TŁUMACZ PRZYSIĘGŁY JĘZYKÓW
ANGIELSKIEGO i NIEMIECKIEGO
Marek Bagiński
15-746 Białystok, ul. Tuwima 13/35
tel. 85 65 17 089 biuro@prolingua.com.pl

Tłumaczenie poświadczone z języka angielskiego

[uwagi tłumacza kursywą w nawiasach]

****

CERTYFIKAT TESTU EKOPROJEKTU *[znak]*

Wyciąg ze sprawozdania nr: 300-ELAB-2430

Producent: NIBE-BIAWAR sp. z o.o.
Al. Jana Pawła II 57, 15-703 Białystok
NIP UE PL5420200292

Wyrób: Kocioł na biopaliwo

Model: Kocioł Pellux Compact i palnik PBMAX 12.1
Kocioł Pellux Compact Touch i palnik PBMAX 12.1
Kocioł Pellux Compact 12 i palnik PBMAX 12.1
Kocioł Pellux Compact Touch 12 i palnik PBMAX 12.1
Kocioł Metrocompact 12 i palnik PBMAX 12.1

Procedura: Badanie przeprowadzone zgodnie z EN 303-5:2012

DUŃSKI INSTYTUT TECHNOLOGICZNY
Teknologiparken
Kongsvang Allé 29
DK-8000 Aarhus C
Tel. +45 72 20 10 00
Faks +45 72 20 10 00
Info@teknologisk.dk

Wymagania: Rozporządzenie Komisji (UE) nr 2015/1189, Załącznik II, art. 1

Podajnik: Automatyczny **Paliwo:** Biomasa

Badanie przeprowadzono na pellecie drzewnym (C1), uzyskano następujące wyniki:

WYNIKI BADANIA

Pomiar	Jednostka	Wynik	Wartości graniczne
Nominalna moc cieplna	kW	13,2	
Stężenie CO na 10% O_2	mg/m_n^3	115	
Stężenie OGC na 10% O_2	mg/m_n^3	< 6	
Stężenie pyłu na 10% O_2	mg/m_n^3	33	
Stężenie No_x na 10% O_2	mg/m_n^3	194	
Wydajność	%	93,4	
Minimalna moc cieplna	kW	3,5	
Stężenie CO na 10% O_2	mg/m_n^3	402	
Stężenie OGC na 10% O_2	mg/m_n^3	18	
Stężenie pyłu na 10% O_2	mg/m_n^3	31	
Stężenie No_x na 10% O_2	mg/m_n^3	157	
Wydajność	%	89,1	

MAREK BAGIŃSKI TŁUMACZ PRZYSIĘGŁY JĘZYKA ANGIELSKIEGO NR TP/1173/05

Emisje sezonowe			
Stężenie CO na 10% O_2	mg/m_n^3	359	500
Stężenie OGC na 10% O_2	mg/m_n^3	16	20
Stężenie pyłu na 10% O_2	mg/m_n^3	31	40
Stężenie No_x na 10% O_2	mg/m_n^3	163	200
Sezonowa efektywność energetyczna ogrzewania pomieszczeń			
ηs	%	78,4	75
ηson	%	83,1	
F1	%	3,0	
F2	%	1,7	

Zwracamy uwagę na to, że podane wartości stanowią wyciąg sprawozdania z badania. W celu uzyskania dodatkowych informacji należy zapoznać się ze sprawozdaniem z badania.

Aarhus, 7 października 2019 r.
[podpis nieczytelny]
Torben Nørgaard Jensen
B. Sc. *[licencjat nauk ścisłych]*

Niniejszy certyfikat został sporządzony, a wartości obliczone na podstawie sprawozdania z akredytowanego badania wykonanego przez instytut badawczy na podstawie akredytacji DANAK, członka EA *[Europejska Współpraca w zakresie Akredytacji]* i ILAC *[Współpraca Międzynarodowa w zakresie Akredytacji Laboratoriów].*

07-10-2019 r. 10:00:59
[tekst w języku trzecim]
Niniejszy dokument PDF jest ważny tylko wówczas, gdy został podpisany cyfrowo za pomocą podpisu cyfrowego OCES Torbena Nørgaarda Jensena z Duńskiego Instytutu Technologicznego.
****

KONIEC TŁUMACZENIA

Niniejszym poświadczam zgodność powyższego tłumaczenia z załączoną kopią dokumentu w języku angielskim.

Marek Bagiński, tłumacz przysięgły języka angielskiego, wpisany na listę tłumaczy przysięgłych prowadzoną przez Ministra Sprawiedliwości pod numerem TP/1173/05.

Białystok, dnia 15 października 2019 r.

