L 1045.1

TEST REPORT
no. 30-14242/T

Product:	Hot-water condensing boiler
Type designation:	ONGAS MEGA 05, ONGAS MEGA 08, ONGAS MEGA 13, ONGAS MEGA 17
Customer:	RIMA Ikitelli OSB Mah. 25 Cad.No:10 Başakşehir 343 06 Istanbul Turkey
Manufacturer:	ONMETAL DOKUM SAN. VE TIC. LTD. STI. Ikitelli OSB Mah. 25 Cad.No:10 Başakşehir 343 06 Istanbul Turkey
Manufacturing plant:	ONMETAL DOKUM SAN. VE TIC. LTD. STI. Edirne OSB 4. Cad. No:3-5 Donurcali-Süloğlu 220 20 Edirne Turkey
Responsible employee:	Ing. Bohdan Brázda
Report issue date:	2020-07-22
Distribution list:	1 copy to the Engineering Test Institute 1 copy to the Customer

The tests were conducted on the basis of Order No. B-64649 of 2019-01-03, contract No. B-64649/30 of 2019-03-05 and Amendment 1 to contract B-64649/30 of 2019-09-03.

I. Product description

The boilers ONGAS MEGA 05, ONGAS MEGA 08, ONGAS MEGA 13 and ONGAS MEGA 17 are floor-standing gas fired condensing hot water boilers. The boilers are designed for the heating of the water in central heating systems. The boilers are equipped with premix burner burning natural gas (G20). According to the combustion products exhaust, the boilers are of B_{23} type. Gas category of these boilers is I_{2H}.

Technical data of the appliance:

Model	Heat input [kW]	Heat output [kW]		Maximum water temperature for central heating [°C]	Dimensions (W x L x H) [mm]
		at 80/60 °C	at 50/30 °C		
ONGAS MEGA 05	100,0 – 800,0	96,0 – 778,0	107,0 – 830,0	80	1140x1425x1973
ONGAS MEGA 08	180,0 – 1400,0	173,0 – 1360,0	192,0 – 1455,0	80	1140x1760x1973
ONGAS MEGA 13	230,0 – 2200,0	223,0 – 2140,0	248,0 – 2335,0	80	1140x2745x1973
ONGAS MEGA 17	360,0 – 3100,0	346,0 – 2990,0	385,0 – 3225,0	80	1140x3068x1973

These condensing hot water boilers are equipped with following components:

a) Boiler ONGAS MEGA 05

Component	Manufacturer	Specification	Remarks
Burner control	Siemens	LMS 14.191	
Displey card	Siemens	AVS 37.295	
Blower	EBM-Papst	G3G250 MW50-01	
Gas valve	Dungs	MBC 700 SE	
Mixer	Dungs	G250 -Ø20 HC	
Premix burner (Ø245mm)	Bekaert-Polidoro	L=444 mm	
Water inlet temperature sensor	Siemens	QAK36	
Water outlet temperature sensor	Siemens	QAK36	
Flue gas temperature sensor	Siemens	QAK36	
Limit thermostat	Zettler	KDS301	
Ignition transformer	Anstoss	ZAG2 Var	
Ignition electrode	BERU	ZE 10-72-74 B	
Water pressure sensor	GTE	TCEAA00	
Heat exchanger	Onmetal	ONGAS MEGA 05 HEX	
Siphon	Almeva	Long John DN 32	

b) Boiler ONGAS MEGA 08

Component	Manufacturer	Specification	Remarks
Burner control	Siemens	LMS 14.191	
Displey card	Siemens	AVS 37.295	
Blower	EBM-Papst	G3G315	
Gas valve	Dungs	MBC 1200	
Mixer	Dungs	G250 -Ø20 HC	
Premix burner (Ø245mm)	Bekaert-Polidoro	L=756 mm	
Water inlet temperature sensor	Siemens	QAK36	
Water outlet temperature sensor	Siemens	QAK36	
Flue gas temperature sensor	Siemens	QAK36	
Limit thermostat	Zettler	KDS301	
Ignition transformer	Anstoss	ZAG2 Var	
Ignition electrode	BERU	ZE 10-72-74 B	
Water pressure sensor	GTE	TCEAA00	
Heat exchanger	Onmetal	ONGAS MEGA 08 HEX	
Siphon	Almeva	Long John DN 32	

