

Report No. K 1793 2019 E5

Residential space heating appliances fired by wood pellets
Supplement to Initial type testing
in accordance with DIN EN 14785

Types:

AP004N_2_06

AP004N_2_07

AP004N_2_08

Trademark:

PALAZZETTI

Company:

PALAZZETTI LELIO S.p.A.



This accreditation is valid only for the listed standards as stated in the accreditation annex of D-PL-11120-04-00

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Publication of page 2 is permitted.

The test results presented in this report refer solely to the test object stated as described on page 2. The report does not represent a general statement about the serial production of the test object and gives not an authorization for use of a TÜV Rheinland test- / certification mark.

3rd Supplement to initial type testing
Residential space heating appliances fired by wood pellets
DIN EN 14785: September 2006
Correction 1 DIN EN 14785: October 2007

Applicant/contractor: **PALAZZETTI LELIO S.p.A.**
Via Roveredo, 103
33080 Porcia (PN) - Italy

Trademark: **PALAZZETTI**

Type of construction: Residential room heating appliances fired by wood pellets without water heat exchanger, with fan assisted flue discharge and with internal fuel hopper

| | | | |
|-------------------------|---|--------------------|--------------------|
| Type designation: | AP004N_2_06 | AP004N_2_07 | AP004N_2_08 |
| Total heat input: | 3,1 - 6,6 kW | 3,1 – 7,8 kW | 3,1 - 9,3 kW |
| Nominal heat output: | 2,9 - 6,0 kW | 2,9 – 7,0 kW | 2,9 - 8,2 kW |
| Water heat output: | Not applicable | | |
| Type of fuel: | wood pellets, class A1 acc. to EN17225-2; Ø: 6 mm, L _{max} : 30 mm, maximum humidity: 7,0%, Firestixx | | |
| Type of loading: | automatic load | | |
| Max. water temperature: | Not applicable | | |
| Max. water pressure: | Not applicable | | |
| Date of test: | 27 th June 2019 | | |

Remarks:

The data of the nominal heat output of the stove **AP004N_2_07** are achieved by linear interpolation between the nominal heat output of the stove **AP004N_2_06** and the nominal heat output of the stove **AP004N_2_08**.

Test results:

The technical requirements cl. 4-8 of the above mentioned standard are fulfilled. The local applicable installation conditions are to be observed.

The electrical safety cl. 5.9. of the standard, is not a part of this assessment.

The presumption of conformity with the relevant European Directives respectively Regulations could only be confirmed by full compliance with Annex ZA.

Additional details are documented on the Initial Type Testing report K17932016T1 and on the supplement testing reports K17932018E3 / K17932019E4.


Dated in Cologne, 2019-12-13
432 / mc

TÜV Rheinland Energy GmbH
Test Centre according to Construction
Product Regulation 305/2011(CPR)
Notified Body: 2456

Assessor:

Report released after review:


Dipl.-Ing. M. Ciccarelli


Dipl.-Ing. A. Pomp

Residential space heating appliances fired by wood pellets, Initial Type Test in accordance with the regulation 305/2011 conformity certification system no. 3

1. Task

History of the testing report K 1793 2016 T1

The Test Centre for Energy Appliances was instructed to execute the initial type testing on the appliances **AP004N_1_08** and **AP004N_1_06** for the operation with wood pellets according to DIN EN 14785:2006, clauses 4-8.

The electrical safety, cl. 5.9. of the standard, was not a part of this initial type testing. The data at nominal heat output of the stove **AP004N_1_07** have been achieved by linear interpolation between the nominal heat output of the stove **AP004N_1_08** and the nominal heat output of the stove **AP004N_1_06**.

The practical tests were carried out in the laboratory in Thiene (Italy) on the 18th, on the 19th and on the 25th of February 2016.

The (FPC) Factory Production Control was not performed.

History of 1st supplement testing report K 1793 2018 E3

The manufacturer decided to execute a retesting at reduced heat output on the appliances **AP004N_1_06**, **AP004N_1_07** and **AP004N_1_08**, in order to improve the combustion gases emissions.

