operating Manual

**Pellet heating with auger
delivery or vacuum suction
system for the end-user
AutoPellet®
PES 20, 22, 32, 56**

FA_V3.10

AutoPellet TOUCH

USA



Title: Operating Manual AutoPellet® **PES 20, 22, 32, 56**

Article number:

Version valid from: **02/2025**

Approved: **Maine Energy Systems**

Author & Manufacturer

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Maineenergysystems.com.

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For warranty inquiries please send an email to warranty@maineenergysystems.com including the system's address in the subject line.

1 Dear Customer

Maine Energy Systems specializes in wood pellet heating.

Our company enjoys an exclusive license from ÖkoFEN to manufacture products here in North America. We represent expertise, innovation and quality.

We are delighted that you have decided to purchase our product.

- This instruction manual is intended to help you operate the product safely, properly and economically.
- Please read this instruction manual completely and take note of the safety warnings.
- Keep all documentation supplied with this unit in a safe place for future reference.
- Installation and first startup must be carried out by a qualified installer certified by Maine Energy Systems.
- The installation must comply with the requirements of the Authority having jurisdiction over the installation.
- Please contact your authorized dealer if you have any questions.



We place great importance on the development of new products. Our R&D department continues to question accepted solutions and works continually on new improvements. That is how we maintain our technological lead. We have already received several awards for our products in Austria and abroad. Our products fulfil European and USA requirements regarding quality, efficiency and emissions.



This wood heater needs periodic inspection and repair for proper operation. It is against federal regulations to operate this wood heater in a manner inconsistent with operating instructions in this manual.

This heating appliance is US EPA 2020 NSPS Compliant.

Note: This manual refers to both PES20 and PES22 systems. The only difference between the PES20 and PES22 is that the PES22 has additional turbulators to increase efficiency.

2 Use only for the purpose intended

The pellet boiler is designed to heat water for central or other indirect heating systems and hot water supply for buildings. It is not permissible to use the pellet boiler for any other purpose. Reasonable foreseeable inadvertent uses for the pellet boiler are not known.

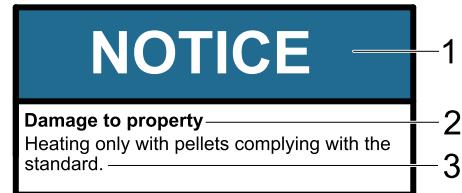
The boiler fulfills the requirements of UL 2523-18 and CSA B366.1-11 (R2020).

3 Types of safety warning sign

The warning signs use the following symbols and texts.

Types of safety warning sign

1. Risk of injury
2. Consequences of risk
3. Avoiding risk



1. Risk of injury:

Danger - indicates a situation that could lead to death or life-threatening injury.



Warning - indicates a situation that could lead life-threatening or serious injury.



Caution - indicates a situation that could lead to injury.



Note - indicates a situation that could lead to property damage.



2. Consequences of risk

Effects and consequences resulting from incorrect operation.

3. Avoiding risk

Observing safety instructions ensures that the heating system is operated safely

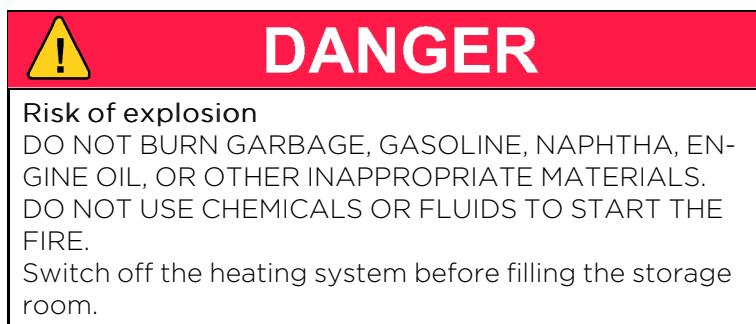
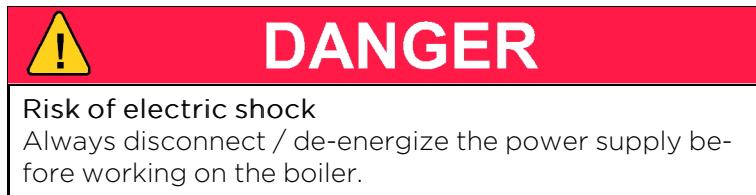
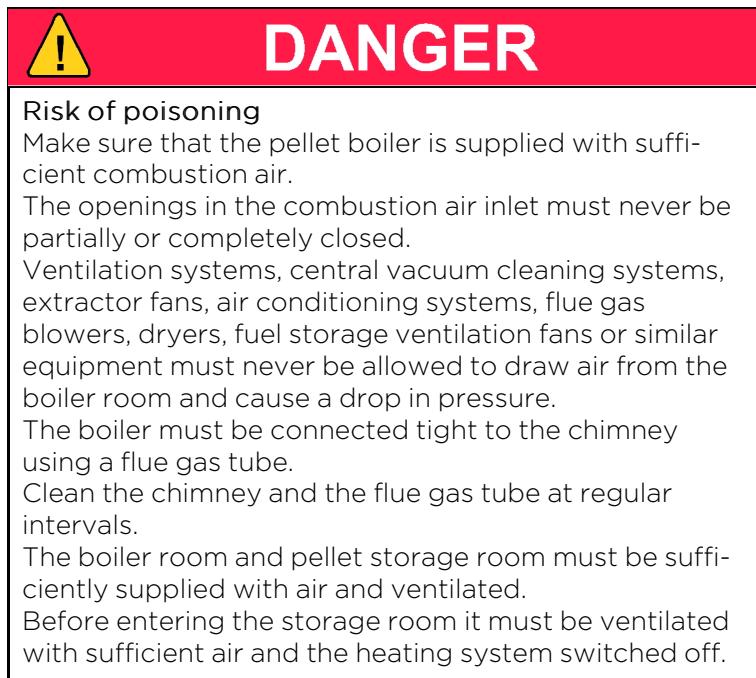
4 Warnings and safety instructions

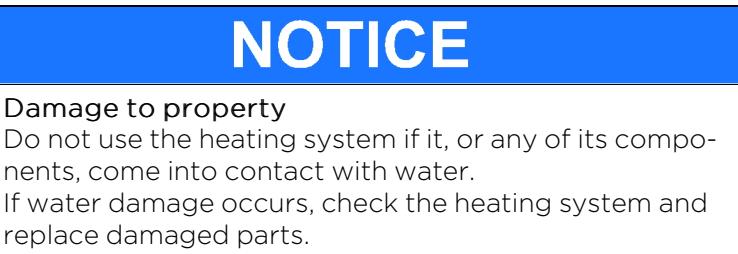
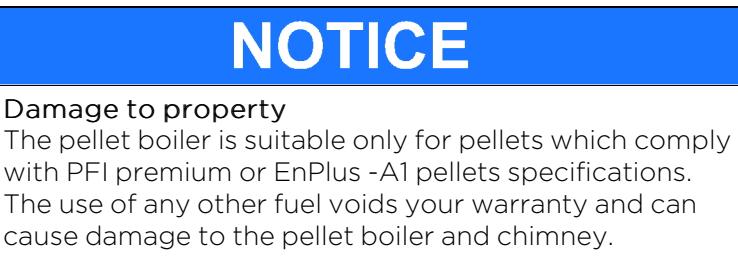
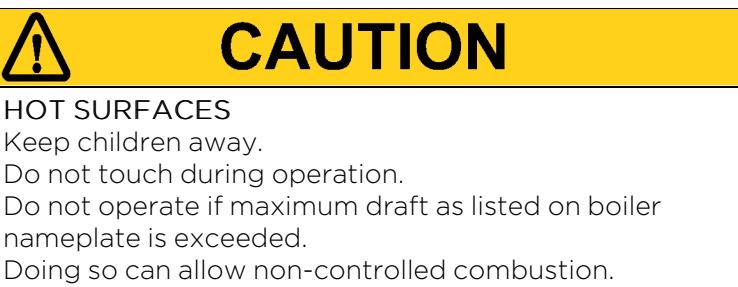
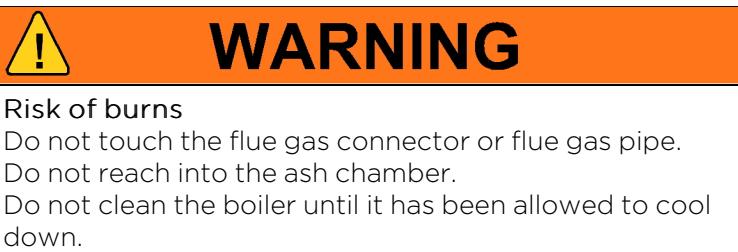
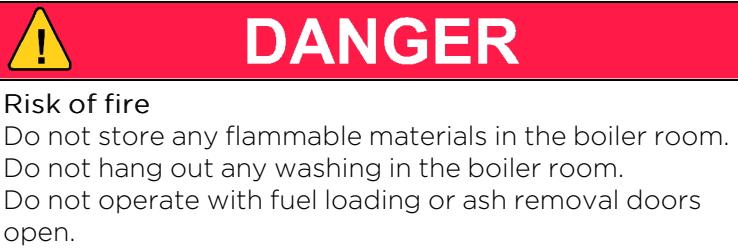
Observing safety instructions ensures that the heating system is operated safely.

4.1 Basic safety instructions

- Never get yourself into danger; give your own safety top priority.
- Keep children away from the central heating room and storage room.
- Observe all safety warnings on the boiler and in this user manual.
- Observe all instructions relating to maintenance, servicing and cleaning.
- The pellet heating system may only be installed and commissioned by an installer that is trained and remains currently authorized by Maine Energy Systems.
- Never make any changes to the heating system or flue gas system. All maintenance, cleaning and changes should only be done by trained professionals.
- Never close or remove safety valves.

4.2 Warning signs





4.3 What to do in an emergency



DANGER

Risk to life

Never get yourself into danger; give your own safety top priority.

What to do in the event of a fire

- Switch off the heating system.
- Call your local fire department and / or 911.
- Use approved fire extinguishers (fire protection class ABC).

What to do if you smell smoke

- Switch off the heating system.
- Close the doors leading to living areas.
- Ventilate the boiler room.

Important: Federal, State/Provincial, and Local Regulations, Laws, and Codes must be followed; use of smoke detectors and carbon monoxide monitors are recommended in accordance with applicable statutes.

INSTALL CO SMOKE DETECTORS IN THE LIVING AREA AND BEDROOMS OF YOUR HOME. TEST THEM REGULARLY AND INSTALL FRESH BATTERIES TWICE ANNUALLY.

WHEN INSTALLED IN THE SAME ROOM AS THE STOVE, A SMOKE OR CARBON MONOXIDE DETECTOR SHOULD BE LOCATED AS FAR FROM THE STOVE AS POSSIBLE TO PREVENT THE ALARM SOUNDING WHEN ADDING FUEL.

5 Prerequisites for installing a pellet boiler

You must fulfill the following conditions before operating a fully automatic pellet boiler.

5.1 Guidelines and standards for installing a pellet boiler

Overview of standards and guidelines applying to the installation of a pellet boiler.

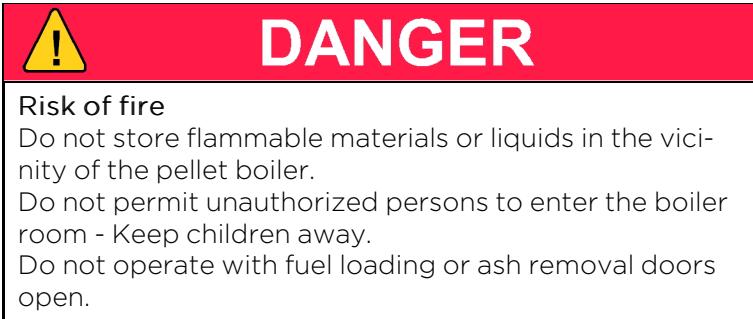
Check whether you need to obtain planning permission or approval from the authorities for installing a new heating system or changing your existing system. Legislation in your country must be observed.

Flue gas system	EN 13384-1	Legislation in your country must be observed.
Building and fire prevention regulations		Legislation in your country must be observed.
Type of installation	FC 42x	Fireplace with a flue gas fan for connection to an air exhaust system. The combustion air line from air shaft and the connecting piece to the chimney are part of the fireplace.
	FC 52x	Fireplace with a flue gas for connection to a chimney. The combustion air line from outside and the connecting piece to the chimney are part of the fireplace.
Sound insulation	DIN 4109	Please note the building-unique demands on sound insulation.

5.2 Installation room

The installation room of the boiler is not necessarily a boiler room. Observe the applicable national and regional regulations.

1. Safety warnings for the installation room



2. Ventilation of the installation room

The installation room must have air inlet and outlet openings for ventilation, even if there is a direct connection to the burner for combustion air.

This is to keep the combustion zone at a neutral pressure.

3. Admission of combustion air, the pellet boiler requires combustion air. The combustion air can be supplied by:

a. Relying upon the boiler room air as supplied by the air inlet and outlet openings for ventilation in the installation room.

b. Independently of the room air via a separate air intake line with a direct connection to the outdoor atmosphere.

The air intake line must not follow the sewage pipe. The diameter of the air intake line must be at least 4 inches. If the air line is greater than 12 feet in length, or if it has more than 270 degrees of turns, then it should be increased in size to 5 inch.

Never operate the pellet boiler if the air intake openings are partially or completely closed.

Contaminated combustion air can cause damage to the pellet boiler. Never store or use cleaning detergents containing chlorine, nitrobenzene or halogen in the room where the heating system is installed, if combustion air is drawn directly from the room. Be particularly cautious around swimming pools and

chemicals.

Do not hang out washing in the boiler room.

Prevent dust from collecting at the combustion air intake to the pellet boiler.

4. System damage due to frost and humidity

The temperature in the installation room must not drop below 38°F and must not exceed +86°F. The relative humidity in the installation room must not exceed 70%.

5. Danger for animals

Prevent pets and other small animals getting into the installation room. Install grilles over all openings.

6. Flooding

In the event of a flooding risk, switch off the pellet boiler and disconnect it from the main power supply before water enters the boiler room. All components that come into contact with water must be replaced before the pellet boiler is put into operation again.

5.3 Flue gas system

The flue gas system consists of a chimney and a flue gas tube. The flue gas tube connects the pellet heating system to the chimney. The chimney leads the flue gas from the pellet heating system out into the open.

1. Design of the chimney

The dimensions and design of the chimney is very important. The chimney must be able to ensure sufficient draft to safely draw away the flue gas regardless of the status of the boiler. Low flue gas temperatures can cause sooting and moisture damage on chimneys that are not insulated. For this reason **moisture-resistant chimneys** (stainless steel or ceramic) should be used. An existing chimney that is not damp-resistant needs to be renovated before use. Follow guidelines below:

Boiler size		AutoPellet
Flue gas tube diameter (at boiler)	inch/mm	6/160
Flue gas temp. / rated power	° F	266 - 320
Flue gas temp. / partial load	° F	194 - 248
Min. draft - full load/part load	in/wc	- 0.04 / - 0.02

Chimney size	Min. Height
6in x 6in	17ft
7in x 7in	16ft
8in x 8in	16ft
6in round	19ft
7in round	17ft

NOTICE

Person(s) operating a hydronic heater is/are responsible for operation in a manner that does not create a public or private nuisance condition. The manufacturer's distance and stack height recommendations and the requirements in any applicable laws or other requirements may not always be adequate to prevent nuisance conditions due to terrain or other factors.

Recommended and UL-103HT approved chimney materials are:

- a. Selkirk sure temp
- b. Supervent (JSC)
- c. Security chimneys (secure temp ASHT)

Use flue gas pipe from chimney to boiler as required by your local code.



CAUTION

Unregulated combustion

Please observe that combustion air openings and flue pipes are not reduced in size or closed. Make end user aware of these guidelines and their potential danger. Clean the chimney and the flue gas tube at regular intervals.

Check if the draft inducer is clean and in a good condition.

2. Flue gas temperature

The flue gas temperatures are approximately the same for all AutoPellet covered in this manual.

The dewpoint of flue gas with wood pellets (max. 10% water content) is approx. 120°F.

It is possible to increase the flue gas temperature to prevent condensation inside the chimney and avoid damage due to damp. Only authorised installers may increase the flue gas temperature.

Note:

The increase in flue gas temperature results in reduced efficiency and thus increases fuel consumption.

3. Negative pressure of the chimney

The boiler must be connected to a chimney or a vertical venting system that is capable of handling and producing a negative breeching pressure of -0.4 "WC. Use a draft gauge to verify the indicated draft value, adjust barometric damper as required. Drill a small hole in the connection pipe at about 2in/ 50mm from the boiler flue outlet and use this hole as your measuring point.

Chimney draft

The suction effect of the chimney draft must extend all the way to the boiler flue pipe connection. The maximum flow rate that can be drawn through the chimney limits the maximum performance of the chimney connection. The boiler performance must be reduced if the chimney does not possess the necessary cross-section. This may only be performed by authorised personnel.

4. Cleaning

Clean the flue gas tube and chimney regularly. Solid fuel burning appliances need to be cleaned frequently because soot, creosote, and ash may accumulate. The hotter the fire, the less creosote is deposited. Cleaning intervals can vary in warm periods due to this and become more frequent.



DANGER

Risk of chimney fire

Creosote-formation and need for removal: Low flue gas temperature can cause creosote. Creosote can condense in a relatively cool chimney. As a result, creosote residue accumulates on the flue lining. If ignited, this creosote will create an extremely hot fire. The chimney and the chimney connector should be inspected at least twice monthly during the heating season to determine if a creosote buildup has occurred. If creosote has accumulated it should be removed to reduce the risk of a chimney fire.

NOTICE

Oxidation of chimney

Do not use metal brushes to clean chimneys made of stainless steel.

Your state and local regulations must be observed.

5.4 Safety systems

The following safety measures are the prerequisite for safe operation of your system.

Emergency stop switch

Every heating system must be able to be switched off with an Emergency Stop switch. The Emergency Stop switch location is determined by your local code requirement. It should remove all electrical power from the boiler.



Safety valve / Over Pressure Relief Valve

This valve opens when the pressure inside the heating system increases to max. 43.5 PSI. For North America, a 30 PSI Relief Valve is supplied with each boiler. This valve must not be locked out or plugged and must be within 3 feet of the boiler, with no valves between the relief valve and boiler.



Low Water Detection

The "Low Water Detection" device is connected to the Emergency Stop of the boiler. Should a low water condition be detected, the boiler stops firing immediately. This device must be of the manual reset variety.



Safety temperature sensor

The pellet boiler is equipped with a safety temperature sensor. This is located on the pellet boiler. If the boiler temperature exceeds 230° F, then the heating system switches off.



Expansion tank

All heating systems must be equipped with an expansion tank.

The overall size of the heating system volume will dictate the required expansion tank size.



NOTICE

Initial start-up

The initial start-up of each MESys boiler must be performed by an authorized installer.

5.5 Installation with an existing boiler

MESys boilers are not to be connected to a chimney flue serving another appliance. However, when all State and local codes allow for the sharing of chimney flues, MESys boilers and another appliance burning pellets or a different fuel can be operated simultaneously while connected to a single existing chimney or flue gas system providing the following conditions are met:

- All state and local codes permit the specific installation.
- All appliances are installed in accordance with the manufacturer's installation specifications or if lacking manufacturers specifications, the appliance in question is installed in a manner commonly recognized as safe and correct for the application and circumstances.
- The chimney or flue gas system must be able to handle the combustion products of either appliance and both appliances when operated simultaneously.

NOTICE

Avoid clearance issues that can make servicing difficult:

Be sure to follow suggested clearances when installing this boiler with an existing boiler to be sure that service and cleaning can be performed adequately.



CAUTION

Avoid code violations:

When connecting to or with an existing boiler, contact the authority having jurisdiction to be sure the type of installation planned is allowed.

Document the type of boiler that the Pellematic is connected to or with.

Pellet boiler: Make and Model number:

Existing boiler: Make and Model number:



DANGER

Possible escape of flue gas:

Do not connect this unit to a chimney flue serving another appliance unless multiple appliances into a single flue is authorized by all authorities having jurisdiction.

6 Fuel

Wood pellets are natural wood (dried sawdust or waste from machining) that has been formed into pellets under high pressure. They have a very low moisture content and very high calorific value. The manufacture of wood pellets is regulated by European standard EN ISO 17225-2.

Fuel Property	PFI Premium
Normative Information - Mandatory	
Bulk Density, lb./cubic foot	40.0 - 46.0
Diameter, inches	0.230 - 0.285
Diameter mm	5.84 - 7.25
Pellet Durability Index	\geq 96.5
Findes, % (at the mill gate)	\leq 0.50
Inorganic Ash, %	\leq 1.0
Length, % greater than 1.50 inches	\leq 1.0
Moisture, %	\leq 8.0
Chloride, ppm	\leq 300
Heating Value	NA
Informative Only - Not Mandatory	
Ash Fusion	NA



WARNING

Never use pellets that contain treated wood, colored paper products, cardboard, solvents, plastic trash or garbage.

Never burn trash, plastics, gasoline, solvents, naphtha, household garbage, material treated with petroleum products such as particleboard, railroad ties and pressure treated wood leaves, paper products, cardboard.

6.1 Specification for high quality pellets as per EN ISO 17225-2, class A1 and by PFI standards in North America

Calorific value	\geq 4,6 kWh/kg or \geq 16,5 MJ/kg
Loose density	min. 600 kg/m ³
Water content	max. 10% Specification for high quality pellets as per EN ISO 17225-2, class A1
Ash content	max. 0.7%
Length	max. 40 mm
Diameter	6 mm
Fine material	max. 1%
Contents	100% natural wood

NOTICE

The heating system is suitable only for pellets of natural wood that comply with standard EN ISO 17225-2 class A1 with a diameter of 6 mm. Using non-pellets fuels or pellets that are not manufactured from natural wood will lead to the warranty becoming void and will cause damage to the pellet boiler and the chimney.

Use only quality pellets that are DINplus or ENplus or PFI premium Certified.



WARNING

Never use pellets that contain treated wood, colored paper products, cardboard, solvents, plastic, trash or garbage

Never burn trash, plastics, gasoline, solvents, naphtha, household garbage, material treated with petroleum products such as particleboard, railroad ties and pressure treated wood, leaves, paper products, cardboard.

6.2 Distance to flammable materials

Observe the country-specific regulations, Local Regulations or NFPA.

6.3 Storing the pellets

1. Pellets are to be stored in a place where they are kept dry all year.
2. Install a back-ventilated partition to prevent pellets from contacting damp walls, or use a fabric tank.
3. Refer to our planning hints for pellet storage rooms and warning signs.
4. Legislation in your country must be observed regarding building specifications for storage rooms.
5. ÖkoFEN also offers FleXILO fabric tanks for storing pellets.

6.4 Measures for the ventilation of storage rooms

To avoid any kind of danger through possible degassing of the pellets, make sure you obey the following guidelines:

- The storage room has to be insulated towards the living area.
- The storage room has to be ventilated to the outdoors.

For further information please consult your expert adviser.

7 Product description

The description of the product is intended to provide an overview of the components that make up an ÖkoFEN pellet heating system, the parts of the pellet boiler and advice on where you can find more information.

The ÖkoFEN concept features different sizes of design and type for each component. These are compatible and designed to match.

The ÖkoFEN pellet heating system consists of 3 components

1	Pellematic pellet boiler
2	Conveyor system
3	Storage system - storage room or fabric tank

7.1 The pellet boiler

The pellet boiler is equipped with an automatic cleaning system, an ash box with ash compression system and an integrated return water temperature control. The installed programmable logic controller system enables fully automatic operation and highest efficiency. We offer an optional automatic de-ashing system for the highest level of cleanliness and comfort.

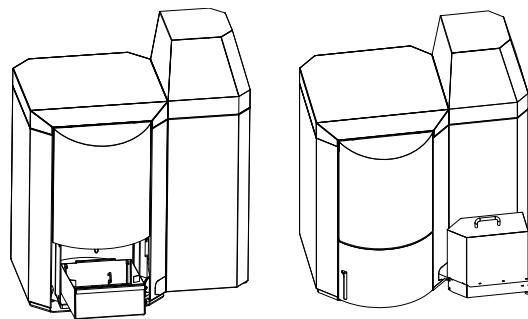
Pellematic types and power ratings

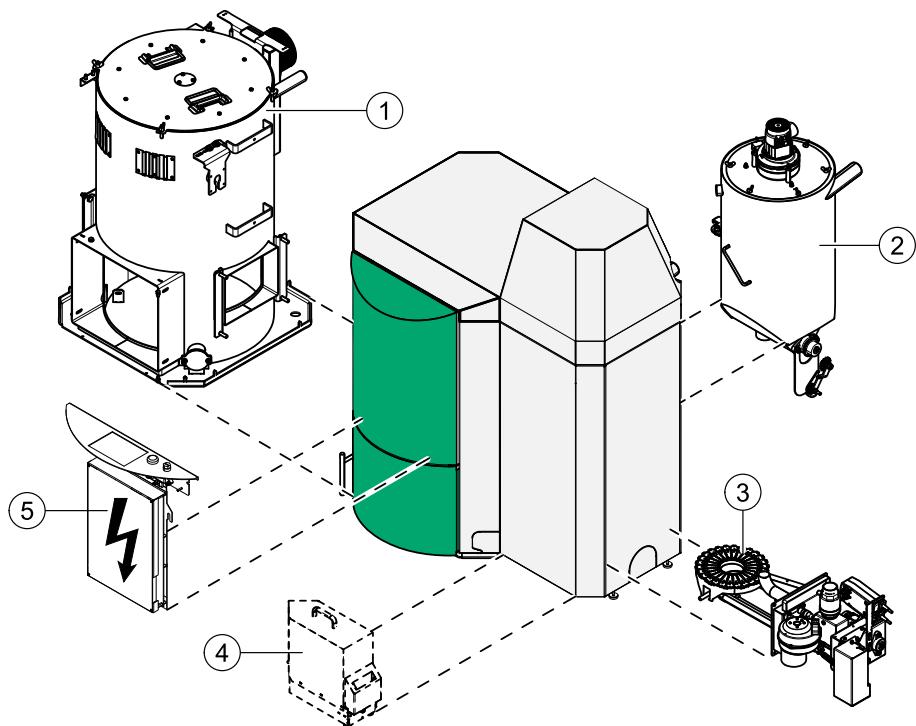
We offer the Pellet boiler with the following power ratings:
Suction-feed systems: 68,300; 109,500 and 191,000 BTU/hr

All sizes / outputs of the Autopellet boiler are available with external automatic ash compression system.

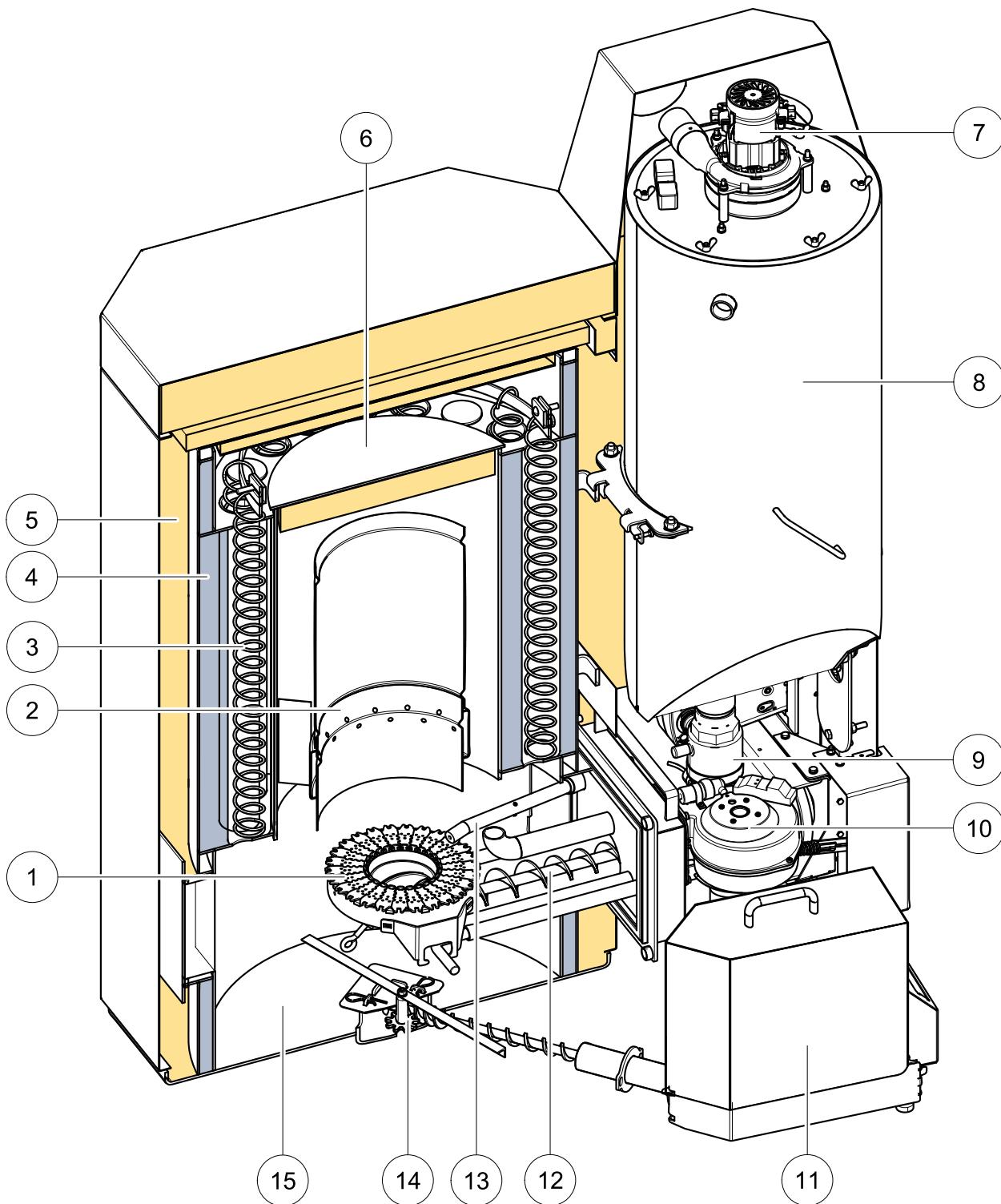
Note:

Refer to the data plate for the power rating of your Pellematic. The data plate is located on the rear side of the Pellematic. Here you will find the type designation, manufacturer's serial number and year of build.



Key components of the Pellematic

1	Boiler (heat exchanger)
2	Vac Hopper / Day tank
3	Burner
4	External automatic ash compression system
5	Boiler controller



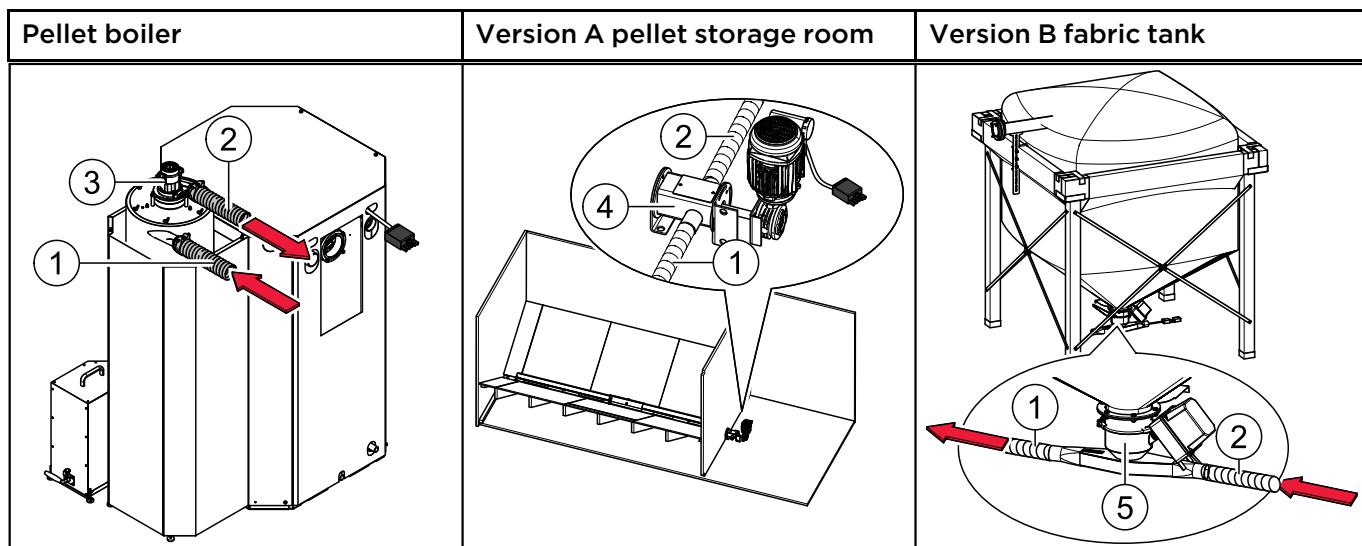
1	Burner plate	9	Fire protection - ball valve
2	Flame tube	10	Burner fan
3	Heat exchanger	11	External ash box
4	Boiler water	12	Burner auger
5	Boiler insulation	13	Electronic ignition
6	Combustion chamber cover	14	De-ashing system
7	Suction turbine	15	Ash chamber / Fire chamber
8	Vac hopper / Day tank		

7.2 Pellet suction system

The pellet suction system consists of the pellet line, air line and a suction fan. The suction fan in the hopper conveys pellets in the pellet line from the storage room or fabric tank to the hopper.

Key components of pellet suction system

1	Pellet line	Line from the storage room auger or fabric tank to the hopper.
2	Air line	Line from the suction fan to the storage room auger or fabric tank.
3	Suction fan	Located above the hopper behind the Pellet boiler burner housing.
4	T-piece	Located at front end of the storage room auger, outside the storage room.
5	Suction flap	Located underneath the fabric tank.

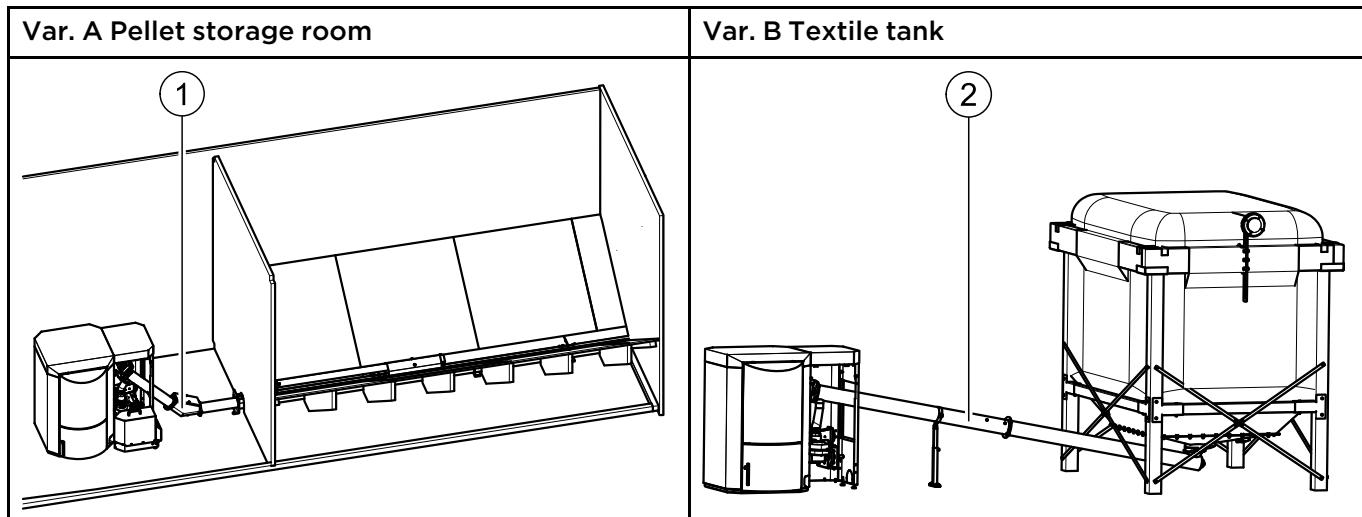


7.3 Auger delivery system

The auger system consists of: Delivery system motor, dropshaft, up leading auger with joint or extraction auger with extraction unit. The delivery system motor powers the auger system and transports pellets from the tank room or textile tank to the burner plate.

Key components of the auger system

1	Up leading auger	Delivery auger with motor unit and joint (Connection of delivery auger and pellet boiler)
2	Extraction auger	Delivery auger with auger, emergency gate, supporting leg and handcuffs; (Connection of textile tank and pellet boiler)



7.4 Storage systems

There are two methods for storing pellets: in a storage room with an auger feed system (version A) or in a FleXILO fabric tank (version B). FleXILO fabric tanks can be located inside the central heating room, storage room or protected from wet and sun outside.

NOTICE

Damage to property and loss of warranty

The combination of an ÖkoFEN pellet boiler with a storage and conveyor system from another manufacturer is not permissible.

7.4.1 Pellet storage room

The auger extraction system is part of the ÖkoFEN pellet heating system. The sloping base is to be provided by the customer. Information and important notes on setting up storage rooms can be found in the ÖkoFEN planning documents and on www.oekofen.com. Information on installing the auger extraction system is included in the auger system installation manual. Refer to the instructions on how to make a sloping base.

7.4.2 Flexilo fabric tank

The whole fabric tank system is included in the scope of supply. ÖkoFEN offers various sizes and types. The fabric tank supplied may vary from the example shown above.

Please refer to the installation instructions supplied for the fabric tank. Note also the instructions on setting up and filling.

8 Operating the Pellematic

The pellet heating system is an automatic heating system. All pellet feed system and combustion system sequences are regulated automatically using an electronic boiler controller and heating controller.

8.1 Operating the heating system

NOTICE

Damage caused do to incorrect operation or incorrect settings.

Only trained operators may use the heating system.
Make sure no unauthorised persons enter the central heating room. Keep children away from the central heating room and storage room.



DANGER

Fire risk

Keep the ash removal door closed while the boiler is in operation.

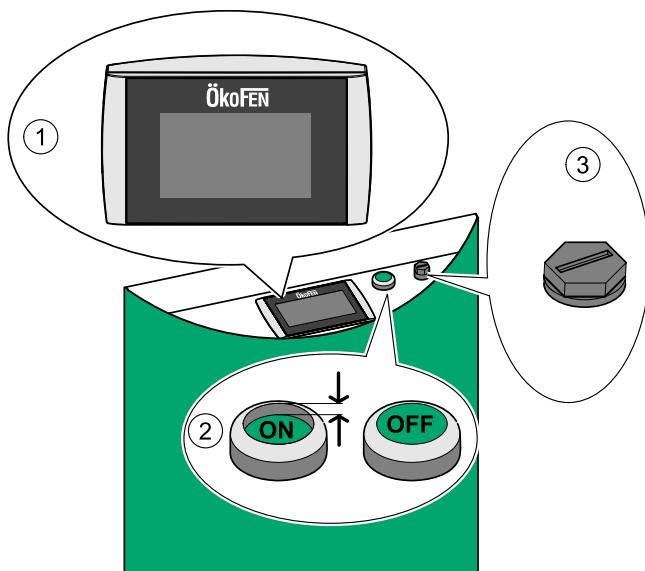
NOTICE

Standby mode boiler controller

Don't set the main switch of the boiler controller outside of the heating period to Off, because no buffer battery is used.

8.2 Description of the control panel

The control panel is located underneath the flap above the door of the boiler.



1	User control unit	Operates the boiler controller and the heating controller.
2	Main switch	Switches off the heating system (both poles) including the power supply to the control panel.
3	Safety temperature sensor	Switches the heating system off, if the boiler temperature reaches 230 °F. The heating controller remains active.

8.3 Setting language, date and time at Pelletronic Touch

Setting the language (The factory setting for the language is German)



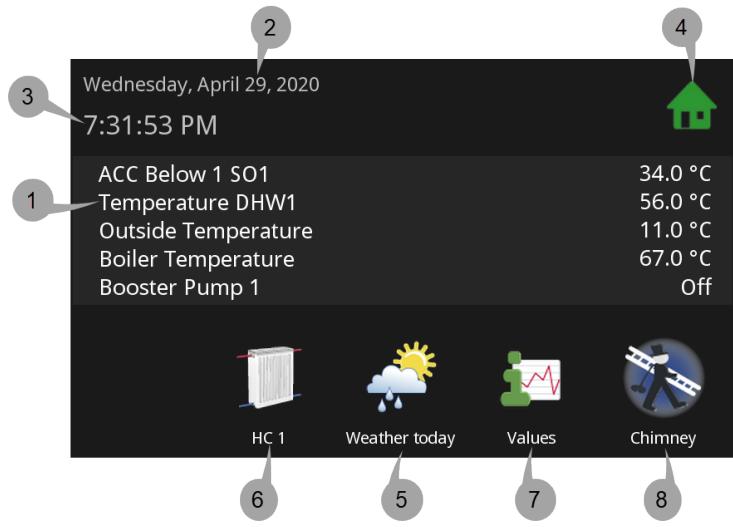
Setting the date**Setting the time**

8.4 Operating Device with Touch screen

The Touch operating device is mounted on the control board of Pellematic. The color display is surrounded by a foil design with logo. With finger pressure you make settings on the Touch operating device.

8.5 Opening window

The touch panel is dark during in standby mode. As soon as you touch the surface of the touch, light turns on and displays the opening window.



- 1 Measuring values (adjustable)
- 2 Date
- 3 Hour
- 4 The icon house takes to the main menu
- 5 Weather + display current weather (only when weather function is active)
- 6 Favorite 1 (adjustable)
- 7 Favorite 2 (adjustable)
- 8 Favorite 3 (adjustable)

Note:

If there is a malfunction, the corresponding fault message is displayed at this point instead of the weather icon

8.6 User controls and their function

1. Navigation-icons

Icon-view If you touch an icon, the icon turns green. The green shows that you are currently on this icon. You get to the enabled menu item .



The yellow house enters you directly to the main menu.



The horizontal arrow leads you one step back.



With the blue down arrow you get to additional lines of information on this item. (Down - scroll down).



With the blue up arrow you get to additional lines of information on this item. (Top of page - scroll up)

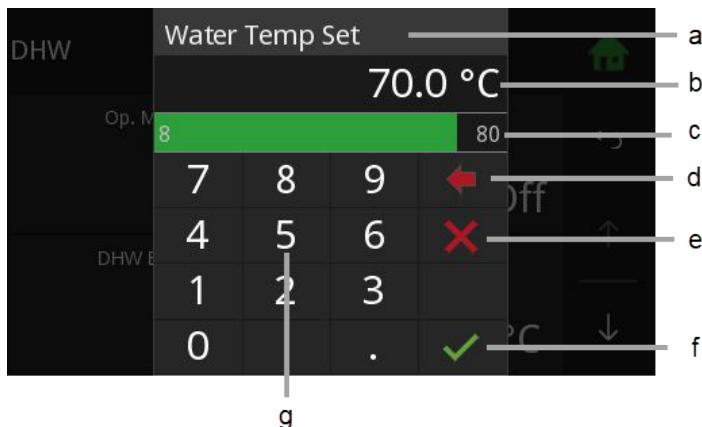


You get to the respective menu item.



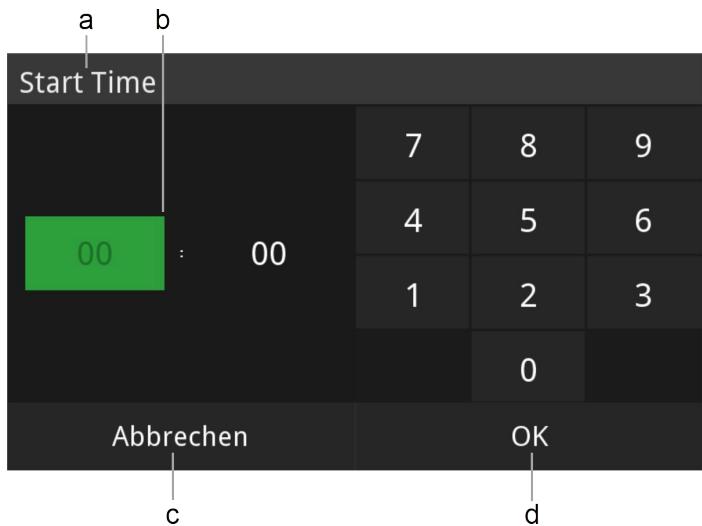
You get to the settings of the parameter. You come either to a numeric keypad, a time / date block or the text selection.

2. Numeric keyboard



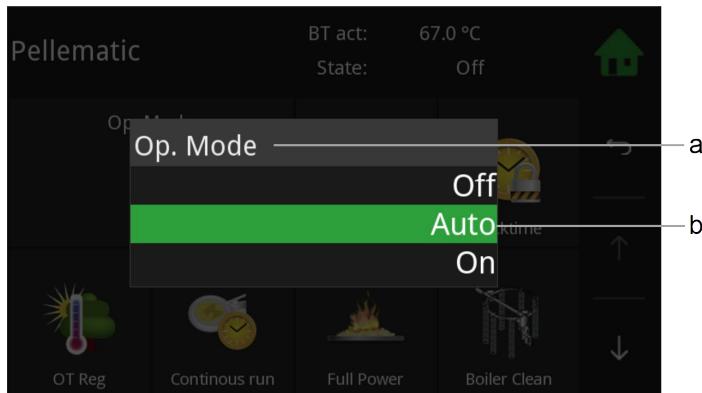
- a. Name of parameter
- b. Value of parameter with unit
- c. Min/max value - Values outside this range are not accepted.
- d. Delete input of numbers - per contact you delete one place.
- e. Cancel - You return to the menu item. Input of a new value was not accepted. The original value is.
- f. Help function - inactive
- g. Confirm
- h. Numeric keyboard - used to enter values within the min - max range.

3. Time and date block



- a. Adjustable time or date
- b. Cancel
- c. Help function - inactive
- d. Confirm

4. Text selection



- a. Name of parameter
- b. Status texts
The number of status texts depends of the parameter.

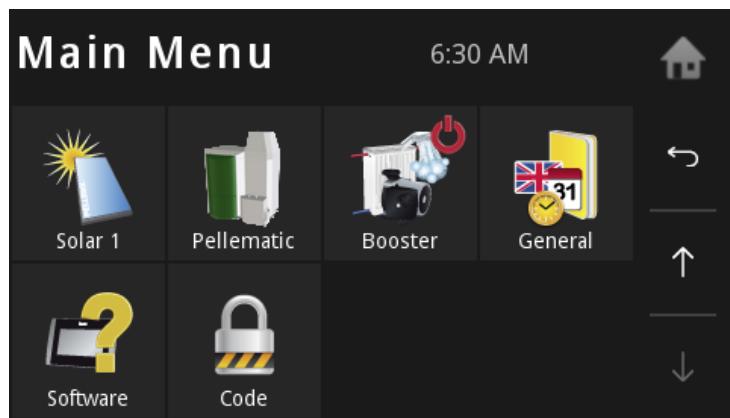
Choose a status text. The setup menu closes automatically and the chosen status text is displayed in the menu.