c) Boiler ONGAS MEGA 13

Component	Manufacturer	Specification	Remarks
Burner control	Siemens	LMS 14.191	
Displey card	Siemens	AVS 37.295	
Blower	EBM-Papst	G3G315	
Gas valve	Dungs	MBC 1200	
Mixer	Dungs	N/N 2 MW	
Premix burner (Ø245mm)	Bekaert-Polidoro	L=1276 mm	
Water inlet temperature sensor	Siemens	QAK36	
Water outlet temperature sensor	Siemens	QAK36	
Flue gas temperature sensor	Siemens	QAK36	
Limit thermostat	Zettler	KDS301	
Ignition transformer	Anstoss	ZAG2 Var	
Ignition electrode	BERU	ZE 10-72-74 B	
Water pressure sensor	GTE	TCEAA00	
Heat exchanger	Onmetal	ONGAS MEGA 13 HEX	
Siphon	Almeva	Long John DN 32	

d) Boiler ONGAS MEGA 17

Component	Manufacturer	Specification	Remarks
Burner control	Siemens	LMS 14.191	
Displey card	Siemens	AVS 37.295	
Blower	EBM-Papst	VG 450	
Gas valve	Dungs	MBC 1200	
Mixer	Dungs	VSA-3000	
Premix burner (Ø245mm)	Bekaert-Polidoro	L=1692 mm	
Water inlet temperature sensor	Siemens	QAK36	
Water outlet temperature sensor	Siemens	QAK36	
Flue gas temperature sensor	Siemens	QAK36	
Limit thermostat	Zettler	KDS301	
Ignition transformer	Anstoss	ZAG2 Var	
Ignition electrode	BERU	ZE 10-72-74 B	
Water pressure sensor	GTE	TCEAA00	
Heat exchanger	Onmetal	ONGAS MEGA 17 HEX	
Siphon	Almeva	Long John DN 32	

II. Sample tested

The visual inspection, tests and verifications were carried out on the sample indicated in table below:

Model	Serial number	Date of acceptance	SZÚ registration number	Quantity
ONGAS MEGA 05	Prototype	2019-03-01	0212.19.30333.001	1 x
ONGAS MEGA 08		2019-03-01	0212.19.30334.001	1 x
ONGAS MEGA 13		2019-03-01	0212.19.30335.001	1 x
ONGAS MEGA 17		2019-05-22	0212.19.30782.001	1 x

Visual inspection, testing, and verification were conducted in Engineering Test Institute, Hudcova 424/56b, 621 00 Brno, Czech Republic since 2019-03-04 till 2019-03-08, since 2019-03-18 till 2019-03-21 and since 2019-05-22 till 2019-05-24 by technicians Ing. Ondřej Ptáček and Ing. Bohdan Brázda.
The testing was conducted using measurement and testing equipment with valid calibration.

III. Measuring and testing equipment

No.	Name	Inventory No. (Serial number)	Calibration valid until	Accuracy
1.	Barometer	022370/7	04/2024	see calibration sheet 4257/2019
2.	Water meter DN80 Optiflux 5300	022434/V2	05/2022	see calibration sheet 6015-KL-P0407-18
3.	Gas meter RABO DN50	77055306	09/2022	see calibration sheet 5012-KL-P1703-17
4.	Gas meter TRZ G160 DN80	022175	01/2023	see calibration sheet 5012-KL-P1003-18
5.	Humidity meter and thermometer	022389-B/5	08/2020	see calibration sheet 6036-KL-V0324-19
6.	Elektrometer ZE310.DU.11E301-10	022434-E1	05/2025	see calibration sheet 036/15/E
7.	Set for measuring of temperatures	022434/T1	07/2020	see calibration sheet KL – T – 0154 - 17
8.	Differential pressure gauge	MaR01-Ti	05/2021	see calibration sheet KL – P – 0056 - 19
9.	Manometer (gas pressure at gas meter)	022389/B10	08/2020	see calibration sheet KL – P – 0070 - 19
10.	Manometer (gas pressure before the boiler)	022389/B11	08/2020	see calibration sheet KL – P – 0069 - 19
11.	Chronometer	990760	11/2022	see calibration sheet 3434E-17
12.	Combustion product analyser Horiba PG 350 PMA	022392	*)	see calibration sheet 49/19
13.	Thermometer Therm 3280-8M	022081	10/2019	see calibration sheet 160147
14.	Manometer Testo 510	ME 546	10/2020	see calibration sheet KL-P-0129-18
15.	Soudness meter WOHLER DP 600	022388	11/2021	see calibration sheet 5012-KL-P1831-17
16.	Pressure pump	ME 529	03/2020	see calibration sheet KL-P-0041-18

Note: *) Calibration prior to each measurement using certified reference material

The stated extended measurement uncertainties are calculated as a factor of the measurement uncertainty and the extension coefficient, k=2, corresponding to the coverage certainty of 95% as regards standard classification. The uncertainties do not reflect the impact of sample taking and lack of homogeneity. The standard uncertainty was determined in accordance with Document EA 4/02.