Furthermore, the type designations of all stoves changed as follow:

- AP004N_1_06 → AP004N_2_06
- AP004N_1_07 → AP004N_2_07
- AP004N_1_08 → AP004N_2_08

Only the new types **AP004N_2_06**, **AP004N_2_07** and **AP004N_2_08** are in production now.

The only difference between the old and the new appliances is the different software settings at reduced heat output.

The practical tests were carried out in the laboratory in Thiene (Italy) on the 14th of March 2018.

All other test results of the test report K17932016T1 are still valid.

History of the 2nd supplement testing report K 1793 2019 E4

The manufacturer made a new version of the stoves. The following features have been implemented:

- vertical flue gas connection
- different auger motor

These new stoves are placed in the market with the following new type designations:

- AP004N_3_06
- AP004N_3_07
- AP004N_3_08

The Test Centre for Energy Appliances has been instructed to carry out a comparison test at nominal heat output on the stove **AP004N_3_08**, chosen as representative model of the whole family. The practical test has been carried out in the laboratory in Thiene (Italy) on the 21st of March 2019.

New supplement testing report K 1793 2019 E5

The manufacturer has introduced a new version of these appliances, which are now fitted with refractory materials on the combustion chamber.

The Test Centre for Energy Appliances has been instructed to carry out a comparison test at nominal heat output on the stove **AP004N_2_08**, chosen as representative model of the whole family.

The practical test has been carried out in the laboratory in Thiene (Italy) on the 27th of June 2019.

A comparison of the essential results is listed on the table below:

| | Input (kW) | Output (kW) | Efficiency (%) | CO* (mg/m ³) | NOx* (mg/m ³) | CnHm* (mg/m ³) | Dust* (mg/m ³) |
|-------------------------------------|---------------|----------------|-------------------|-----------------------------|------------------------------|-------------------------------|-------------------------------|
| AP004N_2_08 (report K17932018E3) | 9,3 | 8,2 | 87,7 | 26 | 134 | 1 | 8 |
| AP004N_2_08 (report K17932019E5) | 9,5 | 8,3 | 88,1 | 41 | 132 | 2 | 14 |

*) Concentration at 13% O₂

2. Brief description of the appliances

Residential space heating appliances fired by wood pellets without water heat exchanger. The flue discharge for pellet operation is fan assisted. The stoves are equipped with an automatic ignition.

The data of the nominal heat output of the stove **AP004N_2_07** are achieved by linear interpolation between the nominal heat output of the stove **AP004N_2_06** and the nominal heat output of the stove **AP004N_2_08**.

2.1 General technical data of the test specimen

| | |
|---|--|
| Type designation: | AP004N_2_08 |
| Nominal heat output: | 8,2 kW |
| Test fuel: | wood pellets, class A1 acc. to EN17225-2. Ø: 6 mm, L _{max} : 30 mm, maximum humidity: 7,0%, Firestixx |
| Total dimension [mm]: Height x Width x Depth | 1107 x 475 x 547 |
| Flue spigot: | 80 mm |
| Weight: | 112 kg |
| Distance of adjacent combustible materials | 100 mm (Backside) distance from test wall 100 mm (Side) distance from test wall 800 mm (Front) distance from test wall |