Note:

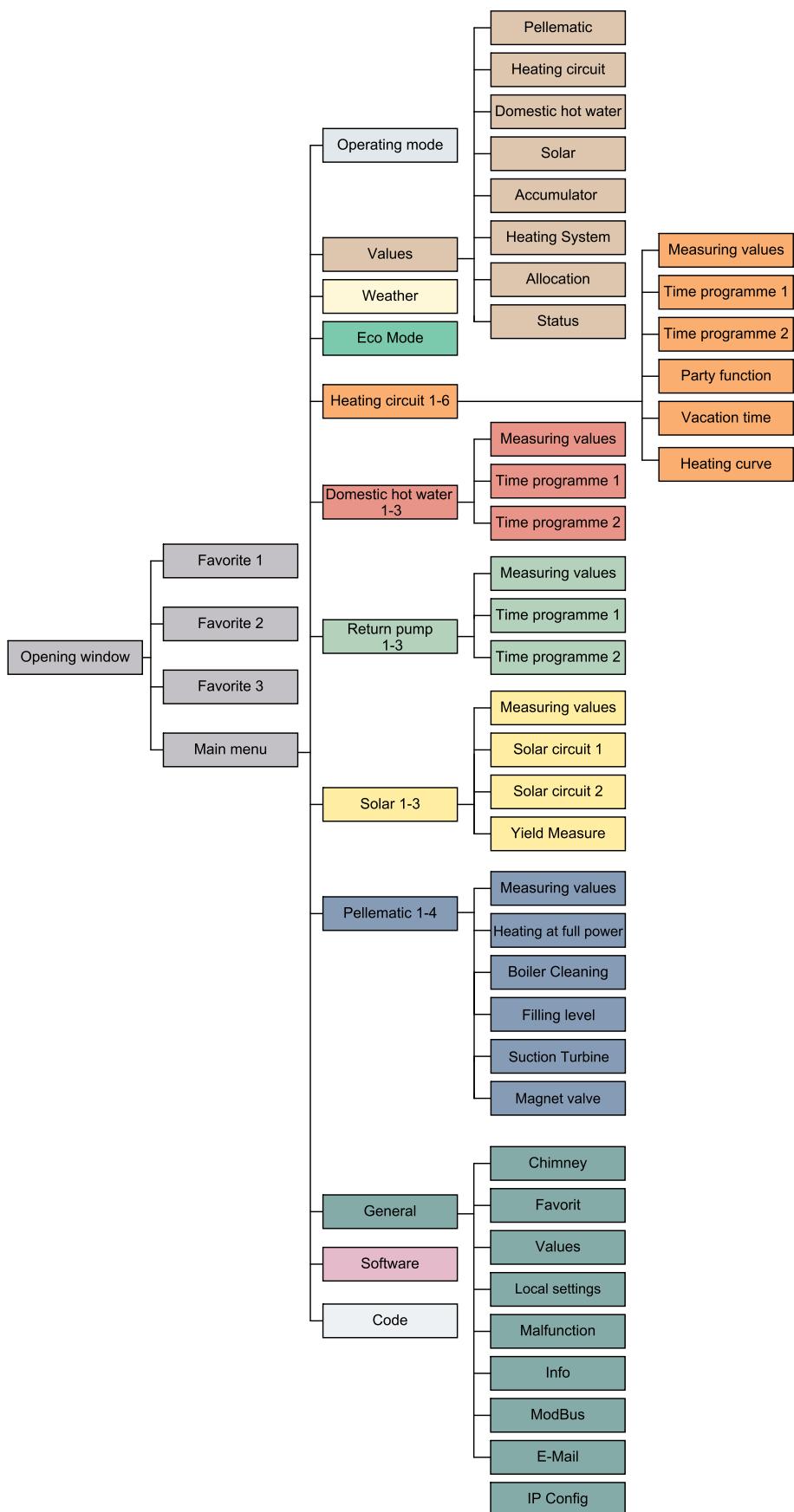
Although a scroll down menu is open, the navigation icons, menu items and parameters behind are active and by touching them it takes you directly there.

8.7 Main Menu

In the Main menu you see all submenus. By finger pressure on an icon you reach the respective submenu.



Menu navigation of Pelletronic Touch



9 Mode

In the menu item Mode you can see the mode of your heating system and the mode of the heating circuits, domestic hot water and solar.



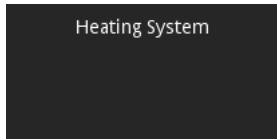
The menu item **Mode** is in the Main menu.

Modes		6:30 AM	
Heating System		HC 1	
Auto		Auto	
HC 2		DHW	
Auto		Auto	

Overview of the operating modes

- Heating Plant
- Heating system 1-6 .
- Domestic hot water 1-3
- Solar 1-3

Choose the operating modes and make settings.



Off

The adjusted operating mode of the heating circuits and DHW is inactive.
The frost protection function is active.

Auto

The adjusted operating mode of the heating circuits and DHW is active.
The frost protection function is active.

DHW

The adjusted operating mode of the DHW is active.
The adjusted operating mode of the heating circuits is active.
The frost protection function is active.

The operating mode heating circuits, domestic hot water and solar are described in the respective chapters.

10 Measuring Values

In the menu item of Measuring Values you see all actual and set values of your heating system.



The menu item **Measuring Values** is in the Main menu.

Values

6:30 AM

Pellematic	HC	DHW	ACC
Solar	Heat. System	Allocation	Status

• Pellematic
• Heating circuit
• Domestic hot water
• Solar
• Accumulator
• Return pump
• Heating Plant

Allocation

6:31 AM

Source	
HC 1	Boiler
HC 2	Boiler
DHW	Boiler
DHW Switch On Sensor	DHW
DHW Switch Off Sensor	DHW

In the menu item **Allocation** you see which heating circuits are allocated to the boiler or to the accumulators.

System Status

6:31 AM

HC 1	DHW Preference
HC 2	DHW Preference
DHW	Time within Time Program
	Requirement On
Solar 1	Circuit 2

In the menu item **Status** you always have an overview about the whole heating system.

11 Weather



Weather Lembach
sky is clear 49 to 53°F

Sat, 28 Aug 06:00 overcast clouds	2 mph	48 to 52°F	
Sat, 28 Aug 09:00 light rain	3 mph	51 to 55°F	
Settings			
http://www.openweathermap.org			

Choose **Settings** () to enter your location.

Please enter 'Place, Country' oder 'Zip Place, Country'

Lembach, AT

1	2	3	4	5	6	7	8	9	0	_	
q	w	e	r	t	z	u	i	o	p	ü	ß
a	s	d	f	g	h	j	k	l	ö	ä	
	y	x	c	v	b	n	m				
	,				.						

Enter location and country. If the specified location is not found, enter a larger, nearby place.

Search with the following details:

- Postal code, location, country
- Postal code, country
- Location, country

Weather Lembach
sky is clear 49 to 53°F

Fri, 27 Aug 12:00 light rain	10 mph	53 to 57°F	
Fri, 27 Aug 15:00 light rain	9 mph	53 to 57°F	
Fri, 27 Aug 18:00 overcast clouds	6 mph	48 to 52°F	
Fri, 27 Aug 21:00 overcast clouds	5 mph	44 to 48°F	

Afterwards, weather data for the next 3 days are downloaded. An icon for the current weather is displayed on the opening window.

Note:

This feature requires an internet connection.

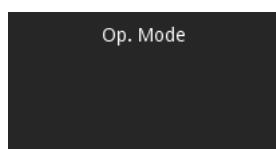
12 Heating Circuit

Heating Circuit encloses all for heating relevant parameters and settings. It can occur up to 6 menu items **Heating Circuit**.



Heating Circuit is in the Main menu

HC 1	Flow act: 53.8 °F RT set: 46.4 °F	
Op. Mode	Room Temp Heating	
Auto	71.6 °F	
Room Temp Set Down	Time Selection	
64.4 °F	Time 1	



Off

Only the frost protection function is active.

Auto

The Furnace starts in the heating times according to the Set room temperature.

Heating

The Furnace heats constantly according to the Set room temperature.

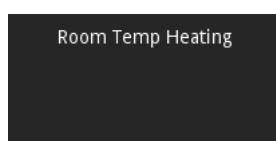
Set back

The Furnace heats constantly according to the Set back room temperature.

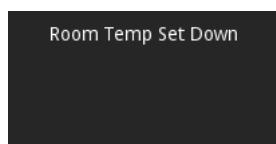
The operating mode of the heating circuits can only be changed if the plant operating mode is set to AUTO.

The adjusted heating limits and maximum flow temperatures are used in all operating modes.

Choose your room temperature (Temperature within the heating times).



Room Temp Heating



Choose Room Temp Set back (= Minimum temperature beyond the heating times).

12.1 Measuring values Heating circuit



Measuring values HC is in the Main menu.

Values		7:36 PM	Home
↳ HC		0 / 5	↶
Outside Temperature	11.0 °C		↑
Boiler Temperature	67.0 °C	70.0 °C	↓
Burner Contact	On		
HC1 Flow Temperature	45.0 °C	8.0 °C	
HC1 Room Temp	21.3 °C	8.0 °C	
HC1 Pump	Off		
HC1 Mixer	Off		

You see all to the Heating circuit corresponding measuring values:

- Actual value
- Set value
- Inputs (sensors)
- Outputs (pumps, mixer and motors)

Outside Temperature	actual Outside Temperature
Boiler Temp	actual Boiler Temperature
Booster	Status (Booster On/Off)
Flow Temp	display of the flow temperature
Room Temp	display of the room temperature
Pump	Status (Pump On/Off)
Mixer	Status (Mixer On/Off)

12.2 Time programme Heating circuit

In the heating circuit time programme you fix the heating times.



Time 1 (=Time programme 1) and **Time 2** are in the menu Heating circuit.

HC 1 ↳ Time Program 1							11:51 AM	1/1	Home
Mo	Tu	We	Th	Fr	Sa	Su	↔		
				12:00 AM	12:00 AM				
				12:00 AM	12:00 AM				
				12:00 AM	12:00 AM				

- 1**
Select Time programme 1

HC 1 ↳ Time Program 1							11:53 AM	3/3	Home
Mo	Tu	We	Th	Fr	Sa	Su	↔		
				6:00 AM	9:00 PM				
				12:00 AM	12:00 AM				
				12:00 AM	12:00 AM				

- 6**
Mo-Fr were assigned heating times
With you get to the remaining days Sa-Su.

HC 1 ↳ Time Program 1							11:51 AM	1/2	Home
Mo	Tu	We	Th	Fr	Sa	Su	↔		
				6:00 AM	9:00 PM				
				12:00 AM	12:00 AM				
				12:00 AM	12:00 AM				

- 2**
Select the heating days.
The activated days are deposited in green.

HC 1 ↳ Time Program 1							11:53 AM	3/3	Home
Mo	Tu	We	Th	Fr	Sa	Su	↔		
				6:00 AM	9:00 PM				
				12:00 AM	12:00 AM				
				12:00 AM	12:00 AM				

- 7**
Sa-Su were assigned to heating times.

Start Time							7	8	9
06	:	00	4	5	6	1	2	3	0
Abbrechen			OK						

- 3**
Enter the heating times for these heating days (Mo-Th).

HC 1 ↳ Time Program 1							11:53 AM	2/3	Home
Mo	Tu	We	Th	Fr	Sa	Su	↔		
				6:00 AM	9:00 PM				
				12:00 AM	12:00 AM				
				12:00 AM	12:00 AM				

- 8**
With and you switch between the heating blocks. You can deactivate heating days in the heating block and activate in another.

HC 1 ↳ Time Program 1							11:51 AM	1/2	Home
Mo	Tu	We	Th	Fr	Sa	Su	↔		
				6:00 AM	9:00 PM				
				12:00 AM	12:00 AM				
				12:00 AM	12:00 AM				

- 4**
The heating times for Mo-Th are assigned. With you assign to days heating times further.

HC 1 ↳ Time Program 1							11:53 AM	1/1	Home
Mo	Tu	We	Th	Fr	Sa	Su	↔		

- 9**
With you set all the heating times in the line and below to 0.

HC 1 ↳ Time Program 1							11:52 AM	2/3	Home
Mo	Tu	We	Th	Fr	Sa	Su	↔		
				6:00 AM	9:00 PM				
				12:00 AM	12:00 AM				
				12:00 AM	12:00 AM				

- 5**
Friday was activated. Heating times were assigned.

HC 1 ↳ Time Program 2							11:53 AM	1/1	Home
Mo	Tu	We	Th	Fr	Sa	Su	↔		

- 10**
Go back with . Choose Time 2. For every heating circuit there are 2 time programmes. You can programm 2 time programmes. In the menu item **Time Al-location** you can activate time 1 or time 2.

12.3 Party

The party function extends the heating time once, without changing the heating times.



Party is in the Main menu.

HC 1	Flow act:	45.0 °C	
↳ Party Program	RT set:	8.0 °C	
Party Program	Stop Time	4/30/20 12:00 AM	
Off			

The party function is basically inactive. Enter the time until the room temperature heating should be heated. Activate the Party function.

The heating time is extended up to the indicated time. Then the party function deactivates itself automatically.

12.4 Vacation

The holiday programme cancels the heating times and heats for the entered period on the set temperature level.



Vacation is in the Main menu.

HC 1	Flow act:	45.0 °C	
↳ Vacation Function	RT set:	8.0 °C	
Vacation Function	Room Temp Vacation	15.0 °C	
Off			
Start Time	Stop Time		
4/29/20 7:00 PM	4/30/20 12:00 PM		

Enter the room temperature on which in your absence the building should be heated. Enter the departure (start time) and return (finish date) and activate the vacation programme.

Note:

To return in an already tempered building, you must enter the day before the return as the finish date.

12.5 Heating curve and Heating limits

By starting up the first time, the authorised technical adviser adjusts the heating curve, the base point and the heating limits on the building situation and the hydraulics. If the Set room temperature is not reached or exceeded, adjust the heat curve with the flow temperatures according to outside temperatures.



Heating curve is in the menu **Heating circuit**.

HC 1	Outs T:	90.3 °F	
↳ Heating Curve Limit	Flow set:	46.4 °F	
Heating Curve	Base Point	68.0 °F	↑
0.4	H Limit Set Back	41.0 °F	↓
H Limit Heating	64.4 °F		

Heating curve 0.0 – 4,0

The heating curve describes the combination between outdoor temperature and the associated flow temperature for a heating circuit.

Base point adjustable from 68 - 113°F

With the change the of base point, you provide a parallel shift of the heating curve.

H limit heating

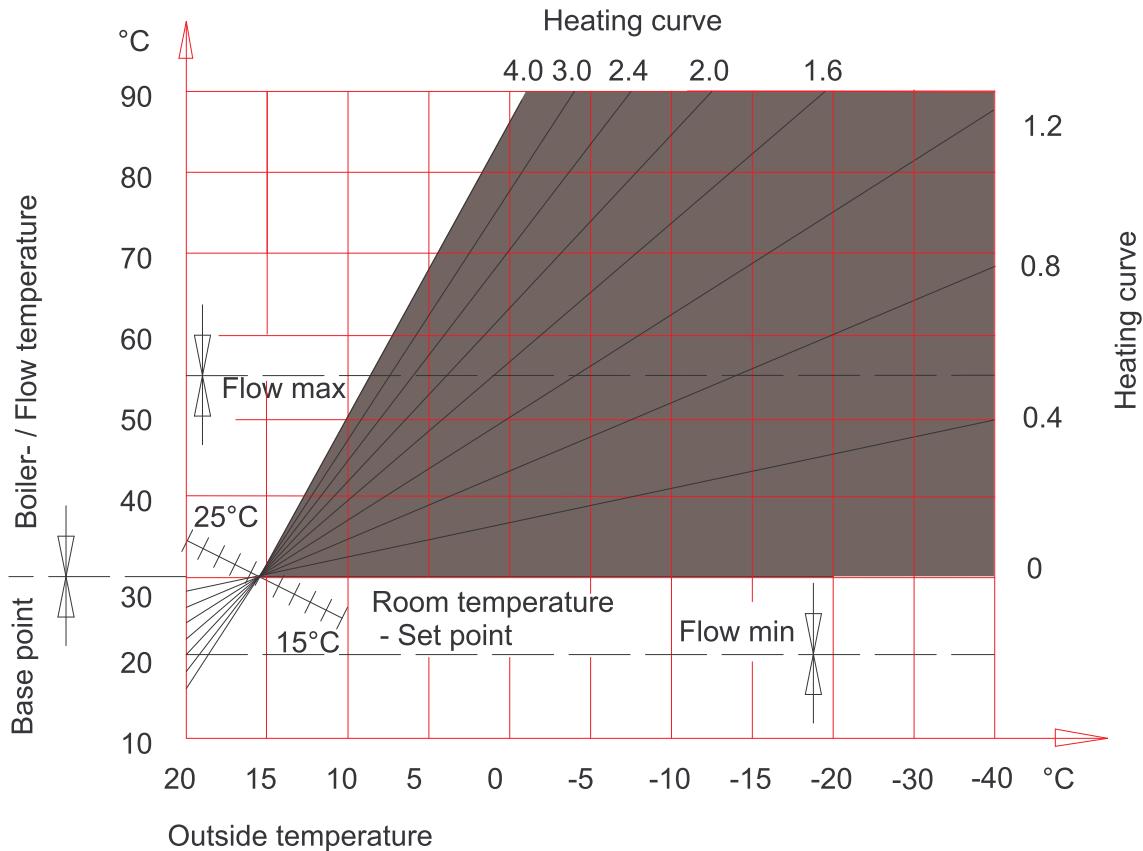
If the average outside temperature is higher than the set temperature, the heating circuit switches off in the heating mode.

H limit set temperature

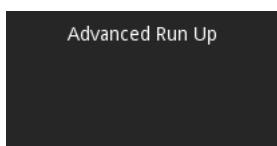
If the average outside temperature is higher than the set temperature, the heating circuit switches off in the Set back mode.

Adjustment of heating curve and the base point to the building

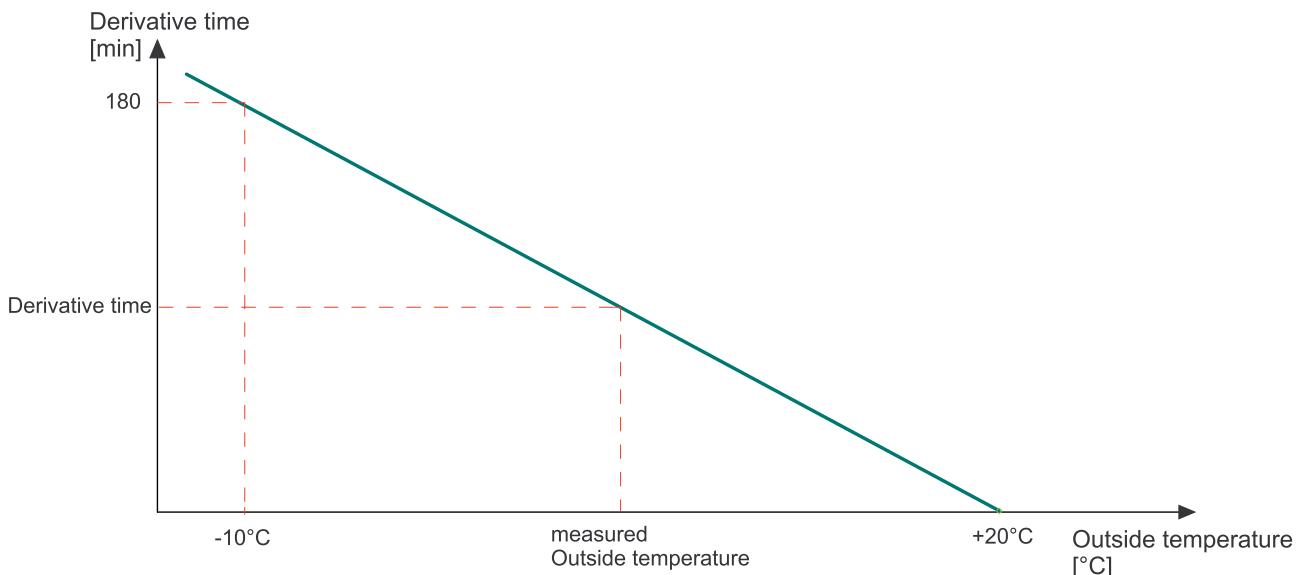
Because of the building's thermal inertia, it is recommended to perform no more than one adjustment step per day.



Daytime outside temp	Room temperature	
	too warm	too cold
+5 to +15°C	Decrease heating curving value by 0,2	Increase heating curving value by 0.2
	Decrease base point value by 5°	Increase base point value by 5°
-20 to +5°C	Decrease heating curve value by 0.2	Increase heating curve value by 0.2



The advanced run up indicates how long the system has to heat before the start of the heating time, to reach the adjusted **roomtemp heating**.



Room thermostat influence

If the measured room temperature deviates from the set room temperature, the heating controller corrects the flow temperature with the Room thermostat influence.

The Room thermostat influence indicates how much the flow temperature is raised or lowered so that the Set room temperature is reached.

Example:

Room temperature desired value = 20°C

Room temperature actual value = 18°C

Room sensor influence = 3

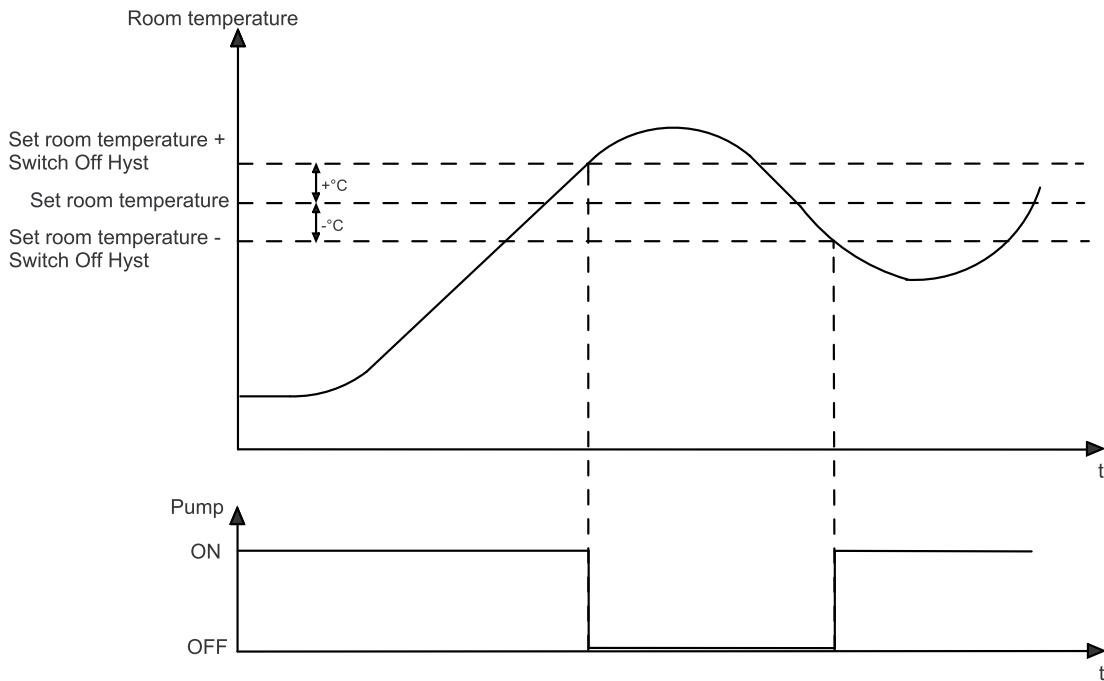


Temperature difference 2°C

Room sensor influence	*	Temperature difference	=	Advanced run up rise/reduction
3	*	2	=	6°C

Room temperature hysteresis

The Room temperature hysteresis prevents the cycling (On Off On Off...) of the heating circuit pump: If the Set room temperature + room temperature hysteresis is reached, the associated pump stops. If the Set room temperature is -1°C , the pump switches on again.



13 Domestic hot water

The menu Item **Domestic hot water** contains up to 3 submenu items.

Domestic hot water includes all, for the preparation of hot water, relevant parameters and settings.



Domestic hot water is in the main menu.

DHW	DHW set: 140.0 °F DHW: 134.8 °F	
Op. Mode	DHW Boost	
Auto	Off	
Water Temp Set	Water Temp Min	
140.0 °F	86.0 °F	

DHW settings has following menu items:

- Mode
- DHW Boost
- Water Temp Set
- Water Temp Min
- Time programme
- Values
- Time 1
- Time 2

Op. Mode

OFF Set water temperature is reduced to 46 °F for frost protection.

Auto The installation heats the water within the time programme to the **desired hot water temperature**. Outside the time programme the installation heats to **Watertemp min**

On The system heats up the domestic hot water continuously on the Water temp set.

You can change the mode domestic hot water only when the **Operation mode** is on **AUTO**.

DHW Boost

Heats the hot water once on the Water temp set.

Water Temp Set

Set the water temperature.

Water Temp Min

Set the minimum water temperature. The water temperature never falls below this value, unless the domestic hot water mode is on **OFF**.

Time Selection

Activate **Time 1** (= Time programme 1) and **Time 2**.



You are able to see a list of all measuring values that are involved in the menu domestic hot water.



In the DHW time programme you set the times of the hot-water processing. The DHW time programme works the same way like the heating circuit time programme. See chapter [12.2 Time programme Heating circuit, page 38](#)

13.1 Measuring values Domestic hot water



Measuring values DHW is in the Main menu.

Values		7:38 PM		
DHW			0 / 5	
Outside Temperature	11.0 °C			
Boiler Temperature	67.0 °C	70.0 °C		
Burner Contact	On			
DHW1 Temperature	56.0 °C	60.0 °C		
DHW1 Pump	On			
ACC1 TPO	72.0 °C	8.0 °C		
ACC1 TPM	65.0 °C	8.0 °C		

You see all the Heating circuit corresponding measuring values:

- Actual value
- Set value
- Inputs (sensors)
- Outputs (pumps, mixer and motors)

13.2 Time programme DHW

In the DHW time programme you set the times for the hot-water processing.



Time 1 (=Time programme 1) and Time 2 are in the menu **Domestic hot water**.

DHW 1		7:38 PM		
Time Program 1			1/1	
Mo	Tu	We	Th	
	6:00 AM		9:00 PM	
	12:00 AM		12:00 AM	
	12:00 AM		12:00 AM	

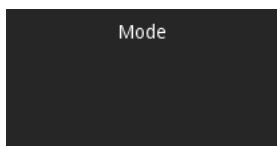
The domestic hot water time programme works the same way like the heating circuit time programme.

14 DHW Return pump



DHW Return pump is in the Main Menu.

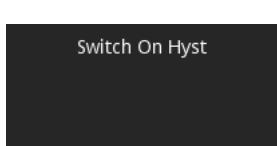
ReturnPump		DHW act: 182.1 °F	Pump: Off	
Mode		Switch Off Temp		
Auto		131.0 °F		
Switch On Hyst		Pump ReleaseTemp		
9.0 K		86.0 °F		



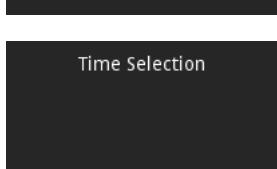
Off DHW Return pump inactive



Auto Temperature regulation within the time programme



If the return temperature sensor of the DHW Return pump reaches the **Switch off temperature**, the pump switches off.



If the return temperature falls below the switch off temperature – the DHW Return pump switches on again!

Choose the time programme 1 or 2.

You see all the DHW pump corresponding measuring values.



Set the run times of the Return pump. The return pump – time programme works the same way like the heating circuit time programme.

Note:

A **Return Pump** and a **booster** rule out each other.



14.1 Measuring values DHW Return pump



Measuring values DHW Return pump is in menu DHW Return pump.

Values		12:04 PM	Home
↳ ReturnPump			↶
0 / 5			
Outside Temperature	6.9 °C		↑
Boiler Temperature	26.3 °C	8.0 °C	↓
Burner Contact	Off		
Existing Boiler	61.0 °C		
Switching Valve	On		
SHHT-1#58EFD0#	50.5 %	25.5 °C	
SHEM-3#DC4F22764744#	0.0 W	0.0 W	

You see all the Heating circuit corresponding measuring values:

- Actual value
- Set value
- Inputs (sensors)
- Outputs (pumps, mixer und motors)

14.2 Time programme DHW return pump

In the Time Programme DHW Return Pump you set the times for the hot water in the water purchasers.



Time 1 (=Time programme 1) and Time 2 are in the menu **DHW return pump**.

ReturnPump		12:04 PM	Home
↳ Time Program 1		1/1	↶
Mo	Tu	We	Th
			Fr
			Sa
			Su
	6:00 AM	9:00 PM	↑
	12:00 AM	12:00 AM	↓
	12:00 AM	12:00 AM	

The DHW return pump time programme works the same way like the heating circuit time programme.

15 Solar

Solar includes all relevant parameters and settings for the solar thermal system. You can control up to 6 solar circuits.



Solar is in the Main menu.



Solar has following menu items:

- Measuring values Solar
- Solar circuit 1-2
- Solar energy- yield

15.1 Measuring values Solar



Measuring values Solar is in the menu Solar.

Values		7:26 AM	Home
↳ Solar		0 / 5	Navigation
Outside Temperature	90.3 °F		Navigation
Boiler Temperature	74.3 °F	46.4 °F	Navigation
Burner Contact	Off		Navigation
Existing Boiler	141.8 °F		Navigation
Switching Valve	On		Navigation
SHHT-1#F3AD7E#	32.0 °F		Navigation
ACC1 TPO	124.9 °F	46.4 °F	Navigation

It displays all measuring values of Solar:

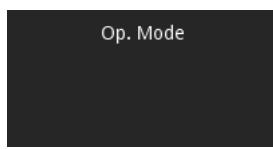
- Actual values
- Set values
- Inputs (sensors)
- Outputs (pumps, mixer and motors)

15.2 Solar circuit



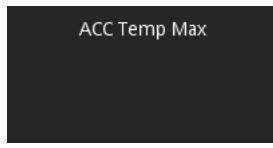
Solar circuit 1 and 2 are in menu Solar.

Solar 1 ↳ Circuit 1	Collector: 164.3 °F ACC Below 1: 127.6 °F	
Op. Mode	Solar cooling Op. Mode	↔
On	Off	↑ ↓
ACC Temp Max	ACC Hysteresis	
140.0 °F	9.0 K	

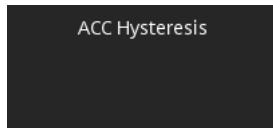


Off: No charge

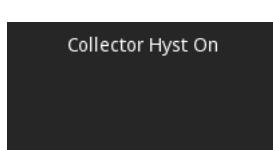
On: Charge as long as **Collector temperature + hysteresis** is lower than the temperature of the **Adj ACC sensor below** or the **ACC temp max**



If the temperature in the ACC is higher than the ACC temp Max, the solar pump switches off. The limit sensor measures the temperature in the ACC.



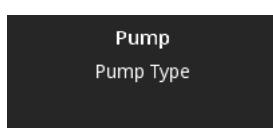
The solar circuit pump is switched off due to the ACC temp Max is reached. The temperature must fall under ACC temp Max minus hysteresis, then the solar circuit pump switches on again. The hysteresis prevents a solar pump cycling (On Off On Off).



If the temperature difference between the collector sensor and TPU, ACC lower sensor is higher than the Coll Hyst A, the solar pump switches On.



If the temperature difference between the collector sensor and TPU, ACC lower sensor is lower than the Coll Hyst A, the solar pump switches Off.



The menu **Pumptype** contains the following modes:

Asynchronous: Asynchronous pump - direct output 230VAC on/off

Async.Regulated: Asynchronous pump - pulsed output 230VAC

Heating Efficient: PWM1 - PWM signal inverted

Solar Efficient: PWM2 - PWM direct signal

Note:

When using a A-class pump as **Accumulator pump** the pump cannot be regulated from Solar circuit 2.

NOTICE

Material damage by false selection of pump!

15.3 Yield - Solar Energy

This function measures the yield of the solar thermal system and displays current energy and logs previous days.

For the function solar energy it is necessary to install:

- Pulse volume meter (must be connected to **24 VOLT** and **Z_IN**)
- Flow temperature sensor
- Return temperature sensor



Yield - Solar Energy is in the menu Solar.

Solar 1	Collector:	164.3 °F	Up/Down
↳ Yield Measure			Left/Right
Current	0.0 kW	Up/Down	Up/Down
Yield - Day	0.0 kWh	Up/Down	Up/Down
Yield - Day Before	0.0 kWh	Up/Down	Up/Down
Yield Since	1/1/12	Up/Down	Up/Down
Flow Rate	0.00 l/min	Up/Down	Up/Down
Flow Temperature	155.3 °F	Up/Down	Up/Down
Return Temperature	132.1 °F	Up/Down	Up/Down

Yield measuring of solar energy has following menu items:

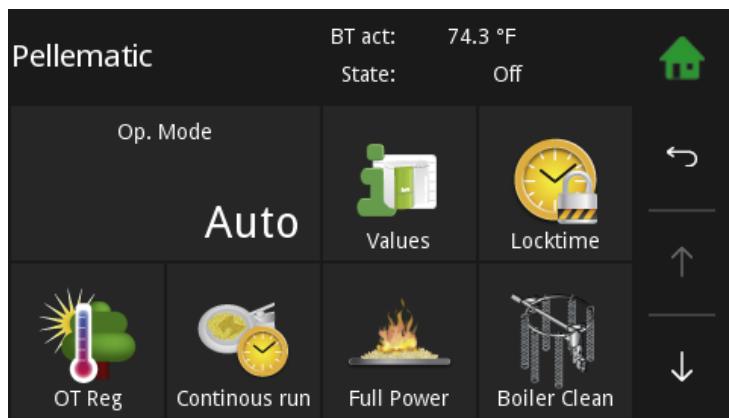
- Actual
Display of the current solar energy, refreshes every 60 sec.
- Yield - Day
Display of todays solar energy since 00:00.
- Yield - Day before
Display of yesterdays solar energy.
- Yield since
Display of the solar energy since the last set date.
- Flow rate
Display of the current flow rate, refreshes every 60 sec.
- Flow temperature
Display of the current flow temperature
- Return temperature
Display of the current return temperature

16 Pellematic

Pellematic includes all the relevant parameters and settings for the control of the pellet boiler. There are up to 4 Pellematic boilers possible.



Pellematic is in the Main menu.



16.1 Measuring values



Measuring values is in the menu Pellematic.

Values		7:27 AM	Home
↳ Pellematic			1 / 5
Outside Temperature	90.3 °F		↔
Boiler Temperature	74.3 °F	46.4 °F	↑ ↓
Burner Contact	Off		
Existing Boiler	141.8 °F		
Switching Valve	On		
SHHT-1#F3AD7E#	32.0 °F		
ACC1 TPO	124.9 °F	46.4 °F	

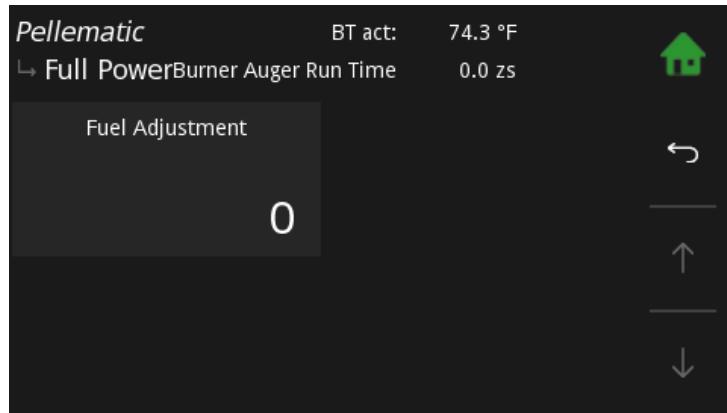
It displays all measuring values of Pellematic:

- Actual values
- Set values
- Inputs (sensors)
- Outputs (pumps, mixer and motors)

16.2 Full Power



Full Power is in the menu Pellematic



In the menu item Full Power can you adjust the fuel feed.

Fuel Adjustment:

The burner auger run time is calculated automatically by the PLC depending on the rated power and the boiler setpoint temperature. The burner motor is controlled accordingly. You can reduce or increase the value calculated by the PLC 10 steps up or down.

16.3 Boiler cleaning



Pellematic	BT act: 67.0 °C	
↳ Cleaning Motor		
Cleaning / Filling	Cleaning	↔
7:00 PM	7:00 AM	—
Min Run Time	Cleaning Time	↑ — ↓
6 h	120 sec	

Cleaning / Filling

The value to be set is the time (full hour) at which the boiler cleaning sequence is performed. On vacuum systems the hopper is also filled at the same time, regardless of whether it is empty or not.

Cleaning

You can set in **Cleaning/Filling** a second cleaning sequence. The value to be set is the time (full hour) at which the additional boiler cleaning sequence is performed. Example: 20h = additional boiler cleaning sequence performed at 20:00. On vacuum systems the hopper is also filled at the same time, regardless of whether it is empty or not.

Default value -1h: It is not performed a second cleaning sequence.

Min Run Time

Min Run Time of the boiler until next cleaning sequence. Value adjustable.

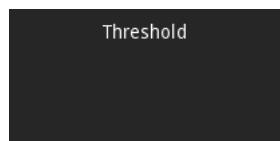
Cleaning Time

Duration of the boiler cleaning sequence in seconds. Value adjustable.

16.4 Level detection system



Weight system (Menu is only displayed when the function Network is activated in the menu General.

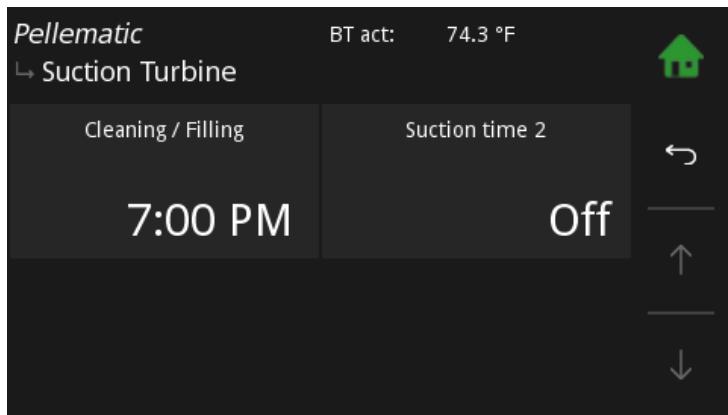


The threshold value, **Minimum weight** for a warning message, is adjustable. The warning message appears on the operating device and will be terminated when filling level rises above the adjusted Minimum weight.

Note:

Only displayed if mode is set on **Textile tank**

16.5 Suction turbine



Cleaning / Filling

Set a Time (full hours), at which the hopper gets refilled, regardless how full it is at this time.
At the same time the purification of the boiler will take place.

Suction time 2

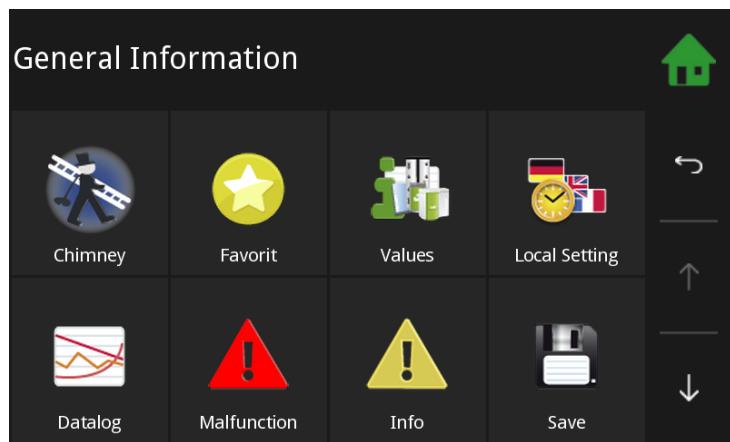
- | | |
|------------|---|
| On | When this menu point is activated, a field appears for specifying the 2nd daily suction time. |
| Off | No 2nd suction time |

17 General

General includes the complete heating control related settings and individual operating options for the customer.



General is in the Main menu.



The menu **General** includes:

- Chimney
- Favorit
- Values
- Local setting
- Datalog
- Malfunction
- Info
- Save
- Load
- ModBUS
- E-Mail
- IP Config
- Settings

17.1 Chimney

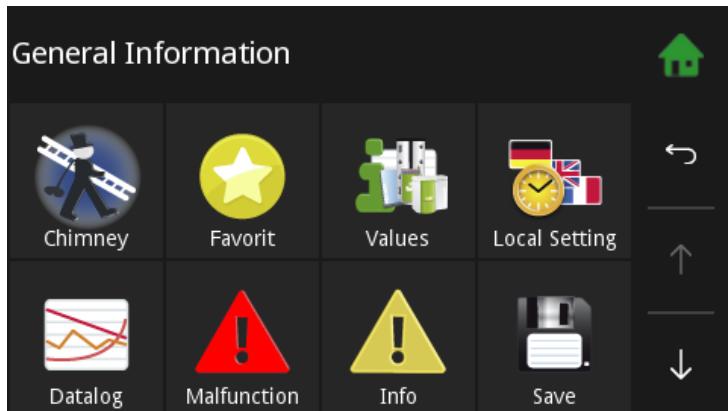
The function chimney is only for chimney droughs and authorized service technicians. It is used for the measurement of exhaust gas.

Note:

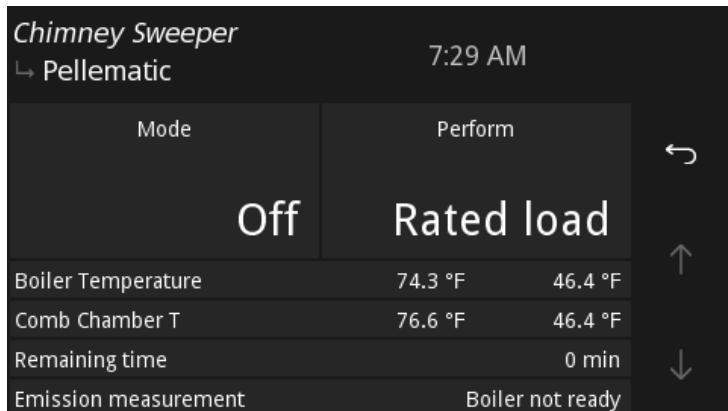
The Chimney Sweep function is inactive without the Pelletronic Heating Controller.



The menu item **Chimney** is situated in the menu General.



Please choose the function **Chimney**.

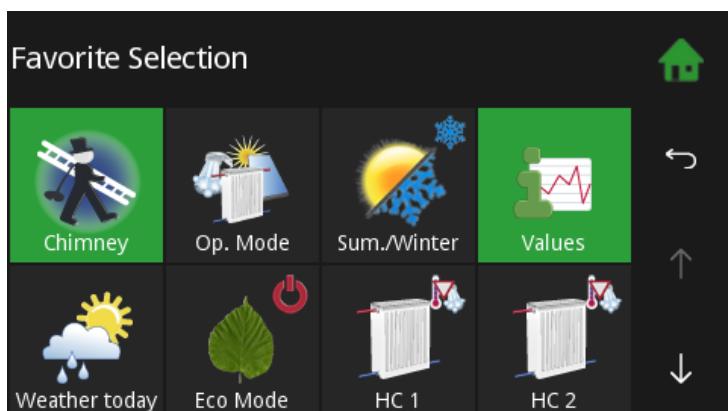


- The Furnace temperature is set to 140 °F for a total runtime of 30 minutes.
- You also can see actual Furnace temperature and the rest of the time limit.
- After the expiry of the time limit the function chimney ends.time of expiry the operation Chimney sweeper ends.
- The button Cancel ends the function Chimney.

17.2 Favorite



Favorite is in the menu General.



With this function you can display most commonly used menus in the start menu. This enables you a direct access.

Select the menu item that should be displayed as a favorite 1 in the Start menu.

The selected item is green and the icon is displayed in the Start menu and is active.

17.3 Local Settings

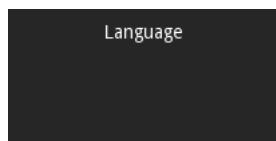


Local Settings is in the menu General.

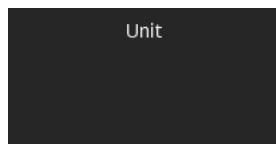
Local Settings		Home
Language	Unit	↔
English	Imperial	↑
Date	Time	↓
Aug 25, 2021	7:29:46 AM	

Local Settings has following menu items:

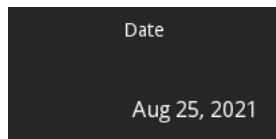
- Language
- Unit
- Date
- Time



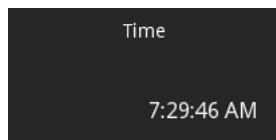
Choose between the languages German, English UK, English U.S. French, Spanish, Italian, Dutch, Danish and Russian.



You can choose between isometric and imperialist number system.



Set the current date.



Set the current time.

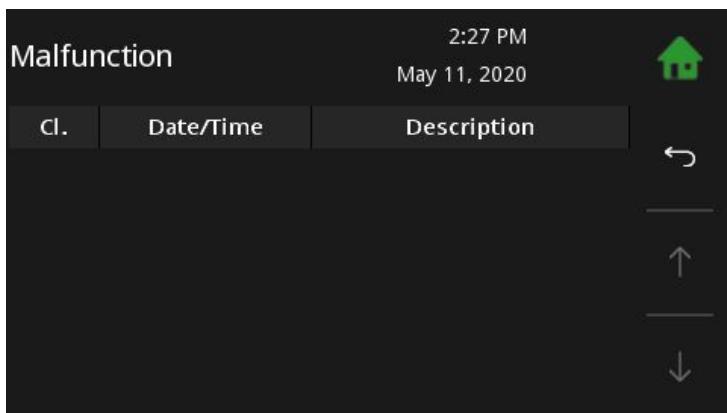
17.4 Malfunction



Malfunction is in the menu General.



Fault messages can be overlaid on all menu items and appear immediately if a fault occurs. Every fault message appears with the date, time and name on the display. It remains until it is acknowledged.



The menu remains the fault incident reports, as long as they are corrected up.

17.4.1 Malfunction report

This is a list of all malfunction reports on the display.