MAREK BAGIŃSKI TŁUMACZ PRZYSIĘGŁY JĘZYKA ANGIELSKIEGO NR TP/1173/05

TEST REPORT

Report no.:
300-ELAB-2430

DANISH
TECHNOLOGICAL
INSTITUTE

Teknologiparken
Kongsvang Allé 29
DK-8000 Aarhus C
+45 72 20 20 00
info@dti.dk
www.dti.dk

Init.: APOD/TNJ
Order no.: 880117
No. of appendices: 2

Requested by:	Company:	NIBE-BIAWAR Sp. z o.o.
	Address:	Al. Jan Pawla II 57
	Postcode/town:	15-703 Bialystok
	Country:	Poland
Product:	Automatic biofuel boiler	
	Manufacturer: NIBE-BIAWAR	Type: Pellux Compact & PBMAX 12.1
	Nominal output: 13,2kW	Fuel: Pellets C1
Sample:	Receipt at DTI, Aarhus:	27.06.2019, sampled by NIBE-BIAWAR
Test period:	Date of testing:	01.07.2019 - 26.08.2019
Procedure	Testing of biofuel boiler according to DS/EN 303-5:2012.	
Result:	Requirements according to DS/EN 303-5:2012 Class 5 were met in relation to emissions and efficiency. Requirements regarding documentation material and construction details were fulfilled.	
Remarks:	See paragraph 2 - Remarks.	
Terms:	Accredited testing was carried out in compliance with the current guidelines laid down by DANAK (The Danish Accreditation), cf. www.danak.dk, and the general terms and conditions of The Danish Technological Institute. The test results apply to the tested products only. This test report may be reproduced in extract only if the laboratory has approved the extract in writing.	
Issued:	Date 06.11.2019, Danish Technological Institute, Aarhus, Energy Laboratory	

Signature:	Anders Pødenphant B. Sc.	Torben Nørgaard Jensen B. Sc.
	Consultant	Quality Assurance

ilac-MRA DANAK
Test reg. no. 300

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1. Documentation material

- Drawings
- Data sheets
- Photos
- User manual & technical information
- Boiler plate
- Risk assessment

The documentation material is enclosed as a digitally signed PDF file.

2. Remarks

Revision concerns two corrections of Danish words that was not translated to English. There has also been added 4 product types which are covered by this report.

This report also covers following product types:

- Pellux Compact Touch boiler & PBMAX 12.1 burner
- Pellux Compact 12 boiler & PBMAX 12.1 burner
- Pellux Compact 12 Touch boiler & PBMAX 12.1 burner
- Metrocompact 12 boiler & PBMAX 12.1 burner

Control of the welded steel sheet boiler, electrical safety and EMC is not included in this report (see paragraph 4.2).

3. The basis of the test

This report concerns testing of a biofuel boiler. The boiler has been subject to random sampling and is representative for appliances from the production.

Testing was carried out by Danish Technological Institute, Kongsvang Allé 29, DK-8000 Aarhus C, Denmark.

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4. Product description

4.1. Test specimen

Overall description

Pellux Compact & PBMAX 12.1 is a compact fully automatic boiler for combustion of pelletized solid fuel. The fuel is transported from an internal fuel hopper via an inclined auger and drop chute to the burner. The combustion takes place in a horizontal steel burner.

The boiler controller is fully modulating without lambda prope. There is an ongoing measurement of flow temperature and flue gas temperature.

The boiler is a welded steel sheet boiler. The convection unit consists one horizontal channel without turbulator and 6 vertical flue gas channels, all of them provided with turbulators. The turbulators are included in the automatic cleaning mechanism.

For protection against back-fire the unit is equipped with a drop chute and heat sensor on the chute. The burner can be removed from the boiler without tools and has a switch which cuts power supply by removal.

The boiler is not suitable for log wood burning.

Photos

Photo of boiler at the test rig.

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Specifications

Feeding system	
Type	Inclined auger and drop chute
Auger motor	SPG S8R25GX-TCE(L42), 220V, 50Hz, 25W, 1200rpm

Burner	
Type	Air-cooled horizontal steel burner
Combustion air	EbmPapst RLD85/0034A, 230V, 50Hz, 35W

Boiler	
Type	Welded steel sheet boiler
Water content	75 litre
Flue gas tube, outer diameter	ø 120 mm
Flow connection	1”
Return connection	1”
Convection unit	1 horizontal channel, 6 vertical channels
Turbulators	6 circular turbulators

Regulation system	
Type	Fully modulating
Operation	Via internal panel

Other	
Automatic ignition	Yes
Automatic ash removal	No
Automatic cleaning of convection unit	Yes

Main dimensions, biofuel boiler	
Height	app. 1280 mm
Width	app. 450 mm
Depth	app. 113 mm
Weight	app. 300 kg

Safety equipment	
Temperature controller	Electronic
Safety temperature limiter	Rozmerovy KNTP 8823.02 (manual reset)
Safety against back-burning	Inclined auger and drop chute
Safety against back-burning	Temperature sensor on drop chute

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4.2. **Requirements for construction etc.**