2.2 Photographs of the appliance (AP004N_2_08)



2.2 Resume of test results

| AP004N_2_06* | | Nominal | Partial | Requirement (EN14785) |
|--|-------------------|---------|---------|-----------------------|
| Mass of the test fuel fired hourly | kg/h | 1,36 | 0,63 | - |
| Flue gas mass flow | g/s | 4,1 | 3,47 | - |
| Flue gas temperature | °C | 167,9 | 85,8 | - |
| Flue draught | mbar | 0,12 | 0,10 | 0,12/0,10 +/-0,02 |
| CO ₂ -concentration | Vol.-% | 11,4 | 6,0 | - |
| O ₂ -concentration | Vol.-% | 9,0 | 14,7 | - |
| CO-concentration | ppm | 32 | 94 | - |
| CO-emission (at 13%-O ₂) | mg/m ³ | 26 | 151 | 500/750 |
| CO-emission | mg/kWh | 63 | 348 | - |
| CO-emission | mg/MJ | 17 | 97 | - |
| NO _x -concentration | ppm | 94 | 51 | - |
| NO _x -emission (at 13%-O ₂) | mg/m ³ | 128 | 133 | - |
| NO _x -emission | mg/kWh | 305 | 308 | - |
| NO _x -emission | mg/MJ | 85 | 86 | - |
| CnHm-concentration measured acc. CEN/TS 15883 | ppm | 1 | 3 | - |
| CnHm-emission (at 13%-O ₂) | mg/m ³ | 1 | 6 | - |
| CnHm-emission | mg/kWh | 3 | 14 | - |
| CnHm-emission | mg/MJ | 1 | 4 | - |
| Dust emission (at 13%-O ₂) | mg/m ³ | 10 | 15 | - |
| Dust emission | mg/kWh | 24 | 35 | - |
| Dust emission | mg/MJ | 7 | 10 | - |
| Total heat input | kW | 6,6 | 3,1 | - |
| Total heat output | kW | 6,0 | 2,9 | - |
| Water heat output | kW | - | - | - |
| Space heat output | kW | 6,0 | 2,9 | - |
| Efficiency | % | 90,0 | 92,3 | 75/70 |

*) The results are taken from the report n. K17932018E3.

| AP004N_2_07* | | Nominal** | Partial | Requirement (EN14785) |
|--|-------------------|------------------|----------------|------------------------------|
| Mass of the test fuel fired hourly | kg/h | 1,62 | 0,63 | - |
| Flue gas mass flow | g/s | 4,6 | 3,47 | - |
| Flue gas temperature | °C | 193,7 | 85,8 | - |
| CO ₂ -concentration | Vol.-% | 12,1 | 6,0 | - |
| O ₂ -concentration | Vol.-% | 8,3 | 14,7 | - |
| CO-concentration | ppm | 33 | 94 | - |
| CO-emission (at 13%-O ₂) | mg/m ³ | 26 | 151 | 500/750 |
| CO-emission | mg/kWh | 62 | 348 | - |
| CO-emission | mg/MJ | 17 | 97 | - |
| NO _x -concentration | ppm | 102 | 51 | - |
| NO _x -emission (at 13%-O ₂) | mg/m ³ | 131 | 133 | - |
| NO _x -emission | mg/kWh | 311 | 308 | - |
| NO _x -emission | mg/MJ | 86 | 86 | - |
| CnHm-emission (at 13%-O ₂) | mg/m ³ | 1 | 6 | - |
| CnHm-emission | mg/kWh | 2 | 14 | - |
| CnHm-emission | mg/MJ | 1 | 4 | - |
| Dust emission (at 13%-O ₂) | mg/m ³ | 9 | 15 | - |
| Dust emission | mg/kWh | 22 | 35 | - |
| Dust emission | mg/MJ | 6 | 10 | - |
| Total heat input | kW | 7,8 | 3,1 | - |
| Total heat output | kW | 7,0 | 2,9 | - |
| Water heat output | kW | - | - | - |
| Space heat output | kW | 7,0 | 2,9 | - |
| Efficiency | % | 89,0 | 92,3 | 75/70 |

*) The results are taken from the report n. K17932018E3.