Code	Display	Input / Output	Affected element	Solution table
1001	HC1 Flow BC	X4 or X5	Heating controller	13.1a
1002	DHW1 OnSensor BC	X6		
1003	Outside Sensor BC	X2		
1004	Boiler Sensor BC	X3		
1008	TPO1 BC	X7		
1009	TPM1 BC	X8		
1010	Collektor1 BC	X15	Heating controller	13.2a
1011	TPU1 BC	X9 or X10	Heating controller	13.1a
1012	Flow Energy1 BS	X16		
1013	Return Energy1 BS	X17		
1014	ExistBoiler1 BS	X13		
1017	Cascade OnSensor BC	X3 or X7		
1018	Cascade OffSensor BC	X3 or X8		
1019	Circulation Return1 BC	X14		

Code	Display	Input / Output	Affected element	Solution table
1020	DHW1 Off Sensor BC	X6 or X7, X8, X9		
2001	HC1 Flow SC	X4 or X5		
2002	DHW1 OnSensor SC	X6		
2003	Outside Sensor SC	X2		
2004	Boiler Sensor SC	X3		
2008	TPO1 SC	X7		
2009	TPM1 SC	X8		
2010	Collektor1 SC	X15	Heating controller	13.1b
2011	TPU1 SC	X9 or X10		
2012	Flow Energy1 SC	X16		
2013	Return Energy 1 SC	X17		
2014	ExistBoiler1 SC	X13		
2017	Cascade OnSensor SC	X3 or X7	Heating controller	13.1b
2018	Sonde arrêt cascade CC	X3 or X8		
2019	Circulation Return1 SC	X14		
2020	DHW1 Off Sensor SC	X6 or X7, X8, X9		
3001	HC1 Flow	X4 or X5		
3002	DHW1 OnSensor	X6		
3003	Outside Sensor	X2		
3004	Boiler Sensor	X3		
3008	TPO1	X7		
3009	TPM1	X8		
3010	Collektor1	X11	Heating controller	13.2c
3011	TPU1	X9 or X10		
3012	Flow Energy1	X16		
3013	Return Energy1	X17		
3014	ExistBoiler1	X13		
3017	Cascade OnSensor	X3 or X7	Heating controller	13.1c
3018	Cascade OffSensor	X3 or X8		
3019	Circulation Return1	X14		
3020	DHW1 Off Sensor	X6 or X7, X8, X9		
4005	BUS HCR 1	X1A or X1B		
4006	BUS PE 1	X1A or X1B		
4007	BUS Remote 1	X1A or X1B		
4015	BUS Remote Touch 1	X1A or X1B		
4016	BUS Master	X1A or X1B		
4021	BUS Radio Remote 1	X1A or X1B		
5000	PE1 Reserve sensor1 BS	R1	BUS-Network RS485	13.3
5001	PE1 Reserve sensor1 SC	R1		
5002	PE1 Reserve sensor2 BS	R2		
5003	PE1 Reserve sensor2 SC	R2		

Code	Display	Input / Output	Affected element	Solution table
5003	PE1 Reserve sensor2 SC	R2	Boiler Controller	13.1b
5004	PE1 Outside sensor BS	AF	Boiler Controller	13.1a
5005	PE1 Outside sensor SC	AF	Boiler Controller	13.1b
5006	PE1 Boiler sensor BS	KF	Boiler Controller	13.1a
5007	PE1 Boiler sensor SC	KF	Boiler Controller	13.1b
5008	PE1 Fluegas sensor BS	RGF	Boiler Controller	13.4
5009	PE1 Fluegas sensor SC	RGF		
5010	PE1 Combustion sensor BS	FRT		
5011	PE1 Combustion sensorSC	FRT		
5012	PE1 Underpressure box BS	UP	Boiler Controller	13.5
5013	PE1 Underpressure box SC	UP		
5014	PE1 Analog input1 BS	AE1	Boiler Controller	13.6
5015	PE1 Analog input1 SC	AE1		
5016	PE1 Analog input2 BS	AE2		
5017	PE1 Analog input2 SC	AE2		
5018	PE1 Motor turbine	VAK	Boiler Controller	13.7
5019	PE1 Ignition	ZUEND	Boiler Controller	13.8
5020	PE1 Motor ashbox	AV	Boiler Controller	13.9
5021	PE1 Motor res 1	RES1	Boiler Controller	13.10
5022	PE1 Magnetic valve	MA	Boiler Controller	13.8
5023	PE1 Motor cleaning	RM		
5024	PE1 Flue gas fan	SZ	Boiler Controller	13.9
5025	PE1 Cirkulationspump	UW		
5026	PE1 Motor ext auger1	RA	Boiler Controller	13.11
5027	PE1 Motor ext auger2	ZW	Boiler Controller	13.9
5028	PE1 Motor between	RES1	Boiler Controller	13.12
5029	PE1 Motor boiler auger	ES	Boiler Controller	13.9
5030	PE1 Combustion Fan	LUFT		
5032	PE1 Emergency stop	NOT	Boiler Controller	13.13
5033	PE1 Max temp sensor	STB		
5034	PE1 Ignition fault	generic	Boiler Controller	13.14
5036	PE1 Low flame temp			
5038	PE1 Firedamper open	BSK 1 2	Boiler Controller	13.15
5039	PE1 Firedamper closed	BSK 3 4		
5040	PE1 Firedamper end switch	BSK 1 2 3 4		

Code	Display	Input / Output		Affected element	Solution table
5041	PE1 Low underpressure	UP, SZ, LUFT		Boiler Controller	13.5
5042	PE1 Low underpressure	UP, SZ, LUFT			
5043	PE1 Vacuum system	KAPZW, RA		Boiler Controller	13.16
5044	PE1 Ashbox full	ESAV, AV		Boiler Controller	13.17
5045	PE1 Ball lock	DE1		Boiler Controller	13.18
5047	PE1 Burner Motor	ES		Boiler Controller	13.19
5048	PE1 Burner gas open-circuit	RGF		Boiler Controller	13.4
5049	PE1 Burner gas short-circuit				
5052	PE1 Container cover open	AK		Boiler Controller	13.20
5053	PE1 ash warning	ESAV, AV		Boiler Controller	13.17
5054	PE1 pellets warning	AE1		Boiler Controller	13.21
5055	Error Output VAK	VAK		Boiler Controller	13.22
5056	Error Output ZUEND	ZUEND		Boiler Controller	13.23
5057	Error Output AV	AV		Boiler Controller	13.24
5058	Error Output RES2	RES2		Boiler Controller	13.25
5059	Error Output MA	MA		Boiler Controller	13.26
5060	Error Output RA	RA		Boiler Controller	13.27
5061	Error Output SM	SM		Boiler Controller	13.28
5062	Error Output SZ	SZ		Boiler Controller	13.29
5063	Error Output UW	UW		Boiler Controller	13.30
5064	Error Output LUFT	LUFT		Boiler Controller	13.31
5065	Error Output RA1	RA1		Boiler Controller	13.32
5066	Error Output RES1	RES1		Boiler Controller	13.33
5067	Error Output ZW	ZW		Boiler Controller	13.34
5068	Error Output ES	ES		Boiler Controller	13.35

13.1a Sensors KTY2K - Heating controller + Boiler Controller (Fault 1001 to 1020 and 5000 to 5007) – Sensor break

Type of fault	Sensor break		
Code:	1001	HC1 Flow BC	X4
	1002	DHW1 OnSensor BC	X6
	1003	Outside Sensor BC	X2
	1004	Boiler Sensor BC	X3
	1008	TPO1 BC	X7
	1009	TPM1 BC	X8
	1011	TPU1 BC	X9
	1012	Flow Energy1 BS	X16
	1013	Return Energy1 BS	X17
	1014	ExistBoiler1 BS	X13
	1017	Cascade OnSensor BC	X3
	1018	Cascade OffSensor BC	X3
	1019	Circulation Return1 BC	X14
	1020	DHW1 Off Sensor BC	X6
	5000	PE1 Reserve sensor1 BS	R1
	5002	PE1 Reserve sensor2 BS	R2
	5004	PE1 Outside sensor BS	AF
	5006	PE1 Boiler sensor BS	KF
Description:	Measuring circuit of KTY sensor is open		
Cause and Remedy:	sensor not connected	►	connect sensor, check plug
	sensor defect	►	measure sensor (approx. 2kΩ at 77 °F) replace if required
	sensor cable defect	►	replace sensor
	sensor temperature too high	►	sensor temperature above measuring range (>230 °F)

13.1b Sensors KTY2K - Heating controller + Boiler Controller (Fault 2001 to 2020 and 5000 bis 5007) – short circuit

Type of fault	Short circuit		
Code :	2001	HC1 Flow SC	X4
	2002	DHW1 OnSensor SC	X6
	2003	Outside Sensor SC	X2
	2004	Boiler Sensor SC	X3
	2008	TPO1 SC	X7
	2009	TPM1 SC	X8
	2011	TPU1 SC	X9
	2012	Flow Energy1 SC	X16
	2013	Return Energy 1 SC	X17
	2014	ExistBoiler1 SC	X13
	2017	Cascade OnSensor SC	X3
	2018	Sonde arrêt cascade CC	X3
	2019	Circulation Return1 SC	X14
	2020	WW1 Aus Fühler KS	X6
	5001	PE1 Reserve sensor1 SC	R1
	5003	PE1 Reserve sensor2 SC	R2
	5005	PE1 Outside sensor SC	AF
	5007	PE1 Boiler sensor SC	KF
Description:	Measuring circuit of KTY sensor is shorted out		
Cause and Remedy:	Sensor defect	►	Measure sensor (approx. 2kΩ at 77 °F), replace if required
	Sensor cable defect	►	Replace sensor
	Sensor temperature too low	►	Sensor temperature below measuring range (< 14 °F)

13.1c Sensors KTY2K - Heating controller + Boiler Controller (Fault 3001 to 3020) - other faults

Type of fault	Other faults		
Code:	3001	HC1 Flow	X4
	3002	DHW1 OnSensor	X6
	3003	Outside Sensor	X2
	3004	Boiler Sensor	X3
	3008	TPO1	X7
	3009	TPM1	X8
	3011	TPU1	X9
	3012	Flow Energy1	X16
	3013	Return Energy1	X17
	3014	ExistBoiler1	X13
	3017	Cascade OnSensor	X3
	3018	Cascade OffSensor	X3
	3019	Circulation Return1	X14
	3020	DHW1 Off Sensor	X6
Cause and Remedy:	Sensor defect	►	Measure sensor (approx. 2kΩ at 77 °F), replace if required
	Sensor cable defect	►	Replace sensor
	Sensor input defect	►	Replace Boiler controller

13.2 Collektor sensor (Fault 1010, 2010, 3010)

Display:	[1010] Collektor BC		
Description:	Collector sensor fracture, measuring circuit of collector sensor (X15) is open		
Cause and Remedy:	Sensor not connected	►	Check and correct wiring
	Sensor defect	►	Measure sensor (approx. 1,1kΩ at 77 °F), replace if required
	Sensor cable defect	►	Replace sensor
Display:	[2010] Collektor SC		
Description:	Measuring circuit of collector sensor (X15) is shorted out		
Cause and Remedy:	Sensor defect	►	Measure sensor (approx. 1,1kΩ at 77 °F), replace if required
	Sensor cable defect	►	Replace sensor
Display:	[3010] Collektor		
Description:	Other fault at input X15		
Cause and Remedy:	Sensor defect	►	Replace sensor
	Sensor cable defect	►	Replace sensor
	Input on heating controller defect	►	Replace input on heating controller

13.3 Bus (Fault 4005, 4006, 4007, 4015, 4016)

Display:	[4005] BUS HCR		
Description:	Time-Out of BUS-connection from touch operating device to heating controller		
Cause and Remedy:	Wrong cable connection	►	Check cable connection
	No power supply available	►	Connect heating controller to BUS
	Fuse in heating controller defect	►	Replace fuse
Display:	[4006] BUS PE		
Description:	Time-Out of BUS-connection from touch operating device to boiler controller		
Cause and Remedy:	Wrong cable connection	►	Check cable connection
	No power supply available	►	Connect heating controller to power supply (X21)
	Fuse in heating F2 defect	►	Replace fuse F2
Display:	[4007] BUS Remote		
Description:	Time-Out of BUS-connection of remote control		
Cause and Remedy:	Wrong cable connection	►	Check cable connection
	Remote controll defect	►	Replace remote controll
Display:	[4015] BUS Remote Touch		
Description:	Time-Out of BUS-Connection from remote controll to Touch operating device		
Cause and Remedy:	Wrong cable connection	►	Check cable connection
	Wrong softwareversion	►	Check version of software
Display:	[4016] BUS Master		
Description:	Missing BUS connection to master-operating device		
Cause and Remedy:	Wrong cable connection	►	Check cable connection

13.4 Combustion chamber sensor (Fault 5010, 5011, 5048, 5049)

Display:	[5010] PE Combustion sensor BS		
Description:	Combustion chamber sensor fracture, measuring circuit from combustion chamber sensor is open – Input FRT		
Cause and Remedy:	Sensor not connected	►	Connect sensor at input
	Sensor defect	►	Measure sensor (approx. 5 mV at 257 °F) replace if required
	Sensor cable defect	►	Replace sensor
	Sensor temperature too high	►	Sensor temperature above measuring range (2012 °F)
Display:	[5011] PE Combustion sensor SC		
Description:	Combustion chamber sensor short circuit, measuring circuit from combustion chamber sensor short circuit – Input FRT		

Cause and Remedy:	Sensor defect	►	Measure sensor (approx. 5 mV at 257 °F) replace if required
	Sensor cable defect	►	Replace sensor
	Sensor temperature too low	►	Sensor temperature below measuring range (14 °F)
	Sensor polarity reversed	►	Change sensor connection + and -
Display:	[5048] PE Burner gas open-circuit (only SMART without combustion chamber sensor)		
Description:	Burner gas sensor fracture, measuring circuit of Burner gas sensor is open - Output RGF		
Cause and Remedy:	Sensor not connected	►	Connect sensor at input
	Sensor cable defect	►	Replace sensor
	Sensor defect	►	Measure sensor (NiCrNi) replace if required
	Sensor temperature too high	►	Sensor temperature above measuring range (2012 °F)
Display:	[5049] PE Burner gas short-circuit (only SMART without combustion chamber sensor)		
Description:	Burner gas sensor short circuit, measuring circuit of Burner gas sensor short circuit - Output RGF		
Cause and Remedy:	Sensor defect	►	Measure sensor (approx. 5mV at 257 °F) replace if required
	Sensor cable defect	►	Replace sensor
	Sensor temperature too low	►	Sensor temperature below measuring range (14 °F)
	Sensor polarity reversed	►	Change sensor connection + and -

13.5 Underpressure box (Fault 5012, 5013, 5041, 5042)

Display:	[5012] PE Underpressure box BS		
Description:	Negative draft input open, measuring circuit from negative draft measurement open - Input UP		
Cause and Remedy:	Signal incorrect	►	Check polarity and signal (0-10V)
	Signal cable defect	►	Replace sensor
	No signal	►	Replace underpressure box
	Combustion chamber leak	►	Check total closure of boiler door

Display:	[5013] PE Underpressure box SC		
Description:	Negative draft input short-circuit, measuring circuit from negative draft measurement is shorted out - Input UP		
Cause and Remedy:	Signal incorrect	►	Check polarity and signal (0-10V)
	Signal cable defect	►	Replace sensor
	Signal too high	►	Signal above 10V
Display:	[5041] [5042] PE Low underpressure		
Description:	Negative draft pressure in boiler is not achieved [5041] or is too high [5042] - Exit LUFT (SMART + Condens) / Output SZ (PE+PEK)		
Cause and Remedy:	Negative draft tube disconnected	►	Connect up negative draft tube
	Negative draft does not change	►	Check negative draft tube for leaks. Check flue gas tube for blockage.
	Negative draft pressure too low	►	Close boiler door, check tube to negative draft sensor, check whether boiler flue gas outlet is clear, check whether condensation heat exchanger is clear. Make sure flue gas fan is running.
	Negative draft pressure too high	►	Check induced draft blower

13.6 Analog input (Fault 5014, 5015, 5016, 5017)

Display:	[5014] / [5016] PE Analog input 1/2 BS		
Description:	Analog input 1/ 2 sensor fracture, measuring circuit of Analog input sensor open - Output AE1 / AE2		
Cause and Remedy:	Signal incorrect	►	Check polarity and signal (0-10V)
	Signal cable defect	►	Replace sensor
	Level detection system activated (valid for AE2)	►	Check settings
Display:	[5015] / [5017] PE Analog input 1 / 2 SC		
Description:	Analog input 1 / 2 sensor short circuit, measuring circuit of Analog input sensor is shorted out - Input AE1/AE2		
Cause and Remedy:	Signal incorrect	►	Check polarity and signal (0-10V)
	Signal cable defect	►	Replace sensor
	Signal too high	►	Signal above 10V

13.7 Motor turbine (Fault 5018)

Display:	[5018] PE Motor Turbine		
Description:	Vacuum turbine not running (Exit VAK)		
Cause and Remedy:	Motor unplugged	►	Plug in motor, check cable connections
	Motor defect	►	Replace motor
	Fuse F1, suction circuit board defective	►	Replace fuse

13.8 Output 230V (Fault 5019, 5022, 5023)

Display:	[5019] PE Ignition [5022] PE Magnetic valve [5023] PE Motor cleaning		
Description:	No function of output ZUEND (Ignition)/MA (Magnetic valve)/ RM (Motor cleaning)		
Cause and Remedy:	Output unplugged	►	Connect plug, check cable wiring
	Current value above the maximal Limit	►	Check limits
	Current value under the minimal Limit	►	Check limits

13.9 Output 230V-2 (Fault 5020, 5024, 5025, 5027, 5029, 5030)

Display:	[5020] PE Motor ashbox (Output AV) [5024] PE Flue gas fan (Output SZ) [5025] PE Cirkulationspump (Output UW) [5027] PE Motor ext auger2 (Output RES2) [5029] PE Motor boiler auger (Output ES) [5030] PE Combustion Fan (Output LUFT)		
Description:	No function of the respective motor/pump/fan		
Cause and Remedy:	Motor/pump/fan unplugged	►	Connect plug, check cable wiring
	Motor/pump/fan defect	►	Replace motor/pump/fan

13.10 Zwischenbehälter leer - Motor res 1 (Fault 5021)

Display:	[5021] PE Hopper empty / Motor RES1 (for 36-56 kW, Pellematic Condens or PEB)		
Description:	No function of PE motor res 1		
Cause and Remedy:	Motor unplugged	►	Plug in motor, check cable connections
	Motor defect	►	Replace motor
	No pellets available	►	Refill storage-Room / supply tank

13.11 Motor extraction auger 1 - RA (Fault 5026)

Display:	[5026] Motor ext auger1		
Description:	Storage room auger 1 motor defect - Output RA		
Cause and Remedy:	Motor unplugged	►	Plug in motor, check cable connections
	motor is jammed	►	Remove pellets and dust from auger and make sure auger rotates freely
	Motor defect	►	Replace motor
	Thermic contact triggered	►	Let motor cool down
	Motor not running	►	Check thermic contact

13.12 Hopper motor (Fault 5028)

Display:	[5028] Hopper motor		
Description:	Hopper suction fan fault. Output RES1.		
Cause and Remedy:	Motor unplugged	►	Plug in motor, check cable connections
	Motor defect	►	Replace motor

13.13 Emergency OFF/ Safety temperature (Fault 5032, 5033)

Display:	[5032] Emergency OFF - NOT AUS		
Description:	Emergency OFF has been actuated - Input NOT-AUS		
Cause and Remedy:	Emergency OFF unplugged	►	Connect up Emergency OFF and check cable connections
	Emergency OFF button has been pressed	►	Reset Emergency OFF switch
	Emergency OFF defect	►	Replace Emergency OFF switch
Display:	[5033] Safety temperature - STB		
Description:	Safety temperature limiter has tripped - Input STB		
Cause and Remedy:	Safety temperature limiter unplugged	►	Connect up safety temperature limiter and check cable connections
	Safety temperature limiter has tripped	►	Let boiler cool down and reset safety temperature limiter
	Safety temperature limiter defect	►	Replace safety temperature limiter
	A 230V Output is defect	►	Check 230V Outputs

13.14 Temperature Combustion chamber sensor/Flue gas sensor (Fault 5034, 5036)

Display:	[5034] PE Ignition fault / Pellets available?		
Description:	Minimum temperature Combustion chamber sensor/Flue gas sensor not reached during the ignition phase		
Cause and Remedy:	No pellets available	►	Fill up with pellets
	Ignition electrode defect	►	Check ignition electrode (approx. 200Ω) replace if required
	Ignition nozzle blocked	►	Clean burner plate and ignition tube

	Not enough draught	►	Check ventilation flap, funktion radial fan, draught free
	Flue gas sensor or flammroomtemperature-sensor soiled	►	Check Flue gas sensor or flammroom-temperature-sensor
Display:	[5036] PE Flame supervision fault		
Description:	Flame supervision fault, minimum flue gas temperature not reached during heating up at full power - Input FRT		
Cause and Remedy:	No pellets available	►	Fill up with pellets

13.15 Flame return gate BSK (5038, 5039, 5040)

Display:	[5038] PE Flame return gate open		
Description:	Flame return gate open fault (BSK - 12)		
Cause and Remedy:	Flame return gate unplugged	►	Connect up flame return gate and check cable connections
	Flame return gate does not reach OPEN limit switch	►	Check ball valve to see if it is jammed
	No signal although open	►	Check cables and flame return gate
	STB on the burner has triggered	►	Surface temperature of the burner is too high
Display:	[5039] PE Flame return gate closed		
Description:	Flame return gate open fault		
Cause and Remedy:	Flame return gate unplugged	►	Connect up flame return gate and check cable connections
	Flame return gate does not reach CLOSE limit switch	►	Check whether ball valve is jammed, check ball valve throughway to see if foreign objects are preventing it from closing
	No signal although closed	►	Check cables and flame return gate
	STB on the burner has triggered	►	Surface temperature of the burner is too high. The boiler switches to fault mode.
Display:	[5040] PE Flame return gate limit switch		
Description:	Both flame return gate limit switches (BSK 1-2 and BSK 3-4) are closed at the same time		
Cause and Remedy:	Both limit switches activated	►	Check flame return gate, check cables, check connectors

13.16 Suction system (Fault 5043)

Display:	Suction system		
Description:	Hopper cannot be filled up even after 3 suction cycles		
Cause and Remedy:	Storage room empty	►	Fill up with pellets
	Extraction system is blocked	►	Clear extraction system

	Extraction system not conveying pellets	►	Pellet bridge - destroy bridge and make sure material flows properly
	Suction fan unplugged	►	Connect up suction fan
	Storage room auger motor unplugged	►	Connect up storage room motor

13.17 Ashbox full (Fault 5044) – Ash Warning (Fault 5053)

Display:	[5044] PE Ashbox full		
Description:	Motor doesn't reach the normal speed after 3 attempts.		
Display:	[5053] PE Ash Warning		
Description:	Ash-box nearly full		
Cause and Remedy:	Ash-box full	►	Clear ash-box
	Ash-box not completely closed	►	Close ash-box
	End-switch defect	►	Replace end-switch

13.18 Ball lock (Smart and Condens only – Fault 5045)

Display:	[5045] PE Ball lock – Smart and Condens only		
Description:	No pellets detected from capacitive sensor (KAP RA)		
Cause and Remedy:	Pellet reserves depleted	►	Refill storage-Room / supply tank
	Capacitive sensor RA defect	►	Replace Capacitive sensor RA

13.19 Burner Motor / Ash box full (SMART and Condens only – Fault 5047)

Display:	[5047] Burner Motor /Ash box full - SMART only		
Description:	The alarm text is displayed after the motor has made 3 unsuccessful attempts to reach the normal speed of the external de-ashing system.		
Cause and Remedy:	Ash box is full	►	Empty ash box
	Rotation of burner auger or ash auger is blocked	►	Ensure rotation of auger

13.20 Container cover open (PEB only – Fault 5052)

Display:	[5052] PE Container cover open		
Description:	Container cover open (PEB only) – Input AK		
Cause and Remedy:	Cover open	►	Close cover
	End-switch defect	►	Replace end-switch

13.21 Pellets Warning (Fault 5054)

Display:	[5054] PE 1 Pellets Warning		
Description:	Measured pellets capacity (AE2) is below the threshold		
Cause and Remedy:	Pellets nearly empty or empty	►	Fill up with pellets

	Sensor unpuged (AE2)	►	Connect plug
	Parameter set incorrectly	►	Check settings in menu Level detection system (protected access)

13.22 Error Output VAK (Fault 5055)

4005

Display:	[5055] Error Output VAK		
Cause and Remedy:	Output defect, incorrect wiring	►	Check cable connection / Replace Boiler Controller

13.23 Error Output ZUEND (Fault 5056)

Display:	[5056] Error Output ZUEND		
Cause and Remedy:	Output defect, incorrect wiring	►	VCheck cable connection / Replace Boiler Controller

13.24 Error Output AV (Fault 5057)

Display:	[5057] Error Output AV		
Cause and Remedy:	Output defect, incorrect wiring	►	Check cable connection / Replace Boiler Controller

13.25 Error Output RES2 (Fault 5058)

Display:	[5058] Error Output RES2		
Cause and Remedy:	Output defect, incorrect wiring	►	Check cable connection / Replace Boiler Controller

13.26 Error Output MA (Fault 5059)

Display:	[5059] Error Output MA		
Cause and Remedy:	Output defect, incorrect wiring	►	Check cable connection / Replace Boiler Controller

13.27 Error Output RA (Fault 5060)

Display:	[5060] Error Output RA		
Cause and Remedy:	Output defect, incorrect wiring	►	Check cable connection / Replace Boiler Controller

13.28 Error Output SM (Fault 5061)

Display:	[5061] Error Output SM		
Cause and Remedy:	Output defect, incorrect wiring	►	Check cable connection / Replace Boiler Controller

13.29 Error Output SZ (Fault 5062)

Display:	[5062] Error Output SZ		
Cause and Remedy:	Output defect, incorrect wiring	►	Check cable connection / Replace Boiler Controller

13.30 Error Output UW (Fault 5063)

Display:	[5063] Error Output UW		
Cause and Remedy:	Output defect, incorrect wiring	►	Check cable connection / Replace Boiler Controller

13.31 Error Output LUFT (Fault 5064)

Display:	[5064] Error Output LUFT		
Cause and Remedy:	Output defect, incorrect wiring	►	Check cable connection / Replace Boiler Controller

13.32 Error Output RA1 (Fault 5065)

Display:	[5065] Error Output RA1		
Cause and Remedy:	Output defect, incorrect wiring	►	Check cable connection / Replace Boiler Controller

13.33 Error Output RES1 (Fault 5066)

Display:	[5066] Error Output RES1		
Cause and Remedy:	Output defect, incorrect wiring	►	Check cable connection / Replace Boiler Controller

13.34 Error Output ZW (Fault 5067)

Display:	[5067] Error Output ZW		
Cause and Remedy:	Output defect, incorrect wiring	►	Check cable connection / Replace Boiler Controller

13.35 Error Output ES (Fault 5068)

Display:	[5068] Error Output ES		
Cause and Remedy:	Output defect, incorrect wiring	►	Check cable connection / Replace Boiler Controller

17.5 Information



Information is in the menu General.

Kl.	Zeit	St.	Beschreibung
06.06.17 03:45	External Error [4022]	C	
06.06.17 03:44	External Error [4022]	Q	
06.06.17 03:43	External Error [4022]	C	
31.05.17 21:41	BUS HCR 1 [4005]	C	

In the menu item information are all faults listed chronologically.

The fault texts have 3 status

- C.....COME – when the fault occurs
- Q.....QUIT – when the fault has been rectified
- G.....GONE – when the fault has been reset by pressing ENTER

17.6 ModBUS



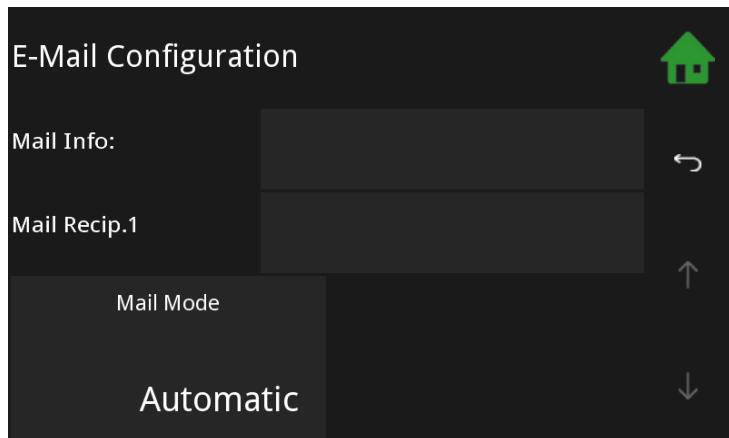
ModBUS		Off	
Mode	Version	Cascade	↔
Off			↑
Port			↓
		502	

Note:

The Modbus registers may be set not less than two hours in cyclic operation, otherwise the life span of the operating device can decrease.

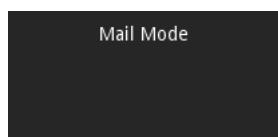
Mode	Off TCP Server
Port	Defaultport for ModBUS is 502.

17.7 E-Mail

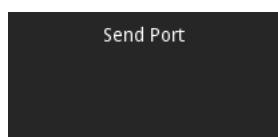


Delivery of disturbance-emails is done through an Maine Energy system server.

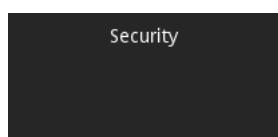
Only the recipient address needs to be configured.



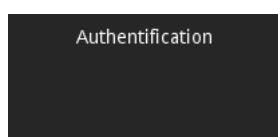
To ensure maximal flexibility, E-mail settings can set individually.



Port used for sending email (depends on provider).



Select encryption mode (specified by provider).



Authentication as specified by provider.

17.8 IP Config



IP Config is the menu General. (The menu item IP Config is only displayed if it has been activated by a qualified person)

Network Configuration						↶
↳ Not connected.						↑
IP:	10	.	1	.	1	.
NM:	255	.	255	.	255	.
GW:	1	.	0	.	0	.
D1:	1	.	2	.	3	.
						↓

After calling up the menu, a connection check is made.

If this is successful, "Connected to LAN and Internet" is displayed.

Network Configuration

↳ Not connected.

IP: 10 . 1 . 1 . 1 ↵

NM: 255 . 255 . 255 . 0 ↑

GW: 1 . 0 . 0 . 0 ↓

D1: 1 . 2 . 3 . 4 ↓

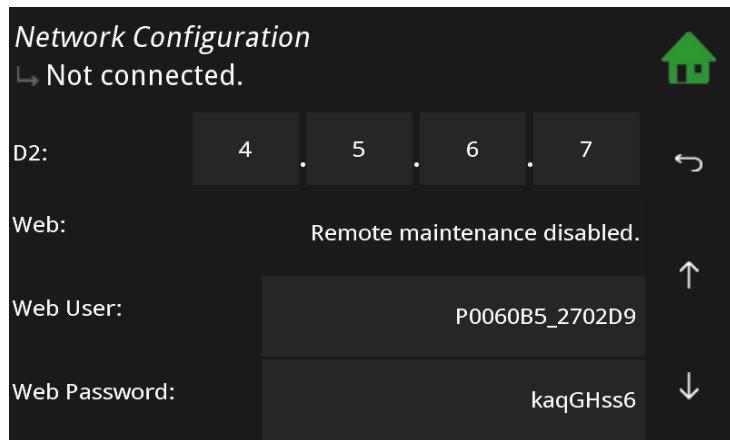
Insert the **IP (Adress)**, **NM (Netmask)** and **GW (Gateway)**, D1 (in most cases similar to GW) and **D2 (optional)**.

IP: IP address in the local network

NM: Networkmask is required in the local network.

GW: The gateway enables the touch operating device the access to the internet.

D1, D2: Server, which provide routing information



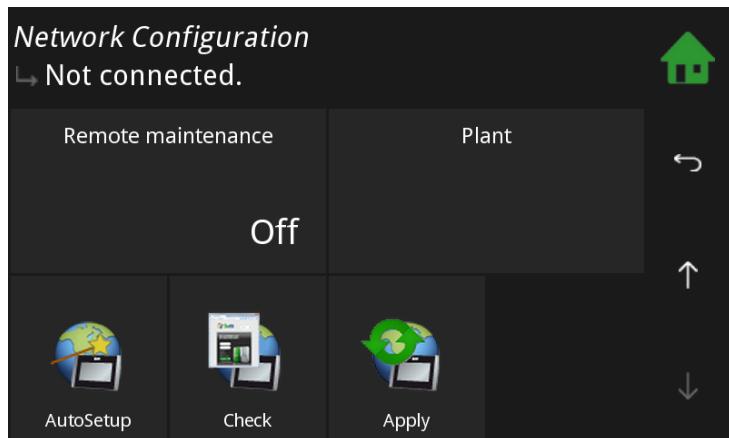
Set **DHCP On** or **Off** depending on your network.

Enter the **Port** (Default **80**).

Web: IP address in local network

Web User: Networkmask is required in local network

Web Password: The gateway enables the touch operating device the access to the internet.

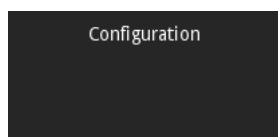


Activate optionally the **Ping** function.

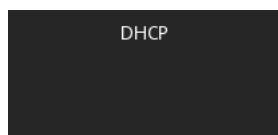
NOTICE

To prevent the modem from switching into standby mode, a ping command is executed every 10 minutes.

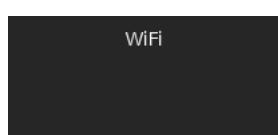
You get the data from your network technician.



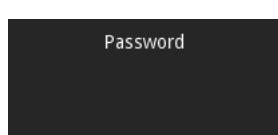
This menu item is only active when a compatible USB wireless adapter is connected.
(not every wireless stick works with the Touch operating device)
By default, this item is hidden and located in LAN mode.
If the wireless mode is enabled, a password box appears.



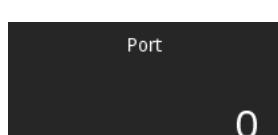
Dynamic address assignment on the local network (should be disabled if possible).



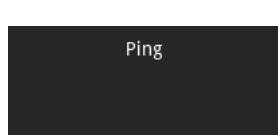
If a WLAN stick is recognized and supported, an Additional LAN & WLAN button appears.



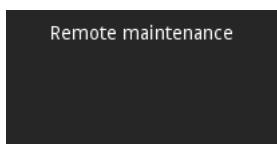
Password of router.



Address extension with which the touch remote control is accessible.
In principle, you can make your own choice, certain ports are associated with special services, e.g. 25 Mail, 80 Web and so on.



The ping prevents the internet connection from being closed by the router.
Therefore a query to the Maine Energy Systems server is started at certain time intervals.
So the router detects that the connection is still active.



Automatic	This will attempt to automatically set up the router using the UPNP protocol port forwarding. If this service is disabled on the router or doesn't work properly, it is canceled accompanied by an appropriate error message. As this function is time-consuming (may take a few minutes), it is running in the background. Whatever the UPNP If available, the Touch operating device registers on the Maine Energy Systems remote control server with its current external IP Address. In case of change of address by the external provider, this is detected and sent to the server Maine Energy Systems.
Manual	In this mode, the port forwarding must be set manually. (for lack of UPNP) The port of the touch panel must correspond to the external shared port. The touch then registers with the external IP address and port on Ök-oFEN remote maintenance server. In case of change of address by the external provider, this is detected and sent to the Maine Energy Systems server.
Static	In this mode, no connection data is transferred to the Maine Energy Systems server and the online service of Maine Energy Systems can not be used. But the remote control of the Touch operating device remains active and can be used as before via port forwarding, DynDns, fixed external IP, LAN and so on.

Remote maintenance access



This function determines the network settings automatically.
For this the DHCP mode is activated and the required settings are set automatically.
Afterwards DHCP is deactivated.
Because of this, the IP address of the control unit can change.

The settings are set as follows:

- DHCP Off
- Ping On
- Port 8080
- Remote maintenance: Automatic

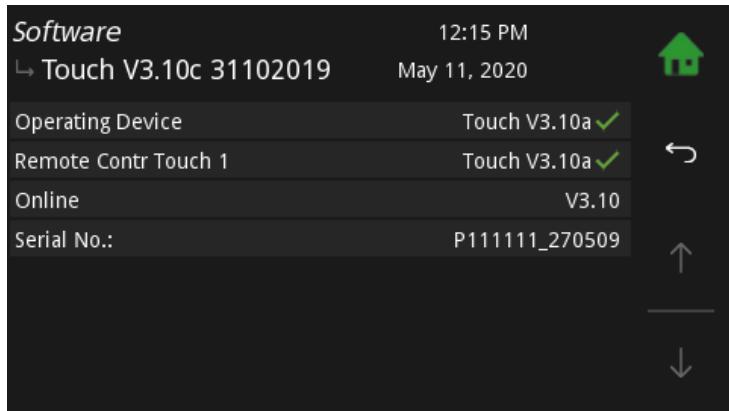


Back to the menu **General**.

18 Software



Software is in the Main menu.



Software shows you the name of the current software.

19 Emptying the ash pan



CAUTION

Risk of burns

Do not touch the boiler vessel. Use gloves.



DANGER

Risk of fire

Bring out the ash pan immediately.

Do not dispose ash until it has completely cooled down.

Empty ash only into a not flammable steel container.

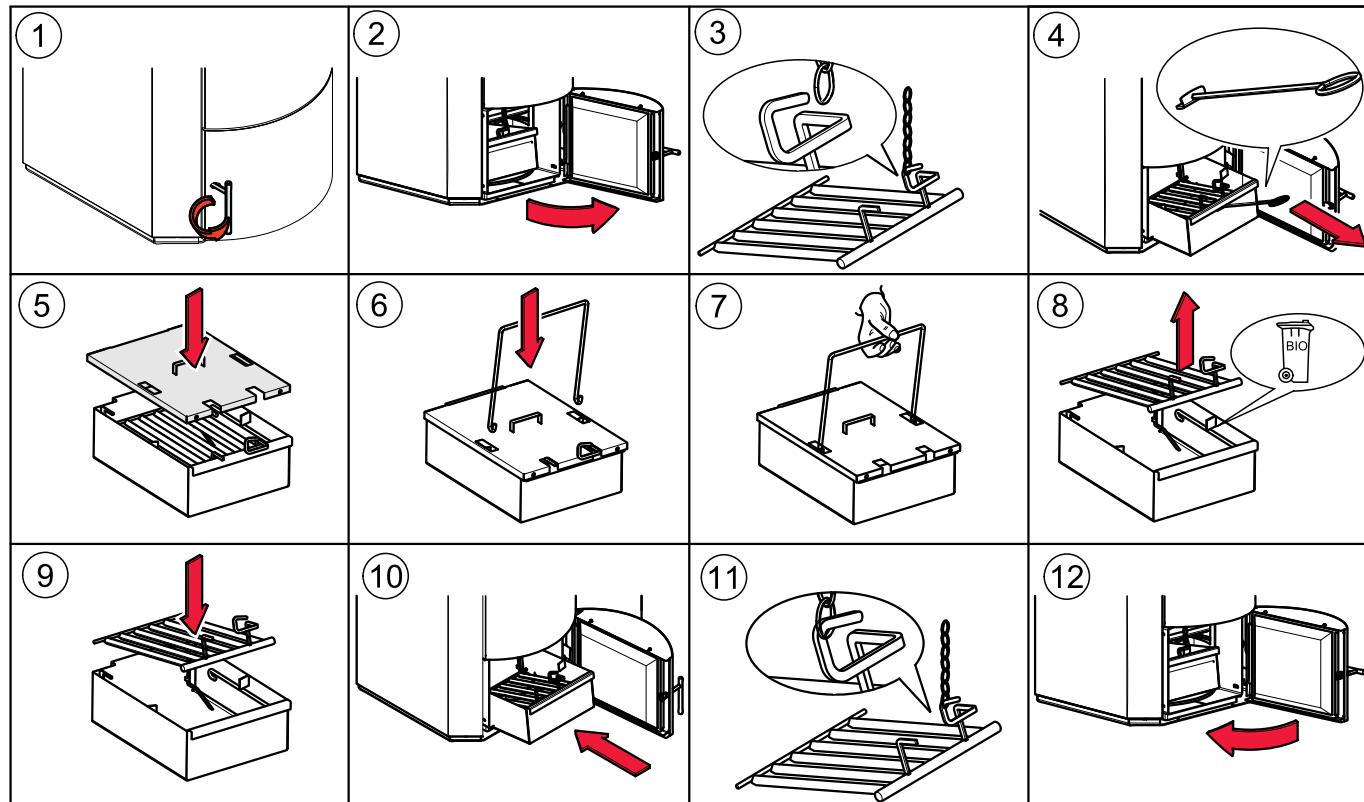
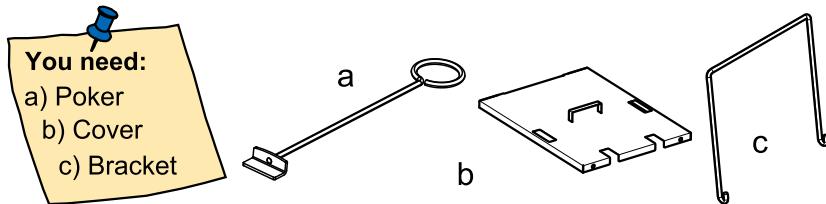
Do not use ash container to store waste or other material.

Do not empty ash onto flammable floors or materials.

Emptying the ash pan

Note:

Check the level of the ash pan and empty it at regularly intervals (at least every 2 weeks). No warning is displayed indicating that ash pan needs to be emptied when it is full (unlike external ash box)



* No riddle grate for systems with burner plate cleaning system.

20 Emptying the ash box

Only on boilers with external ash box. We also offer an optional automatic external ash box. This compresses the ash and reduces the frequency at which it needs to be emptied. It enables the ash to be disposed off without creating dust. Installation is performed by the service technician when the pellet boiler is installed. An external ash box can also be retrofitted.

NOTICE

Damage to property

Empty the ash box before a longer off-time of the boiler. Otherwise the auger and the opening mechanism can be blocked through firmly bonded ash.



DANGER

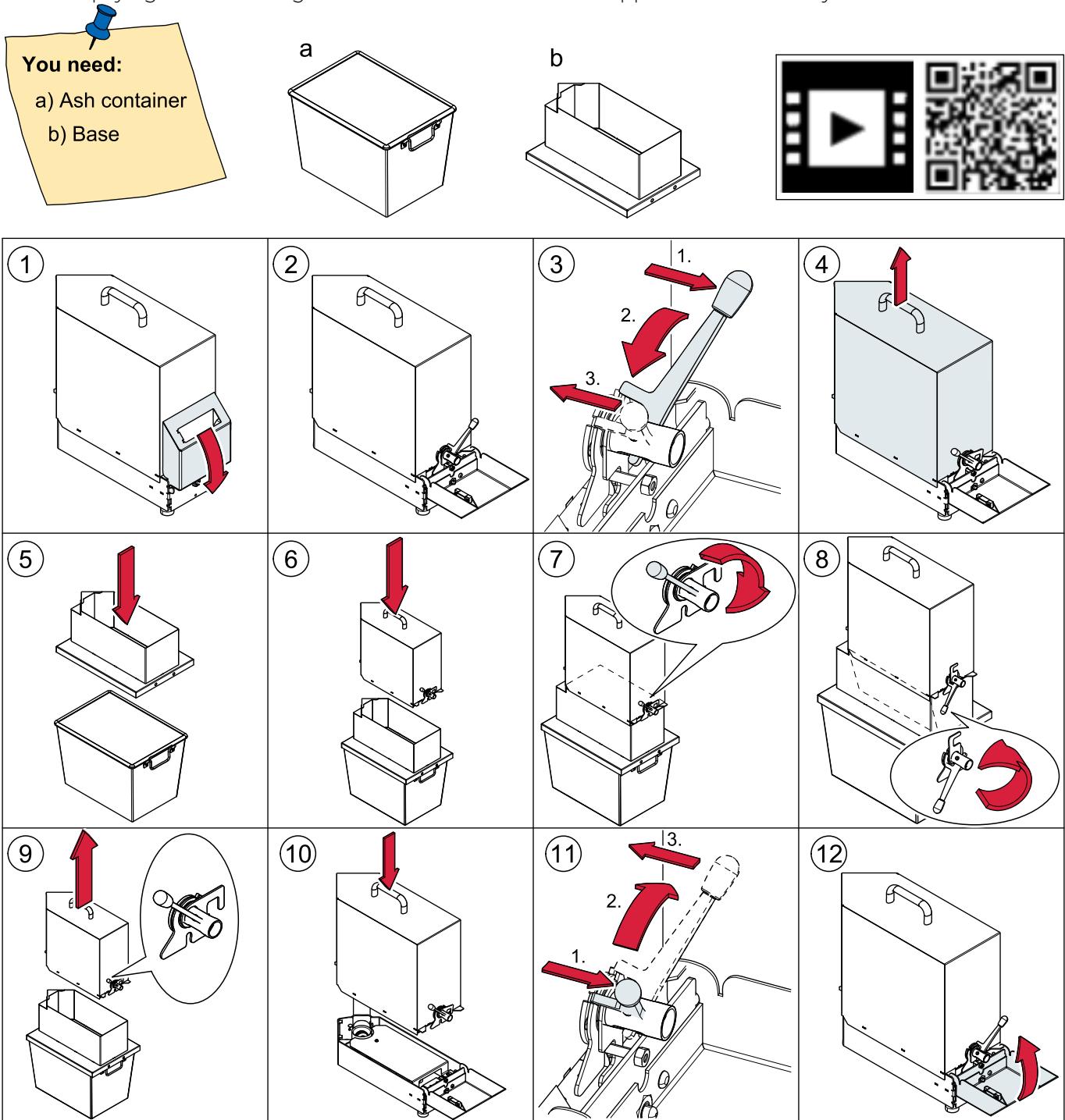
Risk of fire

Bring out the ash box immediately.
Do not dispose ash until it has completely cooled down.
Empty ash only into a not flammable steel container.
Do not use the ash container to store waste or other material.
Do not empty ash onto flammable floors or materials.

Emptying the ash box

Note:

When the ashbox is full then **Ash!!!** appears on the display with the alarm text **Ash box full**. After emptying and restarting the ash box the alarm text disappears automatically.



21 Maintenance and servicing

Regular checks of the pellet heating system are a prerequisite for reliable, efficient and environment-friendly operation.

NOTICE

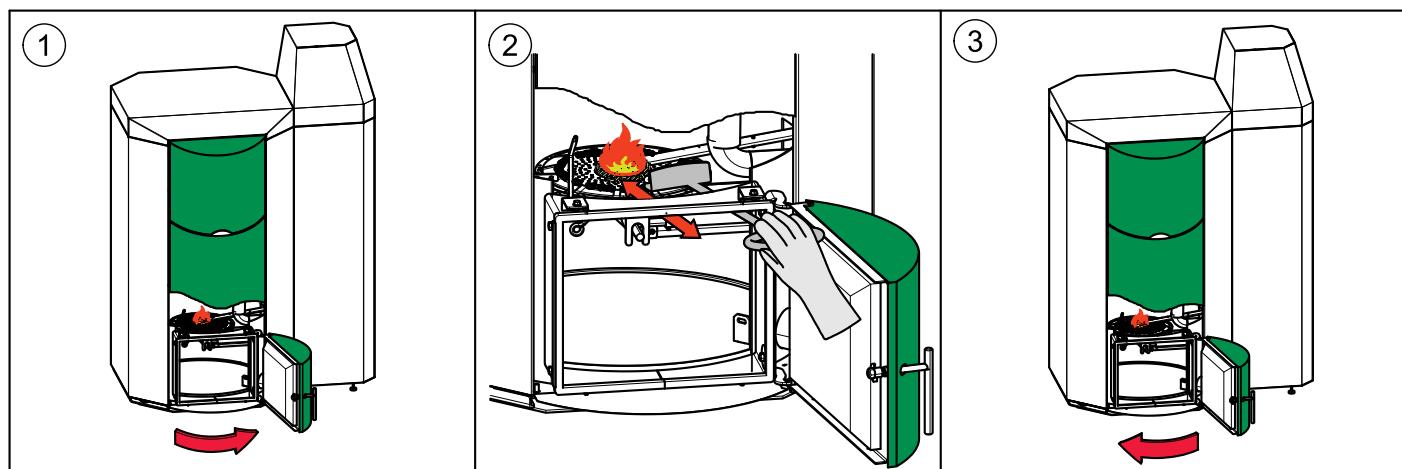
This wood heating appliance needs periodic inspection and repair for proper operation. It is against federal law to operate this wood heating appliance in a manner inconsistent with operating instructions in the manual.

NOTICE

Ashes should be placed in a metal container with a tight-fitting lid. The closed container of ashes should be placed on a noncombustible floor or on the ground, well away from all combustible materials, pending final disposal. If the ashes are disposed of by burial in soil or otherwise locally dispersed, they should be retained in the closed container until all cinders have thoroughly cooled.

21.1 Maintenance

The maintenance, boiler cleaning and cleaning of flue gas connection it is necessary at least once a year. For PE(S) 36-56 it is necessary in any case at least every 2000 operating hours. Pellets which produces tendentially more slagging (ash melting point <2372 °F) and pellets with higher bulk density (> 650kg) leads to additional cleaning of the burner plate at regular intervals.



21.2 Cleaning the boiler every year

NOTICE

The pellet boiler is equipped with an automatic cleaning system that cleans the heat exchanger every day. In addition, you need to clean the boiler manually once a year before the start of the heating season.

NOTICE

Cleaning of the pellet boiler has to be performed from a authorized service technician at least every third year.



WARNING

Risk of burns

Do not clean the boiler until it has been allowed to cool down.