Parameter	**Reference paragraph in EN303-5**	**Requirement met** yes/no
General requirements		
Safety at normal use	4.1	yes
Requirements for documentation		
Drawings	4.2.1.1	yes
Quality manual	4.2.1.2	yes
Data plate	7.1-7.2	yes
Technical information	8.2	yes
Operating instructions	8.3	yes
Risk assessment	4.3.1	yes
Requirements for welded steel sheet boiler		
Execution of welding work	4.2.2.1	*
Welding seams and welding fillers	4.2.2.2	*
Parts of steel subject to pressure	4.2.2.3	*
Minimum wall thicknesses and tolerances	4.2.2.4	*
Requirements for safety and design		
Venting of the water sections etc.	4.2.4.1	yes
Cleaning of heating surfaces	4.2.4.2	yes
Inspection of the flame	4.2.4.3	yes
Water tightness	4.2.4.4	yes
Replacement parts	4.2.4.5	yes
Boiler shell tappings	4.2.4.6	yes
Thermostat pockets	4.2.4.7	yes
Thermal insulation	4.2.4.8	yes
Water side resistance	4.2.4.9	yes
Integral fuel hopper	4.2.4.10	yes
Fuel chamber	4.2.4.11	yes
Ash chamber	4.2.4.12	yes
Overfeeding or disturbances in the fuel supply	4.3.4	yes
Supply of combustion air	4.3.5	yes
Surface temperatures of accessible parts	4.3.6	yes
Leakage of combustion products	4.3.7	yes
Safety requirements for fuel supply		
Generally	4.3.3.1	yes

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Manual stoking	4.3.2	no
Automatic stoked boilers	4.3.3	yes
Thermal conductance	4.3.3.2	yes
Back flow of ignitable combustion gasses	4.3.3.3	yes
Fire propagation into the fuel line	4.3.3.4	yes
Alternative verification of safety against back burning	4.3.3.5	yes

Safety requirements for automatic stoking		
Temperature control for open vented systems	4.3.8.2	yes
Temperature control for closed vented systems	4.3.8.3	yes[1]
Accessories	4.3.9.1	yes
Electrical safety	4.3.9.2	*
Electromagnetic compatibility, EMC	4.3.9.3	*

[1] Only applies for automatic stoking.
* Not included in this report. Please refer to the manufacturer's EU declaration of conformity.

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5. Test results

5.1. Waterside resistance

Equivalent temperature difference at nominal output	Water flow	Pressure drop
20 K	0.6 m^3/h	0.3 mbar
10 K	1.1 m^3/h	2.5 mbar

5.2. Surface temperatures

Equivalent temperature difference at nominal output	Measured temperature	Allowed limit
Boiler doors etc., average of 5 measurements	32 °C	+ 100 K
Boiler bottom, average of 5 measurements	42 °C	+ 65 K
Handles being touched during operation Metal and similar materials Porcelain and similar materials Plastic and similar materials	 - - 27 °C	 + 35 K + 45 K + 60 K
Boiler's average surface temperature Average of 10 spot measurements	32 °C	-
Ambient temperature	27 °C	-

5.3. Disconnection of air fan

	Measured CO	Allowed limit
Disconnection of air fan	3.8 $\%_{vol.}$	5 $\%_{vol.}$

5.4. Function check

The firing system is rapidly disconnectable, DS/EN303-5 paragraph 4.3.8.3 a) and therefore the safety equipment includes a temperature controller and a safety temperature limiter with manual reset. The thermostats are tested in accordance with DS/EN303-5 paragraph 5.13. Loss of power supply and sudden absence of heat dissipation are tested according to paragraph 5.14.

	Measured temperature	Allowed limit
Temperature controller	81 °C	100 °C
Safety temperature limiter	101 °C	110 °C
Sudden absence of heat dissipation	87 °C	100 °C
Loss of power supply	74 °C	100 °C

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5.5. **Test results at nominal heat output**

Parameter	**Value**	**Unit**
Return temperature	58.0	°C
Flow temperature	71.3	°C
Water flow	0.87	m^3/h
Heat output	13.2	kW
Test duration	6.0	H
Power consumption	35	W
Fuel consumption	2.9	kg/h
Water content	6.1	%
Net calorific value	17.7	MJ/kg
Gross calorific value	19.1	MJ/kg
Heat input	14.1	kW
Efficiency	93.4	%
Ambient temperature	23	°C
Flue gas temperature	107	°C
Chimney draught	16	Pa
Flue gas volume flow	32	m^3/h
Flue gas mass flow	30	kg/h
CO_2	12.2	$\%_{vol.}$
Dust at 6% O_2	45	mg/m_n^3
Dust at 10% O_2	33	mg/m_n^3
Dust at 13% O_2	0.02	g/m_n^3
Dust emission	16	mg/MJ
CO measured	106	$\%_{vol.}$
CO at 6% O_2	157	mg/m_n^3
CO at 10% O_2	115	mg/m_n^3
CO at 13% O_2	0.08	g/m_n^3
CO-emission	54	mg/MJ
NO_x (NO_2) at 6% O_2	264	mg/m_n^3
NO_x (NO_2) at 10% O_2	194	mg/m_n^3
NO_x-emission (NO_2)	91	mg/MJ
OGC (C) at 6% O_2	< 8	mg/m_n^3
OGC (C) at 10% O_2	< 6	mg/m_n^3
OGC-emission (C)	< 3	mg/MJ

All emission values are stated on the basis of dry flue gas.