) The data are achieved by linear interpolation between the nominal heat output of the stove **AP004N_2_06 and the nominal heat output of the stove **AP004N_2_08**.

| AP004N_2_08* | | Nominal | Partial | Requirement (EN14785) |
|--|-------------------|----------------|----------------|----------------------------------|
| Mass of the test fuel fired hourly | kg/h | 1,92 | 0,63 | - |
| Flue gas mass flow | g/s | 5,1 | 3,47 | - |
| Flue gas temperature | °C | 224,5 | 85,8 | - |
| Flue draught | mbar | 0,12 | 0,10 | 0,12/0,10 +/-0,02 |
| CO ₂ -concentration | Vol.-% | 13,0 | 6,0 | - |
| O ₂ -concentration | Vol.-% | 7,3 | 14,7 | - |
| CO-concentration | ppm | 35 | 94 | - |
| CO-emission (at 13%-O ₂) | mg/m ³ | 26 | 151 | 500/750 |
| CO-emission | mg/kWh | 61 | 348 | - |
| CO-emission | mg/MJ | 17 | 97 | - |
| NO _x -concentration | ppm | 111 | 51 | - |
| NO _x -emission (at 13%-O ₂) | mg/m ³ | 134 | 133 | - |
| NO _x -emission | mg/kWh | 318 | 308 | - |
| NO _x -emission | mg/MJ | 88 | 86 | - |
| CnHm-concentration measured acc. CEN/TS 15883 | ppm | 1 | 3 | - |
| CnHm-emission (at 13%-O ₂) | mg/m ³ | 1 | 6 | - |
| CnHm-emission | mg/kWh | 3 | 14 | - |
| CnHm-emission | mg/MJ | 1 | 4 | - |
| Dust emission (at 13%-O ₂) | mg/m ³ | 8 | 15 | - |
| Dust emission | mg/kWh | 20 | 35 | - |
| Dust emission | mg/MJ | 6 | 10 | - |
| Total heat input | kW | 9,3 | 3,1 | - |
| Total heat output | kW | 8,2 | 2,9 | - |
| Water heat output | kW | - | - | - |
| Space heat output | kW | 8,2 | 2,9 | - |
| Efficiency | % | 87,7 | 92,3 | 75/70 |

*) The results are taken from the report n. K17932018E3.

3. Statement of the test results

The appliances:

AP004N_2_06

AP004N_2_07

AP004N_2_08

of the company:

PALAZZETTI LELIO S.p.A.

comply for the operation with wood pellets with the requirements acc. to
EN 14785: September 2006, clauses 4-8.

The local applicable installation conditions are to be observed.

The electrical safety, cl. 5.9. of the standard, is not a part of this assessment.

The presumption of conformity with the relevant European Directives respectively Regulations could only be confirmed by full compliance with Annex ZA.

Additional details are documented on the initial type testing report K17932016T1 and on the supplement testing reports K17932018E3 / K17932019E4.

The test results presented in this report refer solely to the test object stated as described on page 2. The report does not represent a general statement about the serial production of the test object and gives not an authorization for use of a TÜV Rheinland test- / certification mark.

4 Test documents

Appendix A 01 Fuel Data

Appendix A 02 Results of comparison at nominal heat output

Appendix A 03 Measurement Instruments

| Appendix | Subject | Reference |
|----------|--|------------------------|
| A 04 | Drawings of internal panels of the combustion chamber (magnofix) | 161230055 161130123 |
| A 05 | Installation instructions | 004724154 |