Switch off the heating system at least 6 hours before opening the boiler.

Switch off the main switch before starting any maintenance work on the system.



CAUTION

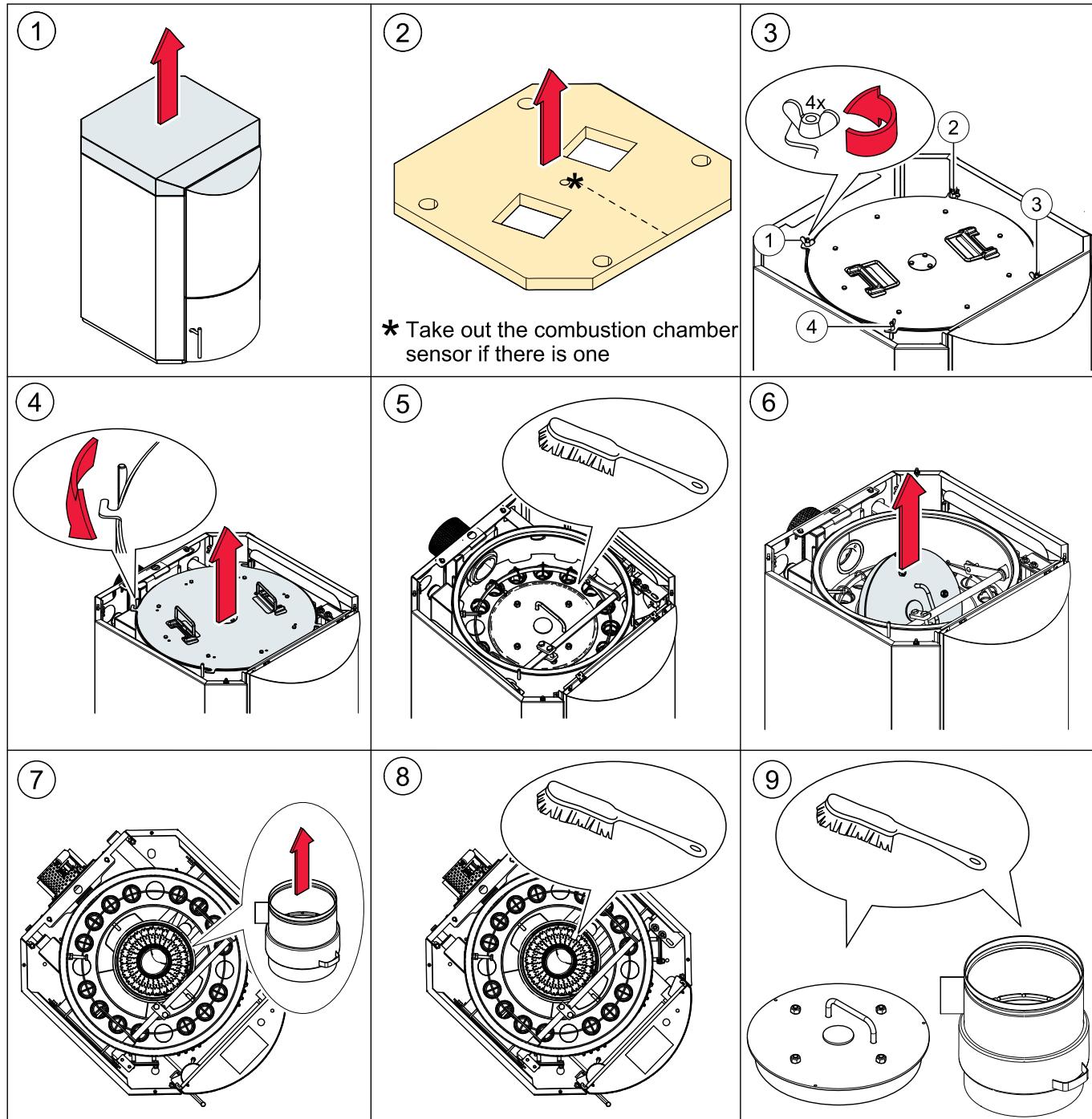
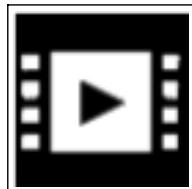
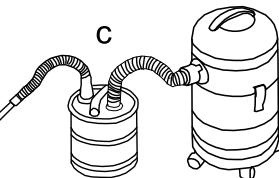
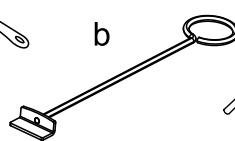
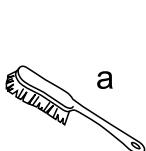
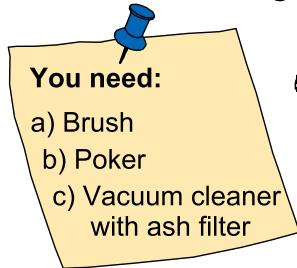
Risk of cut injuries due to sharp edges

Use gloves.

Note:

Check first of all, if all seals are in a good condition and the doors closes tightly.

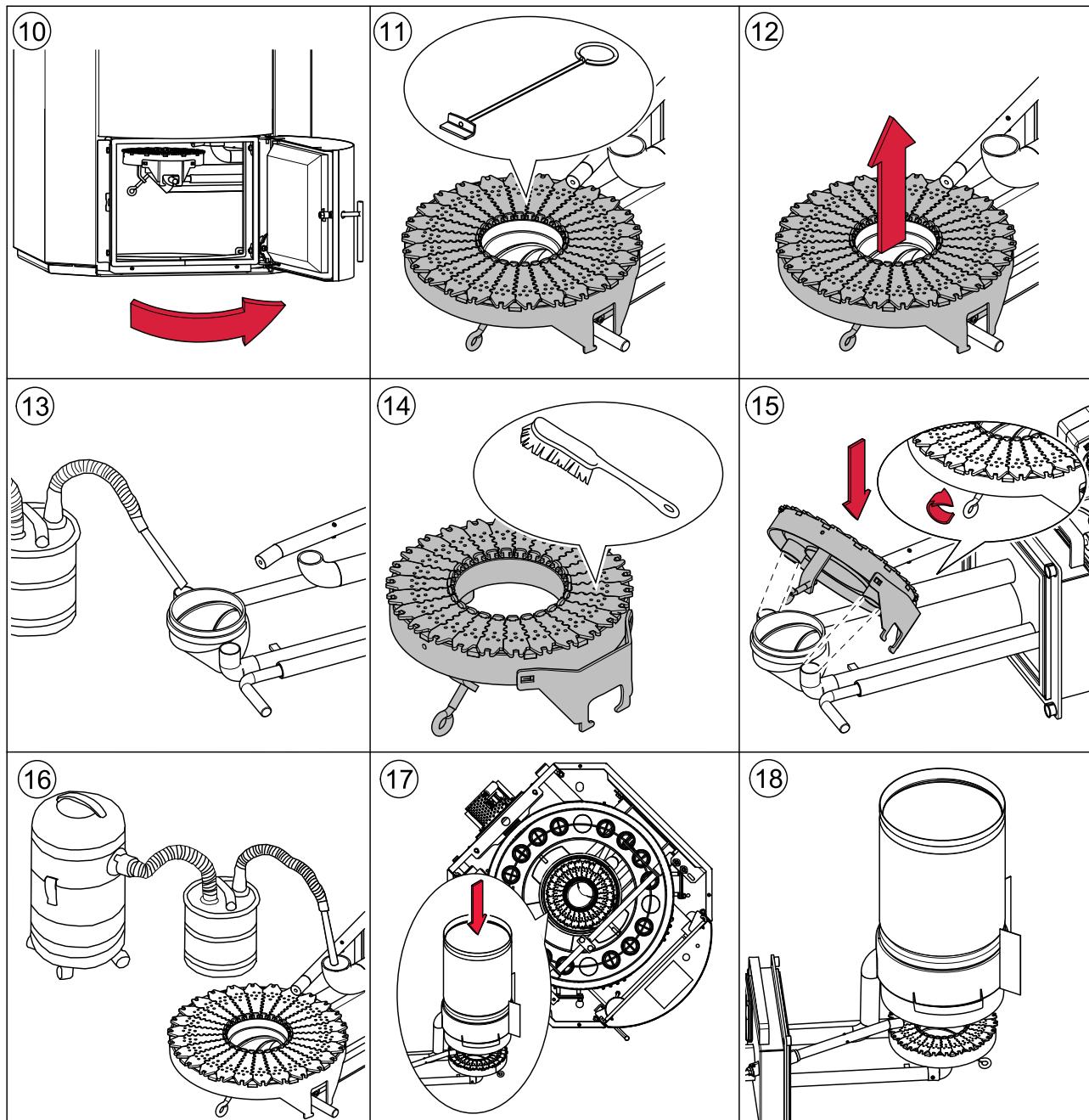
Procedure for cleaning the boiler



NOTICE

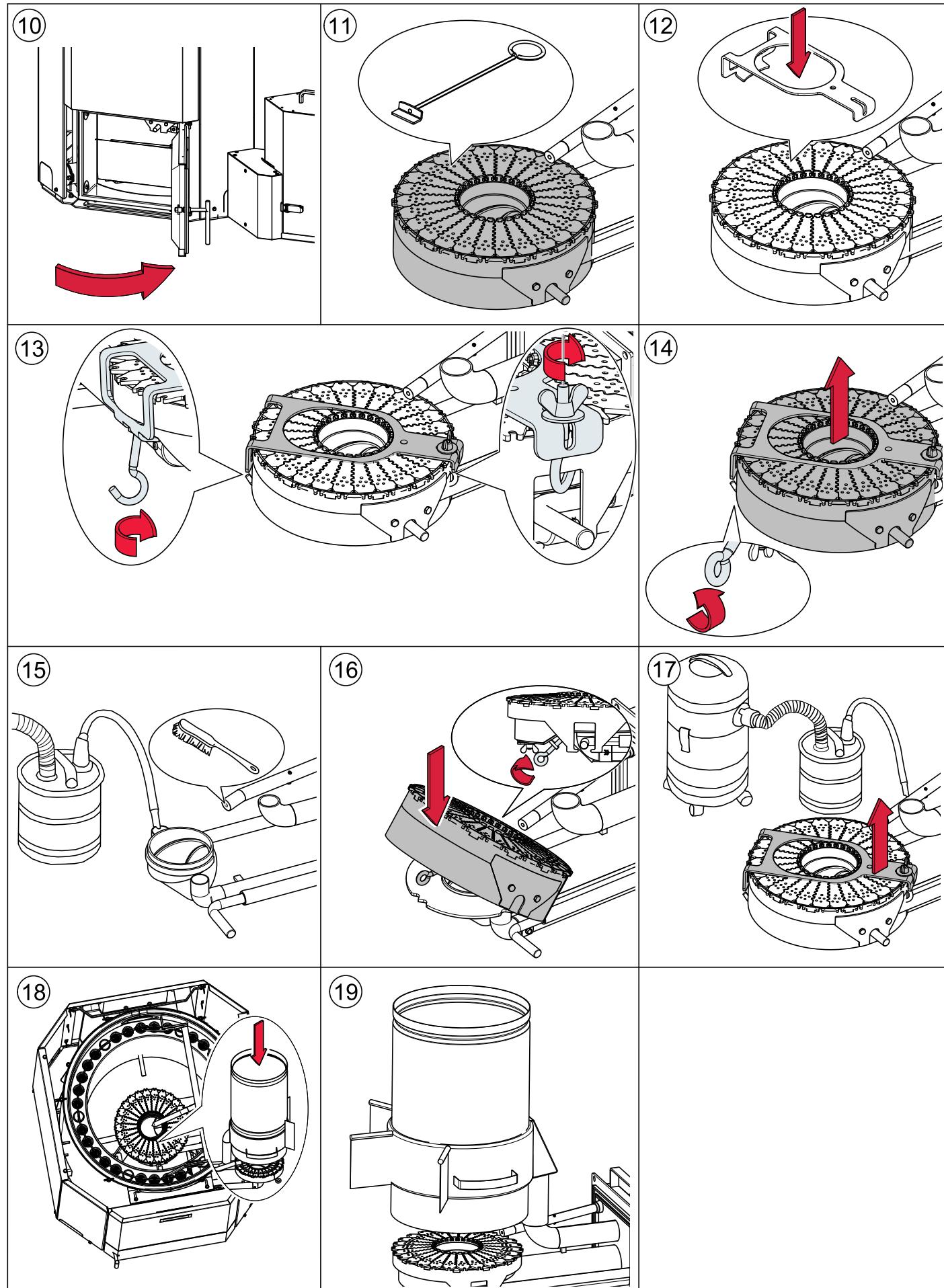
Reduction in boiler performance and damage to pellet boiler due to blockages in the air inlet
Clean the air intakes, the burner plate and the flame tube.

PE(S)(K)(B) 10- 32

**Note:**

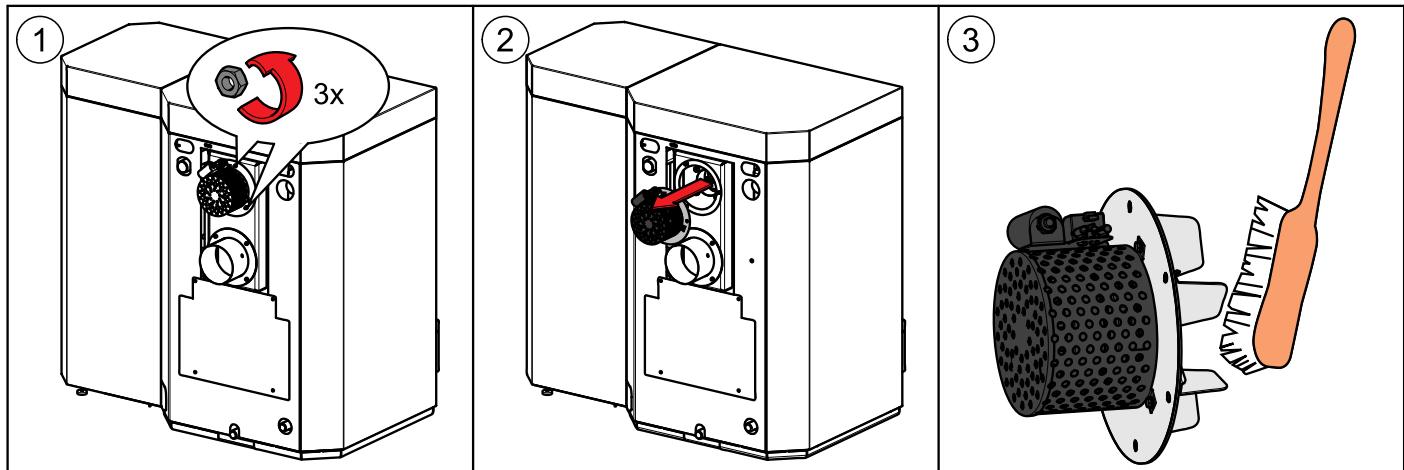
The individual parts of the multi segmented brazier may not be in raised position!

PE(S)(K)(B) 36 - 56



Note:

The individual parts of the multi segmented brazier may not be in raised position!

Cleaning the Induced draft blower:

21.3 Maintenance intervals

We recommend taking out a maintenance contract with your service technician.

21.4 Repairs



Only authorised specialists may carry out repair work on this system. Use original spare parts only. Not using original spare parts will cause the warranty to become void.

21.5 Checking the boiler room and storage room

Checking the pellet heating system regularly prevents malfunctions and unexpected failure of the heating system.

Boiler room

Make sure that no flammable materials are stored in the boiler room.

Make sure that no washing is hanging in the boiler room.

Check the display on the control panel for malfunction messages.

Check the flue gas tube and chimney. Clean it regularly.

Maintenance clearances as given in Installation Manual must be observed at all times.

Do not store fuel or any other materials within these clearances.

Storage room



DANGER

Risk of suffocation

Ventilate the pellet storage room sufficiently before entering.

Switch off the heating system before entering.

Check the level of pellets in the textile tank and order more pellets in good time.

22 Data for 20KW model, including emissions



MESys

Maine Energy Systems, LLC
8 Airport Road, Bethel, Maine 04217
Voice: 207.824.6749 Fax: 207.824.4816

Report No. 0444PB004S

Type: Pellematic20	S/N: XUT xx	CATALOG No.: PES20
Date of manuf.: 02/2018	Rated heat power: 68,300BTU/hr	
Tested to: UL 2523-2013. CSA B366.1-2011 EN303-5		
Manufactured By: MESys LLC, Bethel, Maine FUEL: WOOD PELLETS		
U.S. ENVIRONMENTAL PROTECTION AGENCY certified to comply with the 2020 particulate emissions standard using wood pellets.		
This appliance needs periodic inspection and repair for proper operation. Consult owner's manual for further information. It is against federal regulations to operate this appliance in a manner inconsistent with operating instructions in the owners manual.		
Particulate Emissions , 0.028 lb./million btu - 0.227 grams/hr. CO emissions , 0.019 grams/min. Annual Efficiency , (HHV) 74.3%		
Water Capacity: 15.0 Gallons	Operating Temp: 194 °F	
Max Operating Pressure: 3 BAR / 43.5 PSI / 1204 inches WC		
Chimney	Approved factory built stainless steel or tile-lined masonry	
MAX DRAFT: 0.11 inches WC MIN DRAFT: 0.04 inches WC		
Diameter: 6 INCH	Electrical Rating: 220 V, 60 Hz, 14 A, 1760 W	
FLOORING: COMBUSTIBLE FLOORS CAN BE USED WITH A NON-COMBUSTIBLE SHIELD. MINIMUM CLEARANCES ARE 18IN/457MM IN THE FRONT AND 8IN / 203MM ON EACH SIDE.		
PARTS	Fan Flue Gas: E1001A	Controller Display: E1330
Motor Ash Box: E1302	Motor Flame Return Protection: E1413A	
Motor Cleaning Device: E1054	Motor Hopper: NA	
Motor Burner Plate Cleaning: NA	Suction Turbine: E1205	
Motor Burner Screw: E1030	Low Water Cut Off: Safgard 550SV	
Controller Board: E1412	Pressure-Relief Valve: Watts Co335M1	
Motor Auger Screw: FKAEM 150 / FKAES-S	Fan Burner: E1005S	

12.9 Data for 22KW model



MESys

Maine Energy Systems, LLC
8 Airport Road, Bethel, Maine 04217
Voice: 207.824.6749 Fax: 207.824.4816

Report No. 0444PB004S

Type: Pellematic 22	
S/N:	XUT01753
Date of manuf.:	02/2022
Rated heat power: 68,300 BTU/hr	
Tested to: UL 2523-2013. CSA B366.1-2011 EN303-5	
Manufactured By:	MESys LLC, Bethel, Maine
FUEL: WOOD PELLETS	
U.S. ENVIRONMENTAL PROTECTION AGENCY: Certified to comply with the 2020 particulate emissions standard using wood pellets.	
This appliance needs periodic inspection and repair for proper operation. Consult owner's manual for further information. It is against federal regulations to operate this appliance in a manner inconsistent with operating instructions in the owners manual.	
Particulate emissions, 0.053lb./million btu - 0.439grams/hr. CO emissions, 0.017grams/minute. Annual efficiency (HHV) 82.0%	
Water Capacity:	15 Gallons
Operating Temp: 194 °F	
Operating Pressure: 3 BAR / 43.5 PSI / 1204 inches WC	
Chimney Approved factory built stainless steel or tile-lined masonry	
max DRAFT: 0.11 inches WC - min DRAFT: 0.04 inches WC	
Diameter:	6 INCH
Electrical Rating: 220 V, 60 Hz, 14 Amp, 1760 Watts	
FLOORING: Combustible floors can be used with a non-combustible shield. Minimum clearances are 18in/457mm in the front and 8in/203mm on each side.	
PARTS	
Fan, Flue Gas:	E1001A
Controller Display/Screen:	E1330
Motor Flame Return Protection:	E1413A
Motor Ash Box:	E1302
Motor Cleaning Device:	E1054
Motor Hopper:	NA
Motor Burner Plate Cleaning:	NA
Suction Turbine:	E1205
Motor Burner Screw:	E1030
Low Water Cut Off:	Safgard 550SV
Controller Board:	E1412
Pressure-Relief Valve:	Watts Co335M1
Fan Burner:	E1005S
Motor Auger Screw:	FKAEM 150 /FKAES

23 Data for 32KW model, including emissions



MESys
 Maine Energy Systems, LLC
 8 Airport Road, Bethel, Maine 04217
 Voice: 207.824.6749 Fax: 207.824.4816

Report No. 0444PB004S

Type: Pellematic32	S/N: XUT xx	CATALOG No.: PES32		
Date of manuf.: 02/2018	Rated heat power: 109,000 BTU/hr			
Tested to: UL 2523-2013. CSA B366.1-2011 EN303-5				
Manufactured By: MESys LLC, Bethel, Maine FUEL: WOOD PELLETS				
U.S. ENVIRONMENTAL PROTECTION AGENCY certified to comply with the 2020 particulate emissions standard using wood pellets.				
This appliance needs periodic inspection and repair for proper operation. Consult owner's manual for further information. It is against federal regulations to operate this appliance in a manner inconsistent with operating instructions in the owners manual.				
Particulate Emissions , 0.021 lb./million btu - 0.319 grams/hr. CO emissions , 0.025 grams/min. Annual Efficiency , (HHV) 76.5%				
Water Capacity: 23.6 Gallons	Operating Temp: 194 °F			
Max Operating Pressure: 3 BAR / 43.5 PSI / 1204 inches WC				
Chimney	Approved factory built stainless steel or tile-lined masonry			
MAX DRAFT: 0.11 inches WC MIN DRAFT: 0.04 inches WC				
Diameter: 6 INCH	Electrical Rating: 220 V, 60 Hz, 14 A, 1760 W			
FLOORING: COMBUSTIBLE FLOORS CAN BE USED WITH A NON-COMBUSTIBLE SHIELD. MINIMUM CLEARANCES ARE 18IN/457MM IN THE FRONT AND 8IN / 203MM ON EACH SIDE.				
PARTS	Fan Flue Gas: E1001A	Controller Display: E1330		
Motor Ash Box: E1302	Motor Flame Return Protection: E1413A			
Motor Cleaning Device: E1054	Motor Hopper: NA			
Motor Burner Plate Cleaning: NA	Suction Turbine: E1205			
Motor Burner Screw: E1030	Low Water Cut Off: Safgard 550SV			
Controller Board: E1412	Pressure-Relief Valve: Watts Co335M1			
Motor Auger Screw: FKAEM 150 / FKA-E-S	Fan Burner: E1005S			

24 Data for 56KW model, including emissions



MESys

Maine Energy Systems, LLC
8 Airport Road, Bethel, Maine 04217
Voice: 207.824.6749 Fax: 207.824.4816

Report No. 0444PB004S

Type: Pellematic56				
S/N:	XUT01553	CATALOG No.:	PES56	
Date of manuf.:	09/2020	Rated heat power:	191,000 BTU/hr	
Tested to: UL 2523-2013. CSA B366.1-2011 EN303-5				
Manufactured By: MESys LLC, Bethel, Maine FUEL: WOOD PELLETS				
U.S. ENVIRONMENTAL PROTECTION AGENCY: Certified to comply with the 2020 particulate emissions standard using wood pellets.				
This appliance needs periodic inspection and repair for proper operation. Consult owner's manual for further information. It is against federal regulations to operate this appliance in a manner inconsistent with operating instructions in the owners manual.				
Particulate emissions, 0.06lb./million btu - 0.952grams/hr. CO emissions, 0.052grams/minute. Annual efficiency (HHV) 81.9%				
Water Capacity: 30.6 Gallons	Operating Temp:	194 °F		
Operating Pressure: 3 BAR / 43.5 PSI / 1204 inches WC				
Chimney Approved factory built stainless steel or tile-lined masonry				
max DRAFT: 0.11 inches WC min DRAFT: 0.04 inches WC				
Diameter:	7 INCH			
Electrical Rating: 220 V, 60 Hz, 14 Amp, 1760 Watts				
FLOORING: Combustible floors can be used with a non-combustible shield. Minimum clearances are 18in/457mm in the front and 8in/203mm on each side.				
PARTS	Fan, Flue Gas: E1249A	Controller Display/Screen: E1330		
Motor Flame Return Protection: E1413A		Motor Ash Box: E1302		
Motor Cleaning Device: E1054		Motor Hopper: E1197		
Motor Burner Plate Cleaning: E1204		Suction Turbine: E1205		
Motor Burner Screw: E1306	Low Water Cut Off: Safgard 550SV			
Controller Board: E1412	Pressure-Relief Valve: Watts Co335M1			
Fan Burner: E1005S	Motor Auger Screw: FKAEM 150 /FKAES			

25 General information

As required by the United States Environmental Protection Agency the following information is given for the:
AutoPellet Pellematic PES 10-56 wood pellet fired central heating boiler. Manufactured by Maine Energy
Systems, of 8 Airport Road, Bethel, Maine, 04217

- The Pellematic has a thermal output levels from 3 kW or 10,000 btu/h to 191,000 btu/h and complies with EPA 2020 requirements.
- This wood heater has a manufacturer-set minimum low burn rate that must not be altered.
It is against federal regulations to alter this setting or otherwise operate this wood heater in a manner inconsistent with operating instructions in this manual.
- Complete installation information is found in the Installation Manual.
- Although operational information is elsewhere in this manual, there are specific concerns for correct operation that can directly affect the emissions profile of this equipment.
It is therefore necessary that we mention these important points.
- Fuel loading and selection. Your Pellematic is equipped with completely automatic fuel loading.
Thus, other than selecting the correct fuel, there are no loading instructions as such. Fuel selection is straight forward.
Only PFI Premium 100% wood pellets should be used in your boiler.
- Among the materials that are specifically prohibited to be burned in your Pellematic are: trash, plastics, gasoline, rubber, naphtha, household garbage, material treated with petroleum products such as particleboard, railroad ties, and pressure treated wood.
Burning these materials may result in release of toxic fumes or render the boiler ineffective and cause smoke.
- Your Pellematic pellet fired boiler is completely automatic ignition as well as the loading as before mentioned.
There are therefore no starting procedures to be followed. The boiler correctly starts itself when required by building load.
- There are no user adjustments required for the air controls on your Pellematic.
- It is important to have your Pellematic boiler serviced by a trained professional who is aware of the importance to ensure that there are no inlet air restrictions in or around your boiler's combustion blower.
And that the air passages within your boiler are free of debris, (creosote, ash, etc.)
The flue pipe and chimney are also clean and free of debris / restrictions.
And that the combustion chamber door seal is airtight when the door is closed and secured.
- Ash removal is also completely automatic on your Pellematic boiler. Ashes should be placed in a metal container with a tight-fitting lid.
The closed container of ashes should be placed on a noncombustible floor or on the ground, away from all combustible materials, pending final disposal. The ashes should be retained in the closed container until all cinders have thoroughly cooled.
When cooled ashes can be disposed of on your lawn, garden or local transfer station.
- Your Pellematic is not a catalytic type burner.
- A person or persons responsible for the operation of a hydronic heater must comply with all applicable laws or other requirements, such as State laws or regulations as well as local ordinances.
- A person or persons operating a hydronic heater should be aware that they are responsible for operation in such a manner that does not create a public or private nuisance condition.
The Manufacturer's distance and stack height recommendations and the requirements in any applicable laws or other requirements may not always be adequate to prevent nuisance conditions due to terrain or other factors.
- Your Pellematic should be installed with a minimum stack height of 16 feet.
Providing correct draft as given in the Installation manual.
- Draft is the force which moves air from the appliance up through the chimney.

The amount of draft in your chimney depends on the length of the chimney, local geography, nearby obstructions and other factors. Too much draft may cause excessive temperatures in the appliance and may damage the catalytic combustor. Inadequate draft may cause backpuffing into the room and 'plugging' of the chimney. Inadequate draft will cause the appliance to leak smoke into the room through appliance and chimney connector joints an uncontrollable burn or excessive temperature indicates excessive draft.

- The efficiency of your 20KW Pellematic boiler running at full power is >80%.
- The efficiency of your 22KW Pellematic boiler running at full power is >82%.
- The efficiency of your 32KW Pellematic boiler running at full power is >83%.
- The efficiency of your 56KW Pellematic boiler running at full power is >86%.
- This is the result of a laboratory test and was measured using the HHV of the fuel used.
- You should never operate a combustion appliance of any type in your home without there being a properly installed smoke and CO detector.
Your local fire department usually has good advice on placement of these detectors and how many your home may need for complete coverage.

RESIDENTIAL LIMITED WARRANTY

What this Warranty Covers & Who it Applies to: The limited warranty provided by **Maine Energy Systems LLC** ("MESys") applies only to MESys brand boilers, furnaces, wood pellet burners and accessories ("Product") sold to you, the first user and purchaser provided that the Product was purchased: (1) for your normal, household (non-commercial) use, and has only been used for normal household purposes; (2) new at retail (not a display, "as is", or previously returned model) and not for resale, or commercial use; and (3) within the United States. Products installed in a building other than a one or two family residential dwelling are not covered, under this Warranty unless individual Boilers are installed for each dwelling unit. Please return your registration card; while not necessary to establish warranty coverage, it allows MESys to be able to notify you in the unlikely event of a safety issue.

How Long this Limited Warranty Lasts: This Limited Warranty has three time frames, depending on the particular Product component involved.

(1) MESys warrants that the burner, ignition, electric and electronic parts, flame tube and burner plate, chains, bearings, chain pinions, and all other moving components of the Product are free from defects in materials and workmanship for a period of *two (2) years from the date of initial operation or 6,000 operating hours, whichever comes first*, provided they are installed and properly maintained by a qualified heating contractor and the other conditions of this warranty are met, and

(2) *In addition*, all other parts including the boiler vessel, or heat exchanger in furnaces, are warranted to be free from defects in materials and workmanship for a period of *five (5) years from the date of initial operation or 15,000 operating hours, whichever comes first* provided it is installed and properly maintained by a qualified heating contractor and the other conditions of this warranty are met; and

(3) *In addition* thereafter, MESys warrants that the boiler vessel is free from defects in materials and workmanship on a prorated basis follows, provided it is installed and properly maintained by a qualified heating contractor and the other conditions of this warranty are met:

For the next five (5) years (years 6 through 10) or a maximum of 30,000 operating hours, whichever comes first, the boiler vessel is warranted for 75% of the then retail parts cost; and thereafter

For the next ten (10) years (years 11 through 20) or a maximum of 60,000 operating hours, whichever comes first, the boiler vessel is warranted for 50% of the then retail parts cost.

For the next ten (10) years (years 21 through 30) or a maximum of 90,000 operating hours, whichever comes first, the boiler vessel is warranted for 25% of the then retail parts cost, which may be used to replace the boiler vessel, or used as a credit toward a new boiler system, at MESys' discretion.

Labor is not covered under this limited warranty. During the pro-rated warranty period, the customer is responsible for payment of the remaining portion of the then retail cost.

The warranty period begins to run upon the date of initial operation, and shall not be extended for any reason whatsoever. This limited warranty does not cover labor and shipping costs, non-MESYS components, serviceable items or normal maintenance, nor the other items and events excluded below.

Terms of Limited Warranty: MESys will provide replacement parts for any component that proves to be defective in materials or workmanship (excludes labor charges) within the periods set forth above, or replace it with the most comparable model available from MESys at the time of the replacement, provided that the purchaser pays for the other portion of the prorated charge set forth above if applicable. The proportionate charge is based the current list price of the boiler vessel involved in the warranty claim (or the nearest comparable MESys model). The foregoing timelines begin to run upon the date of initial operation, and shall not be stalled, tolled, extended, or suspended, for any reason whatsoever.

Repair/Replace as Your Exclusive Remedy: During this limited warranty period, MESys or one of its authorized service providers will provide replacement parts for your Product or replace it with the most comparable model then available from MESys at the time of the replacement (subject to certain limitations stated herein,) if your Product proves to have been manufactured with a defect in materials or workmanship. All removed parts and components shall become the property of MESys at its sole option. All replaced and/or repaired parts shall assume the status of the original part for purposes of this

warranty and this warranty shall not be extended by the replacement of such parts. MESys's sole obligation hereunder is to provide replacements for defective Product to a MESys-authorized service provider during normal business hours. For safety and property damage concerns, MESys highly recommends that you do not attempt to repair the Product yourself, or use an un-authorized servicer; MESys will have no responsibility or liability for repairs or work performed by a non-authorized servicer. If you choose to have someone other than an authorized service provider work on your Product, THIS WARRANTY WILL AUTOMATICALLY BECOME NULL AND VOID. Authorized service providers are those persons or companies that have been specially trained for customer service and technical ability (note that they are independent entities and are *not* agents, partners, affiliates or representatives of MESys).

Warranty Exclusions: The warranty coverage described herein excludes all defects or damage that are not the direct fault of MESys, including without limitation, any one or more of the following: (a) use of the Product in anything other than its normal, customary and intended manner (including without limitation, any form of commercial use or use that is not for personal, family or household purposes); (b) any party's willful misconduct, negligence, misuse, abuse, accidents, improper operation, failure to maintain, improper or negligent installation, tampering, failure to follow operating instructions, mishandling, unauthorized service (including self-performed "fixing" or exploration of the appliance's internal workings); (c) adjustment, alteration or modification of any kind; (d) a failure to comply with applicable state, local, city, or county electrical, plumbing and/or building codes, regulations and laws, including failure to install the product in strict conformity with local fire and building codes and regulations; (e) ordinary wear and tear; (f) any external, elemental and/or environmental forces and factors, including without limitation, lightning strikes, voltage spikes, flues that do not meet specified standards, fire, floods, rain, windstorm, floods, fires, mud slides, freezing, excessive moisture or extended exposure to humidity, power surges, building structural failures and acts of God; (g) any damage or failure resulting from contaminated air, including but not limited to sheetrock particles or other dirt or dust, introduced into the Boiler; (h) damage or failure resulting from hard water scale build-up on the heat exchanger waterways; (l) use with insufficient water or operation with water or fuel additives that cause deposits or corrosion; and (j) use with oxygen permeable tubing or other components. In no event shall MESys have any liability or responsibility whatsoever for damage to surrounding property and other structures or objects around the Product. Also excluded from this warranty are scratches, nicks, minor dents, and cosmetic damages on external surfaces and exposed parts; Products on which the serial numbers have been altered, defaced, or removed; service visits to teach you how to use the Product, or visits where there is nothing wrong with the Product; correction of installation problems (you are solely responsible for any structure and setting for the Product, including all chimneys, flues, electrical, plumbing or other connecting facilities, for proper foundation/flooring, and for any alterations); and resetting of breakers or fuses.

TO THE EXTENT ALLOWED BY LAW, THIS WARRANTY SETS OUT YOUR EXCLUSIVE REMEDIES WITH RESPECT TO PRODUCT, WHETHER THE CLAIM ARISES IN CONTRACT OR TORT (INCLUDING STRICT LIABILITY, OR NEGLIGENCE) OR OTHERWISE. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED. ANY WARRANTY IMPLIED BY LAW, WHETHER FOR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE, SHALL BE EFFECTIVE ONLY FOR THE PERIOD THAT THIS EXPRESS LIMITED WARRANTY IS EFFECTIVE OR THE IMPLIED WARRANTY PERIOD, WHICHEVER IS LESS. IN NO EVENT WILL MESYS BE LIABLE FOR CONSEQUENTIAL, SPECIAL, INCIDENTAL, INDIRECT, "BUSINESS LOSS", AND/OR PUNITIVE DAMAGES, LOSSES, OR EXPENSES, INCLUDING WITHOUT LIMITATION TIME AWAY FROM WORK, HOTELS AND/OR RESTAURANT MEALS, EXPENSES IN EXCESS OF DIRECT DAMAGES DEFINITIVELY CAUSED EXCLUSIVELY BY MESYS, OR OTHERWISE ARISING. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, AND SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS, WHICH VARY FROM STATE TO STATE.

The customer is responsible for the costs of:

- Components which have been replaced but found not to have been defective;
- Faulty installation;
- Normal maintenance; and
- Equipment used contrary to the installation manual.

The required information that must be furnished to MESYS for a claim under this Limited Warranty includes:

- Model number and serial number of the Product;
- Date the Product was installed and placed in operation, the location , the name of the installer;
- Date the Product component failure was reported; and

- Description of condition that prompted the report.

No attempt to alter, modify or amend this warranty shall be effective unless authorized in writing by an officer of MESYS.

To Obtain Warranty Service, Please Contact

Maine Energy Systems, LLC ("MESys")

8 Airport Road, P.O. Box 547, Bethel, Maine 04217

Tel: 207.824.6749 Fax: 207.824.4816

info@maineenergystems.com

Limited Warranty Boiler Resid 1-31-2013 REV

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Author & Manufacturer

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Maine 04217

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www.maineenergysystems.com

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Subject to modifications

Please read carefully prior
to installing and servicing.
SAVE THESE INSTRUCTIONS

Installation Manual

**Pellet heating with vacuum
suction system, type**

**AutoPellet®
PES 56**

MESys V1.1

AutoPelletTOUCH

USA



Title: Installation Manual AutoPellet® PES 56

Article number: PE 3671 USA 3.0

Version valid from: 03/2025

Approved: **Maine Energy Systems**

Author & Manufacturer

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Maineenergysystems.com.

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For warranty inquiries please send an email to warranty@maineenergysystems.com including the system's address in the subject line.

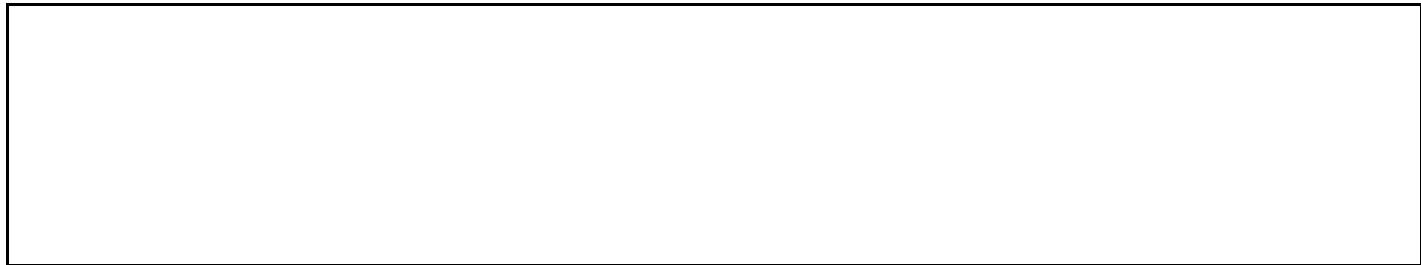
1 Dear Customer

Maine Energy Systems specializes in wood pellet heating.

Our company enjoys an exclusive license from ÖkoFEN to manufacture products here in North America. We represent expertise, innovation and quality.

We are delighted that you have decided to purchase our product.

- This instruction manual is intended to help you operate the product safely, properly and economically.
- Please read this instruction manual completely and take note of the safety warnings.
- Keep all documentation supplied with this unit in a safe place for future reference.
- Installation and first startup must be carried out by a qualified installer certified by Maine Energy Systems.
- The installation must comply with the requirements of the Authority having jurisdiction over the installation.
- Please contact your authorized dealer if you have any questions.



We place great importance on the development of new products. Our R&D department continues to question accepted solutions and works continually on new improvements. That is how we maintain our technological lead. We have already received several awards for our products in Austria and abroad. Our products fulfil European and USA requirements regarding quality, efficiency and emissions.



This wood heater needs periodic inspection and repair for proper operation. It is against federal regulations to operate this wood heater in a manner inconsistent with operating instructions in this manual.

This heating appliance is US EPA 2020 NSPS Compliant.

2 Use only for the purpose intended

The pellet boiler is designed to heat water for central or other indirect heating systems and hot water supply for buildings. It is not permissible to use the pellet boiler for any other purpose. Reasonable foreseeable inadvertent uses for the pellet boiler are not known.

The boiler fulfills the requirements of UL 2523-18 CSA B366.1-11 (R2020)

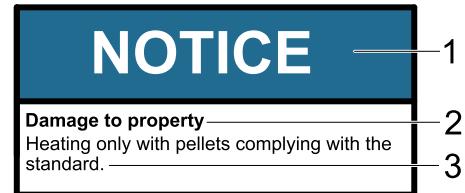
This boiler is intended to be fueled by Pellet Fuels Institute (PFI) Certified Wood Pellets.

3 Types of safety warning sign

The warning signs use the following symbols and text.

Types of safety warning sign

1. Risk of injury
2. Consequences of risk
3. Avoiding risk



1. Risk of injury:

Danger - indicates a situation that could lead to death or life-threatening injury.



Warning - indicates a situation that could lead life-threatening or serious injury.



Caution - indicates a situation that could lead to injury.



Note - indicates a situation that could lead to property damage.



2. Consequences of risk

Effects and consequences resulting from incorrect operation.

3. Avoiding risk

Observing safety instructions ensures that the heating system is operated safely.

4 Warnings and safety instructions

Observing safety instructions ensures that the heating system is operated safely.

4.1 Basic safety instructions

- Never get yourself into danger; give your own safety top priority.
- Keep children away from the central heating room and storage room.
- Observe all safety warnings on the boiler and in this user manual.
- Observe all instructions relating to maintenance, servicing and cleaning.
- The pellet heating system may only be installed and commissioned by an installer that is trained and remains currently authorized by Maine Energy Systems.
- Never make any changes to the heating system or flue gas system. All maintenance, cleaning and changes should only be done by trained professionals.
- Never close or remove safety valves.

4.2 Warning signs

 **DANGER**

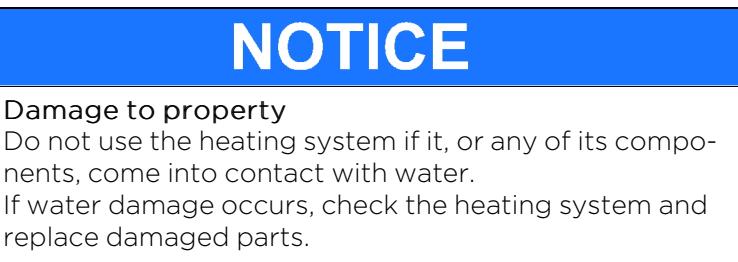
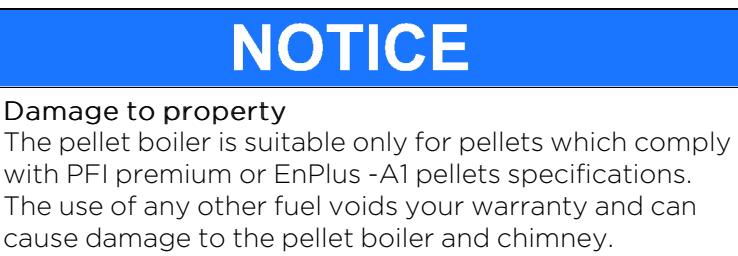
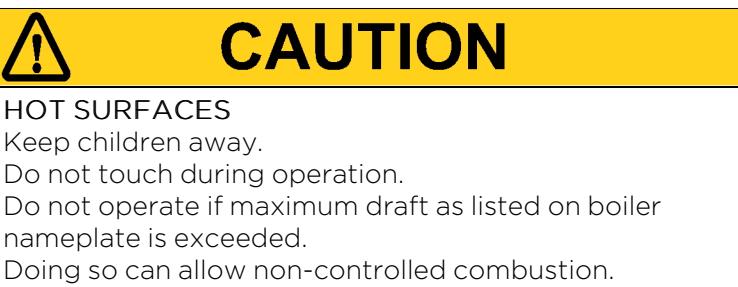
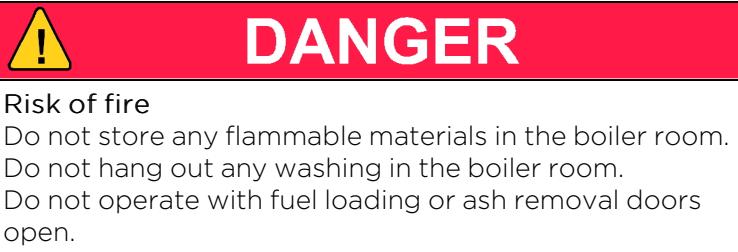
Risk of poisoning
Make sure that the pellet boiler is supplied with sufficient combustion air.
The openings in the combustion air inlet must never be partially or completely closed.
Ventilation systems, central vacuum cleaning systems, extractor fans, air conditioning systems, flue gas blowers, dryers, fuel storage ventilation fans or similar equipment must never be allowed to draw air from the boiler room and cause a drop in pressure.
The boiler must be connected tight to the chimney using a flue gas tube.
Clean the chimney and the flue gas tube at regular intervals.
The boiler room and pellet storage room must be sufficiently supplied with air and ventilated.
Before entering the storage room it must be ventilated with sufficient air and the heating system switched off.

 **DANGER**

Risk of electric shock
Always disconnect / de-energize the power supply before working on the boiler.

 **DANGER**

Risk of explosion
DO NOT BURN GARBAGE, GASOLINE, NAPHTHA, ENGINE OIL, OR OTHER INAPPROPRIATE MATERIALS.
DO NOT USE CHEMICALS OR FLUIDS TO START THE FIRE.
Switch off the heating system before filling the storage room.



4.3 What to do in an emergency



DANGER

Risk to life

Never get yourself into danger; give your own safety top priority.

What to do in the event of a fire

- Switch off the heating system.
- Call your local fire department and / or 911.
- Use approved fire extinguishers (fire protection class ABC).

What to do if you smell smoke

- Switch off the heating system.
- Close the doors leading to living areas.
- Ventilate the boiler room.

Important: Federal, State/Provincial, and Local Regulations, Laws, and Codes must be followed; use of smoke detectors and carbon monoxide monitors are recommended in accordance with applicable statutes.

INSTALL CO SMOKE DETECTORS IN THE LIVING AREA AND BEDROOMS OF YOUR HOME. TEST THEM REGULARLY AND INSTALL FRESH BATTERIES TWICE ANNUALLY.

WHEN INSTALLED IN THE SAME ROOM AS THE STOVE, A SMOKE OR CARBON MONOXIDE DETECTOR SHOULD BE LOCATED AS FAR FROM THE STOVE AS POSSIBLE TO PREVENT THE ALARM SOUNDING WHEN ADDING FUEL.

5 Prerequisites for installing a pellet boiler

The following must be fulfilled before the installation and operation of a fully automatic pellet boiler.

5.1 Guidelines and standards for installing a pellet boiler

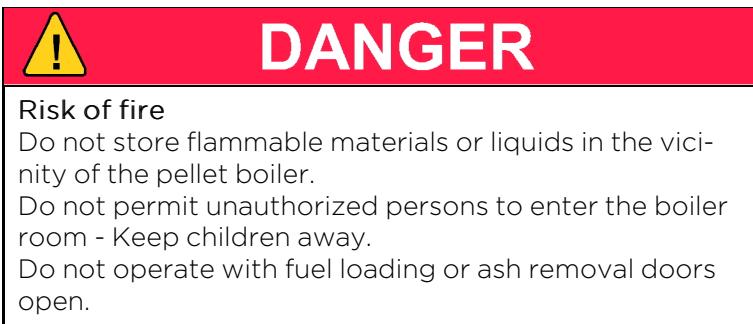
Overview of standards and guidelines applying to the installation of a pellet boiler.

Check whether you need to obtain planning permission or approval from the authorities for installing a new heating system or changing your existing system. Legislation in your country must be observed.

5.2 Installation room

The installation room of the boiler is not necessarily a boiler room. Observe the applicable national and regional regulations.

1. Safety warnings for the installation room



2. Ventilation of the installation room

The installation room must have air inlet and outlet openings for ventilation, even if there is a direct connection to the burner for combustion air. This is to keep the combustion zone at a neutral pressure. For each pellet boiler in the room, there must be at least 31 square inches of opening to outside air, NOT to an adjacent room.