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5.6. **Test results at partial heat output**

Parameter	**Value**	**Unit**
Return temperature	58.0	°C
Flow temperature	71.9	°C
Water flow	0.22	m^3/h
Heat output	3.5	kW
Test duration	6.0	H
Power consumption	20	W
Fuel consumption	0.8	kg/h
Water content	6.1	%
Net calorific value	17.7	MJ/kg
Gross calorific value	19.1	MJ/kg
Heat input	3.9	kW
Efficiency	89.1	%
Ambient temperature	25	°C
Flue gas temperature	75	°C
Chimney draught	9	Pa
Flue gas volume flow	13	m^3/h
Flue gas mass flow	13	kg/h
CO_2	7.4	$\%_{vol.}$
Dust at 6% O_2	42	mg/m_n^3
Dust at 10% O_2	31	mg/m_n^3
Dust at 13% O_2	0.02	g/m_n^3
Dust emission	15	mg/MJ
CO measured	225	$\%_{vol.}$
CO at 6% O_2	548	mg/m_n^3
CO at 10% O_2	402	mg/m_n^3
CO at 13% O_2	0.29	g/m_n^3
CO-emission	187	mg/MJ
NO_x (NO_2) at 6% O_2	215	mg/m_n^3
NO_x (NO_2) at 10% O_2	157	mg/m_n^3
NO_x-emission (NO_2)	73	mg/MJ
OGC (C) at 6% O_2	25	mg/m_n^3
OGC (C) at 10% O_2	18	mg/m_n^3
OGC-emission (C)	8	mg/MJ

All emission values are stated on the basis of dry flue gas.

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5.7. **Other measurements**

Subject	Measured	Unit
Power consumption at standby	8	W

6. Test conditions

The moisture content of the fuel was determined according to the weigh/dry method. Sample from both nominal and partial load tests were taken.

Determination of particle emission at in-stack sampling with tubular filter device. Drying before and after sampling for minimum 4 hours at 105 °C.

Temperature settings on unit during testing at nominal and partial testing was 80 ºC at nominal and 72 ºC at partial.

7. Test equipment

Testing rig and equipment has been set up according to EN 303-5 and EN 304.

Rack B1			
Instrument	**Type**	**Traceability**	**Instrument number**
Data logger	HP 34970A	DANAK 200	270-A-2436
PC	Dell	-	-
CO/CO_2 analyser	ABB EL3020	-	101360
FID analyser	M&A	-	270-A-2419
Pressure gauge	Autotran 700	ELAB	270-A-2479
Heated hose/probe	M&C	-	270-A-2481
Heated hose/probe	M&C	-	270-A-2483
Ambient temperature sensor	Type K	ELAB	270-A-2487
Span gas, C_3H_8	AGA	Swedac	135578

Rack 3			
Instrument	**Type**	**Traceability**	**Instrument number**
NO_x analyser	ECO Physics CLD-60	-	98348

Test rig 2			
Instrument	**Type**	**Traceability**	**Instrument number**
Water flow meter	0-3,2 m^3/h	DANAK 200	127920
Water temperature sensor	Pt100 (flow)	DANAK 200	106551

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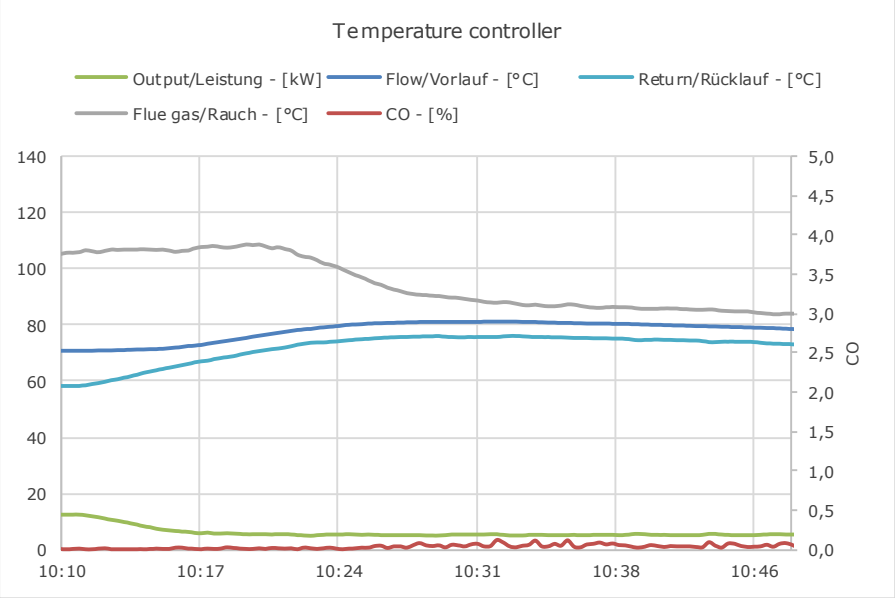
Water temperature sensor	Pt100 (return)	DANAK 200	106552
Gas meter	Elster BK-G2,5MT	DANAK 9	121799
Flue gas temperature sensor	Type K	ELAB	270-A-2485