Appendix A 01

Fuel data AP004N_2_08

| Test at nominal load Verbrennungsrechnung aus der Elementaranalyse nach DIN EN 304 Teil 2, Ausgabe 01/2004 nach DIN 4702 Teil 2, Ausgabe 3/1990 | | | | | | | | | | | |
|--|-----------------------|-----------------------------|----------------------------|---|----------------------------|-----------------------------|----------------------------|-----------------------------|----------------------------|-----------------------------|----------------------------|
| Analysis from: | | 26/03/2019 | | Analysis No. | | | | Fuel sampling date: | | | |
| Fuel: | | wood pellets | | 1903438-001 | | | | 11/03/19 | | | |
| Bestandteil im Brennstoff | Stoffanteil | Sauerstoffbedarf | | Abgasbestandteile aus Brennstoff in Nm³/kg Brennstoff | | | | | | | |
| | | in Nm³ je kg Bestandteil | in Nm³ je kg Brennstoff | CO₂ | | SO₂ | | H₂O | | N₂ | |
| | Gew. % | Stoffanteil x | Sauerstoff- Bedarf | in Nm³ je kg Bestandteil | in Nm³ je kg Brennstoff | in Nm³ je kg Bestandteil | in Nm³ je kg Brennstoff | in Nm³ je kg Bestandteil | in Nm³ je kg Brennstoff | in Nm³ je kg Bestandteil | in Nm³ je kg Brennstoff |
| C | 48,400 | 1,860 | 0,900 | 1,850 | 0,8954 | - | - | - | - | - | - |
| S | 0,047 | 0,700 | 0,000 | - | - | 0,680 | 0,0003 | - | - | - | - |
| H | 6,770 | 5,550 | 0,376 | - | - | - | - | 11,100 | 0,7515 | - | - |
| N | 0,010 | - | - | - | - | - | - | - | - | 0,80 | 0,0001 |
| O | 37,400 | -0,700 | -0,262 | - | - | - | - | - | - | - | - |
| Wasser | 7,000 | - | - | - | - | - | - | 1,240 | 0,0868 | - | - |
| Asche | 0,300 | - | - | - | - | - | - | - | - | - | - |
| Summe | 99,927 | O min = | 1,015 | V CO₂ = | 0,8954 | V SO₂ = | 0,0003 | V W = | 0,8383 | V N₂ = | 0,0001 |
| Luftbedarf trockene stöchiometrische Abgasmenge Max. Kohlenstoffdioxid-Anteil Wasserdampfmenge Heizwert, wf | | | | L min = 4,8310 Nm³/kg Brennstoff V A tr min = 4,7122 Nm³/kg Brennstoff CO₂ max = 19,0018 Vol.-% V w = 0,8383 Nm³/kg Brennstoff V A tr min/ L min = 0,9754 Hu = 18904 kJ/kg 5,251 kWh/kg | | | | | | | |
| Berechnungen zum Versuchszeitpunkt | | | | | | | | | | | |
| Wasser | zum Versuchszeitpunkt | w = | | 7,000 Gew. % | | | | | | | |
| Heizwert, roh | zum Versuchszeitpunkt | Hu | | 17410 kJ/kg | | | | | | | |

Appendix A 02

Results of comparison at nominal heat output

| | | | | |
|---|---------|--|----------------|----------------|
| Report- No. | | K17932019E5 | | |
| TÜV- order- No. | | 21247127 | | |
| Manufacturer | | PALAZZETTI LELIO S.p.A. | | |