3. Admission of combustion air, the pellet boiler requires combustion air. The combustion air can be supplied by:

- Relying upon the boiler room air as supplied by the air inlet and outlet openings for ventilation in the installation room.
- Independently of the room air via a separate air intake line with a direct connection to the outdoor atmosphere.

The air intake line must not follow the sewage pipe. The diameter of the air intake line must be at least 4 inches. If the air line is greater than 12 feet in length, or if it has more than 270 degrees of turns, then it should be increased in size to 5 inch.

Never operate the pellet boiler if the air intake openings are partially or completely closed.

Contaminated combustion air can cause damage to the pellet boiler. Never store or use cleaning detergents containing chlorine, nitrobenzene or halogen in the room where the heating system is installed, if combustion air is drawn directly from the room. Be particularly cautious around swimming pools and chemicals.

Do not hang out washing in the boiler room.

Prevent dust from collecting at the combustion air intake to the pellet boiler.

4. System damage due to frost and humidity

The temperature in the installation room must not drop below 38°F and must not exceed +86°F. The relative humidity in the installation room must not exceed 70%.

5. Danger for animals

Prevent pets and other small animals getting into the installation room. Install grilles over all openings.

6. Flooding

In the event of a flooding risk, switch off the pellet boiler and disconnect it from the main power supply

before water enters the boiler room. All components that come into contact with water must be replaced before the pellet boiler is put into operation again.

5.3 Flue gas system

The flue gas system consists of a chimney and a flue gas tube. The flue gas tube connects the pellet heating system to the chimney. The chimney leads the flue gas from the pellet heating system out into the open.

1. Design of the chimney

The dimensions and design of the chimney is very important. The chimney must be able to ensure sufficient draft to safely draw away the flue gas regardless of the status of the boiler. Low flue gas temperatures can cause sooting and moisture damage on chimneys that are not insulated. For this reason **moisture-resistant chimneys** (stainless steel or ceramic) should be used. An existing chimney that is not damp-resistant needs to be renovated before use. Follow guidelines below:

Boiler size		AutoPellet
Flue gas tube diameter (at boiler)	inch/mm	7/180
Flue gas temp. / rated power	° F	266 - 320
Flue gas temp. / partial load	° F	194 - 248
Min. draft (full load/part load) to Max draft	in/wc	- 0.04 / - 0.02 to -0.11

Chimney size	Min. Height
6in x 6in	17ft
7in x 7in	16ft
8in x 8in	16ft
6in round	19ft
7in round	17ft

NOTICE

Person(s) operating a hydronic heater is/are responsible for operation in a manner that does not create a public or private nuisance condition. The manufacturer's distance and stack height recommendations and the requirements in any applicable laws or other requirements may not always be adequate to prevent nuisance conditions due to terrain or other factors.

Recommended and UL-103HT approved chimney materials are:

- Selkirk sure temp
- Supervent (JSC)
- Security chimneys (secure temp ASHT)

Use flue gas pipe from chimney to boiler as required by your local code.



CAUTION

Unregulated combustion

Please observe that combustion air openings and flue pipes are not reduced in size or closed. Make end user aware of these guidelines and their potential danger. Clean the chimney and the flue gas tube at regular intervals.

Check if the draft inducer is clean and in a good condition.

2. Flue gas temperature

The flue gas temperatures are approximately the same for all AutoPellet covered in this manual.

The dewpoint of flue gas with wood pellets (max. 10% water content) is approx. 120°F.

It is possible to increase the flue gas temperature to prevent condensation inside the chimney and avoid damage due to damp. Only authorised installers may increase the flue gas temperature.

Note:

The increase in flue gas temperature results in reduced efficiency and thus increases fuel consumption.

3. Negative pressure of the chimney

The boiler must be connected to a chimney or a vertical venting system that is capable of handling and producing a negative breeching pressure of **-0.04 "WC**. Use a draft gauge to verify the indicated draft value, adjust barometric damper as required. Drill a small hole in the connection pipe at about 2in/ 50mm from the boiler flue outlet and use this hole as your measuring point.

Chimney draft

The suction effect of the chimney draft must extend all the way to the boiler flue pipe connection. The maximum flow rate that can be drawn through the chimney limits the maximum performance of the chimney connection. The boiler performance must be reduced if the chimney does not possess the necessary cross-section. This may only be performed by authorised personnel.

4. Cleaning

Clean the flue gas tube and chimney regularly. Solid fuel burning appliances need to be cleaned frequently because soot, creosote, and ash may accumulate. The hotter the fire, the less creosote is deposited. Cleaning intervals can vary in warm periods due to this and become more frequent.



DANGER

Risk of chimney fire

Creosote-formation and need for removal: Low flue gas temperature can cause creosote. Creosote can condense in a relatively cool chimney. As a result, creosote residue accumulates on the flue lining. If ignited, this creosote will create an extremely hot fire. The chimney and the chimney connector should be inspected at least twice monthly during the heating season to determine if a creosote buildup has occurred. If creosote has accumulated it should be removed to reduce the risk of a chimney fire.

NOTICE

Oxidation of chimney

Do not use metal brushes to clean chimneys made of stainless steel.
Your state and local regulations must be observed.

5.4 Safety systems

The following safety measures are the prerequisite for safe operation of your system.

Emergency stop switch

Every heating system must be able to be switched off with an Emergency Stop switch. The Emergency Stop switch location is determined by your local code requirement. It should remove all electrical power from the boiler.



Safety valve / Over Pressure Relief Valve

This valve opens when the pressure inside the heating system increases to max. 43.5 PSI. For North America, a 30 PSI Relief Valve is supplied with each boiler. This valve must not be locked out or plugged and must be within 3 feet of the boiler, with no valves between the relief valve and boiler.



Low Water Detection

The "Low Water Detection" device is connected to the Emergency Stop of the boiler. Should a low water condition be detected, the boiler stops firing immediately. This device must be of the manual reset variety.



Safety temperature sensor

The pellet boiler is equipped with a safety temperature sensor. This is located on the pellet boiler. If the boiler temperature exceeds 230° F, then the heating system switches off.



Expansion tank

All heating systems must be equipped with an expansion tank. The overall size of the heating system volume will dictate the required expansion tank size.



Barometric Controller

All heating systems must be equipped with a barometric controller (see section 5.3.1).

NOTICE

Initial start-up

The initial start-up of each MESys boiler must be performed by an authorized installer.

5.5 Installation with an existing boiler

MESys boilers are not to be connected to a chimney flue serving another appliance. However, when all State and local codes allow for the sharing of chimney flues, MESys boilers and another appliance burning pellets or a different fuel can be operated simultaneously while connected to a single existing chimney or flue gas system providing the following conditions are met:

- All state and local codes permit the specific installation.
- All appliances are installed in accordance with the manufacturer's installation specifications or if lacking manufacturers specifications, the appliance in question is installed in a manner commonly recognized as safe and correct for the application and circumstances.
- The chimney or flue gas system must be able to handle the combustion products of either appliance and both appliances when operated simultaneously.

NOTICE

Avoid clearance issues that can make servicing difficult:

Be sure to follow suggested clearances when installing this boiler with an existing boiler to be sure that service and cleaning can be performed adequately.



CAUTION

Avoid code violations:

When connecting to or with an existing boiler, contact the authority having jurisdiction to be sure the type of installation planned is allowed.

Document the type of boiler that the Pellematic is connected to or with.

Pellet boiler: Make and Model number:

Existing boiler: Make and Model number:



DANGER

Possible escape of flue gas:

Do not connect this unit to a chimney flue serving another appliance unless multiple appliances into a single flue is authorized by all authorities having jurisdiction.

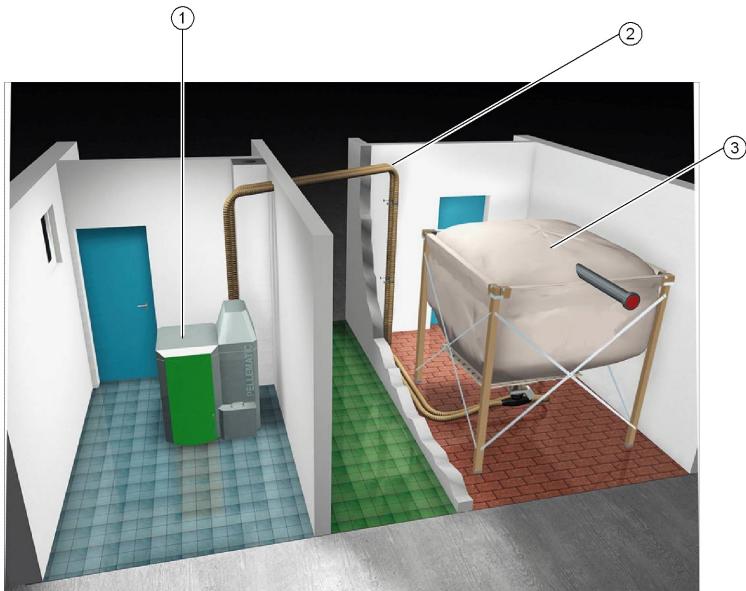
6 Product description

The description of the product is intended to provide an overview of the components that make up a pellet heating system, the parts of the pellet boiler and advice on where you can find more information.

The pellet heating system consists of 3 components

1	Pellet boiler
2	Conveyor system
3	Storage system - textile tank

Pellet boiler with textile tank



The concept features different sizes of design and type for each component. These are compatible and designed to match.

6.1 The pellet boiler

The pellet boiler is equipped with an automatic cleaning system, mounted within the fire chamber and an integrated return water temperature control. The installed programmable logic controller system enables fully automatic operation and highest efficiency. We offer an optional external automatic ash compression system for the highest level of cleanliness and convenience.

AutoPellet types and power ratings

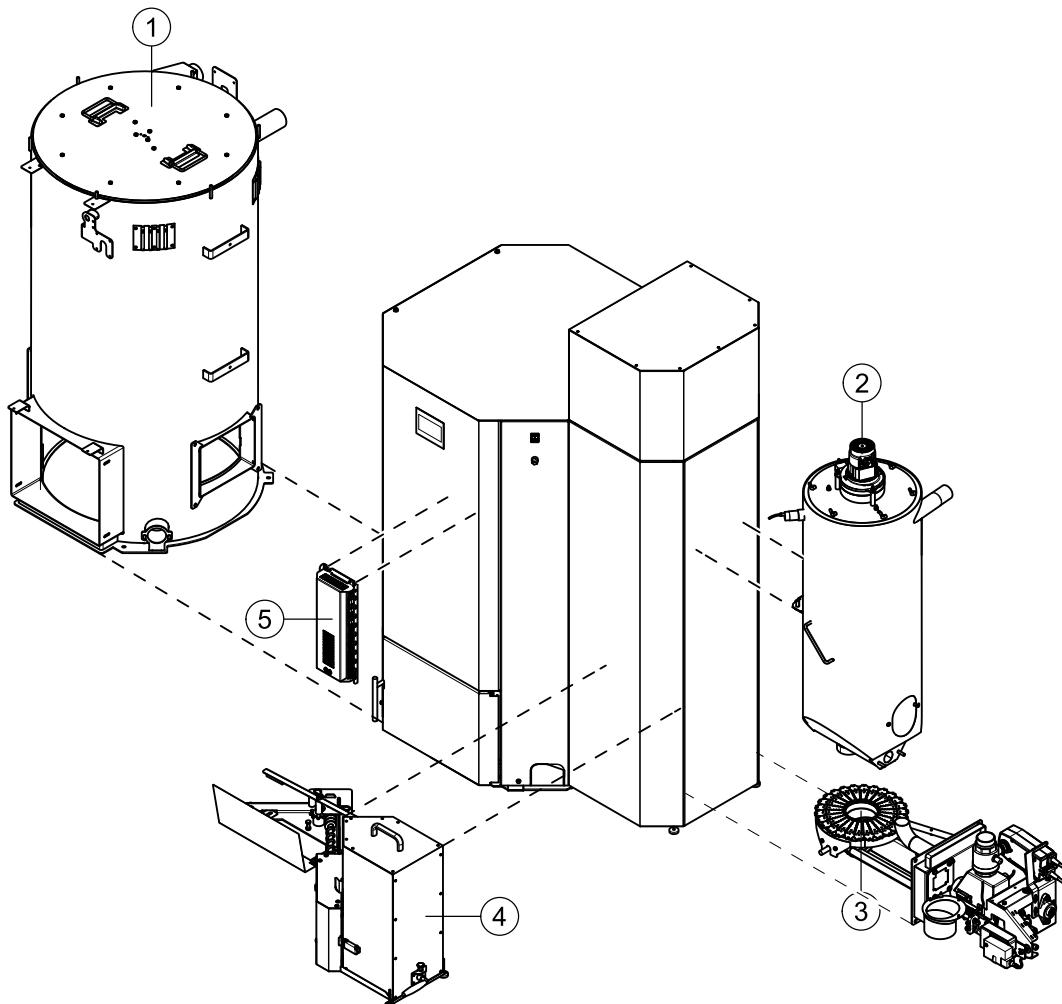
We offer the Pellet boiler with the following power ratings:

Suction-feed systems: 68,300; 109,500 and 191,000 BTU/hr

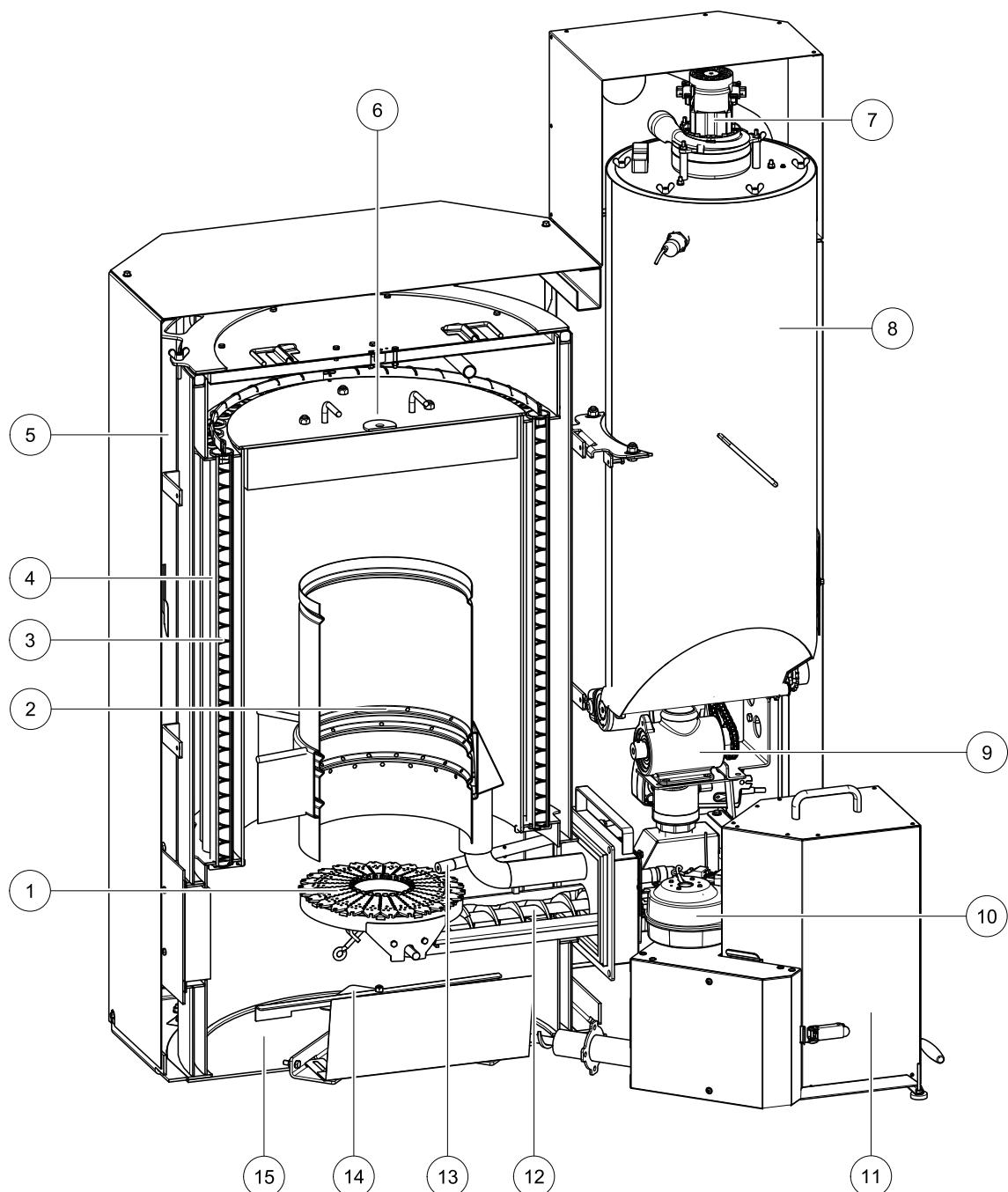
Note:

Refer to the data plate for the power rating of your AutoPellet. The data plate is located on the rear side of the AutoPellet. Here you will find the type designation, manufacturer's serial number and year of build.

Key components of the AutoPellet



1	Boiler (heat exchanger)
2	Vac Hopper / Day tank
3	Burner
4	External automatic ash compression system
5	Boiler controller



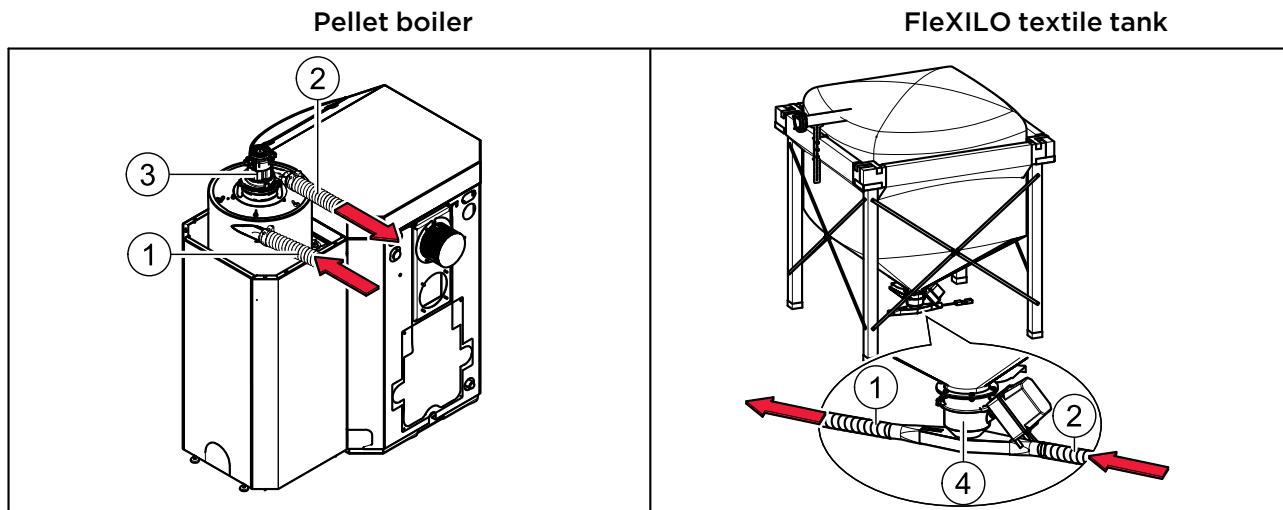
1	Burner plate	9	Fire protection - ball valve
2	Flame tube	10	Burner fan
3	Heat exchanger	11	External ash box
4	Boiler water	12	Burner auger
5	Boiler insulation	13	Electronic ignition
6	Combustion chamber cover	14	De-ashing system
7	Suction turbine	15	Ash chamber / Fire chamber
8	Vac hopper / Day tank		

6.2 Pellet suction system

The pellet suction system consists of a pellet line, an air line and a suction turbine. The suction turbine in the hopper conveys pellets in the pellet line from the storage room or textile tank to the hopper.

Key components of pellet suction system

1	Pellet hose	Hose from textile tank to the hopper.
2	Air hose	Hose from the suction turbine to the textile tank.
3	Suction turbine	Located above the hopper underneath the AutoPellet burner casing.
4	Suction switch	Located underneath the textile tank.



6.2.1 Assembly of the vacuumsystem

The pellet hose and the air hose are flexible spiral hoses made out of plastic. A copper braid avoids the static loading of the spiral hose.

To avoid damage to the spiral hose, you must observe the following assembly guidelines:

- | | |
|---|--|
| Bending radius | The hose should be led as briefly as possible and with a few curves as necessarily. Bending radius may never be smaller than 12inch . |
| Upward gradients | Max difference in height = 236inch
Note: A difference in height of up to 118inch can be overcome at one time. Larger differences in height must be interrupted with a 4 foot horizontal run of the pellet hose. |
| Impact protection | The spiral hose can be mounted up to 236inch exactly straight. In such cases however, it is very important to create a slight "S" in the pellet piping before a sharp curve to slow down the pellets to prevent hose damage. |
| Installation in the soil and openings: | When installing pellet lines underground remember! The pellet lines are not designed for direct burial and require protection from being crushed or chewed by varmints.
Protective piping should be minimum 4 inch and sealed at each end. There should be no bends greater than 15 degrees in the underground sections of the pellet hose. |
| Tightness | To avoid problems with your pellet lines, it is important to have all hose connections secured completely air tight with hose clamps. |
| Static neutralization | The hoses are provided with a copper braid, which the hose keeps antistatic. In order to ensure the function of the anti-statics, this copper braid must be attached at each end to the existing grounding become. |
| Fire protection | At a wall break-through to the heating room must be installed a fire protection seal in the pellet- and the air hose. |

Crossing

The pellet hose and the air hose should cross each other as few times as possible.

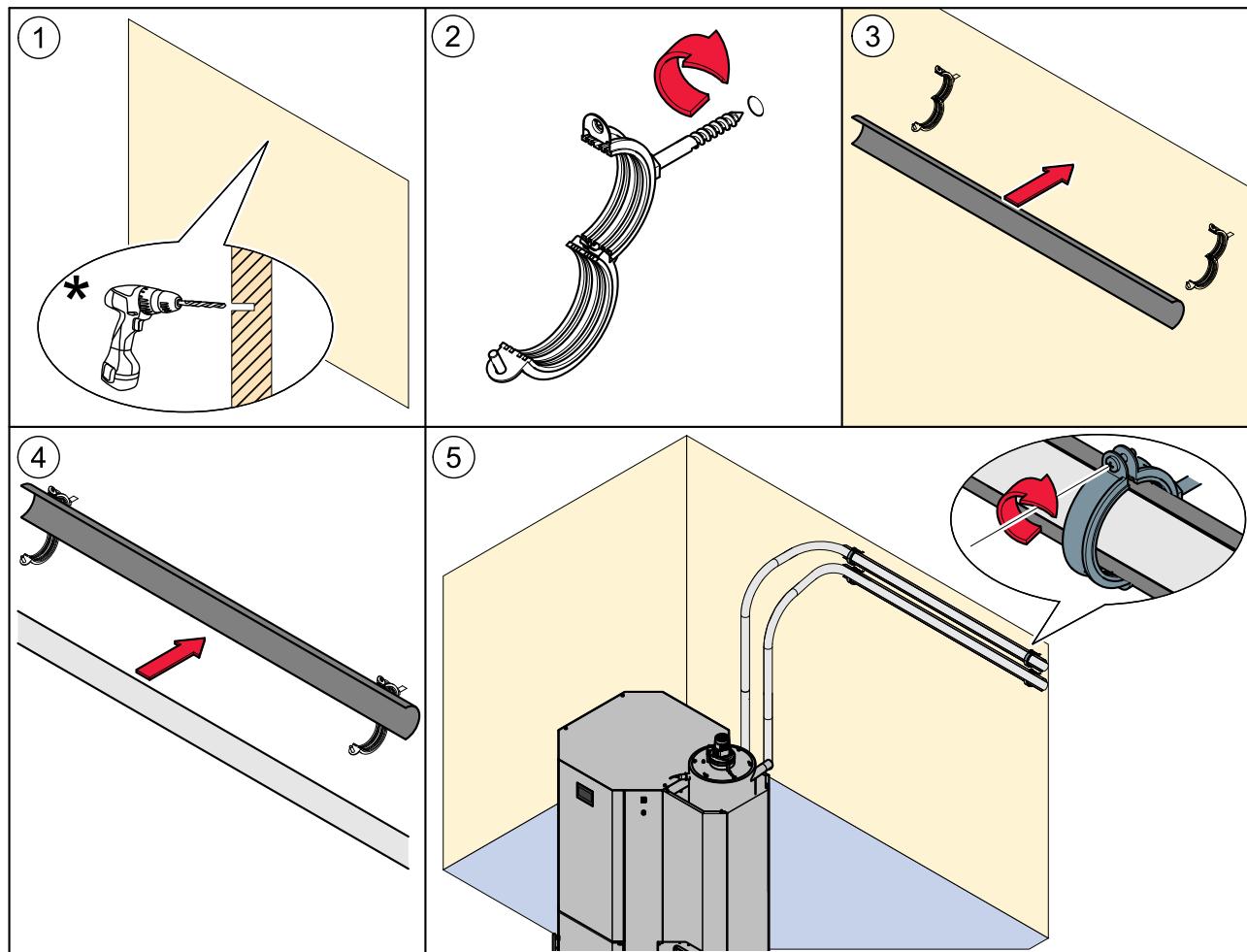
Length of the spiral hose

The maximum total length of the spiral hose is 130 feet.

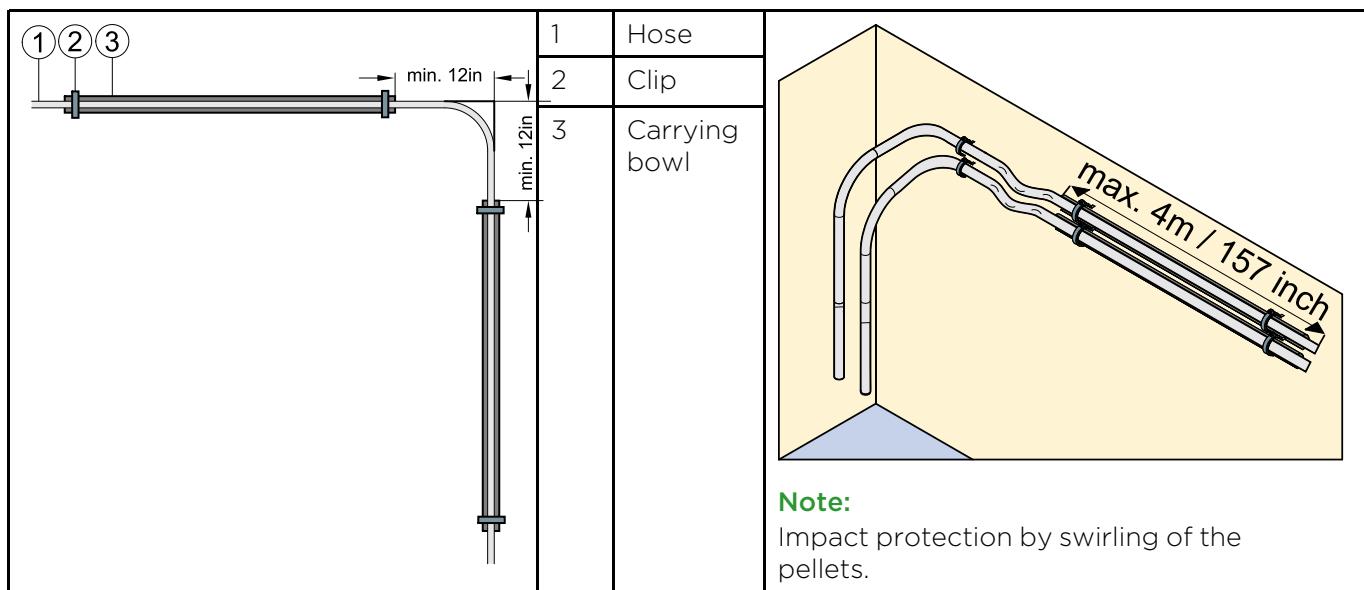
The maximum for pellet hose and air hose are each 60 feet.

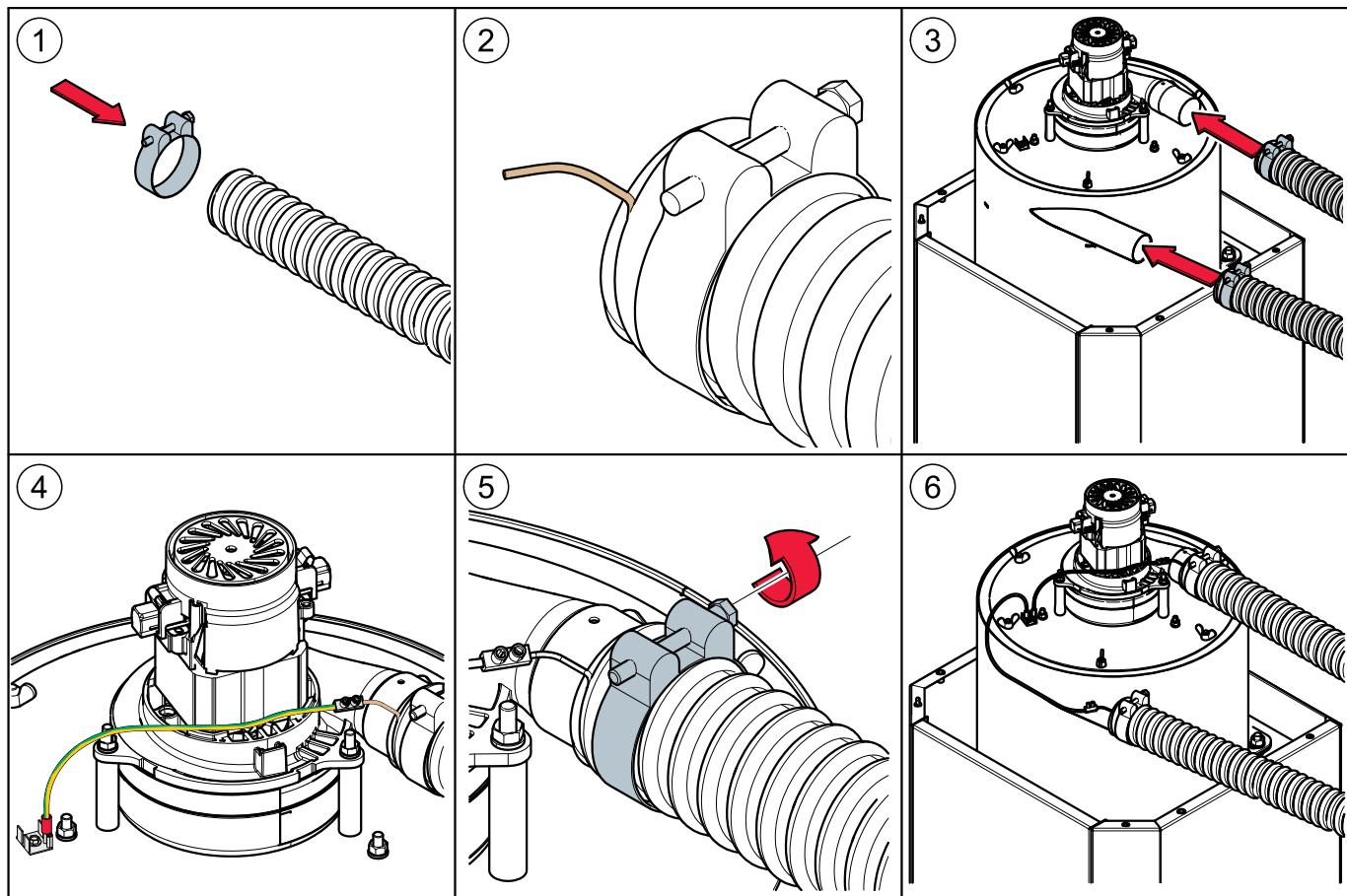
Assembly

Use securing clips and carrying bowls.



*Pay attention to the defined distances!



Connection of the pellet and air hose to the suction turbine

6.3 Storage systems

There are two methods for storing pellets: in a storage room with an auger feed system (version A) or in a FleXILO fabric tank (version B). FleXILO fabric tanks can be located inside the central heating room, storage room or protected from wet and sun outside.

NOTICE

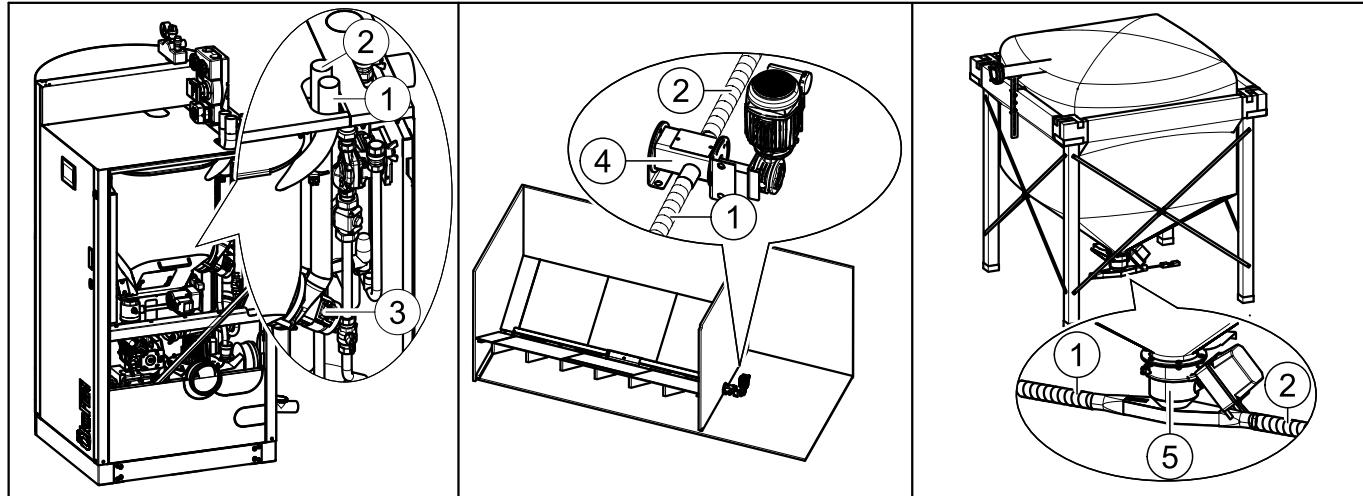
Damage to property and loss of warranty

The use of an MESys boiler with a storage or conveyor system from another manufacturer is not permissible and will result in voiding your warranty along with undependable operation.

6.3.1 Flexilo fabric tank

The whole fabric tank system is included in the scope of supply. MESys offers various sizes and types. The fabric tank supplied may vary from the example shown below.

Please refer to the installation instructions supplied for the fabric tank. Note also the instructions on setting up and filling.



NOTICE

DAMAGE TO PROPERTY

Fans should not be used to ventilate the storage room or boiler room. The use of passive ventilation is required, or the use of a sophisticated system that balances outside and inside pressure in the boiler

7 Bringing the pellet boiler into the boiler room

This section describes the prerequisites as well as the working sequence required.

1. Transport
2. Notes on bringing the unit into the building
3. Casing parts
4. Dismantling the casing parts

7.1 Transport

We supply the pellet boiler on a pallet. The pellet boiler is ready to be connected.

The control unit for the boiler controller and the operating device is integrated into the control panel.

If it is not possible to bring the boiler into the building at ground level, then you can remove the casing, the burner, the hopper and the boiler controller. This will reduce the weight of the unit and make it easier to carry.

NOTICE

Contamination and corrosion

Make sure that the pellet boiler is located under a roof if it needs to be stored outside before it is transported/brought into the building. It is also necessary to transport the boiler in a closed in truck or trailer. Boilers transported otherwise will lose their warranty.

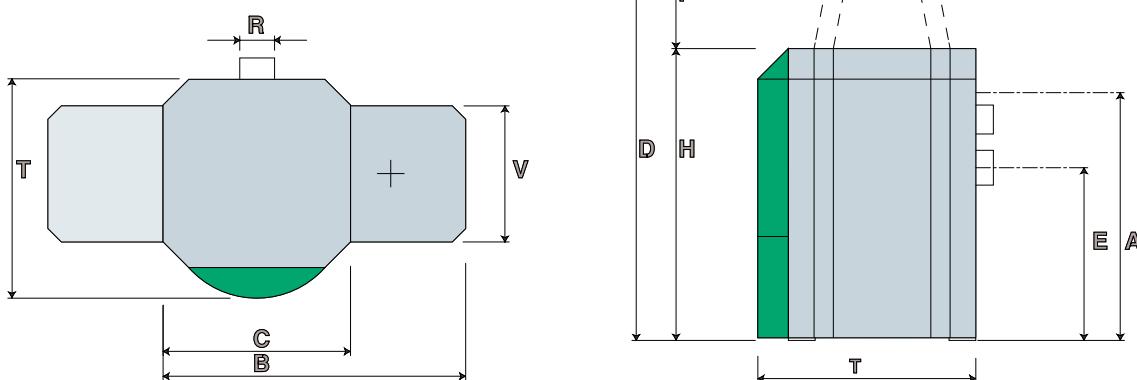
7.2 Notes on bringing the unit into the building

Before bringing the unit into the building, check the dimensions of all doors to ensure that the boiler has sufficient clearance and can be set up properly.

Minimum door width — max. unit dimension

PE, PES	12, 15, 20	27,5 inch / 750mm
PE, PES	25, 32	29,75 inch / 800mm
PES	36, 48, 56	31,2 inch / 900mm

Boiler dimensions



Boiler size		PE(S) 12	PE(S) 15	PE(S) 20	PE(S) 25	PE(S) 32	PE(S) 36	PE(S) 48	PE(S) 56
B - Overall width of pellet boiler	inch	44 1/2	44 1/2	44 1/2	46 3/4	46 3/4	51	51	51
	mm	1130	1130	1130	1186	1186	1297	1297	1297
C - Width of boiler casing	inch	27 1/2	27 1/2	27 1/2	29 3/4	29 3/4	34	34	34
	mm	700	700	700	756	756	862	862	862
H - Height of boiler casing	inch	43	43	43	51	51	61	61	61
	mm	1090	1090	1090	1290	1290	1553	1553	1553
D - Height of pellet suction system	inch	55	55	55	63	63	73	73	73
	mm	1392	1392	1392	1592	1592	1855	1855	1855
F - Height of suction filling unit	inch	12	12	12	12	12	12	12	12
	mm	302	302	302	302	302	302	302	302
T - Depth of boiler casing	inch	32	32	32	34 1/4	34 1/4	39	39	39
	mm	814	814	814	870	870	990	990	990
V - Depth of burner casing	inch	20	20	20	20	20	20	20	20
	mm	508	508	508	508	508	508	508	508
E - Flue gas tube connection height	inch	25 1/2	25 1/2	25 1/2	33 1/4	33 1/4	41	41	41
	mm	645	645	645	844	844	1040	1040	1040
A - Height of supply/return	inch	35 3/4	35 3/4	35 3/4	43 3/4	43 3/4	52	52	52
	mm	896	896	896	1110	1110	1320	1320	1320
R - Diameter of flue gas tube	inch	5	5	5	6	6	7	7	7
	mm	130	130	130	150	150	180	180	180

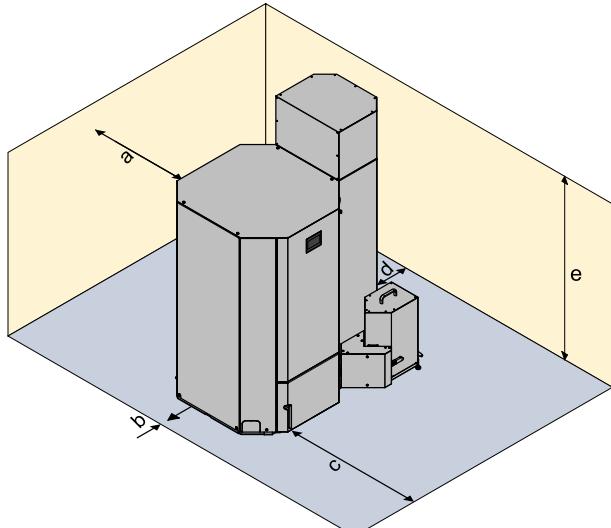
Boiler Weight

Boiler size		PE(S) 12	PE(S) 15	PE(S) 20	PE(S) 25	PE(S) 32	PE(S) 36	PE(S) 48	PE(S) 56
Weight of boiler packaged on pallet with wooden frame	Lb	858	858	858	1003	1003	1430	1430	1430
Weight of boiler with casing, hopper and burner	Lb	533	542	551	696	705	1327	1336	1344
Weight of boiler without casing, hopper and burner	Lb	529	529	529	664	664	930	930	930

Minimum clearance dimensions required

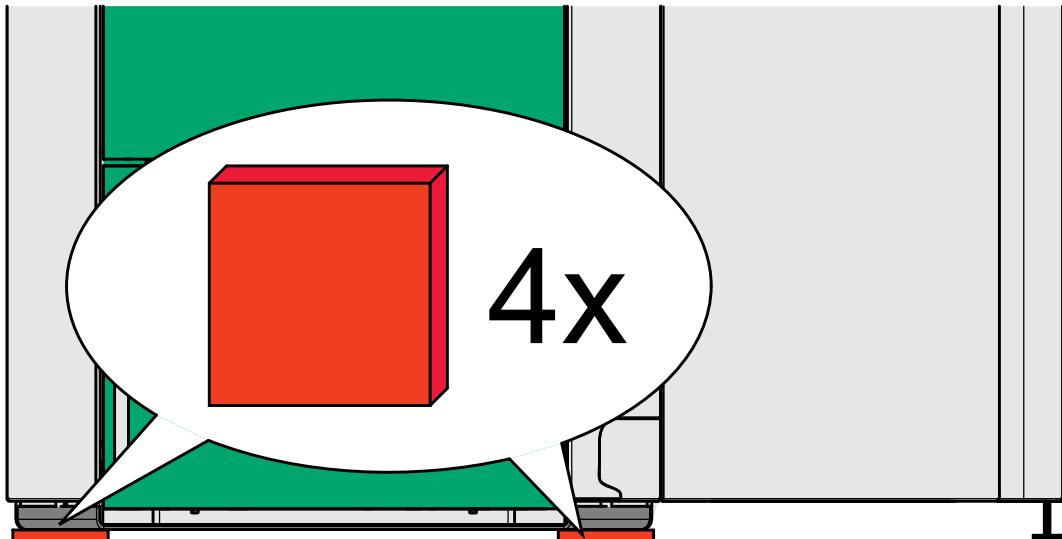
Note:

To install the heating system properly and ensure economical operation, you need to make sure that minimum clearance dimensions indicated below are observed when setting up the boiler. **In addition, make sure that legislation in your country is complied with relating to the minimum clearance of the flue gas tube.**



a	Minimum clearance to the edge of removable top cover of the boiler. For flue pipe clearance, refer to applicable codes.	inch mm	18 450
b	Min. clearance of side of boiler	inch mm	5 50
c	Min. clearance of front of boiler	inch mm	28 700
d	Min. clearance to housing - burner side.	inch mm	12 300
e	Min. ceiling height. And the distance from ceiling to top of boiler must be enough to remove all covers.	inch mm	80 2000

Note:
Place the boiler according to the minimum clearances to the flue pipe connection point as defined in NFPA 31, or if NFPA is not recognized, then the code pertinent to the installation location.
Make sure that you also comply with local legal regulations.
For clearances required for floor protection, see following page.

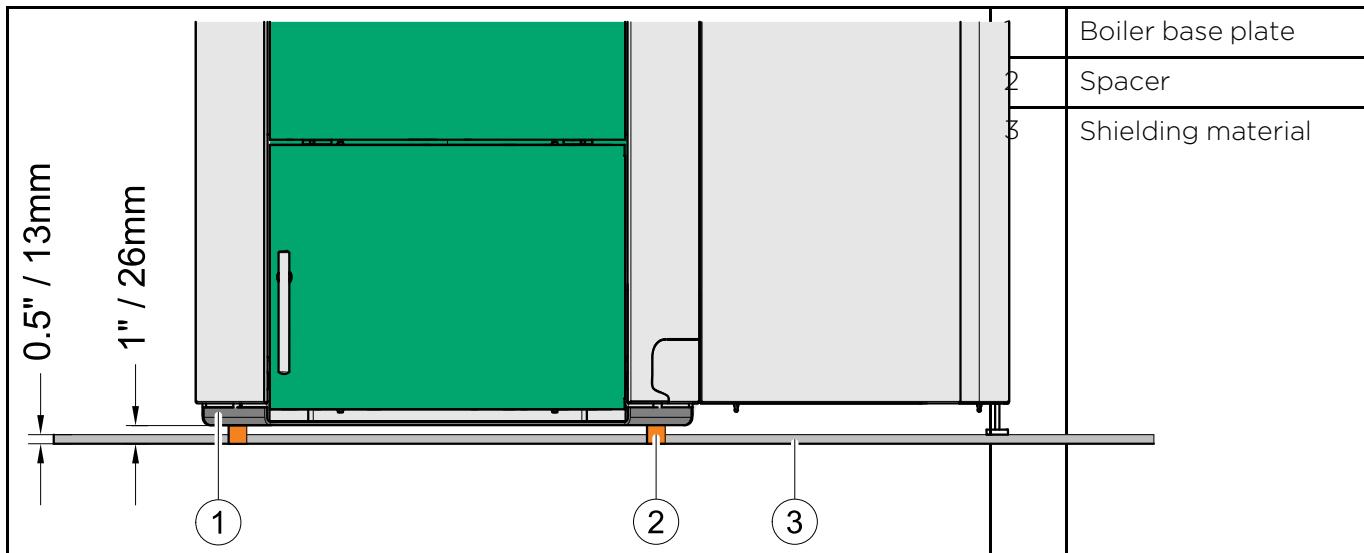
Placement of rubber plates**NOTICE**

The pellet heating boiler must be placed on the supplied rubber plates.

7.3 Flooring

The boiler room floor must be flat and level and must be able to support boiler gross weight. The floor must comply with the requirements of NFPA 31.

Generally the boiler should be placed on non-combustible floors. However, a shielding material can be placed underneath the boiler and the chimney connector in the case of a combustible floor like shown on the following drawing.