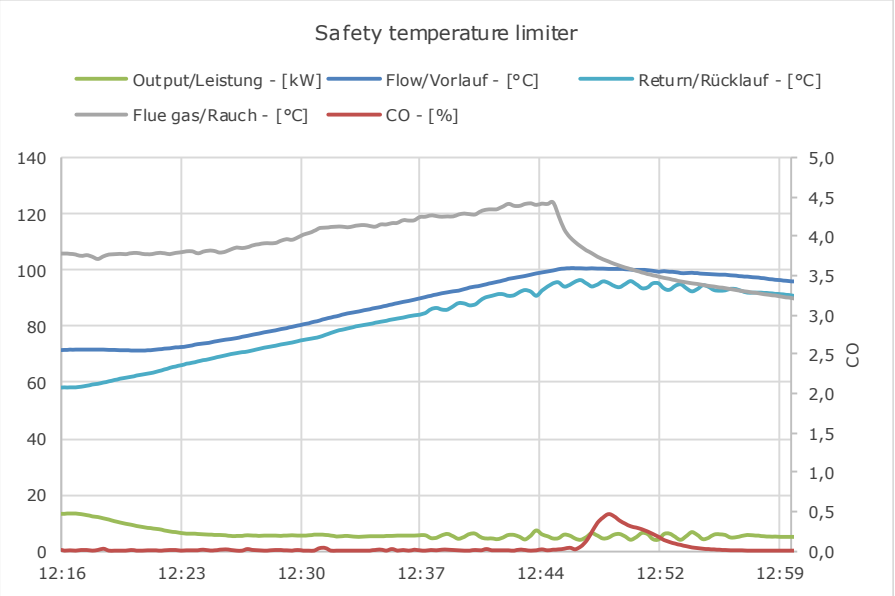
Other equipment			
Instrument	**Type**	**Traceability**	**Instrument number**
Adiabatic calorimeter	-	IVC, Kemi	-
Span gas, CO/CO_2	AGA	Swedac	135573
Span gas, CO/CO_2	AGA	Swedac	135574
Zero gas, N_2	AGA	Swedac	135575
Span gas, NO/CO	AGA	Swedac	135576
Data collection programme	N.I. Labview	-	TI-DOP ver. 13.28.vi
Dust measuring equipment	Ströhlein	-	270-A-1330
Surface thermometer	Technoterm 5500	DANAK 200	270-A-976
Water gauge	ELAB	-	270-A-1759
Scale (dust)	Mettler XS 204	ELAB	Id.nr. 7084
Scale (humidity)	Mettler PC 440	ELAB	270-A-947
Scale (fuel)	Sauter 60 kg	ELAB	270-A-484
Temperature calibrator	Jofra 650 SE	ELAB	270-A-0912
Scale (boiler)	Mettler IND 560	ELAB	270-A-0551

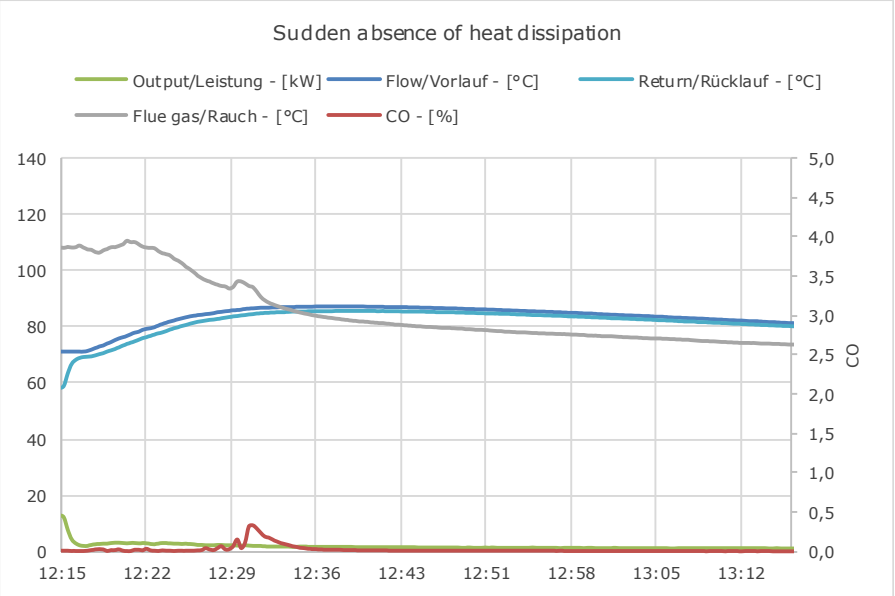
8. Appendices

Appendix 1: Graphs of measurements during safety and function checks
Appendix 2: Graphs of measurements at nominal and partial heat output