| Construction type | | Residential room heating appliance fired by wood pellets without water heat exchanger, with combustion air fan and with internal fuel hopper | | |
| max. working temperature | °C | Not applicable | | |
| max. working pressure | bar | Not applicable | | |
| Type of fuel charging | | automatic load | | |
| Special properties / Remarks | | - | | |
| Special properties | | room air dependent | | |
| Type designation | | AP004N_2_08 | | |
| Model name | | - | | |
| Test place | | Thiene | | |
| Standard | | DIN EN 14785:10.2006, Correction 1: 10.2007 | | |
| Type of test | | Test at nominal load | | |
| Heat input from manufacturer | kW | 9,5 | | |
| Heat output from manufacturer | kW | 8,3 | | |
| | | 1. test | 2. test | Average |
| Test date | | 27/06/2019 | 27/06/2019 | |
| Time | | 09:30-12:30 | 12:30-15:30 | |
| Ambient: | | | | |
| Barometric pressure | mbar | 1008 | 1008 | 1008 |
| Temperature of combustion air | °C | 30,0 | 31,9 | 31,0 |
| Ambient rel. humidity | % | 64,0 | 64,0 | 64,0 |
| Ambient temperature (room) | °C | 30,0 | 31,9 | 31,0 |
| Type of Fuel | | wood pellets | | |
| Properties of Fuel | | Ø 6 mm, Lmax 30 mm, max humidity 7,0% Firestixx | | |
| Number of fuel loadings | | 1 | 1 | |
| Weight of the stove, start, measurement | kg | 183,7 | 177,7 | |
| Weight of the stove, end, measurement | kg | 177,8 | 171,9 | |
| Fuel consumption, calculated of the difference | kg | 5,9 | 5,8 | |
| Test duration | sec | 10800 | 10800 | |
| Fuel consumption "B" | kg/h | 1,98 | 1,94 | 1,96 |
| Calculation of losses in the ash (yes = 1, no = 0) | Gew . % | 25,0 | 25,0 | 25,0 |
| Residue passing through the grate, measurement | kg | 0,00 | 0,00 | 0,00 |
| Residue passing through the grate "R" | Gew . % | 0,000 | 0,000 | 0,000 |
| Carbon content of the residue passing through the grate "Cr" depending of 1 kg fuel | Gew . % | 0,104 | 0,104 | 0,104 |
| Water side, measurement | | | | |
| Flow , measurement | °C | 0,0 | 0,0 | 0,0 |
| Return, measurement | °C | 0,0 | 0,0 | 0,0 |
| Delta T | K | 0,0 | 0,0 | 0,0 |
| Cold water flow , measurement | kg/h | 0,0 | 0,0 | 0,0 |
| Additional energy of the pump | kW | 0,00 | 0,00 | 0,00 |
| Flue, average | | | | |
| Flue gas temperature, measurement | °C | 221,0 | 219,6 | 220,3 |
| Flue draught, measurement | Pa | 12,0 | 12,0 | 12,0 |
| O2 - concentration, calculated | Vol.-% | 6,7 | 6,4 | 6,5 |
| CO2 - concentration, measurement | Vol.-% | 13,0 | 13,2 | 13,1 |
| lambda value, l | - | 1,456 | 1,429 | 1,442 |