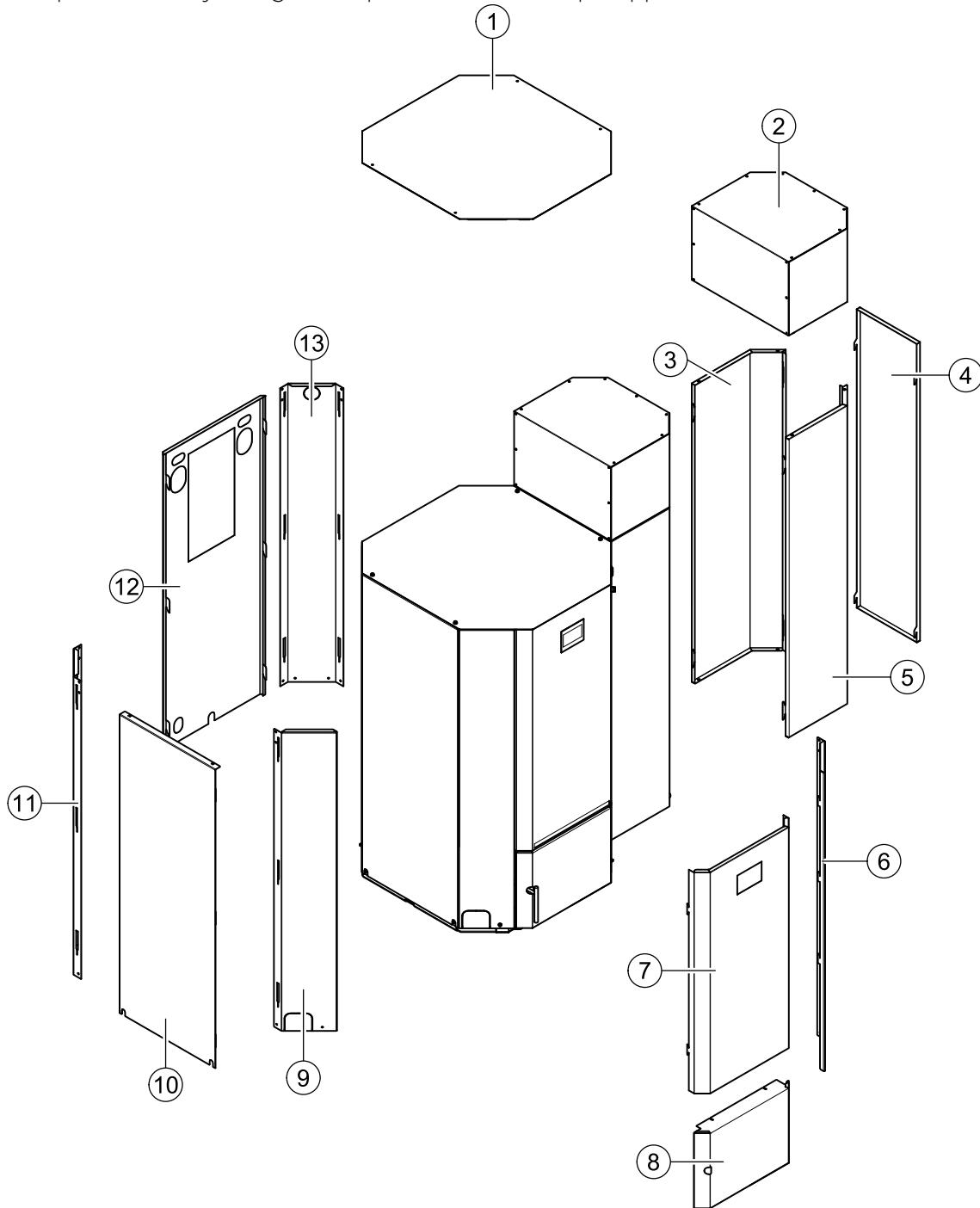
The spacer must be able to support the weight of the boiler and has to be non combustable. The shielding material must be equivalent to a $\frac{1}{2}$ in / 13mm micro board with a K-value of 0.49 (W/m K) (R-value of 1.02 Km²/W) or greater. For more information contact Maine Energy Systems.



Minimum clearances of shielding material required for floor protection			
Min. clearance of the shielding material from the boiler back – Note also the local restrictions in your area (a)	inch	17	
Min. clearance of the shielding material from the boilers left side panel (b)	inch	8	
Min. clearance of the shielding material from the boilers front panel (c)	inch	27	
Min. clearance of the shielding material from the boilers right side panel (d)	inch	12	

7.4 Casing parts

The boiler is protected by a casing on all sides. The casing parts prevent contact with hot, moving and live components. They also give the pellet boilers a unique appearance.



1	Boiler casing cover	7	Boiler side panel with opening
2	Boiler rear panel	8	Burner side panel (same as 11)
3	Boiler side panel without opening	9	Burner lug without opening
4	Boiler door panel (semi-circle)	10	Burner cover suction system
5	Boiler front panel (semi-circle)	11	Burner side panel (same as 8)
6	Boiler raise panel (semi-circle)		

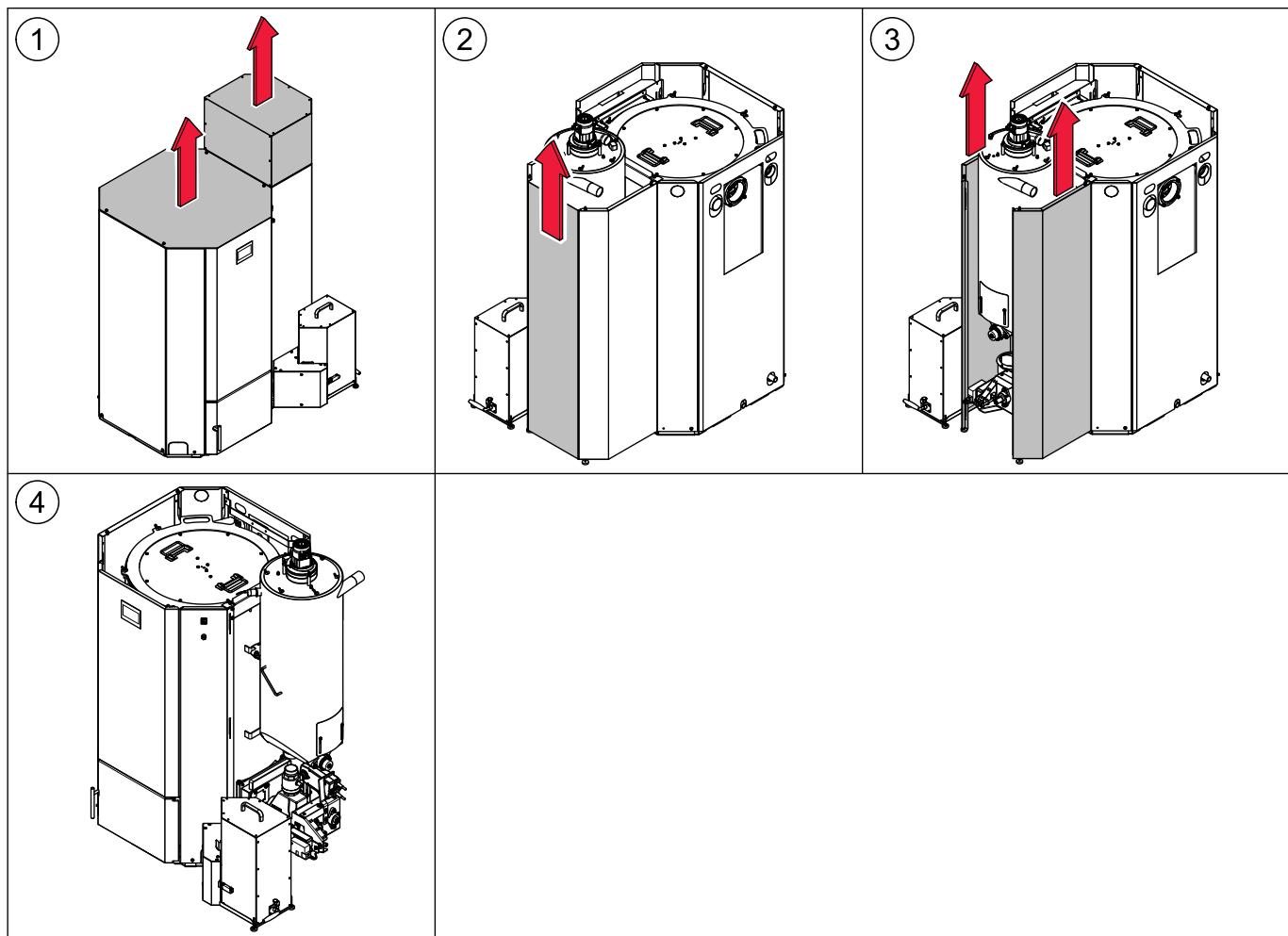
7.5 Removing the casing, the hopper and the burner

Dismantle the pellet boiler as far as necessary if site conditions require, so that the unit can be brought safely into the building.

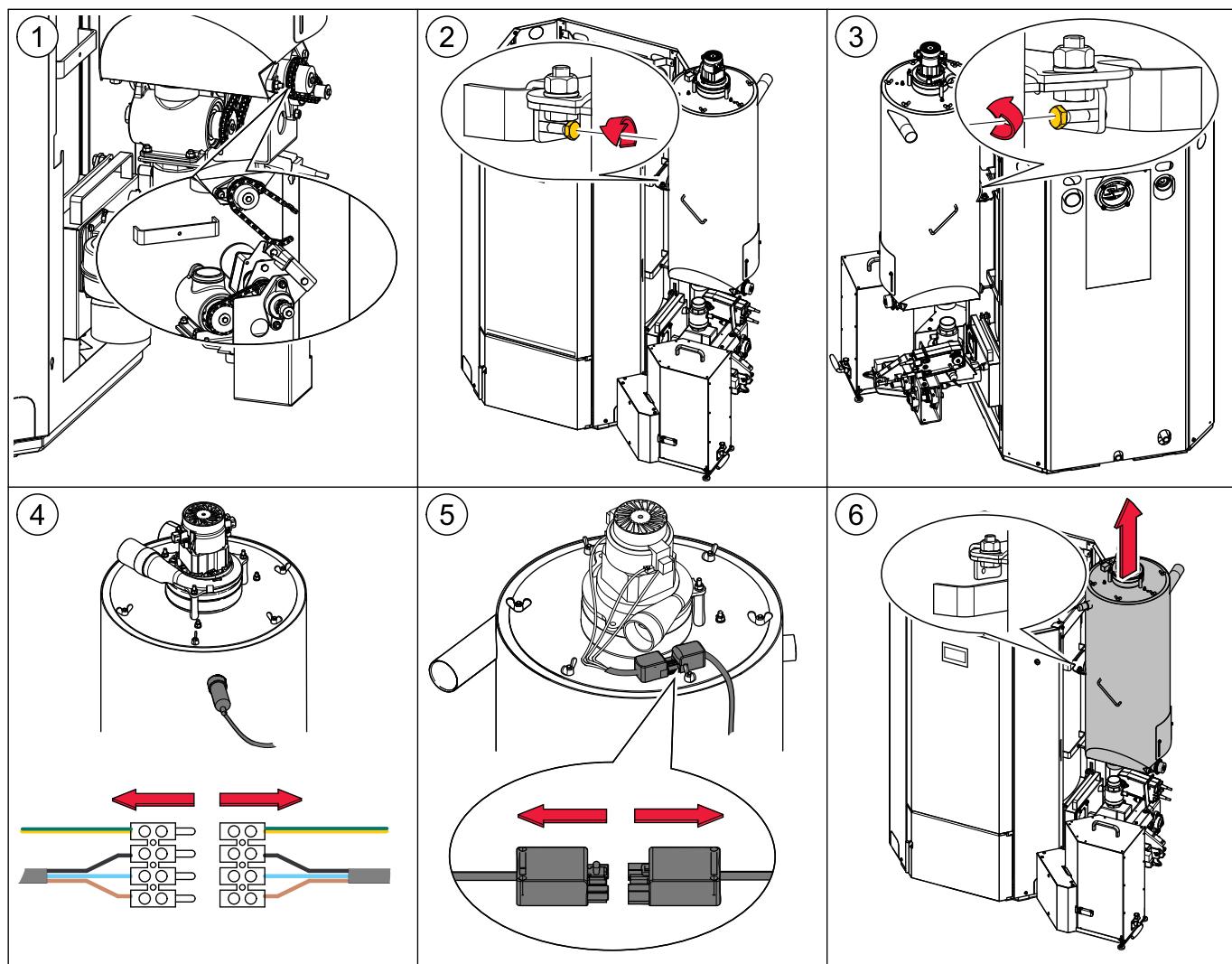
The complete dismantling of all components described here is divided into the following sections:

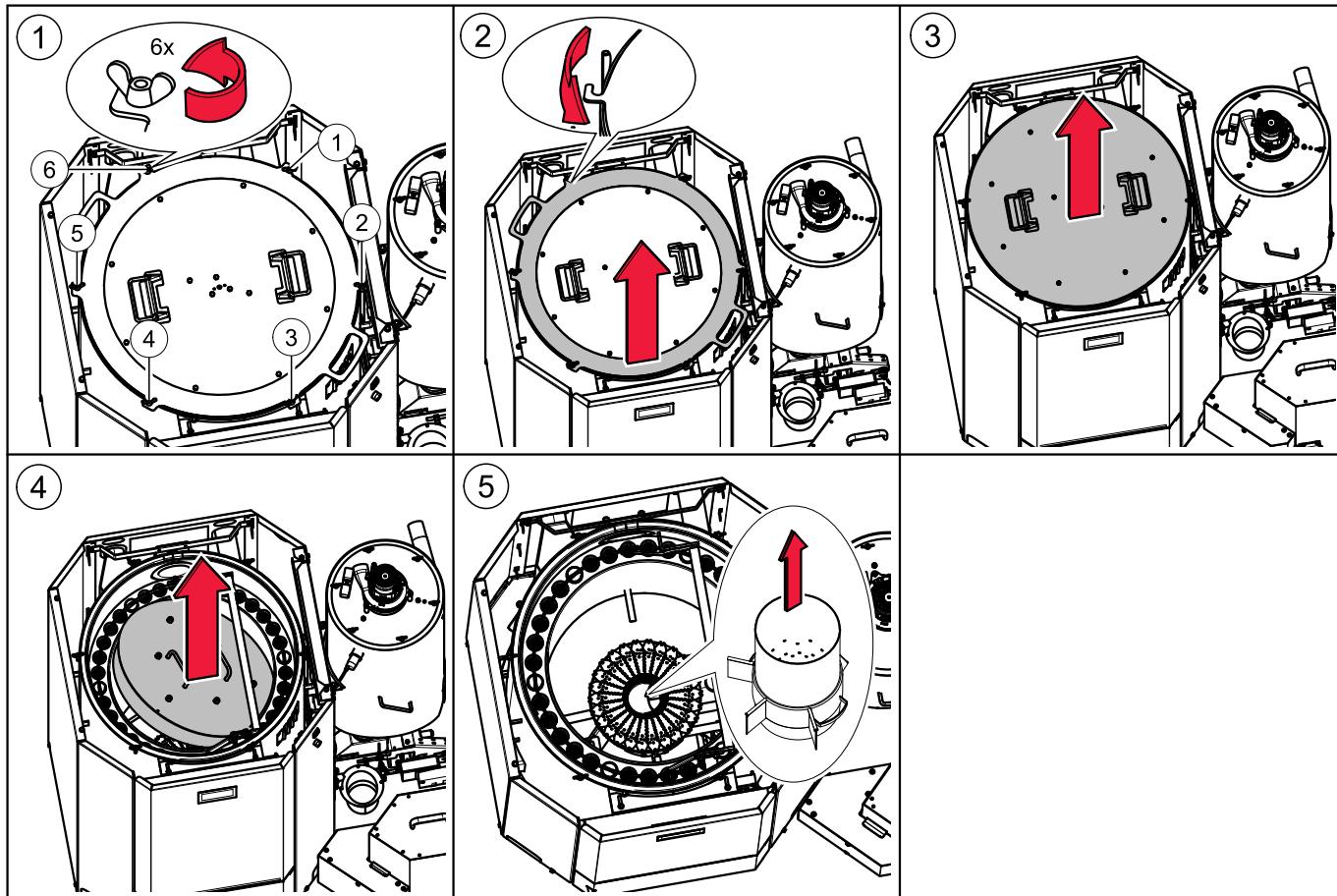
1. Dismantling the burner casing
2. Dismantling the hopper
3. Dismantling the burner
4. Dismantling the boiler door
5. Dismantling the boiler casing

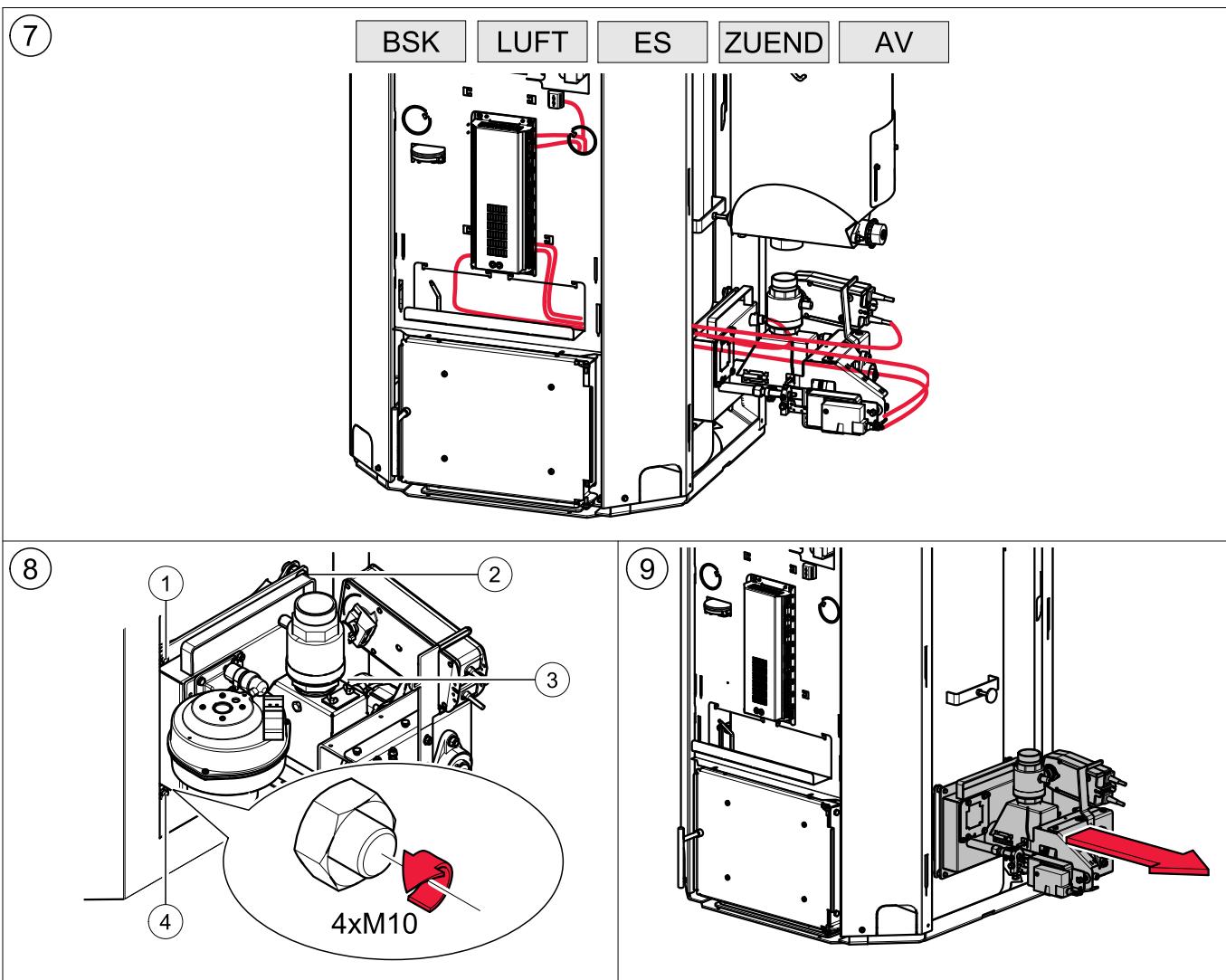
7.5.1 Dismantling the burner casing



7.5.2 Dismantling the hopper

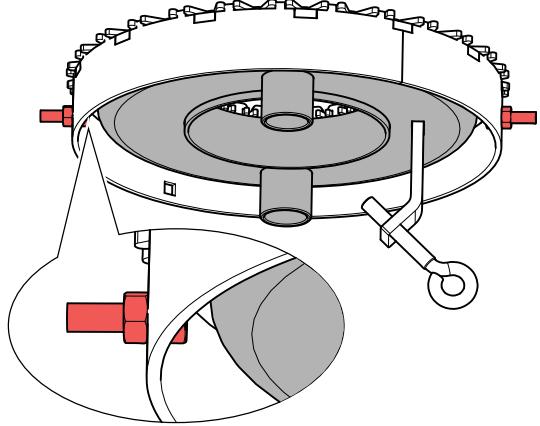
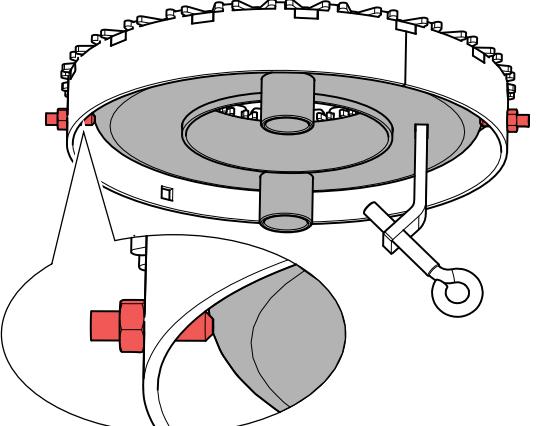


7.5.3 Dismantling the burner

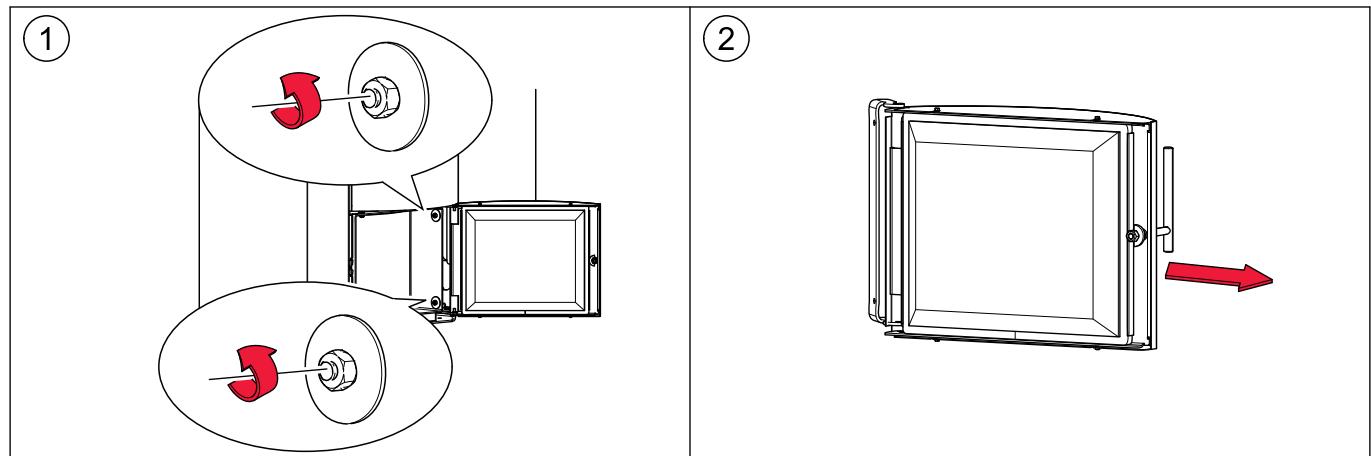


Multi segmented burner plate

There are 2 mounting variations:

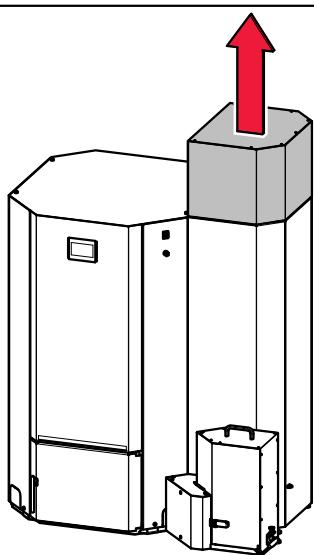
With burner plate cleaning system: Bolts loosened	Without Burner plate cleaning system: Bolts tightened
	
<p>NOTICE</p> <p>Damage to property The safety screws for rotating the Multi segmented burner plate must be loosened/removed when exchanging the Multi segmented burner plate.</p>	<p>NOTICE</p> <p>Damage to property The safety screws for rotating the Multi segmented burner plate may not be loosened/removed when mounting.</p>

7.5.4 Dismantling the boiler door

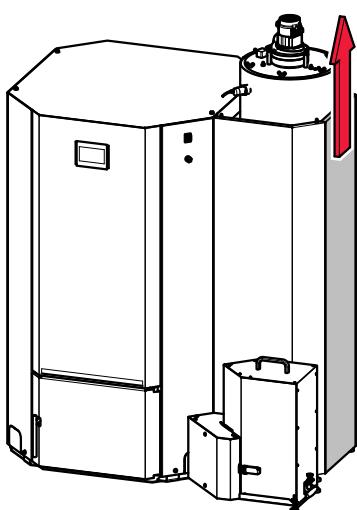


7.5.5 Dismantling the boiler casing

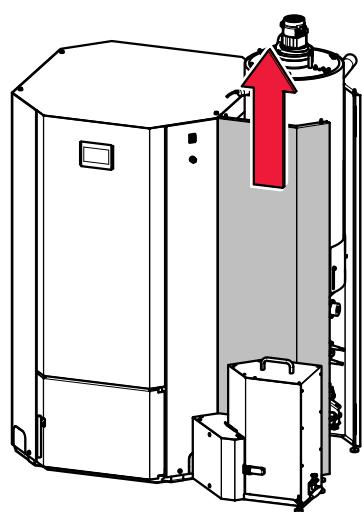
(1)



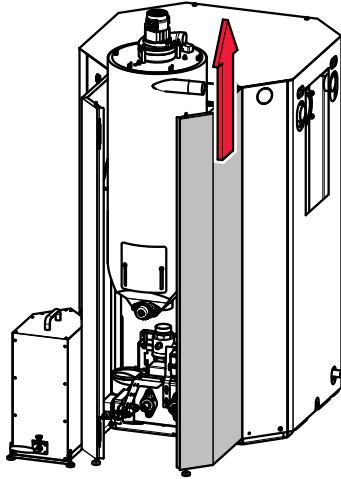
(2)



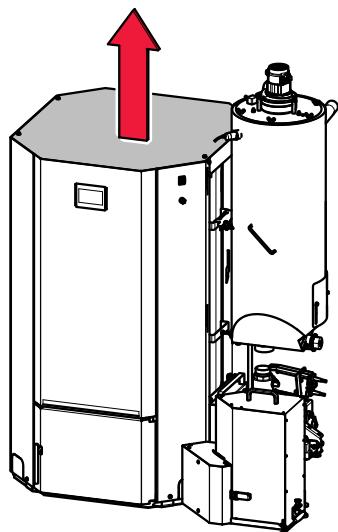
(3)



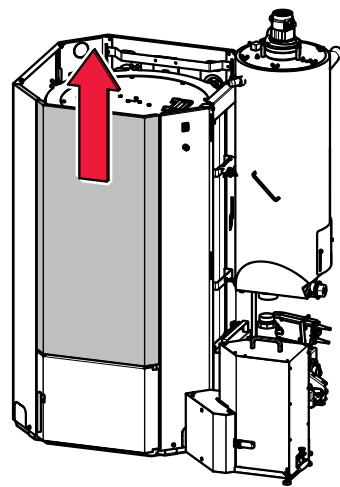
(4)

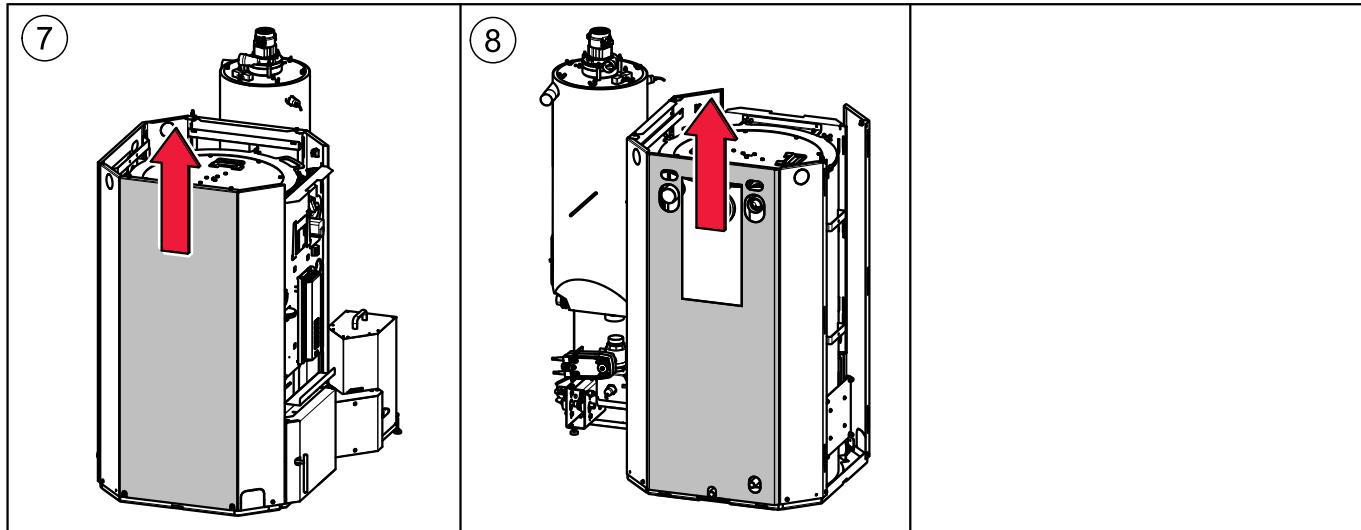


(5)



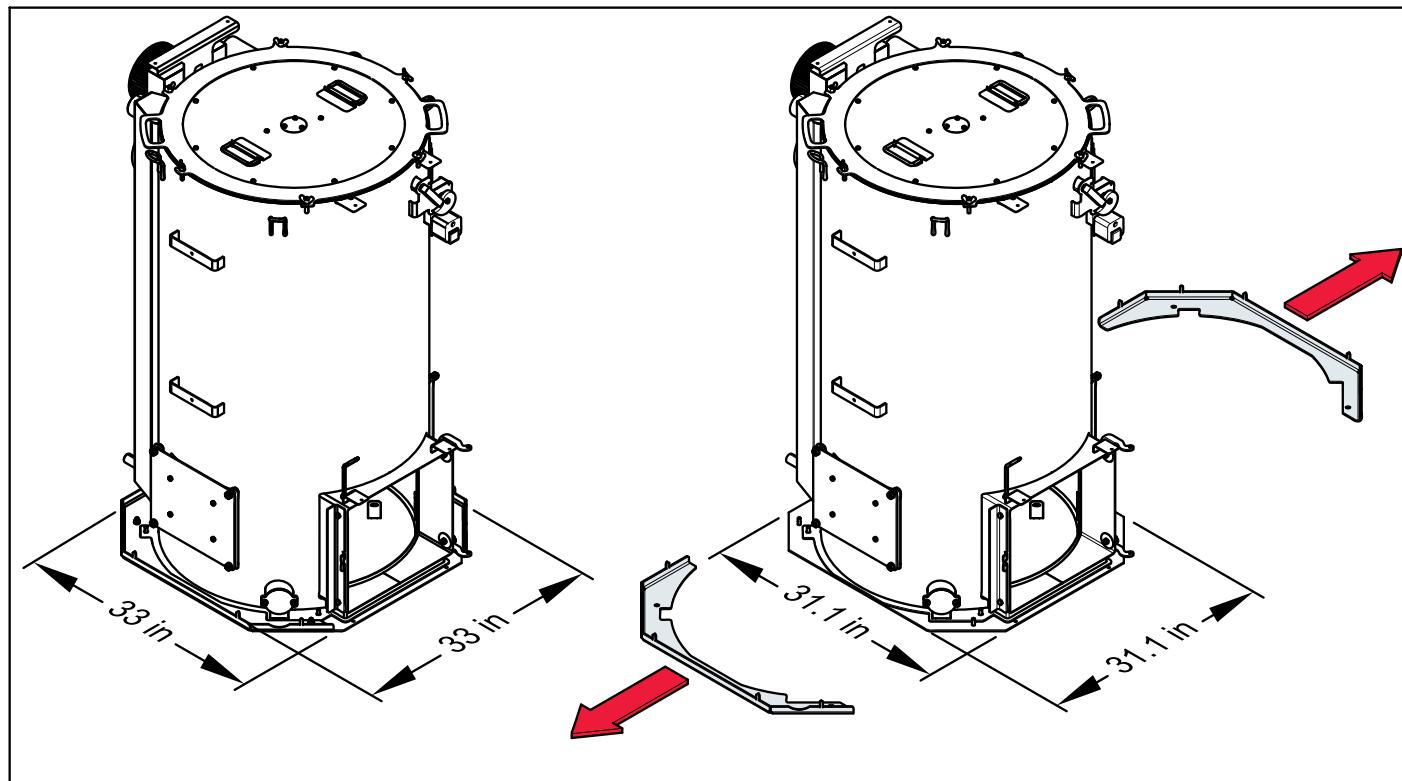
(6)





7.5.6 Deassembling the base plate

The base plate consists of three parts. Two parts on the left and the right side can be deassembled.



Note:

31.1 inch is the minimum width of the boiler.

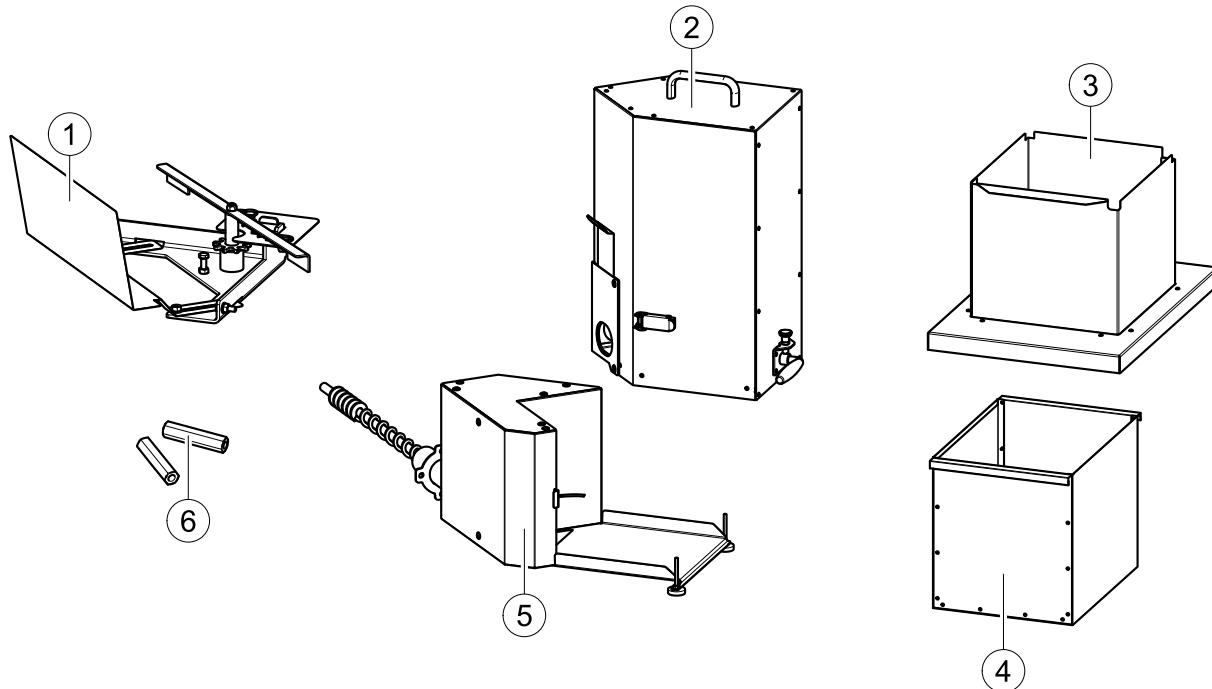
8 External de-ashing / automatic ash compaction system

We offer an automatic external de-ashing system.

1. Description of de-ashing system
2. How the de-ashing system works
3. Installing the de-ashing system
4. Emptying the de-ashing system

8.1 Description of de-ashing system

The de-ashing system compresses the ash and conveys it from the ash chamber into the ash box. The ash box enables the ash to be easily disposed off without creating dust.



1	Turnstile with agitator, door plate and mounting bolts	5	Ash container
2	Ash box with single-hand lever	6	Sub-assembly with extractor auger and cable
3	Mounting frame	7	Extended nuts to secure the sub-assembly
4	Cable duct with mounting bolts	8	1 pack of bio-bags

Note:

All components for the de-ashing system are packaged in a separate box which is shipped together with the boiler. Open the box and check that all parts are available before starting work.

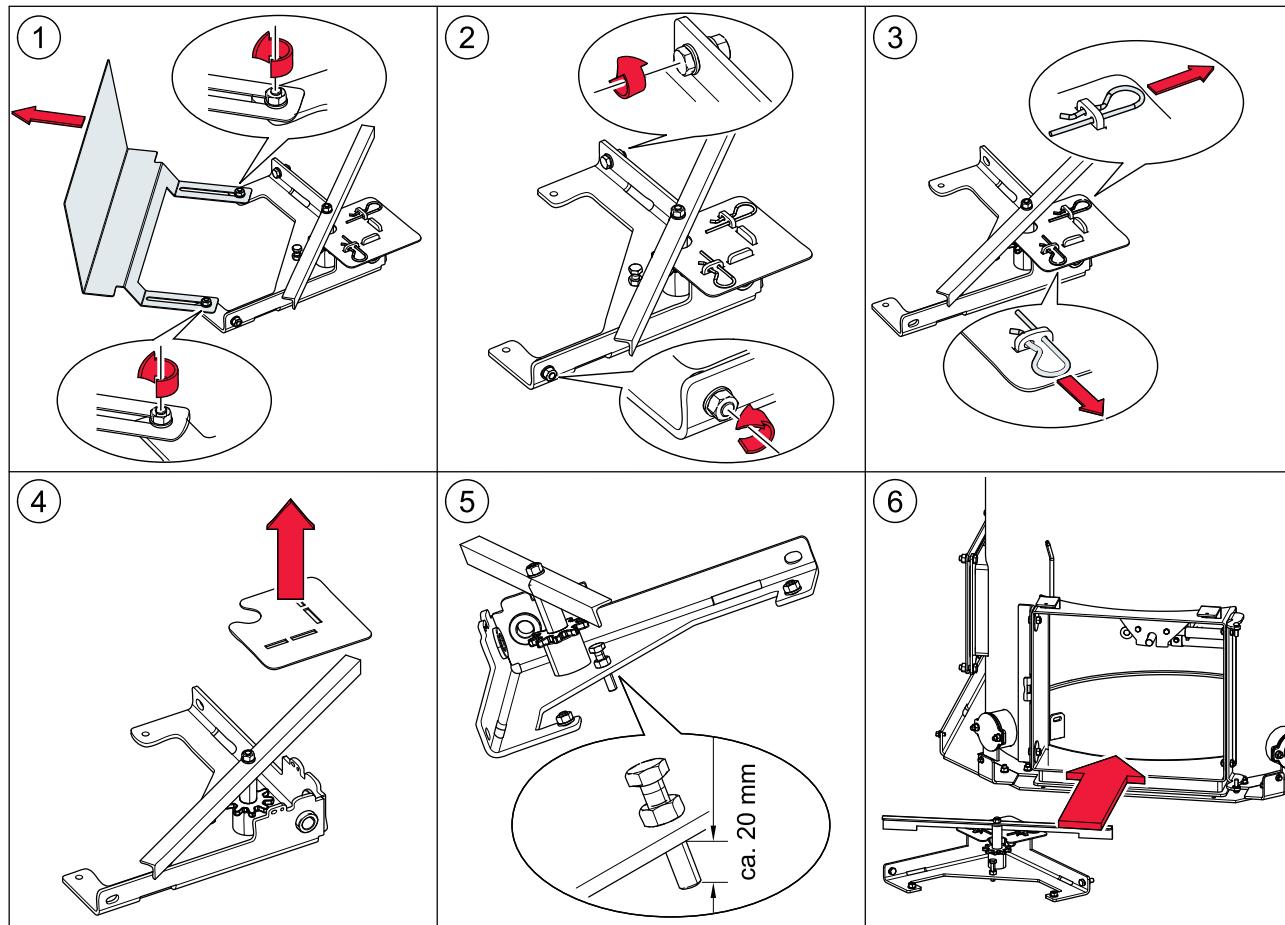
8.2 Installing the de-ashing system

We recommend installing the de-ashing system after the boiler has been brought in, but before the boiler casing is fitted. The de-ashing system has to be installed before the burner casing is assembled.

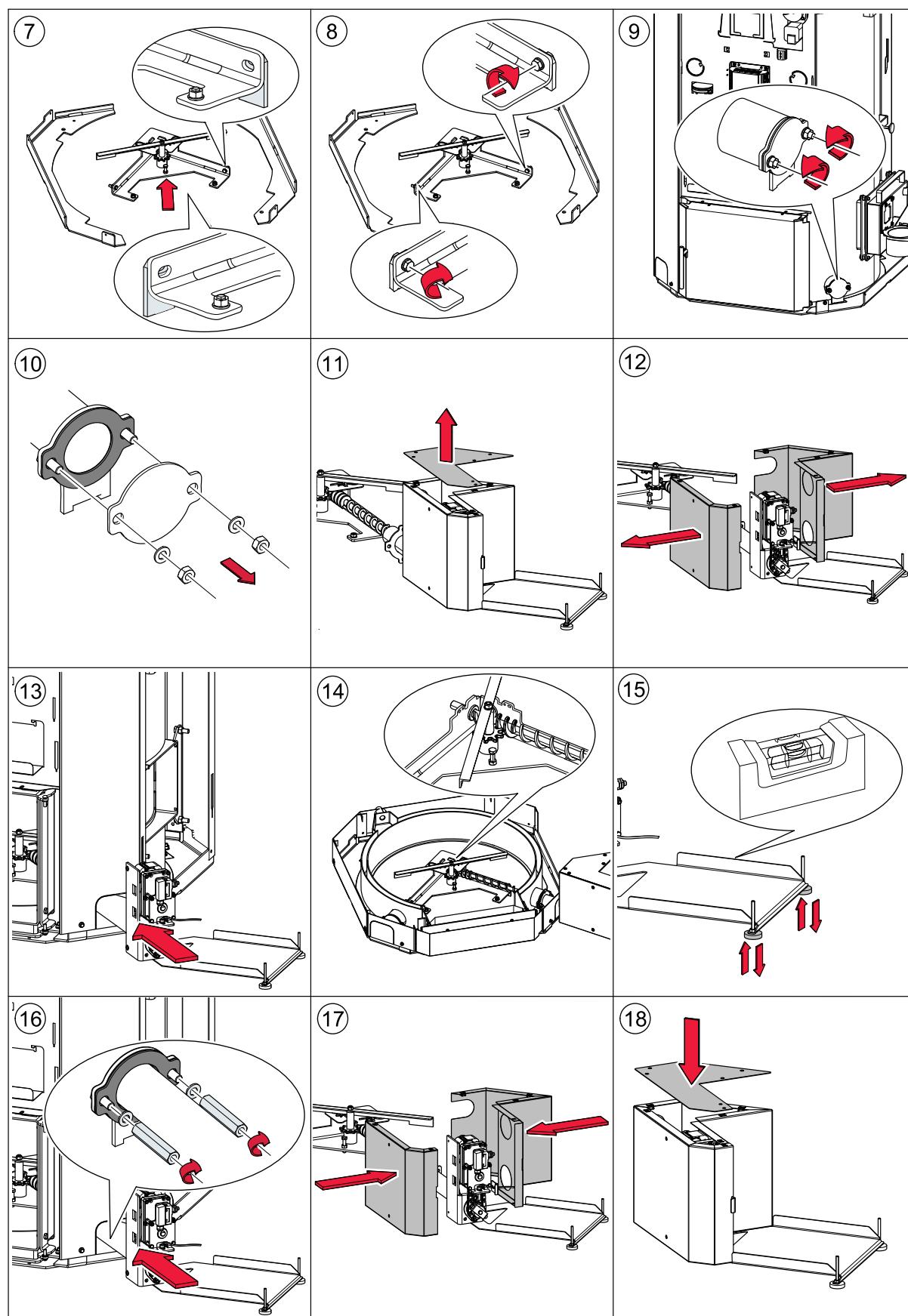
Installation of the de-ashing system is divided into the following steps:

1. Bringing in and installing the de-ashing system on the base plate
2. Installing the de-ashing auger, fitting the sub-assembly and mounting the door plate
3. Installing the burner side casing with cut-out and electrical connection
4. Assembling the pellet boiler and activating the ash box

8.2.1 Bringing in and installing de-ashing system on the base plate

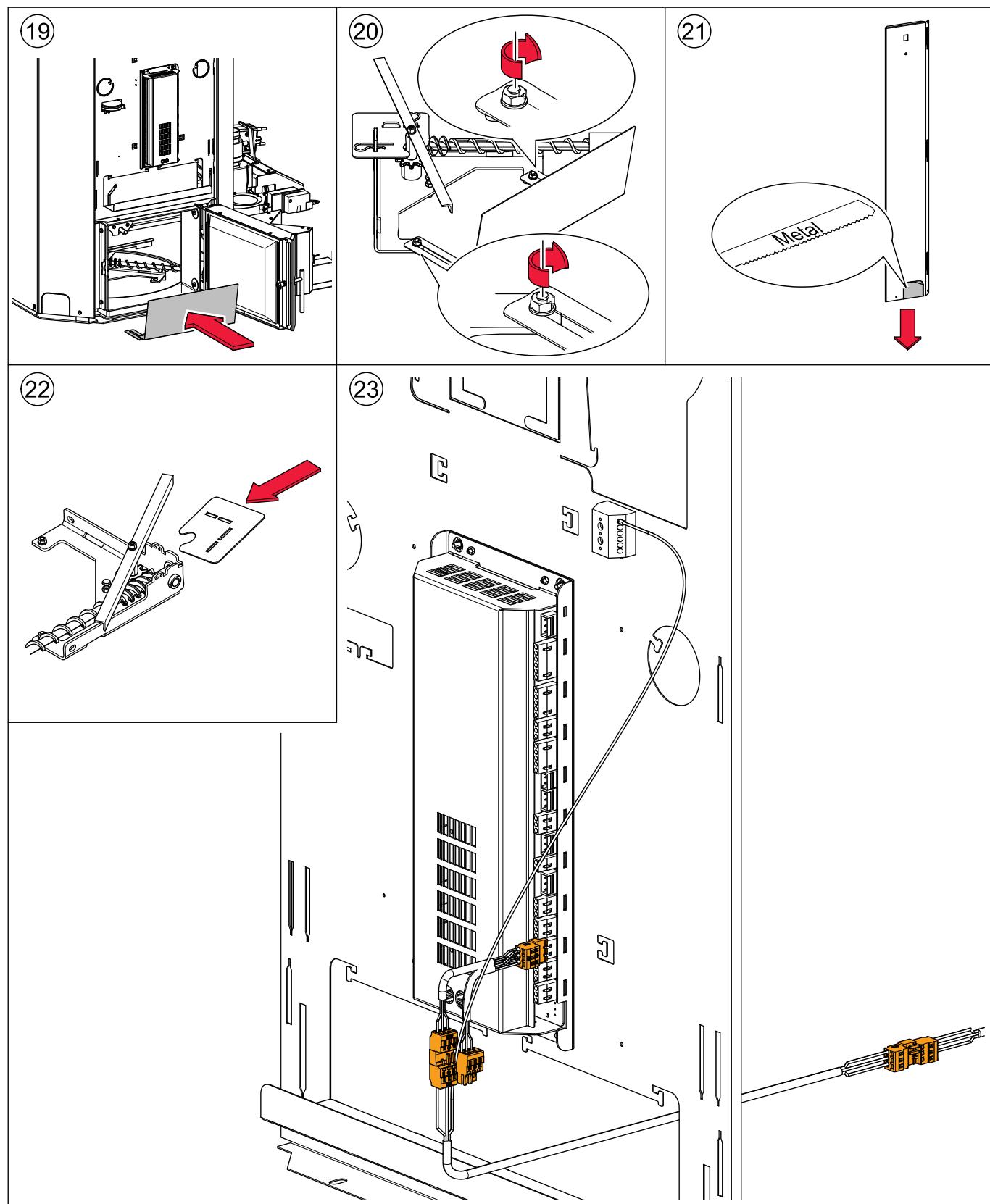


8.2.2 Installing the de-ashing auger, fitting the sub-assembly and mounting the door plate

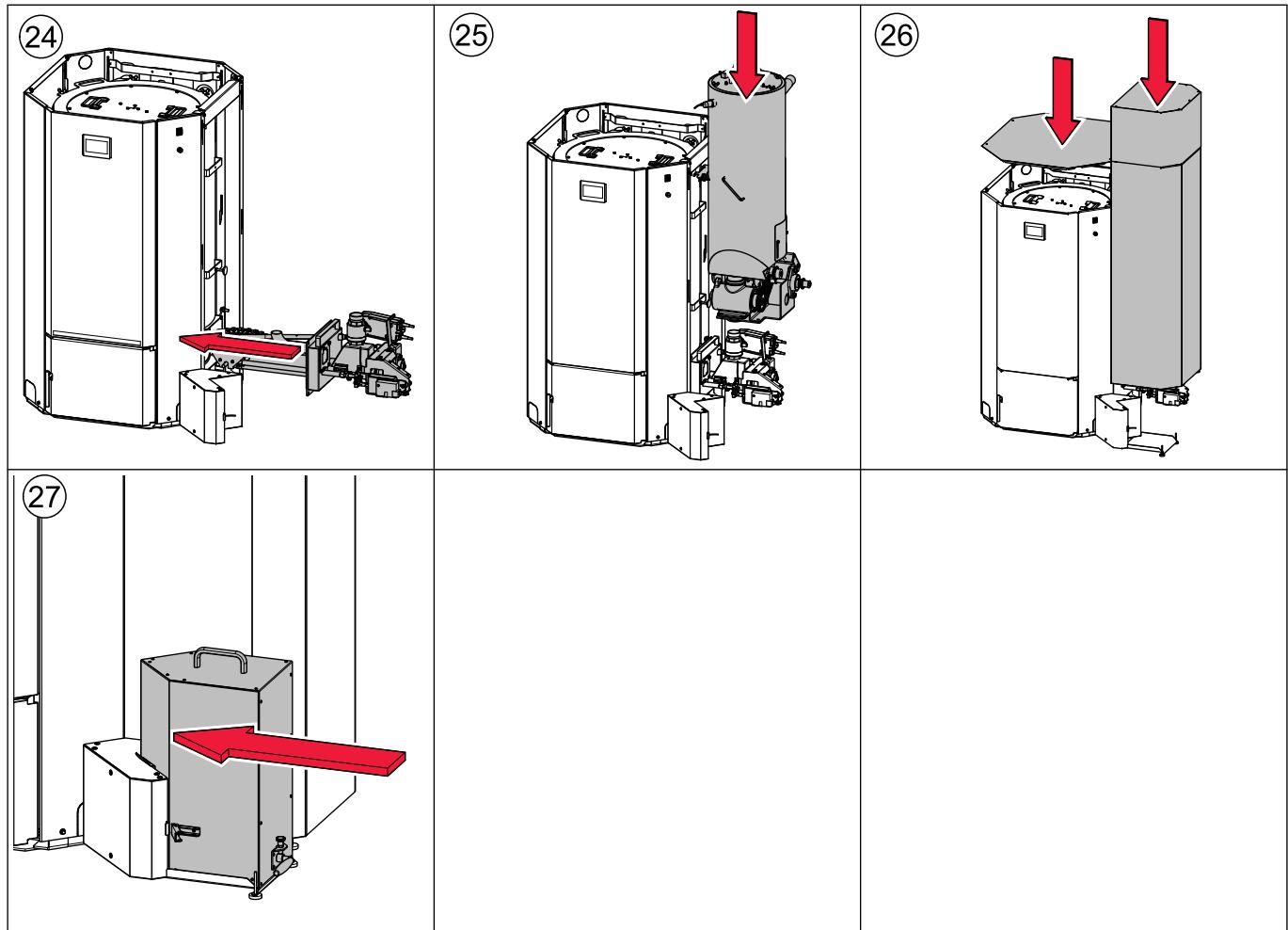


Note:

PICTURE 7: Do not tighten the screws firmly. Tighten the screws firmly only after working step in picture 11.