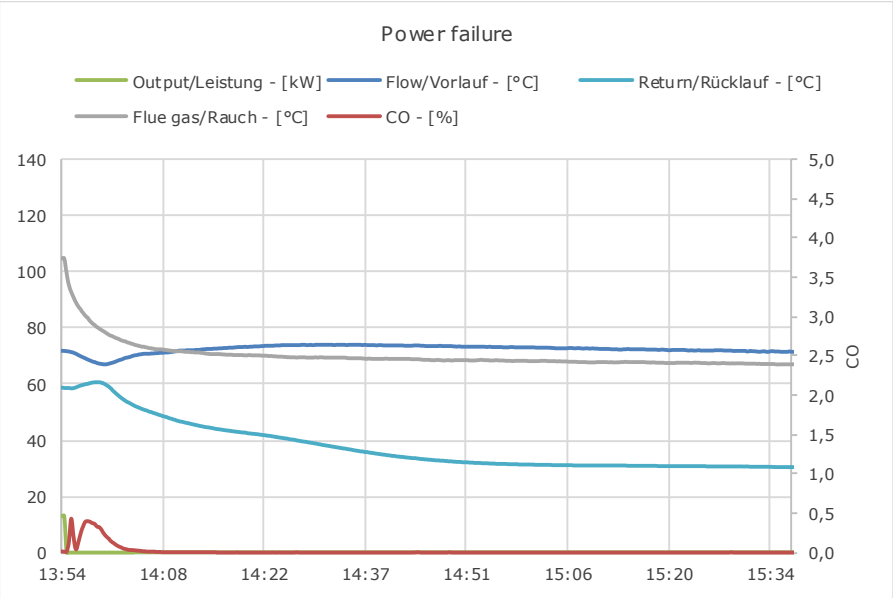
Appendix 1: Graphs of measurements during safety and function checks