| | | | | |
|--|----------|------------------|------------------|----------------|
| CO - concentration, measurement | ppm | 40 | 80 | 60 |
| CO - concentration, measurement | Vol.-% | 0,004 | 0,008 | 0,006 |
| CO - concentration, measurement | mg/m³ | 50 | 101 | 75 |
| CO - concentr. (at 13% - O2) | Vol.-% | 0,002 | 0,004 | 0,003 |
| CO - concentr. (at 13% - O2) | mg/m³ | 28 | 55 | 41 |
| CO - concentration rel. to fuel input | mg/kWh | 71 | 141 | 106 |
| CO - concentration rel. to fuel input | mg/MJ | 20 | 39 | 29 |
| NOx - concentration, measurement | ppm | 115 | 118 | 117 |
| NOx - concentration, measurement | mg/m³ | 235 | 243 | 239 |
| NOx - concentr. (at 13% - O2) | mg/m³ | 131 | 133 | 132 |
| NOx - concentration rel. to fuel input | mg/kWh | 336 | 341 | 338 |
| NOx - concentration rel. to fuel input | mg/MJ | 93 | 95 | 94 |
| CnHm concentration, measurement | ppm | 3 | 2 | 2 |
| CnHm concentration, measurement | mg/m³ | 5 | 3 | 4 |
| CnHm concentr. (at 13% - O2) | mg/m³ | 3 | 1 | 2 |
| CnHm - concentration (total C) rel. to fuel input | mg/kWh | 7 | 4 | 6 |
| CnHm - concentration (total C) rel. to fuel input | mg/MJ | 2 | 1 | 2 |
| Dust, measurement* | mg | 7 | | 7 |
| Dust, measurement* | mg/m³ | 24 | | 24 |
| Dust (at 13% - O2)* | mg/m³ | 14 | | 14 |
| Dust* rel. to fuel input | mg/kWh | 35 | | 35 |
| Dust* rel. to fuel input | mg/MJ | 10 | | 10 |
| Electrical consumption | | | | |
| Rated electrical power (max) | W | | 330 | |
| Electrical consumption (at nominal heat output) - acc. EN 15456 | W | | 46 | |
| Electrical consumption (at minimum heat output) - acc. EN 15456 | W | | - | |
| PSTBY (during stand-by) - acc. IEC 62301 | W | | 1,3 | |
| Calculation | | | | |
| "Qa" loss free heating flue gas | kJ/kg | 2067,5 | 1999,2 | 2033,4 |
| "qa" loss flue gas | % | 11,9 | 11,5 | 11,7 |
| "Qb" loss fix heating in flue gas | kJ/kg | 3,5 | 6,9 | 5,2 |
| "qb" loss fix heating in flue gas | % | 0,020 | 0,040 | 0,030 |
| "Qr" losses due to combustible constituents in the residue passing through the grate | kJ/kg | 0,0 | 0,0 | 0,0 |
| "qr" losses due to combustible constituents in the residue passing through the grate | % | 0,200 | 0,200 | 0,200 |
| "m" flue gas mass flow | g/s | 5,5 | 5,3 | 5,4 |
| cpm, acc. DIN 4702-2, version 03.90 for dry flue gas | kJ/(m³K) | 1,37 | 1,37 | 1,37 |
| cpm-H2O | kJ/(m³K) | 1,53 | 1,53 | 1,53 |
| "eta" Efficiency (direct), to consider only water heating output Pw | % | not applicable | not applicable | not applicable |
| "eta" Efficiency (indirect) | % | 87,9 | 88,3 | 88,1 |
| Heating input | kW | 9,6 | 9,4 | 9,5 |
| "P" heating output, total | kW | 8,4 | 8,3 | 8,3 |
| "Pw" water heating output | kW | 0,0 | 0,0 | 0,0 |
| Space heating output: PSTR = P - Pw | kW | 8,4 | 8,3 | 8,3 |
| Space heating output, relating to heat input | % | 87,9 | 88,3 | 88,1 |
| Water heating output, relating to heat input | % | 0,0 | 0,0 | 0,0 |
| Adjustments | | | | |
| Flue gas motor | rpm | 1770 | 1770 | |
| Fuel motor | s | 3,6 ON / 2,4 OFF | 3,6 ON / 2,4 OFF | |
| Convection air fan | Volts | 230 | 230 | |
| Cleaning time | s / min | off | off | |
| Firedoor | - | closed | closed | |