8.2.3 Installing the burner side casing with cut-out and electrical connection

8.2.4 Assembling the pellet boiler and activating the ash box



Note:

Refer to the section on bringing the pellet boiler into the boiler room for detailed instructions on assembling the hopper, burner and casing components.

Activating the ash box

1. Switch ON the boiler
2. In the boiler-menu , after entering the code, you can activate the function **Ashbox**.
3. Set up the number from **Off** to **Ashbox**
4. Ashbox is now active

9 Connecting up the hydronics

The hydronic connections are located on the rear side of the boiler.



DANGER

Risk of explosion

The boiler can only be connected and operated after the hydronic system is complete, with all safeties and purged of air.

NOTICE

Water damage, damage to pellet boiler

The hydronic system can only be installed by an experienced heating professional. Check the entire installation for leaks before firing the boiler.

1. Return water temperature control

The device to increase the return temperature is already integrated into the boiler. You do not need to make any adjustments to this.

2. Hydronic schematics

If you have questions about piping a heating system, refer to the our hydronic schematics when connecting the boiler.

Our hydronic schematics are available from your sales partner or from our website.

3. Connections

The connections between the pellet boiler and the hydronic system must be disconnectable.

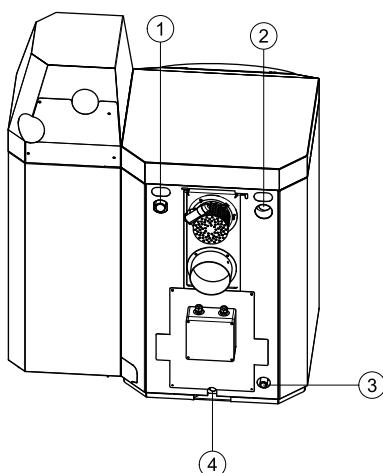
4. Drain connection

When you install the pellet boiler, remove the plug from the drain connection (4) and fit a 1/2" diameter shut-off valve.

5. Thermometer connection

Installing a thermometer at location (3) (submersion sleeve 3.94 in long) enables you to measure the temperature of the return water after the return water temperature control.

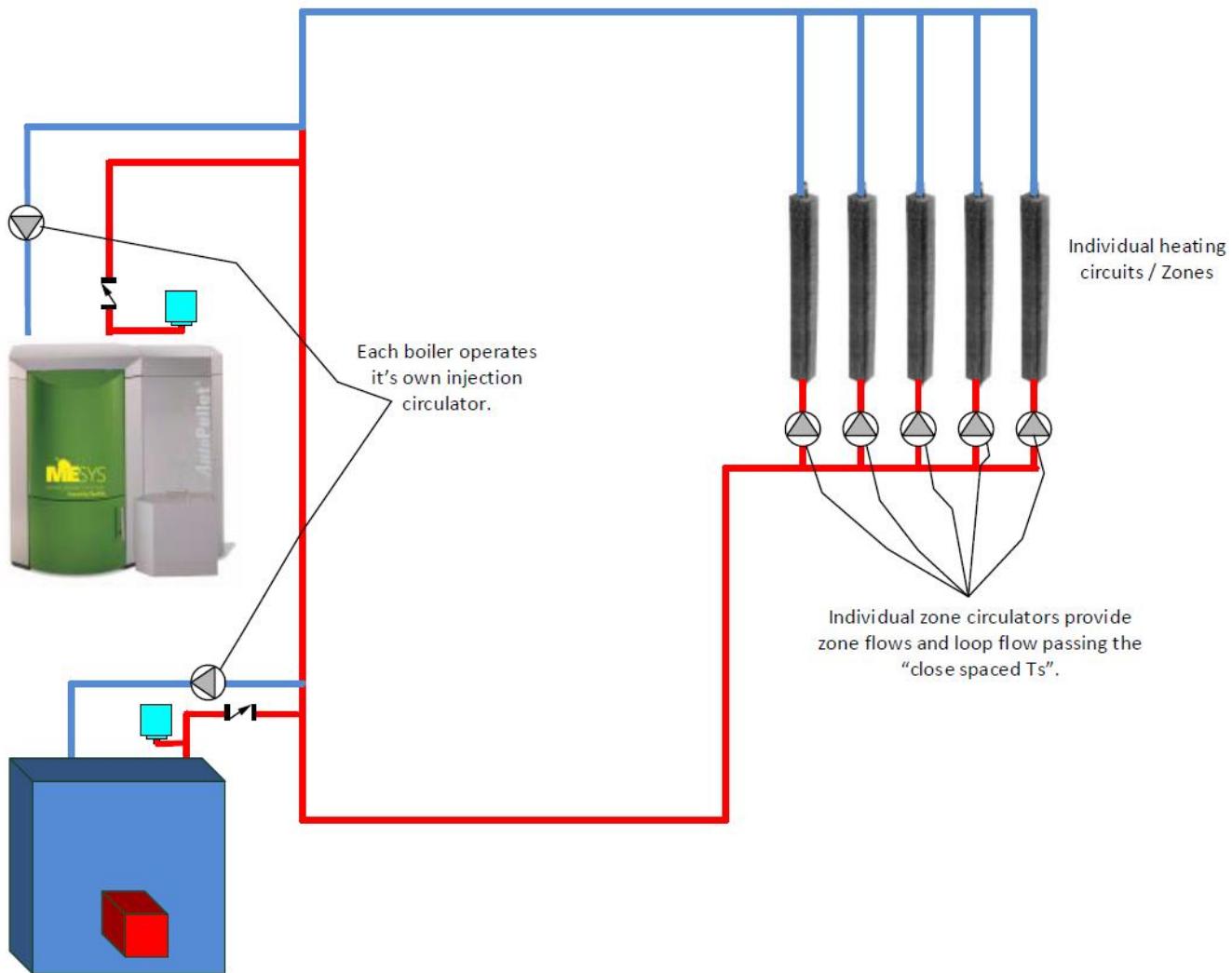
Whether this is installed or not, after setting up the pellet boiler you need to remove the cap and fit a 1/2" diameter closure plug at location (3).



1	Flow out	3	Thermometer connection
2	Flow return	4	Drain connection

9.1 Hydronic connecting diagrams

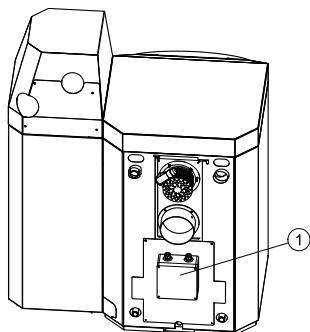
AutoPellet and existing gas or oil fired boiler, modified "primary - secondary" allows heat to come from either source without external changes.



10 Connecting to the power supply

10.1 Terminal box

The terminal box serves as the connection point for the power supply, low water cut off, circulator pump, cold start contacts, bus connection, power vent, and outdoor sensor if used. There is also a low power 220 volt connection point.



1..... Terminal box

10.1.1 Wiring diagram - terminal box

The wiring diagrams for the terminal box provide detailed technical information for professionals and are packed within the terminal box along with other helpful schematics for interconnecting the boiler with circulator controls.



DANGER

Risk of electric shock

Only an authorised installer may connect the pellet boiler to the power supply.

Always disconnect / de-energize the power supply before working on the boiler.

General information for the electrician

- USA and Canada 208 to 240 VAC, single phase, 60 Hz, 15 amp dedicated circuit. To operate the boiler during prolonged power failures, the heating system, including controls and circulators, must be connected to a generator which produces clean, true 60 cycle power. Minimum suggested generator size, 2500W.
- **Lightening protection:** As there is no possible complete protection against lightening, we suggest installing a voltage spike suppression system for the building where the boiler is located or in the same panel as the boiler is powered from.
- **Electrical connection:**
USA and Canada 208 to 240 VAC, single phase, 60 Hz, 15 amp dedicated circuit.

Wiring Plan	
Terminal #	Specification of Terminal #
1	Hot Wire L1 - Power Supply 220VAC
2	Hot Wire L2 - Power Supply 220VAC
3	Neutral Wire
PE	Ground here AND on Stud Welded to Terminal box
4	Hot Wire - Boiler Contact / Cold Start Contact
5	Hot Wire - Boiler Contact / Cold Start Contact
6	Hot Wire - Domestic Hot Water Pump
7	Neutral Wire - Domestic Hot Water Pump
PE	Ground Wire - Domestic Hot Water Pump
8	Hot Wire - Boiler Controlled Pump
9	Neutral Wire - Boiler Controlled Pump
PE	Ground Wire Boiler Controlled Pump
10	Hot Wire / Power Supply Out - Low Water Cutoff
11	Hot Wire / Power Return - Low Water Cutoff
12	Neutral - Low Water Cutoff
PE	Ground Wire - Low Water Cutoff
13	Hot Wire L1 - Convenience Power Output 120 to Neutral - (240 to Terminal 14)
14	Hot Wire L2 - Convenience Power Output 120 to Neutral - (240 to Terminal 13)
PE	Ground Wire - Convenience Power Output
15	Hot Wire - Power Vent Safety Circuit
16	Hot Wire - Power Vent Safety Circuit
PE	Ground Wire - Power Vent Safety Circuit
17	Hot Wire - Power Vent Motor Supply 120 VAC
18	Neutral Wire - Power Vent Motor Supply 120 VAC
PE	Ground Wire - Power Vent Motor Supply 120 VAC
19	Hot Wire - Pellet Auger Delivery Motor Temperature Safety Loop
20	Hot Wire - Pellet Auger Delivery Motor Temperature Safety Loop
21	Hot Wire - Pellet Auger Delivery Motor Power Supply L1
PE	Ground Wire - Pellet Auger Delivery Motor
22	Hot Wire - Pellet Auger Delivery Motor Power Supply L2
23	Hot Wire (24VDC) - Pellet Level Detection System
24	Hot Wire (24VDC) - Pellet Level Detection System
25	Hot Wire (24VDC) - Pellet Level Detection System
26	Hot Wire (24VDC) - Outdoor Sensor
27	Hot Wire (24VDC) - Outdoor Sensor
28	R1 - Cascade Header Sensor or Accum Upper Sensor
29	R1 - Cascade Header Sensor or Accum Upper Sensor
30	R2 - Accum Middle Sensor ONLY with R1 as Upper Sensor
31	R2 - Accum Middle Sensor ONLY with R1 as Upper Sensor
24V.	24V
Gnd.	Gnd.
A	A
B	B
Shield	Shield - Connect one end ONLY

10.2 Plugs on the boiler control unit

The designation of the plugs must correspond with the labeling of plug-in positions.

Designation	Number	Voltage	Name of the sensor, motor or pump
X1A	3 2 GND 1	24 Volt	Operating display
X1B	3 2 GND 1	24 Volt	Heating controller
X2	5 4	24 Volt	Power supply for 24V BUS-connections
R1	46 45	24 Volt	Heating circuit sensor, AC sensor or room sensor
R2	44 43	24 Volt	DHW sensor or AC sensor
AF	42 41	24 Volt	Not used
KF	8 9	24 Volt	Boiler sensor
UP	2 3 4	24 Volt	Negative draft measuring
AE2	5 6 7	24 Volt	Not used
AK	10 8	24 Volt	Disabling contact for existing boilers, optional stirling engine
FRT	12 13	24 Volt	Combustion chamber sensor
RGF	14 15	24 Volt	Not used
PWM SZ	16 17	24 Volt	PWM for a speed controlled A-Class Pump
Analog IN	18 19	24 Volt	external malfunction
BR1	7 8	24 Volt	Burner contact for extern controller (optional)
PWM UW	11 12	24 Volt	PWM for speed controlled high-efficiency pump
ESAV	32 33 34	24 Volt	End switch ash box
DE 1	37 36 35	24 Volt	Signaling Switch for position of the Ball lock
DE 2	40 39 38	24 Volt	Not used
KAPZW	26 25 24	24 Volt	Capacitive sensor - hopper
KAPRA	5 4 3	24 Volt	Capacitive sensor - burner
BSK	6 5 4 3 2 1	24 Volt	Flame return gate
X21	PE L N	230 Volt	Power supply
VAK	56 PE 55	230 Volt	Vacuum turbine
ZUEND	N PE 22	230 Volt	Ignition
AV	52 PE 51	230 Volt	De-ashing motor
RES 2	54 PE 53	230 Volt	Pump Optimize Stratification
MA	48 PE 47	230 Volt	not used
RM	15 PE N	230 Volt	Magnetic valve and motor cleaning device
SM	19 20	230 Volt	Relay fault signal
SZ	17 PE N	230 Volt	Flue gas fan
UW	13 PE N	230 Volt	not used
STB	17 PE 19	230 Volt	Safety temperature sensor
NOT	41 43	230 Volt	Emergency stop heating
RA	N PE 14 15 16	230 Volt	Fuel transport system
RES1	50 PE 49	230 Volt	Motor hopper

ZW	N PE 26 25 24	230 Volt	Not used
ES	1 2 3 N PE 6	230 Volt	Burner motor
LUFT	N PE 11	230 Volt	not used

10.3 Cable routing

Reroute cables after dismantling the casing or other system components.



DANGER

Electric shock

Isolate the entire heating system from the power supply before starting work on the pellet boiler.

Note the following points to ensure the cables are routed securely:

Cables must not be routed:

- over moving parts,
- over hot parts,
- or over sharp edges.

Cables must be:

- routed in the cable ducts provided and
- through cable leadthroughs,
- tied together,
- and secured with cable ties at the points provided.
- Power cables must be routed in the right-hand duct and sensor cables must be routed in the left-hand duct.



DANGER

Electric shock

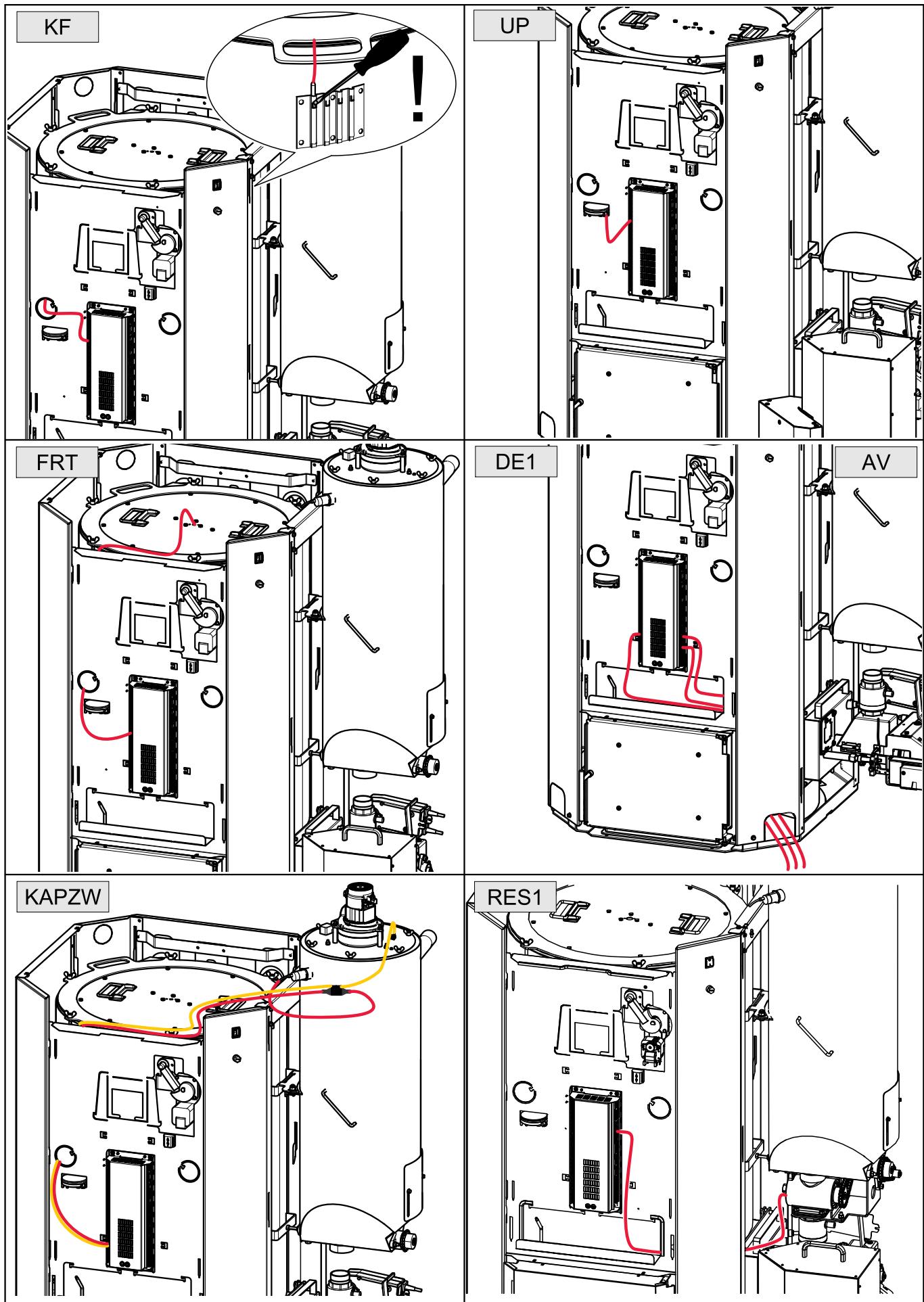
Check cables for damage.

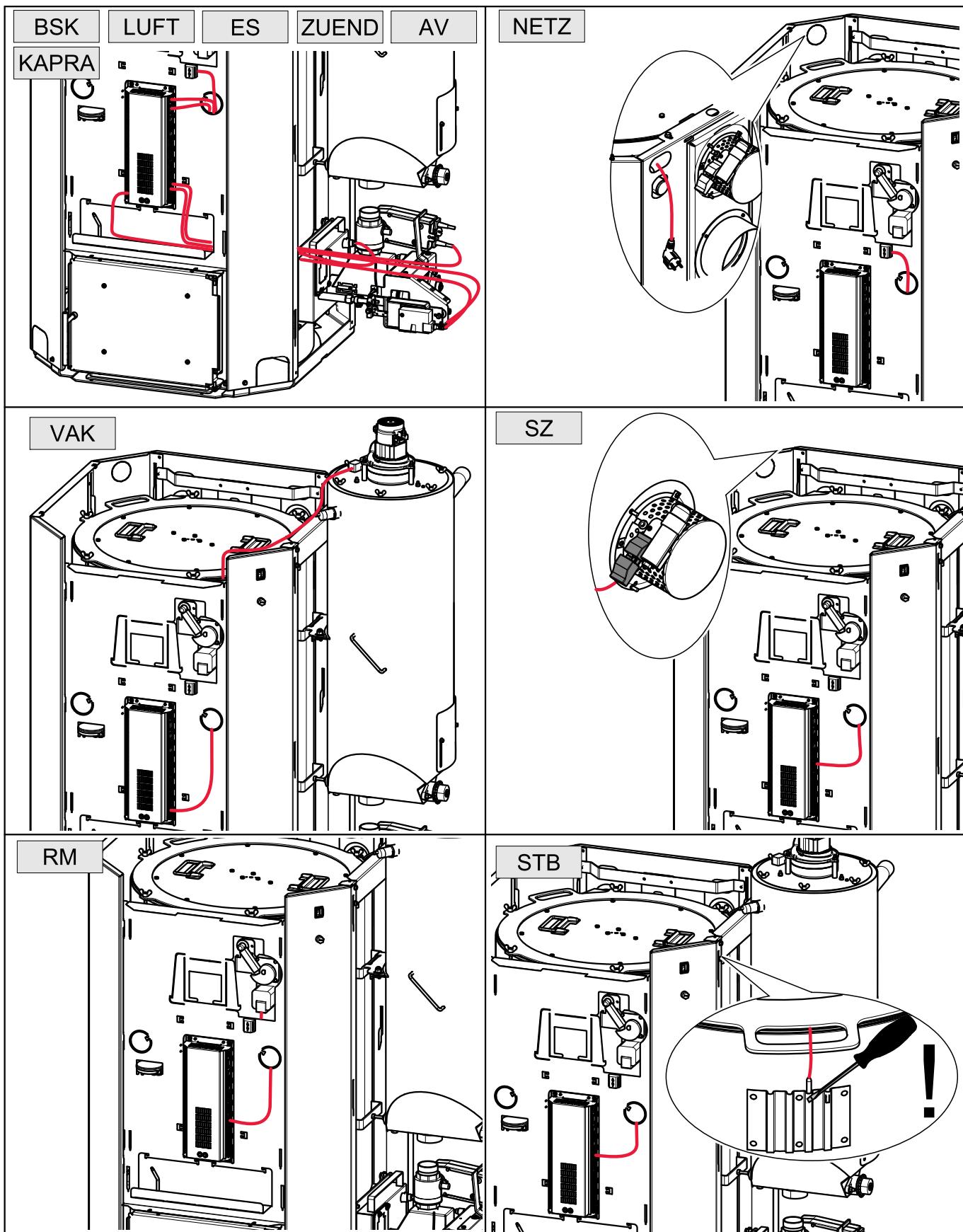
Replace any cables that are damaged.

NOTICE

Damage to the boiler controller

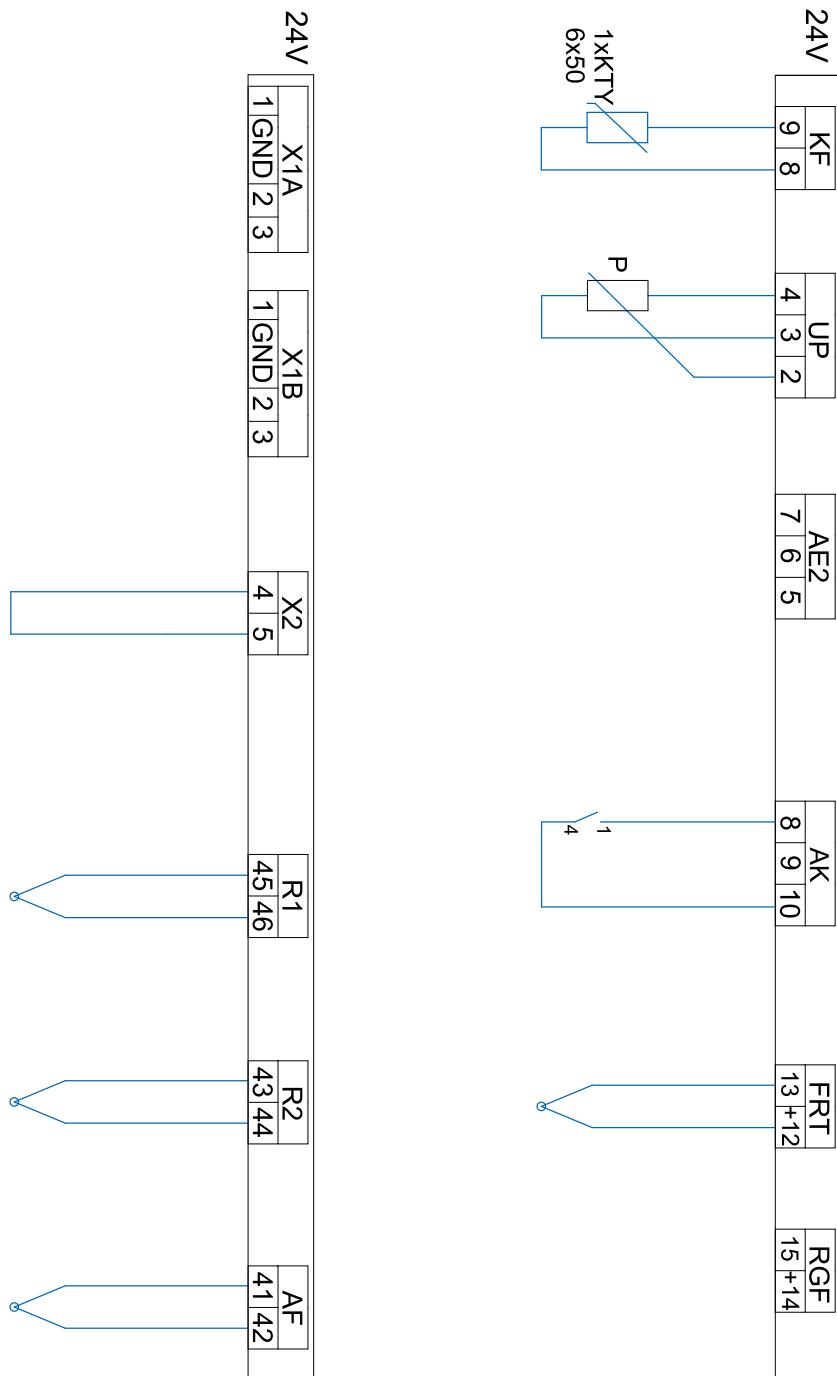
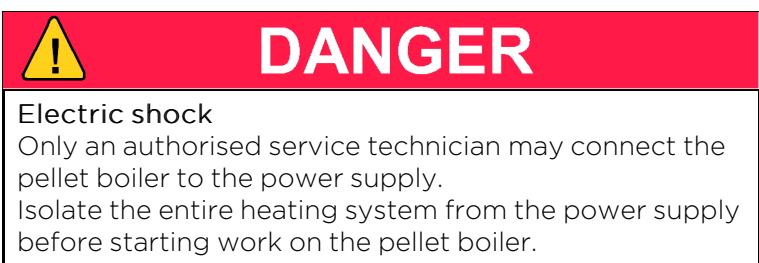
Before fitting the casing components, make sure that the cable plug connector codes match the socket codes.

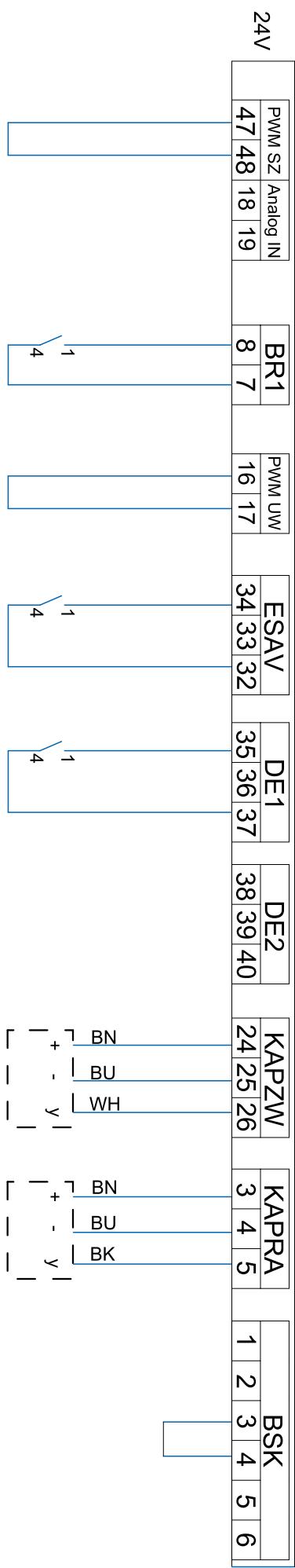


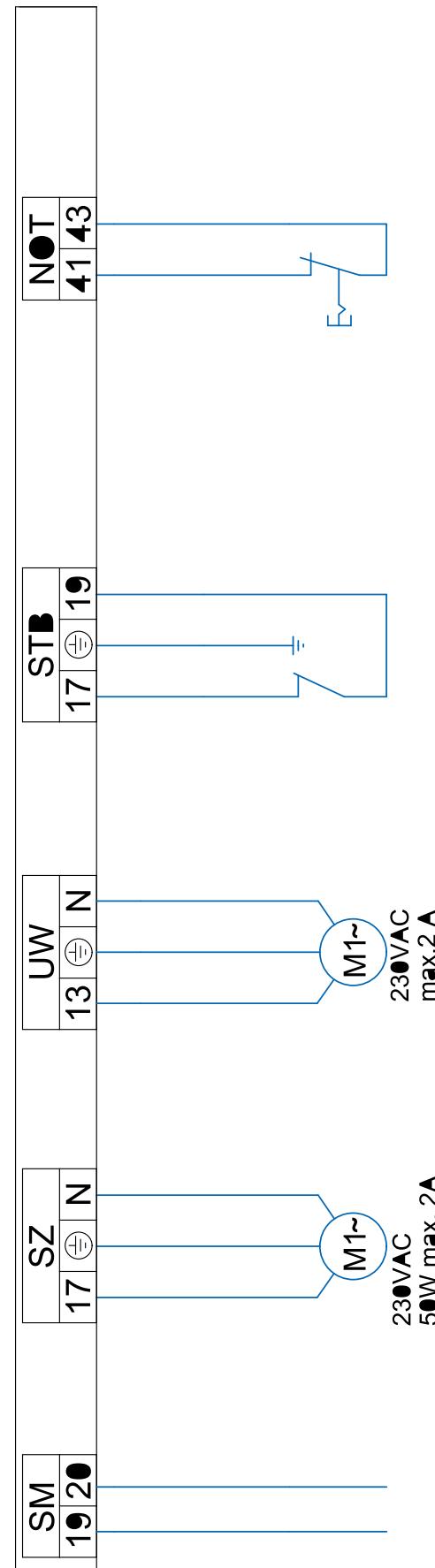
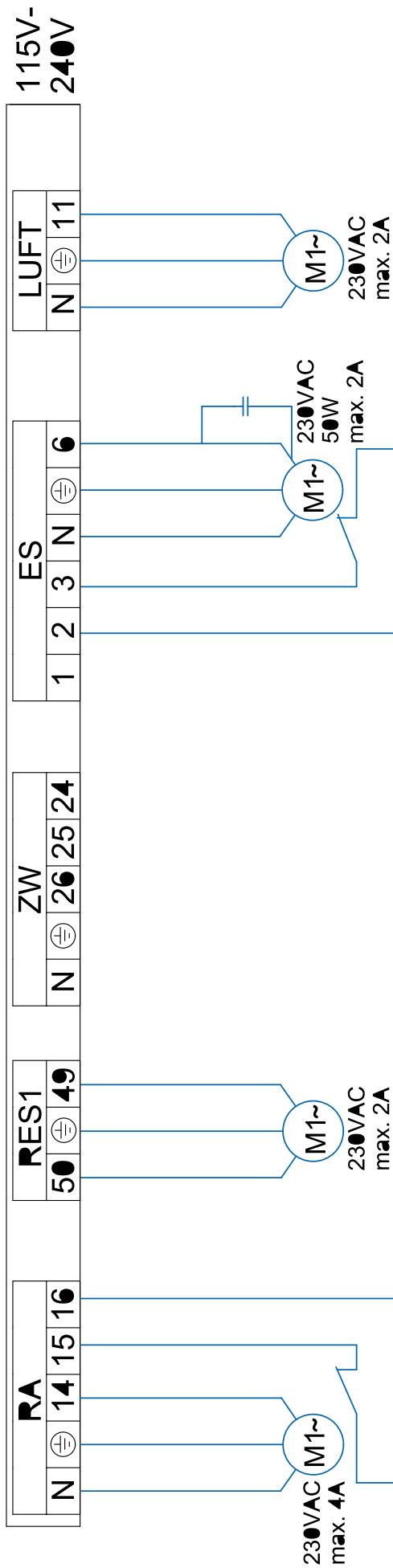


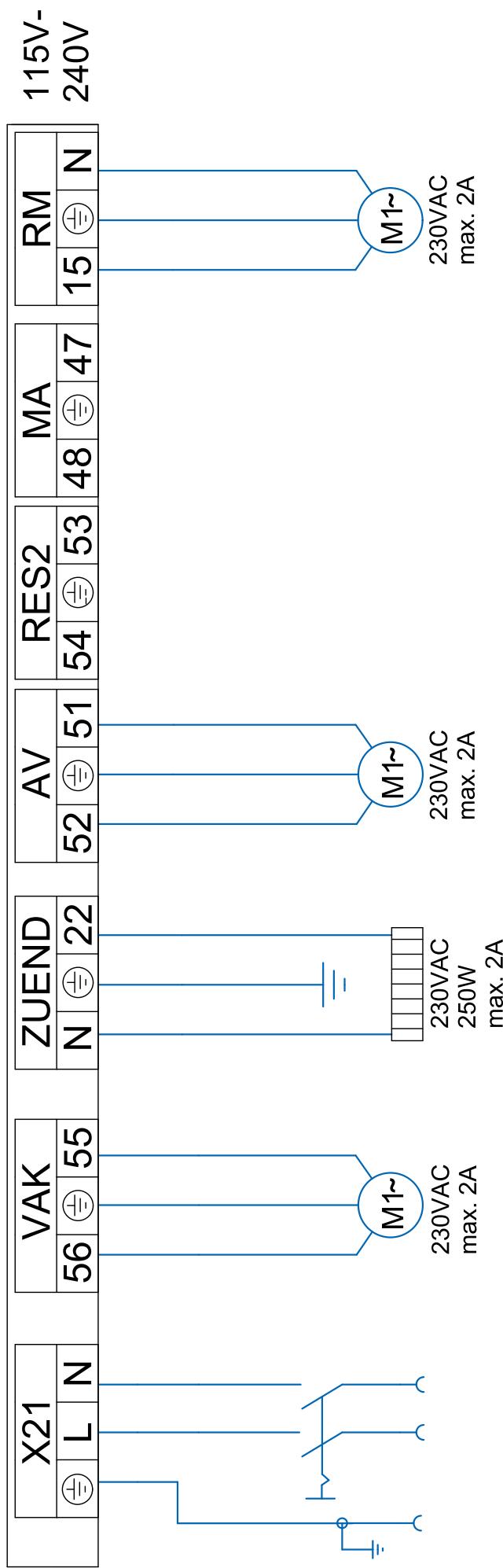
10.4 Wiring diagrams

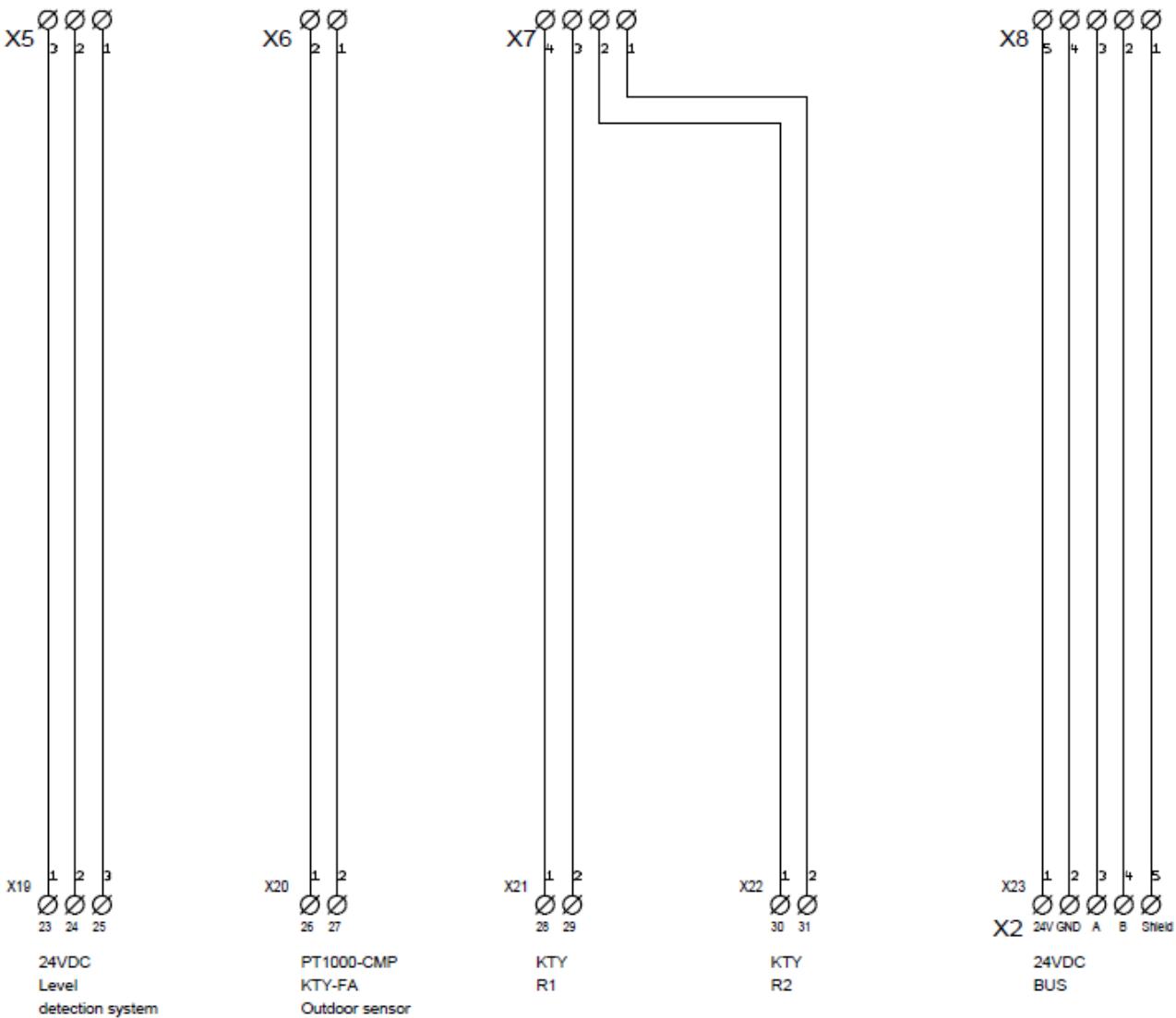
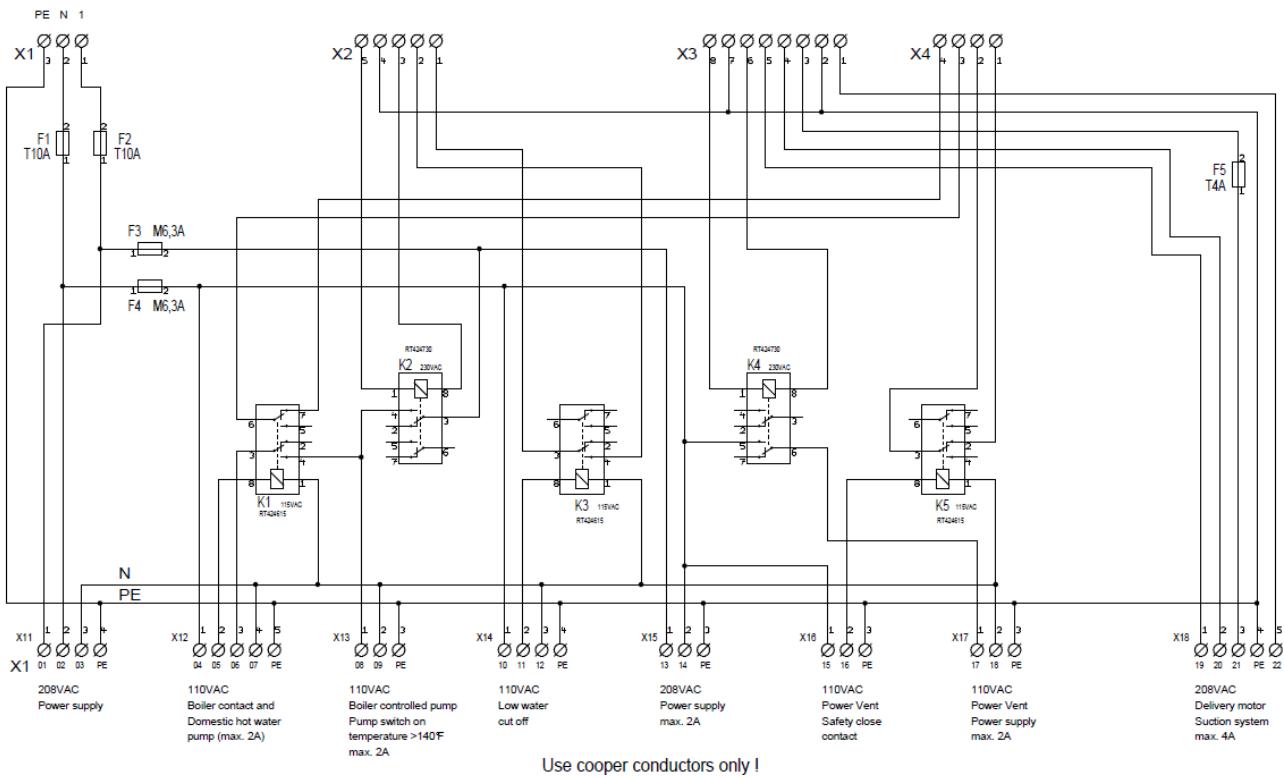
The wiring diagrams for the boiler control unit provide detailed technical information for technicians.











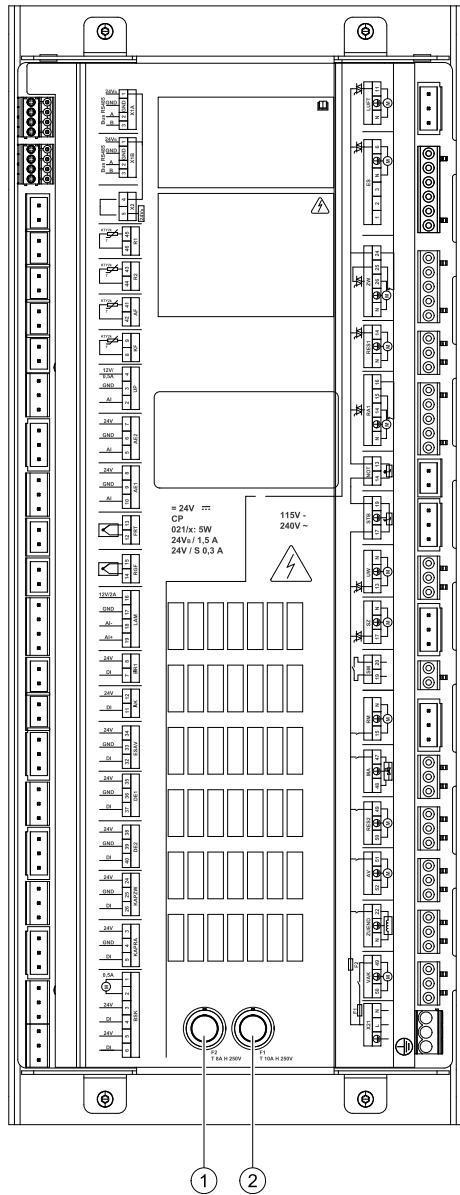
10.5 Fuses - boiler controller

The control unit is protected against short circuits and excessive current consumption by fuses which are in the control panel (under the front boiler panel). There are also fuses in the terminal box at the rear of the boiler. At the rear panel, there are 4 fuses. Two 6.3 amp for outputs there, and two 10 amp also for the main controller.

NOTICE

Damage of property

Should it become necessary to replace a fuse, it is critically important to replace the fuse only with a fuse having the same exact ratings.



1	F1: Fuse T10A
2	F2: Fuse T8A

10.6 Operating the AutoPellet

The operation of the system is described in the **manual for the End User**.

11 Starting up for the first time

After verifying all installation work has been correctly completed and pellet fuel has been delivered, it is time to commission the boiler.

NOTICE

Air tight property of combustion chamber

To ensure correct combustion and overall operation, all fittings to the combustion chamber must be correctly assembled to be completely air-tight.

Note:

The unit must be started up for the first time by an authorized MESys service technician.

Before starting up the pellet boiler, the following settings must be made in the sequence specified below:

1. Output test - test all motors
2. Settings in heating controller (if installed)
3. Start the pellet boiler

Use the checklist enclosed to document the start-up procedure.

12 Appendix

12.1 Checklist for checking the heating system

The checklist is intended to help authorized specialists perform and document a comprehensive check on the heating system.

Name and address of the customer	Heating device
Name:	Type of boiler:
Street:	Rated power:
Place:	Year of build:
Name and address of installer	Manufacturer's serial number:
Name:	Type of heating controller:
Street:	Type of accumulator:
Place:	Solar device:

NOTICE

Damage to property

Use the checklist to check the heating system before starting up for the first time.