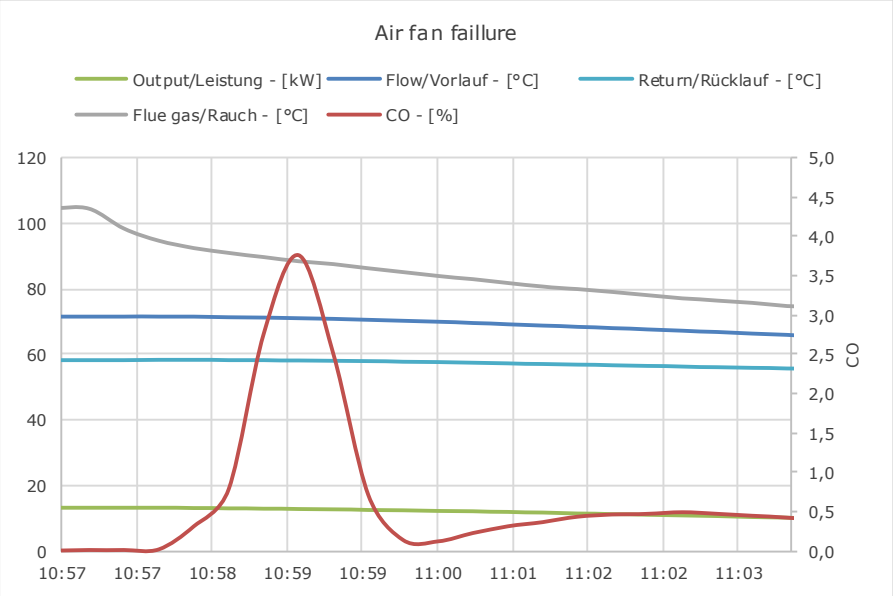




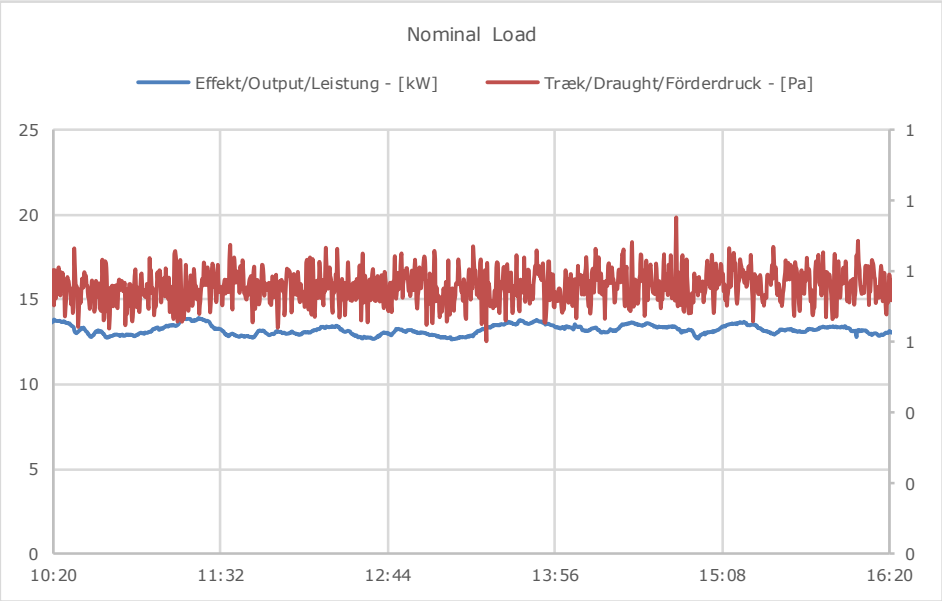


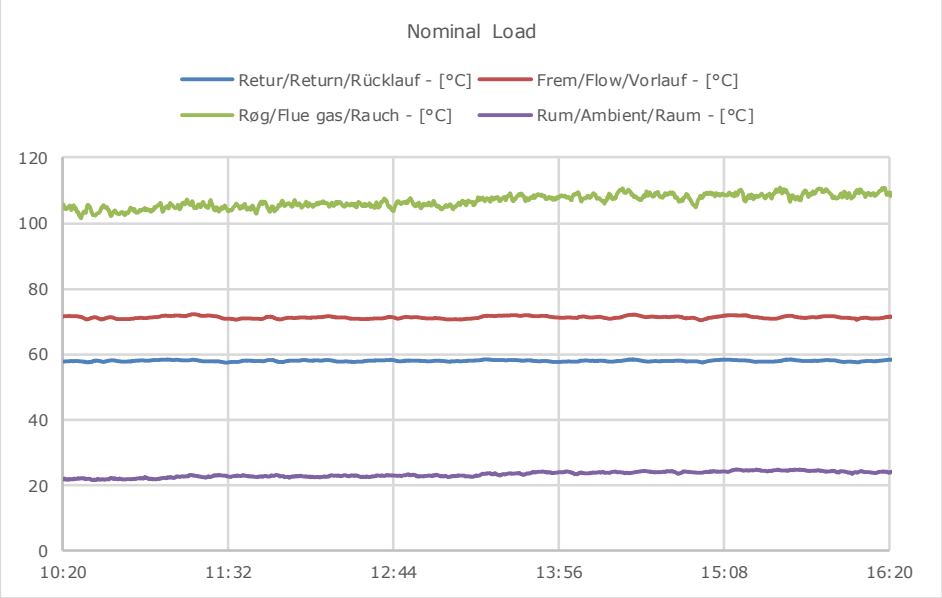
Appendix 1: Graphs of measurements during safety and function checks