The tests were carried out under the conditions of DIN EN 14785:2006

Appendix A 03

**The requirements of the measuring instruments are fulfilled.
 Before each qualified measuring analysers were calibrated with zero gas and calibration gas.**

| Index | Measure | Principle | Company | Range | Instrument specification | Reference |
|-------------|------------------|----------------------------------|---------------------------------------|---|------------------------------|----------------------------------|
| B030 | Water pressure | Manometer | Cewal DN 150 | 0 – 25 bar | ± 0,6% | Reference manometer |
| B062 | Temperature | PT 100 K-type thermocouples | Agilent 34970 A | 0 – 300 °C | Up to 0,5 °C | Reference thermometer |
| B066 | Gas pressure | Manometer | Testo 510 | 0 – 100 hPa | ± 3% related to final value | Reference manometer |
| B068 | Temperature | IR emission | Fluke Ti20 | -10 – 350 °C | --- | --- |
| B070 | Fuel consumption | Gravimetric | Dini Angeo DFWK | 0 – 600 kg | ± 10 g | Reference load |
| B079 | Water flow | Magnetic | ABB Copa-XE DE43FI | 0 – 2000 kg/h | ± 1% related to the range | Reference flow meter |
| B084 | Temperature | PT 100 K-type thermocouples | Agilent 34970 A | 0 – 300 °C | Up to 0,5 °C | Reference thermometer |
| B090 | Dust content | Gravimetric | Sartorius CPA 224 S | 0,1 mg – 220 g | ± 0,1 mg | Reference load |
| B092 | Fuel consumption | Gravimetric | Dini Angeo DFWK | 0 – 1200 kg | ± 10 g | Reference load |
| B094 | CO ₂ | Infrared-absorption | Siemens Ultramat 6E | 0 – 3 % 0 – 30 % | ± 1% related to the range | Reference gas: 19,93 % |
| | CO | Infrared-absorption | Siemens Ultramat 6E | 0 – 300 ppm 0 – 3000 ppm | ± 1% related to the range | Reference gas: 201,1 ppm |
| B095 | CO | Infrared-absorption | Siemens Ultramat 23 | 0 – 1 % 0 – 5 % | ± 1% related to the range | Reference gas: 4,876 % |
| B096 + B123 | CO ₂ | Infrared-absorption | Siemens Ultramat 23 | 0 – 5 % 0 – 25 % | ± 1% related to the range | Reference gas: 19,93 % |
| | CO | Infrared-absorption | Siemens Ultramat 23 | 0 – 1000 ppm 0 – 5000 ppm | ± 1% related to the range | Reference gas: 201,1 ppm |
| | NO _x | Infrared-absorption | Siemens Ultramat 23 + Bühler Bünox MV | 0 – 1000 ppm 0 – 5000 ppm | ± 1% related to the range | Reference gas: 196,9 ppm |
| B097 | OGC | FID | Siemens Fidamat 6 | 0 – 3,33 ppm C3 0 – 33,3 ppm C3 0 – 333 ppm C3 0 – 3333 ppm C3 | ± 1% related to the range | Reference gas: 29,51 ppm propane |
| B098 | Temperature | K-type thermocouple | Testo 925 | 0 – 200 °C | ± 2 °C | Reference thermometer |
| B109 | Air flow | Flow measurement | CMC / ASA 132826 P13-2800 | 400 - 4000 l/h | ± (2 % FS) | Reference flow meter |
| B118 | Gas volume | Diaphragm | CMC | 0,016 – 2,5 m ³ /h | ± 5 % | Air flow |
| B121 | OGC | FID | Siemens Fidamat 6 | 0 – 3,33 ppm C3 0 – 33,3 ppm C3 0 – 333 ppm C3 0 – 3333 ppm C3 | ± 1% related to the range | Reference gas: 29,51 ppm propane |
| B122 | CO ₂ | Infrared-absorption | Siemens Ultramat 23 | 0 – 5 % 0 – 25 % | ± 1% related to the range | Reference gas: 20,0 % |
| | CO | Infrared-absorption | Siemens Ultramat 23 | 0 – 1000 ppm 0 – 5000 ppm | ± 1% related to the range | Reference gas: 206,0 ppm |
| | NO | Infrared-absorption | Siemens Ultramat 23 | 0 – 1000 ppm 0 – 5000 ppm | ± 1% related to the range | Reference gas: 196,9 ppm |
| B140 | Gas pressure | Inclined liquid column manometer | Kimo HP series | 0 – 15 Pa | ± 10% related to final value | Reference manometer |
| B141 | Gas pressure | Inclined liquid column manometer | Kimo HP series | 0 – 15 Pa | ± 10% related to final value | Reference manometer |

| Index | Measure | Principle | Company | Range | Instrument specification | Reference |
|-------|-------------------------|-------------------------|--|---------------|------------------------------|----------------------|
| B149 | Mass | Gravimetric | Kern FKB 15K0.5A | 0 – 15 kg | ± 0,5 g (reproducibility) | Reference load |
| B154 | Gas volume | Diaphragm | Elster BK-G4M | --- | Class 1,5 | Air flow |
| B169 | Electrical power | --- | Yokogawa WT310E | 0 – 2000 W | ± 0,5 % | External calibration |
| B179 | Stopwatch | --- | RS 8111814 | 0 – 99 h | 0,01 s | --- |
| B180 | Absolute pressure meter | Absolute pressure meter | Testo 511 | 0 – 999,0 hPa | ±3,0 hPa | External calibration |
| B183 | Water flow | Magnetic | ISOIL Industria MS501-T10- 1A1A1A + ML210- B0A1B3A0 | 0 – 2000 kg/h | Accuracy: ± 0,2% r.v. | Reference flow meter |

The values are continuously recorded. The scan interval is 10s. All related certificates are stored.