CHECKLIST		Yes	Comment
Textile tank			
Textile tank	Are the struts mounted?		
	Are all stayers straightened vertical?		
Delivery unit	Is the slot for the emergency gate valve closed with an adhesive tape?		
Filling coupling	Are the filling couplings correctly installed?		
	Are the plugs at the filling couplings?		
	Are the safety labels placed? (Caution - Switch off the heating system before entering)		
	Are the couplings correctly grounded?		
Aeration	Is the storage room / building properly ventilated with minimum 27 square inches to the outside?		
Caution label	Is the caution label "Wood pellets storage room" placed on the door to the storage room?		
Fire protective collar	Are fire protection collars mounted in the storage room?		
Boiler			
Burner plate	Is the position of the burner plate correct? Has the locking screw of the burner plate been tightened?		
Flame tube	Has the locking device of the concrete flame tube been removed? Is the position of the stainless steel flame tube centred and upright?		
Sensors	Check the position and fixing of the sensors. After the start of the boiler, check if the values of the sensors are in a realistic range.		

Washer nozzle	Is the washer nozzle positioned upright? (The connecting pipe must be positioned horizontally)		
Boiler cover	Check that the cover of the flue gas collector chamber is properly fitted, leak-tight and fastened down.		
Flue gas pipe connection	Is the flue gas pipe made of stainless steel? Is the flue gas pipe leak-tight? Does the flue gas pipe have a gradient? No movable parts? No damper?		
Combustion chamber door	Check that the combustion chamber door closes correctly.		
Drain	Is the connection pipe tight?		
Aeration/boiler room	Exists the required aeration opening?		
Nameplate	Is the nameplate placed on the boiler?		
Chimney system	A common chimney for two different fuels is allowed if all codes and regulations allow it.		
Electric installation and regulation			
Power supply	Check the electrical connection.		
	Check the dimensions of the fuses.		
Settings-Boiler control unit	Are the settings of the boiler control unit according to the installation manual?		
Settings-Heating controller	Set the parameters, the heating circuit program and domestic hot water program.		
Hydraulic Connection			
Circuit pumps	Check the switch on temperature.		
Boiler connection	Is the pellet boiler correctly connected?		
	Is the hydraulic system deaerated?		
	Is the system filled up with water? Check the pressure.		
Safety systems			
Fire protection - ball valve - Belimo - Flame Return Gate	Check the function of the limit switch: Fuel feed of burner may only start when the fire protection valve is fully open. Disconnect the plug DE1 from the boiler controller. Start an intake process. After 2 minutes without intake, the error message Pellets??? will appear on the display. Re-connect plug DE1 to the boiler controller.		
Safety temperature sensor	Check the position and fixing of the safety temperature sensor.		
Negativ draft measuring cell	Check that the negative draft hoses P1 and P2 are correctly connected to the cell and to the air inlet line. Check the function of the negative draft measurement.		
Safety valve	Is the outlet of the safety valve connected to the drain?		
Emergency stop switch	Exists an emergency stop switch?		
Fire extinguisher	Exists a fire extinguisher?		

Instruction			
Heating-up	Explanation of functions, malfunctions and maintenance to the customer.		
Heating controller	Explanation of the heating controller.		
Operating manual	Explanation of the operating regulations to the customer.		
Maintenance contract	Explanation of maintenance and control activities, notice to the legal regulations.		

12.2 Appendix G of CAN/CSA-B365-M91

Functioning of safety and operating controls

This Annex is not a mandatory part of this Standard, but is written in mandatory language to accommodate its adaption by anyone wishing to do so.

The safety and operating controls shall function within the limits specified by the manufacturer for the type of equipment. The following test shall be performed:

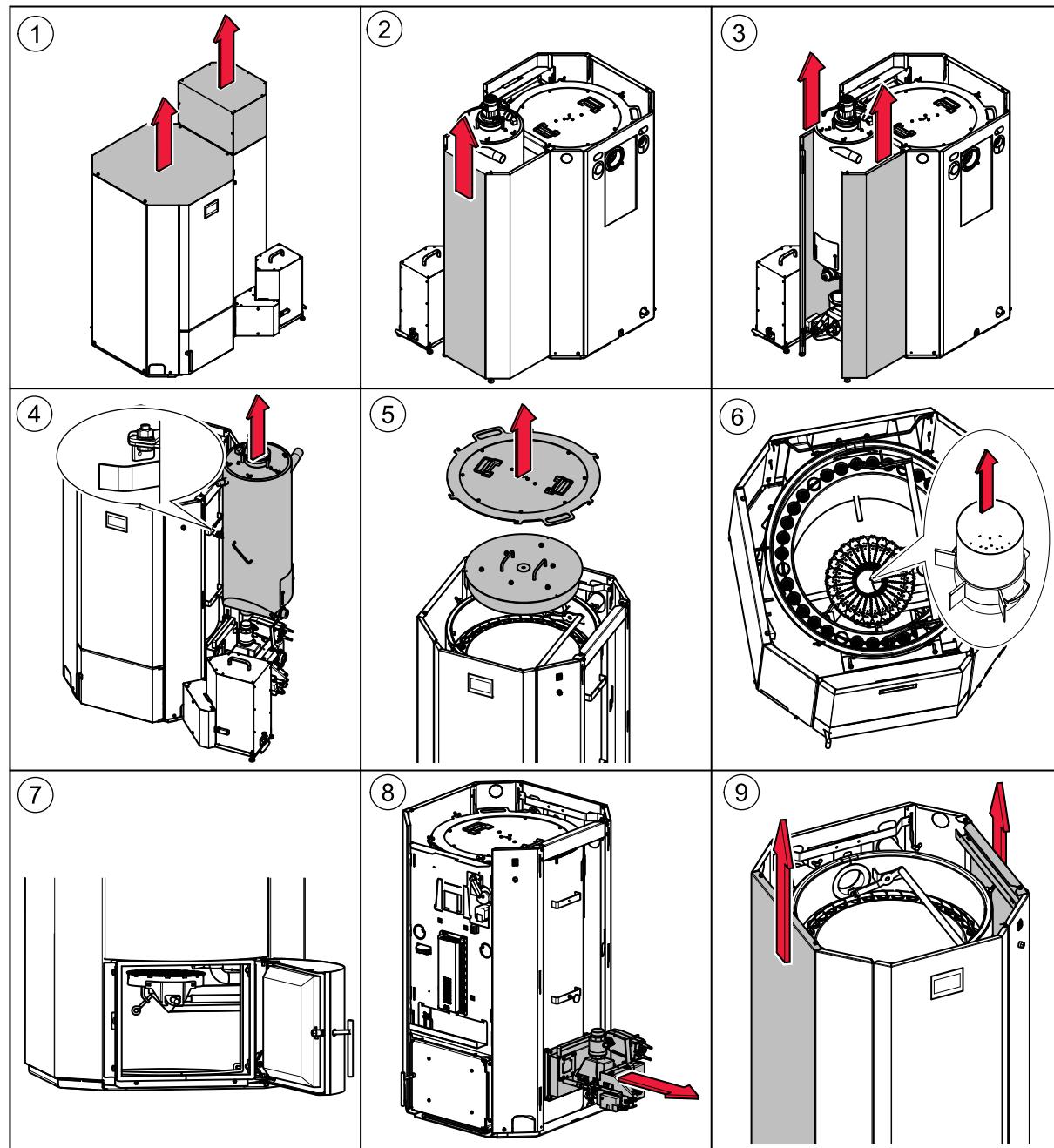
1. Check the operation of the automatic fuel_feeding interrupt device at each entrance to the floor space within which the fuel-feeding device is installed.
2. Check that when the low water level control on steam and hot water boilers is operated to indicate a low water level, the automatic fuel-feed is interrupted.
3. Check that when the excessive pressure control on steam and hot water boilers is operated as in an excessive pressure situation, the automatic fuel-feed is interrupted.
4. Check that when the excessive water temperature control on steam and hot water boilers is operated to indicate excessive water temperature, the automatic fuel-feed is interrupted and, if appropriate, that one or more zone control valves open.
5. Check that if the temperature exceeds 200°F in a furnace supply plenum on hot air furnaces, the automatic fuel-feed is interrupted.
6. Check that if there is a failure of the fan providing combustion air, the automatic fuel-feed is interrupted.
7. Check that if there is a failure of the combustion air supply control mechanism to remain fully open, the automatic fuel-feed is interrupted.
8. Check that when the hot water circulating pump manual disconnect switch is opened, the automatic fuel-feed is interrupted.
9. Check that if there is a shutdown or failure of the mechanical flue-gas exhauster, the automatic fuel-feed is interrupted.
10. Check that if there is a failure in the flue gas flow, the automatic fuel-feed is interrupted, or the combustion air supply is shut off in manually fuelled appliances.
11. Check for the proper operation of the minimum fire maintenance controls and system or, if applicable, of the automatic ignition system.
12. Check for the proper operation of the controls used for normal automatic fuel-feeding.
13. Check the operation of any other controls supplied on the appliance by the manufacturer, or required by the authority having jurisdiction.

12.3 Modifying the burner

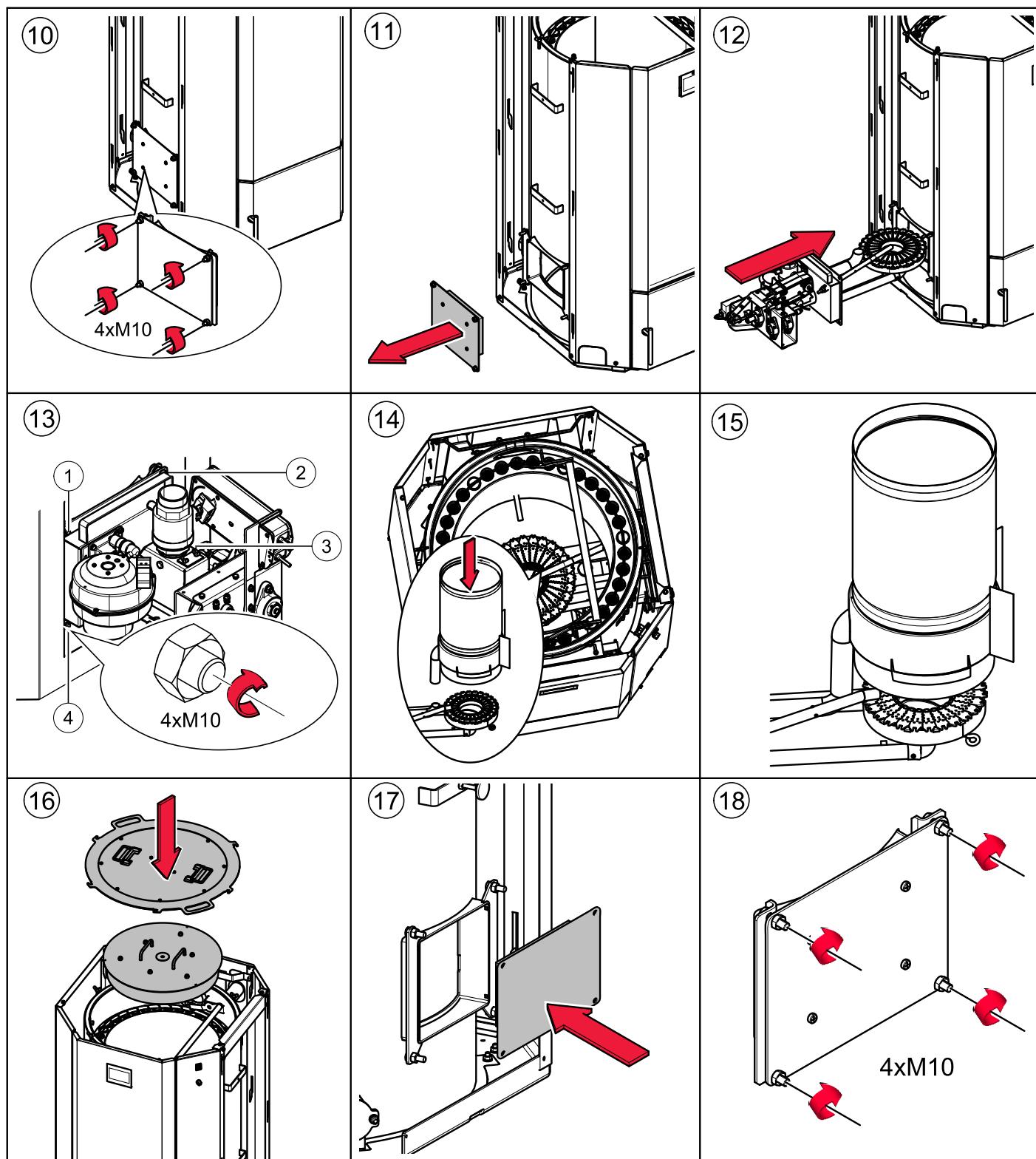
The pellet boiler is configured symmetrically. If required, you can remove the burner from the right-hand side (as shipped) and reinstall it on the left.

1. Dismantle the casing, hopper, combustion chamber lid, flame tube, burner and burner plug.
2. Modify the burner on the left.
3. Route cables through cutouts to the boiler controller and connect up the plug.

12.3.1 Dismantling the casing, hopper, combustion chamber lid, flame tube and burner

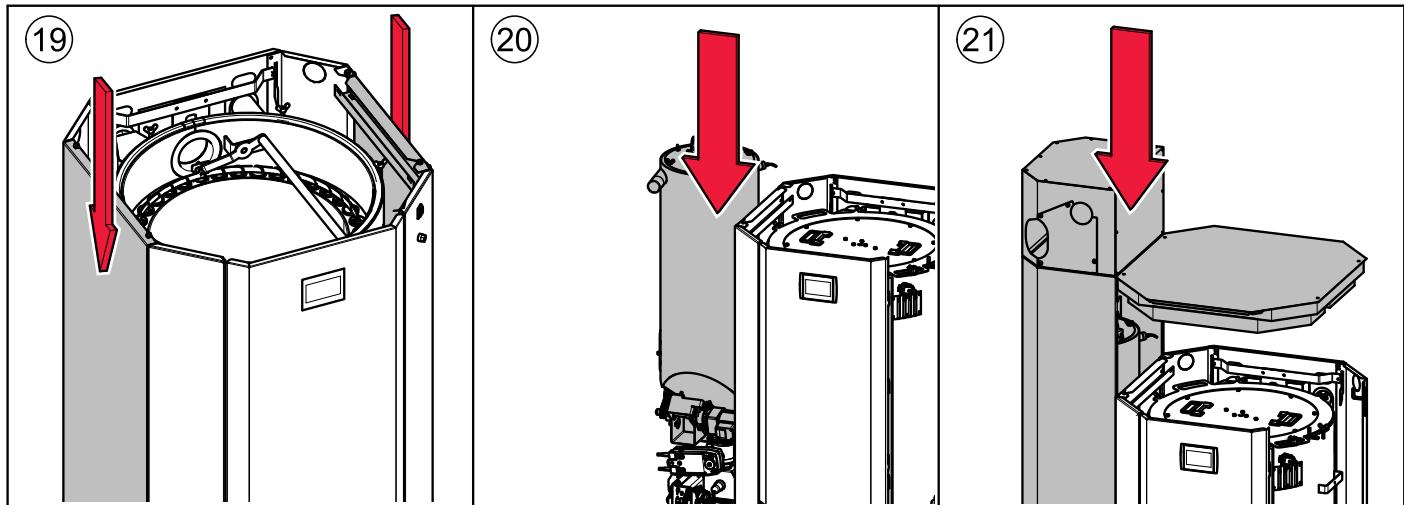


12.3.2 Modify the burner on the left



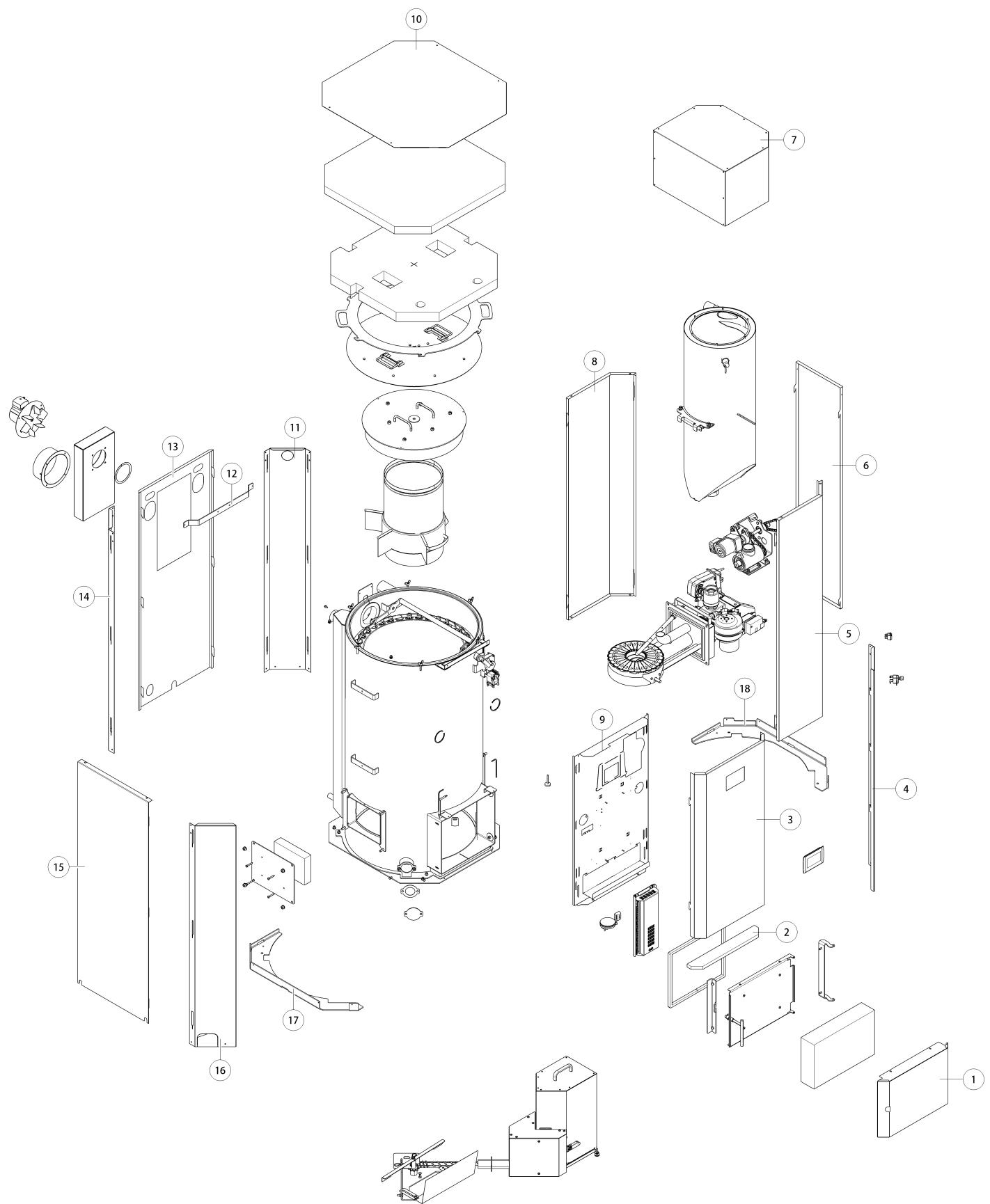
Note:

Do not tighten too firm, otherwise the dummy cover could become leaky.

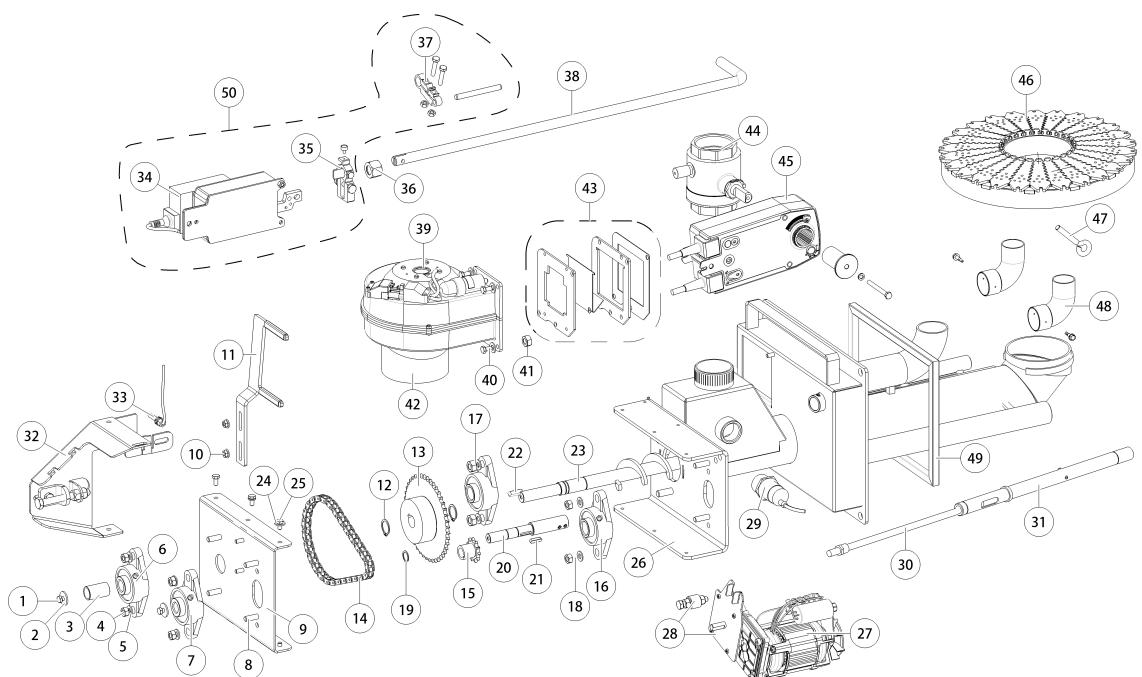
12.3.3 Reassembling the pellet boiler after modifying the burner

12.4 Parts list

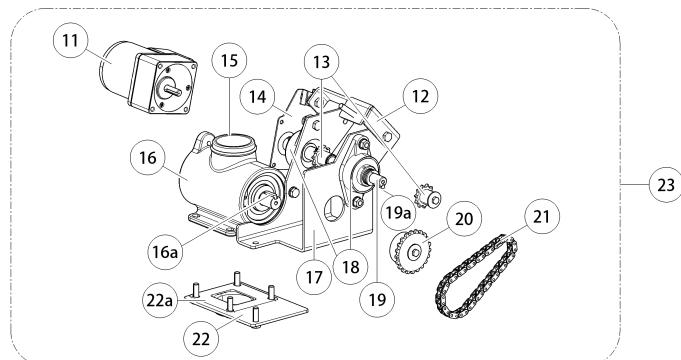
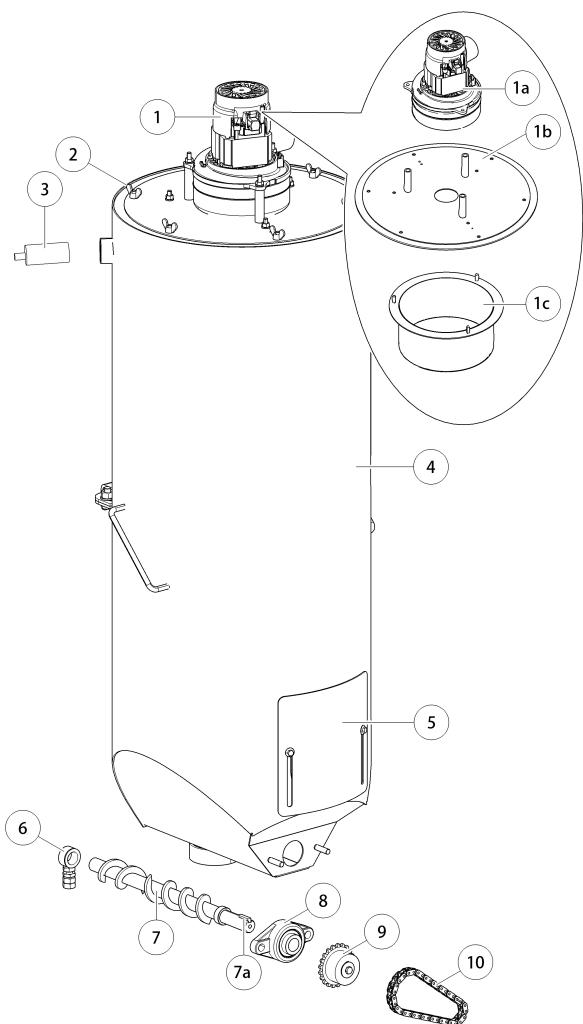
12.4.1 Pellematic PES 36-56



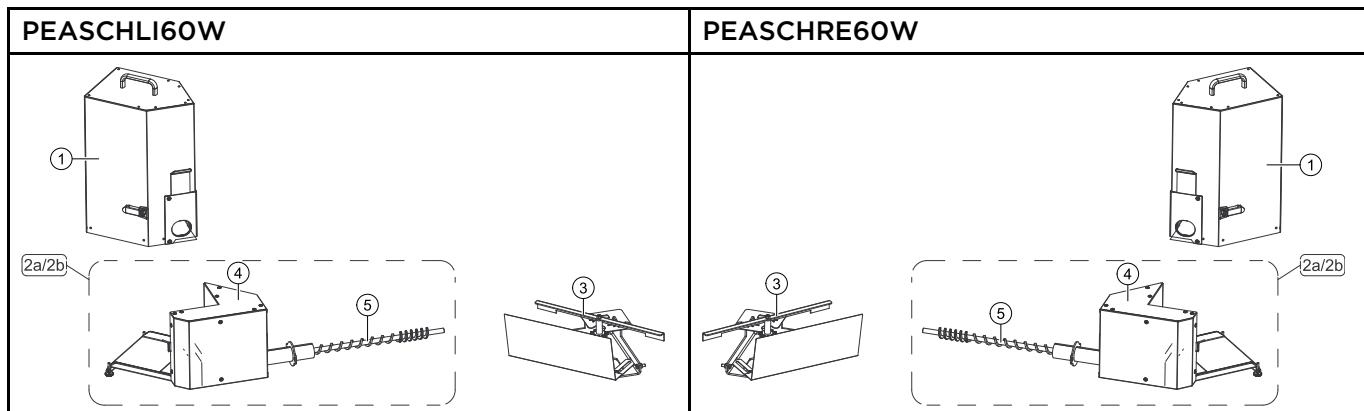
1	270076	8	301814	15	270077
2	302659	9	301811	16	270075
3	270082	10	270080	17	302115
4	301731	11	301730	18	300070
5	301814	12	270079	19	300166
6	301678	13	270078		
7	301812	14	301730		


B0036

1	121041	20	B172	33	210581
2	121058	21	121197	34	E1640
3	B150	22	121023	35	300823
4	121039	23	B190	35	210061
5	121038	24	121041	36	B186
6	121011	25	121037	37	B221
7	121195	26	121079	37	302738
8	121051	27	E1306	37	210599
9	B179	27	E1002-1	38	B185
10	121082	28	B191	39	E1005P
11	121037	28	121026	40	121041
12	B129P	28	121040	41	121082
13	121075	28	121185	42	B202
14	121193	28	121039	43	B148
15	121194	28	121038	44	B144
16	121192	28	B113	45	E1413E
17	121010	29	E1059	46	303589
17	121083	30	E1004	47	121284
18	121029	31	B176	48	B180
18	121039	32	300890	49	B152
19	121196	33	210039		

**041917**

1	E1368	7a	121023	16a	121023
1a	E1192	8	121010	17	B252
1b	041869	9	121250	18	121195
1c	041868	10	121225	19	B249
2	121176	11	E1197	19a	121484
3	E1138	12	B251	20	121250
4	041913	13	121192	21	121225
5	041911	14	B165	22	B253
6	121114	15	80590	22a	B254
7	SZB	16	210012	23	B255



1	302578	2b	PE689	4	302605
2a	PE688	3	PE373	5	302653

12.5 Technical data

Boiler - Type		PE(S) 12	PE(S) 15	PE(S) 20	PE(S) 25	PE(S) 32	PES 36	PES 48	PES 56
Boiler-rated power	BTU/hr	41,000	51,000	68,300	85,300	109,500	123,000	164,000	191,000
	kW	12	15	20	25	32	36	48	56
Boiler-partial load	BTU/hr	11.601	17.061	20.473	27.297	34.121	37.534	51.182	58.006
	kW	3,4	5	6	8	10	11	15	17
Measurements									
Width - total (B)	Inch	44 1/2	44 1/2	44 1/2	46 3/4	46 3/4	51	51	51
	mm	1.130	1.130	1.130	1.186	1.186	1.297	1.297	1.297
Width - boiler (C)	Inch	27 1/2	27 1/2	27 1/2	29 3/4	29 3/4	34	34	34
	mm	700	700	700	756	756	862	862	862
Height - boiler (H)	Inch	43	43	43	51	51	61	61	61
	mm	1.100	1.100	1.100	1.300	1.300	1.555	1.555	1.555
Height - vacuum system execution (D)	Inch	55	55	55	63	63	73	73	73
	mm	1.400	1.400	1.400	1.600	1.600	1.855	1.855	1.855
Height - filling unit (F)	Inch	12	12	12	12	12	12	12	12
	mm	300	300	300	300	300	300	300	300
Depth - boiler (T)	Inch	32	32	32	34 1/4	34 1/4	39	39	39
	mm	814	814	814	870	870	990	990	990
Depth - burner casing (V)	Inch	20	20	20	20	20	20	20	20
	mm	508	508	508	508	508	508	508	508
Flow/return - dimensions	Inch	1	1	1	5/4	5/4	2	2	2
Flow/return - height of connection (A)	Inch	35 3/4	35 3/4	35 3/4	43 3/4	43 3/4	52	52	52
	mm	905	905	905	1.110	1.110	1.320	1.320	1.320
Flue size - diameter	Inch	5	5	5	6	6	7	7	7
	mm	130	130	130	150	150	180	180	180
Flue - height of connection (E)	Inch	25 1/2	25 1/2	25 1/2	33 1/4	33 1/4	41	41	41
	mm	645	645	645	844	844	1.040	1.040	1.040
Overall Weight	Lb	631	631	631	756	756	1.120	1.120	1.120
	kg	286	286	286	343	343	508	508	508
Boiler Body Weight	Lb	529	529	529	664	664	930	930	930
	kg	240	240	240	301	301	422	422	422
Efficiency rated power	%	85,4	85,6	85,5	84,9	84,5	85,3	85,4	85,9
Efficiency partial power	%	85,1	84,3	84,2	84,2	84,3	84,1	84,1	84,1
Water capacity	Gal	15,0	15,0	15,0	23,6	23,6	30,6	30,6	30,6
	l	66,0	66,0	66,0	104,0	104,0	135,0	135,0	135,0
Flue gas area									

Boiler - Type		PE(S) 12	PE(S) 15	PE(S) 20	PE(S) 25	PE(S) 32	PES 36	PES 48	PES 56
Fire vault temperature	°F	1652 - 2012							
	°C	900 - 1100							
Fire vault pressure	Inch WC	-0.14							
	mbar	-.35							
Flue gas temperature rated power (Flue gas temperature can be adjusted)	°F	320							
	°C	160							
Flue gas temperature partial load (Flue gas temperature can be adjusted)	°F	212							
	°C	100							
Flue gas inertia current rated power	Lb/hr	49,60	62,17	82,89	99,43	115,96	149,25	198,85	231,92
	kg/h	22,50	28,20	37,60	45,10	52,60	67,70	90,20	105,20
Flue gas inertia current partial load	Lb/hr	14,11	20,72	24,91	29,76	35,71	45,64	62,17	70,33
	kg/h	6,40	9,40	11,30	13,50	16,20	20,70	28,20	31,90
Flue gas volume rated power	Cft/hr	918	1.232	1.642	1.971	2.627	2.956	3.941	4.598
	m³/h	26	35	47	56	74	84	112	130
Flue gas volume partial load at flue gas temperature	Cft/hr	240	353	424	509	607	777	1.059	1.204
	m³/h	7	10	12	14	17	22	30	34
Chimney diameter	according to chimney calculation								
Chimney construction	steel or ceramic lined, withstand humidity								
Electrical connection	USA and Canada	208 to 240 VAC, single phase, 60 Hz, 15 amp dedicated circuit.							
Water area									
Water resistance at 10K	In WC	38,22	60,22	88,32	114,02	150,95	15,62	20,84	24,29
	mbar	95,20	150,00	220,00	284,00	376,00	38,90	51,90	60,50
Water resistance at 20K	In WC	9,72	15,26	22,08	28,91	38,14	4,18	5,58	6,50
	mbar	24,20	38,00	55,00	72,00	95,00	10,40	13,90	16,20
Boiler temperature	°F	149 - 194							
	°C	65 - 90							
Boiler input temperature minimum	°F	131							
	°C	55							
Operating pressure maximum	psi	43.5							
	bar	3							
Test pressure	psi	67							

Boiler - Type		PE(S) 12	PE(S) 15	PE(S) 20	PE(S) 25	PE(S) 32	PES 36	PES 48	PES 56						
	bar	4,60													
Flue gas volume rated power at flue gas temperature	Cft/hr	1.010,0	1.327,8	1.772,8	2.231,9	2.874,6	3.217,2	4.262,5	4.944,1						
	m³/h	28,6	37,6	50,2	63,2	81,4	91,1	120,7	140,0						
Flue gas volume partial load at flue gas temperature	Cft/hr	243,7	384,9	459,1	614,5	769,9	847,6	1.165,4	1.313,7						
	m³/h	6,9	10,9	13,0	17,4	21,8	24,0	33,0	37,2						
Fuel	USA	According to PFI Premium Standards or EnPlus -A1 pellets													
	Europe	According to EN14961-2 Standards (A1 Class)													
Colorific value	BTU/lbs	> 7.200													
	MJ/kg	>16,5													
Bulk density	Lb/cft	> 40,00													
	kg/m³	>600													
Water content	Mass%	<10													
Ash content	Mass%	<1													
Length	Inch	11/4 - 11/2													
	mm	3,15 - 40													
Diameter	Inch	1/4 - 5/16													
	mm	6,00 - 8,00													
Fine material	Mass%	<0,5													
	Mass%	<1%													
Ash melting point	°F	> 2.200													
	°C	> 1.200													
Contents	USA	untreated wood													
	Europe	stemwood or chemically untreated wood													
Components															
Internal ash pan volume	Gal	5,68		6,81		-									
	lb	25		30		-									
External ash box volume	Gal	4,54				5,675									
	lb	20				25									
Main Drive	W	40													
Drive Motor	W	250/370													
Suction Turbine	W	1200													
Combustion Air Blower	W	83													
Suction Fan Blower	W	32													
Electrical Ignition	W	250													

Boiler - Type		PE(S) 12	PE(S) 15	PE(S) 20	PE(S) 25	PE(S) 32	PES 36	PES 48	PES 56
Cleaning Motor	W					40			
Motor External Ash Box	W					40			
Fire protection motor	W					5			

The data are values of the test measurement and can vary from locally measured values

WB Federal Institute of Agricultural Engineering Wieselburg

Address: A-3250 Wieselburg, Rottenhauserstraße 1; Tel.: +43-7416-52175-0

Note:

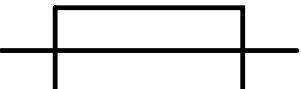
Test reports are available

12.6 Pellet boiler cautionary markings

Labeling 60x30

 <p>BEFORE OPENING TURN OFF THE MAIN SWITCH</p>	<p>TO START THE SYSTEM PRESS THE GREEN ON/OFF BUTTON</p>	<p>THE CONTAINER CAN BE TAKEN DOWN ONLY BY LOOSENING THE YELLOW LOCKING SCREW</p> <p>←</p>
<p>CAUTION</p> <p>DO NOT ALTER THIS EQUIPMENT IN ANY WAY LOSS OF WARRANTY</p>	<p>CAUTION</p> <p>POWER SOURCE NOT CONTROLLED BY SUCTION TURBINES MAIN DISCONNECT</p>	<p>CAUTION</p> <p>POWER ORIGINATED FROM A SOURCE OF POWER OTHER THAN THIS MOTOR</p>
<p>CAUTION</p> <p>DO NOT REMOVE THE SNAP RING! LOSS OF WARRANTY</p>	<p>CAUTION</p> <p>FOR USE WITH WOOD PELLET FUEL ONLY LOSS OF WARRANTY</p>	<p>CAUTION</p> <p>VACUUM SUCTION SYSTEMS: REMOVE THE PROTECTIVE CAP FROM THE BALL VALVE</p>

Labeling 99x34

<p>DANGER</p> <p>TO AVOID INJURY FROM MOVING PARTS, SHUT OFF THE MAIN CONTROLLER BEFORE REMOVING THIS COVER</p>	<p>CONTACT LOCAL BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS AND INSTALLATION INSPECTION IN YOUR AREA</p>
<p>DANGER</p> <p>KEEP VIEWING AND ASH REMOVAL DOORS TIGHTLY CLOSED DURING OPERATION!</p>	<p>CAUTION</p> <p>DO NOT CONNECT THIS UNIT TO A CHIMNEY FUEL SERVING ANOTHER APPLIANCE. SEE LOCAL RESTRICTIONS!</p>
<p>CAUTION</p> <p>INSTALL AND USE ONLY IN ACCORDANCE WITH INSTALLATION- AND OPERATING INSTRUCTIONS! REFER TO OWNERS MANUAL</p>	<p>FORWARD</p> <p>WATER QUALITY ACC. TO VDI 2035 STANDARD (THE MEDIUM HAS TO BE FREE FROM AIR AND MUD)</p>
<p>DANGER</p> <p>MOVING PARTS CAUSE INJURY! DO NOT OPERATE WITH REMOVED COVERING!</p>	<p>RETURN</p> <p>WATER QUALITY ACC. TO VDI 2035 STANDARD (THE MEDIUM HAS TO BE FREE FROM AIR AND MUD)</p>
<p>COPPER CONDUCTORS ONLY!</p>	<p>FUSE</p>  <p>T 10A</p>
<p>REFER TO OWNERS MANUAL</p>	

Labeling 105x74

<p>IN THE CASE OF A “RUN-AWAY” FIRE:</p> <ul style="list-style-type: none"> NEVER PUT YOUR SELF AT RISK OF FATAL INJURY. YOUR SAFETY MUST ALWAYS TAKE HIGHEST PRIORITY! SWITCH OFF THE HEATING SYSTEM EXIT THE BUILDING AND CALL YOUR SERVICE CONTRACTOR AND LOCAL FIRE DEPARTMENT 	 CAUTION HOT SURFACES <ul style="list-style-type: none"> DO NOT TOUCH DURING OPERATION! KEEP CHILDREN AWAY KEEP CLOTHING AND COMBUSTIBLE MATERIALS AWAY FROM MARKED CLEARANCES. MAXIMUM DRAFT MARKED ON NAMEPLATE
 CAUTION <p>IN THE CASE OF A CONNECTING BOILER CONTACT A SERVICE TECHNICIAN FOR COMPLIANCE INFORMATION BEFORE CONNECTING! MAY BE CONNECTED TO AN EXISTING BOILER SYSTEM</p> <p>THE FOLLOWING UNIT IS APPROVED FOR CONNECTING WITH THE AUTOPELLET SYSTEM:</p> <p>MODEL NUMBER CONNECTED UNIT: _____ ITEM NUMBER CONNECTED UNIT: _____</p>	 WARNING RISK OF FIRE! <ul style="list-style-type: none"> DO NOT OPERATE WHILE FLUE DRAFT EXCEEDS -.11 INCHES WC! DO NOT OPERATE WITH DOORS OPEN! DO NOT STORE FUEL OR OTHER COMBUSTIBLE MATERIAL WITHIN MARKED INSTALLATION CLEARANCES! INSPECT AND CLEAN FLUE AND CHIMNEY REGULARLY! DO NOT USE CHEMICALS TO START UNIT FIRING DO NOT BURN GARBAGE, GASOLINE, FUEL OILS OR OTHER FLAMMABLE LIQUIDS OR MATERIALS
 DANGER <p>HOT SURFACES AND MOVING PARTS MAY CAUSE INJURY!</p> <p>RISK OF FIRE OR EXPLOSION – DO NOT BURN GARBAGE, GASOLINE, FUEL OILS, DRAIN OIL OR OTHER FLAMMABLE LIQUIDS OR MATERIALS</p>	 CAUTION UNSAFE TO ADJUST FLUE DRAFT HIGHER THAN .11 INCHES WATER COLUMN <ul style="list-style-type: none"> MIN DRAFT @ LOW FIRE -.02 INCHES WC MIN DRAFT @ HIGH FIRE -.04 INCHES WC MAX DRAFT -.11 INCHES WC
 CAUTION <p>THE HEAT EXCHANGER, FLUE PIPE AND CHIMNEY MUST BE CLEANED REGURARLY TO REMOVE ACCUMULATED CREOSOTE AND ASH, ENSURE THAT THE HEAT EXCHANGER, FLUE PIPE, AND CHIMNEY ARE CLEANED AT THE END OF THE HEATING SEASON TO MINIMIZE CORROSION DURING THE SUMMER MONTHS, THE APPLIANCE FLUE PIPE AND CHIMNEY MUST BE IN GOOD CONDITION. THESE INSTRUCTIONS ALSO APPLY TO A DRAFT INDUCER IF USED.</p>	<p>LOSS OF ELECTRICAL POWER</p> <p>NO DANGER PELLET BOILER COOLS DOWN AUTOMATICALLY</p> <p>INSPECT AND CLEAN EXHAUST VENTING SYSTEM FREQUENTLY</p>

12.6.1 Data for 56KW model, including emissions



MESys
Maine Energy Systems, LLC
8 Airport Road, Bethel, Maine 04217
Voice: 207.824.6749 Fax: 207.824.4816

Report No. 0444PB004S

Type: Pellematic56				
S/N:	XUT01553	CATALOG No.: PES56		
Date of manuf.:	09/2020	Rated heat power: 191,000 BTU/hr		
Tested to: UL 2523-2013. CSA B366.1-2011 EN303-5				
Manufactured By: MESys LLC, Bethel, Maine FUEL: WOOD PELLETS				
U.S. ENVIRONMENTAL PROTECTION AGENCY: Certified to comply with the 2020 particulate emissions standard using wood pellets.				
This appliance needs periodic inspection and repair for proper operation. Consult owner's manual for further information. It is against federal regulations to operate this appliance in a manner inconsistent with operating instructions in the owners manual.				
Particulate emissions, 0.06lb./million btu - 0.952grams/hr. CO emissions, 0.052grams/minute. Annual efficiency (HHV) 81.9%				
Water Capacity: 30.6 Gallons	Operating Temp: 194 °F			
Operating Pressure: 3 BAR / 43.5 PSI / 1204 inches WC				
Chimney Approved factory built stainless steel or tile-lined masonry				
max DRAFT: 0.11 inches WC min DRAFT: 0.04 inches WC				
Diameter: 7 INCH				
Electrical Rating: 220 V, 60 Hz, 14 Amp, 1760 Watts				
FLOORING: Combustible floors can be used with a non-combustible shield. Minimum clearances are 18in/457mm in the front and 8in/203mm on each side.				
PARTS	Fan, Flue Gas: E1249A	Controller Display/Screen: E1330		
Motor Flame Return Protection: E1413A		Motor Ash Box: E1302		
Motor Cleaning Device: E1054		Motor Hopper: E1197		
Motor Burner Plate Cleaning: E1204		Suction Turbine: E1205		
Motor Burner Screw: E1306		Low Water Cut Off: Safgard 550SV		
Controller Board: E1412		Pressure-Relief Valve: Watts Co335M1		
Fan Burner: E1005S		Motor Auger Screw: FKAEM 150 /FKAES		

25 General information

As required by the United States Environmental Protection Agency the following information is given for the:
AutoPellet Pellematic PES 10-56 wood pellet fired central heating boiler. Manufactured by Maine Energy
Systems, of 8 Airport Road, Bethel, Maine, 04217

- The Pellematic has a thermal output levels from 3 kW or 10,000 btu/h to 191,000 btu/h and complies with EPA 2020 requirements.
- This wood heater has a manufacturer-set minimum low burn rate that must not be altered.
It is against federal regulations to alter this setting or otherwise operate this wood heater in a manner inconsistent with operating instructions in this manual.
- Complete installation information is found in the Installation Manual.
- Although operational information is elsewhere in this manual, there are specific concerns for correct operation that can directly affect the emissions profile of this equipment.
It is therefore necessary that we mention these important points.
- Fuel loading and selection. Your Pellematic is equipped with completely automatic fuel loading.
Thus, other than selecting the correct fuel, there are no loading instructions as such. Fuel selection is straight forward.
Only PFI Premium 100% wood pellets should be used in your boiler.
- Among the materials that are specifically prohibited to be burned in your Pellematic are: trash, plastics, gasoline, rubber, naphtha, household garbage, material treated with petroleum products such as particleboard, railroad ties, and pressure treated wood.
Burning these materials may result in release of toxic fumes or render the boiler ineffective and cause smoke.
- Your Pellematic pellet fired boiler is completely automatic ignition as well as the loading as before mentioned.
There are therefore no starting procedures to be followed. The boiler correctly starts itself when required by building load.
- There are no user adjustments required for the air controls on your Pellematic.
- It is important to have your Pellematic boiler serviced by a trained professional who is aware of the importance to ensure that there are no inlet air restrictions in or around your boiler's combustion blower.
And that the air passages within your boiler are free of debris, (creosote, ash, etc.)
The flue pipe and chimney are also clean and free of debris / restrictions.
And that the combustion chamber door seal is airtight when the door is closed and secured.
- Ash removal is also completely automatic on your Pellematic boiler. Ashes should be placed in a metal container with a tight-fitting lid.
The closed container of ashes should be placed on a noncombustible floor or on the ground, away from all combustible materials, pending final disposal. The ashes should be retained in the closed container until all cinders have thoroughly cooled.
When cooled ashes can be disposed of on your lawn, garden or local transfer station.
- Your Pellematic is not a catalytic type burner.
- A person or persons responsible for the operation of a hydronic heater must comply with all applicable laws or other requirements, such as State laws or regulations as well as local ordinances.
- A person or persons operating a hydronic heater should be aware that they are responsible for operation in such a manner that does not create a public or private nuisance condition.
The Manufacturer's distance and stack height recommendations and the requirements in any applicable laws or other requirements may not always be adequate to prevent nuisance conditions due to terrain or other factors.
- Your Pellematic should be installed with a minimum stack height of 16 feet.
Providing correct draft as given in the Installation manual.
- Draft is the force which moves air from the appliance up through the chimney.

The amount of draft in your chimney depends on the length of the chimney, local geography, nearby obstructions and other factors. Too much draft may cause excessive temperatures in the appliance and may damage the catalytic combustor. Inadequate draft may cause backpuffing into the room and 'plugging' of the chimney. Inadequate draft will cause the appliance to leak smoke into the room through appliance and chimney connector joints and uncontrollable burn or excessive temperature indicates excessive draft.

- The efficiency of your 20KW Pellematic boiler running at full power is >80%.
- The efficiency of your 32KW Pellematic boiler running at full power is >83%.
- The efficiency of your 56KW Pellematic boiler running at full power is >86%.
- This is the result of a laboratory test and was measured using the HHV of the fuel used.
- You should never operate a combustion appliance of any type in your home without there being a properly installed smoke and CO detector.
Your local fire department usually has good advice on placement of these detectors and how many your home may need for complete coverage.

Author & Manufacturer

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Maine 04217

E-Mail: info@maineenergysystems.com
www.maineenergysystems.com

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Subject to modifications

Verification

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Document

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Finalised on 2025-03-26 08:50:02 CET (+0100)

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