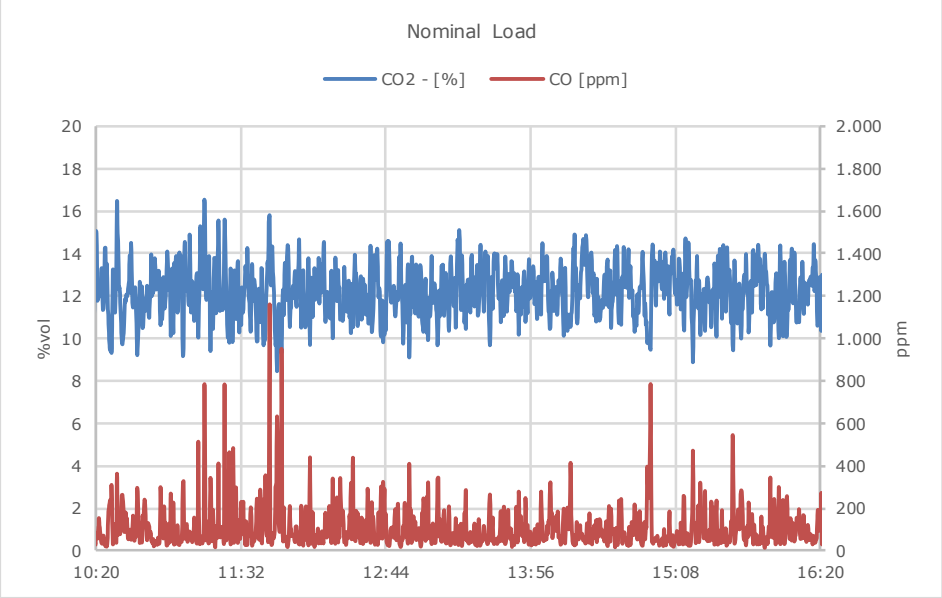




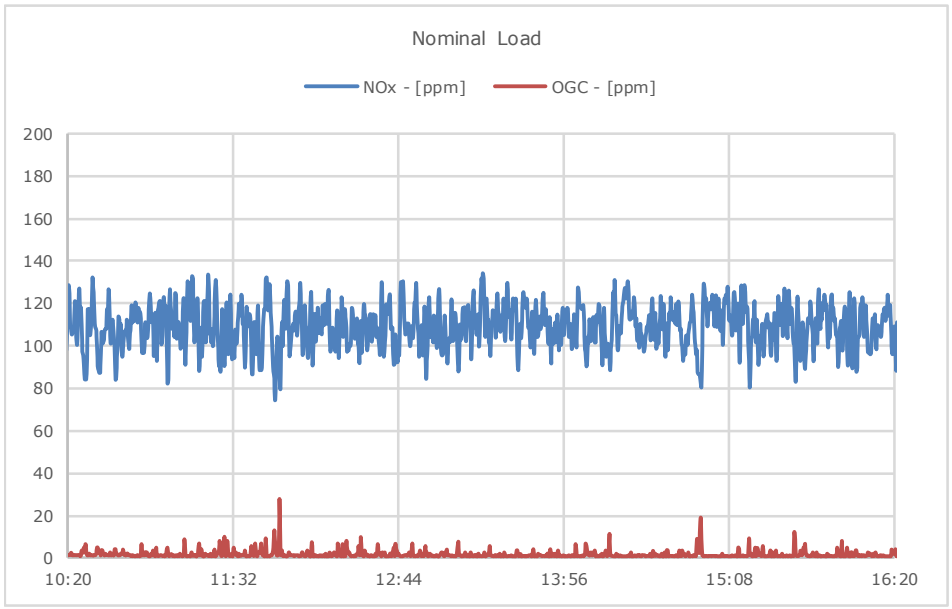
Appendix 2: Graphs of measurements at nominal and partial heat output

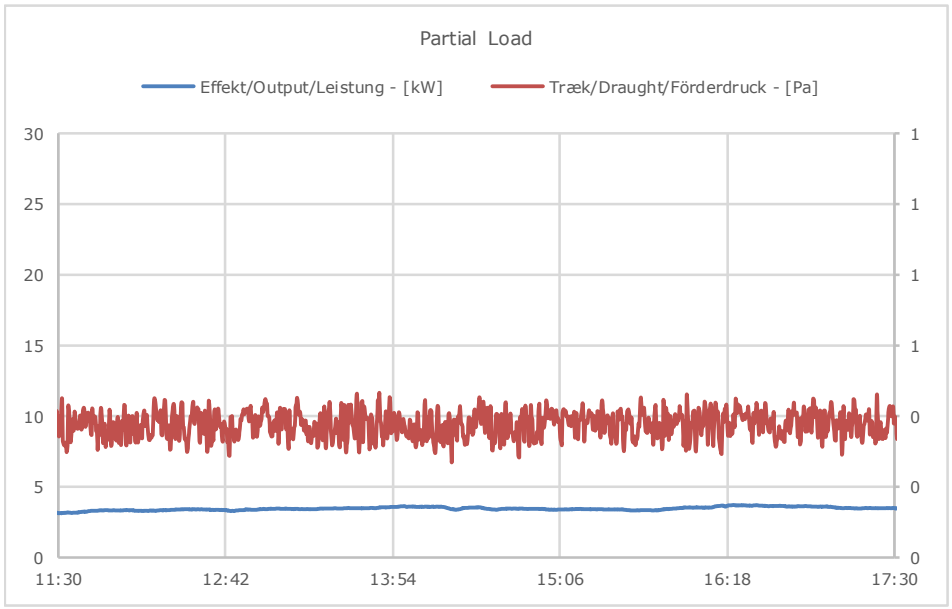


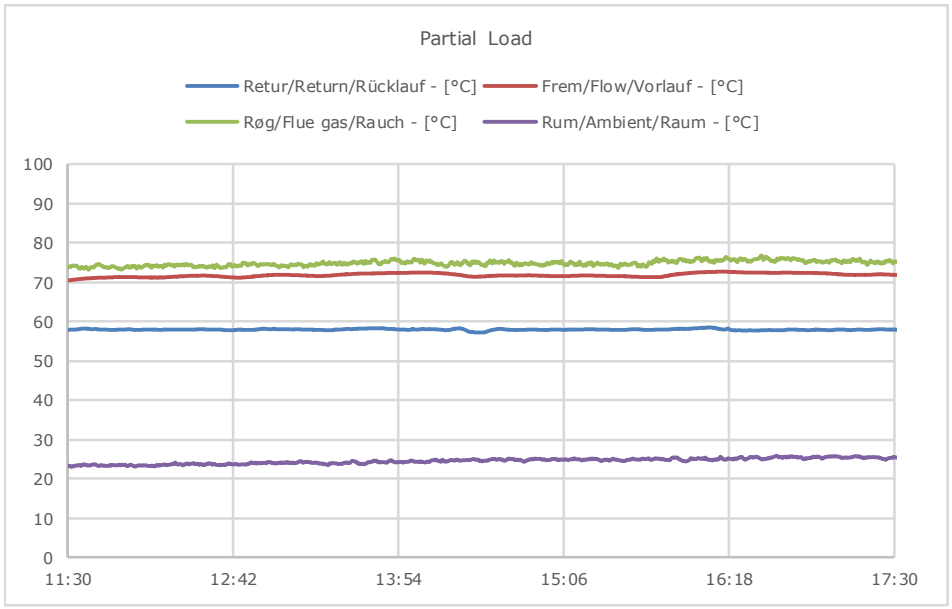




Appendix 2: Graphs of measurements at nominal and partial heat output







Appendix 2: Graphs of measurements at nominal and partial heat output