IV. Test results

No.	Name and specification	Technical standard / regulation applied	Source materials	Evaluation
1.	Soundness of the gas circuit	ČSN EN 15502-1+A1:2017, Art. 8.2, 8.2.1	Page 7	+
2.	Soundness of the combustion circuit	ČSN EN 15502-2-1+A1:2017, Art. 8.2.2, 8.2.2.101, 8.2.2.103, 8.2.2.103.1, 8.2.2.103.2	Page 8 - 11	+
3.	Soundness of the water circuit	ČSN EN 15502-1+A1:2017, Art. 8.2.3, 8.2.3.1, 8.2.3.4.2, 8.2.3.4.2.1, 8.2.3.4.2.2	Page 12 - 14	+
4.	Hydraulic resistance	ČSN EN 15502-1+A1:2017, Art. 8.3	Page 15 - 16	+
5.	Heat input, heat output and useful efficiency	ČSN EN 15502-1+A1:2017, Art. 8.4, 8.4.1, 8.4.4, 8.4.5, 9, 9.1, 9.1.1, 9.2, 9.2.1, 9.2.2, 9.3, 9.3.1, 9.3.2, 9.3.2.1, 9.3.2.2	Page 17 - 28	+
6.	Limiting temperatures	ČSN EN 15502-1+A1:2017, Art. 8.5, 8.5.1, 8.5.2, 8.5.3, 8.5.4 ČSN EN 15502-2-1+A1:2017, Art. 8.5.101	Page 29 - 32	+
7.	Ignition, flame cross-lighting and stability	ČSN EN 15502-1+A1:2017, Art. 8.6, 8.6.1, 8.6.2 ČSN EN 15502-2-1+A1:2017, Art. 8.6.3.101, 8.6.3.111	Page 33 – 38	+
8.	Adjusting, control and safety devices	ČSN EN 15502-1+A1:2017, Art. 7.3.3, 7.3.3.1, 7.3.3.2, 7.3.3.3, 7.3.3.3.2, 8.7, 8.9, 8.11, 8.11.1, 8.11.4, 8.11.4.1, 8.11.4.2, 8.11.5, 8.11.5.2, 8.11.5.2.1, 8.11.5.2.2, 8.11.6, 8.11.6.2, 8.11.6.2.1, 8.11.6.2.2, 8.11.6.2.4, 8.11.6.2.5, 8.11.7, 8.11.8, 8.11.8.1, 8.11.8.2, 8.11.8.2.1, 8.11.8.2.3 ČSN EN 15502-2-1+A1:2017, Art. 8.9.101, 8.11.101, 8.11.101.1, 8.11.101.3, 8.11.101.3.2, 8.11.101.3.3	Page 39 - 55	+
9.	Combustion efficiency	ČSN EN 15502-1+A1:2017, Art. 8.12, 8.12.1, 8.12.3, 8.12.3.1, 8.12.3.2, 8.12.3.3, 8.12.5, 8.13, 8.13.1, 8.13.2.1, 8.13.2.6 ČSN EN 15502-2-1+A1:2017, Art. 8.12.2, 8.12.2.101, 8.12.2.102, 8.12.3.1, 8.12.3.101, 8.12.3.101.10	Page 56 – 62	+
10.	Formation of condensate	ČSN EN 15502-1+A1:2017, Art. 8.15	Page 63	+
11.	Temperature of combustion products	ČSN EN 15502-2-1+A1:2017, Art. 8.16, 8.16.101, 8.16.102, 8.16.102.1, 8.16.102.2	Page 64 – 65	+
12.	Electric auxiliary energy	ČSN EN 15502-1+A1:2017, Art. 10.1, 10.2, 10.3, 10.4, 10.5, 10.6, 10.6.1, 10.6.2, 10.6.3, 10.6.4, 10.6.5	Page 66 – 69	+

Evaluation: Note: + Requirement fulfilled x Not assessed
- Requirement not fulfilled 0 Not applicable

Accredited test number: **T 001** Test title: **Soundness of the gas circuit**

Testing method: ČSN EN 15502-1+A1:2017, Art. 8.2, 8.2.1

Sample tested: ONGAS MEGA 05, ONGAS MEGA 13

Measuring equipment used: No. 1, 5, 15

Test results:

Requirement	Specification of requirement	Test evaluation	Note
Soundness	ČSN EN 15502-1+A1:2017, Art. 8.2		
Soundness of the gas circuit The gas circuit shall be sound. Internal soundness requirements for the controls are given in Clause 7. The external soundness of the gas circuit in the boiler is verified before and after all the tests of this standard. External soundness is assured if, under the test conditions below, the leakage of air does not exceed 0,14 dm^3/h.	ČSN EN 15502-1 +A1:2017, Art. 8.2.1	+	

Note: + Requirement fulfilled x Not assessed
- Requirement not fulfilled 0 Not applicable

Measurement results:

a) Sample tested: ONGAS MEGA 05

Date of testing:	2019-03-07	t_{amb} = 21,7	°C	rel. humidity = 29,4	%	p_a = 972,2	mbar

Testing pressure (mbar)	Medium leakage (dm^3/hour)	Medium leakage limit (dm^3/hour)
150	0,021	0,14

Test evaluation: The gas circuit is sound.

b) Sample tested: ONGAS MEGA 13

Measurement results:

Date of testing:	2019-03-04	t_{amb} = 21,4	°C	rel. humidity = 49,4	%	p_a = 967,6	mbar

Testing pressure (mbar)	Medium leakage (dm^3/hour)	Medium leakage limit (dm^3/hour)
150	0,042	0,14

Test evaluation: The gas circuit is sound.

Accredited test number: **T 001** Test title: **Soundness of the combustion circuit**

Testing method: ČSN EN 15502-2-1+A1:2017, Art. 8.2.2, 8.2.2.101, 8.2.2.103, 8.2.2.103.1, 8.2.2.103.2

Sample tested: ONGAS MEGA 05, ONGAS MEGA 13

Measuring equipment used: No. 1, 5, 15

Test results:

<table>
<tr><th>Requirement</th><th>Specification of requirement</th><th>Test evaluation</th><th>Note</th></tr>
<tr><td>Soundness of the combustion circuit</td><td colspan="3">ČSN EN 15502-2-1+A1:2017, Art. 8.2.2</td></tr>
<tr><td>General
Boilers and/or their ducts shall be sound in accordance with 8.2.2.102 or 8.2.2.103. Ducts that are part of the boiler shall be sound in accordance with 8.2.2.102.3, 8.2.2.102.4 and 8.2.2.102.5.
Soundness is verified before and after all the tests of this standard, except the tests specified in the mechanical tests.
All the joints identified in the installation instructions shall be checked, for example between:
a) the boiler and its ducts;
b) interconnecting ducts;
c) the ducts and any bends and;
d) the ducts and any fitting piece or terminal.
In the case where leakage can also occur along the length of the ducts, the tests are also carried out with the maximum length of ducts as specified by the manufacturer in the installation instructions.
In accordance with the installation instructions, the wall connections, the joint with the terminal or the joint with the fitting piece with another system of combustion products evacuation may be made sound.</td><td>ČSN EN 15502-2-1+A1: 2017, Art. 8.2.2.101</td><td>+</td><td></td></tr>
<tr><td>Soundness of the air supply and combustion product circuit type C boilers</td><td colspan="3">ČSN EN 15502-2-1+A1:2017, Art. 8.2.2.102</td></tr>
<tr><td>Air supply and combustion product circuit
Requirements
Soundness with respect to the room where the boiler is installed is ensured if, under the specified test conditions, the leakage rates do not exceed the values in Table 102.
Table 102: Maximum admissible leakage rate
<table>
<tr><th rowspan="2">Test object</th><th rowspan="2">Surrounding of the combustion products circuit by the combustion air circuit</th><th colspan="2">Maximum leakage rate (m^3/h)</th></tr>
<tr><th>$Q_n \leq 40kW$</th><th>$Q_n \geq 40kW$</th></tr>
<tr><td rowspan="2">Boiler with its air supply and combustion products evacuation ducts and all their joints</td><td>completely</td><td>5</td><td>5 $Q_n/40$</td></tr>
<tr><td>not completely</td><td>1</td><td>$Q_n/40$</td></tr>
<tr><td rowspan="2">Boiler and the joint to the air supply and combustion products evacuation duct</td><td>completely</td><td>3</td><td>3 $Q_n/40$</td></tr>
<tr><td>not completely</td><td>0,6</td><td>0,6 $Q_n/40$</td></tr>
<tr><td colspan="2">Combustion products evacuation ducts, not completely surrounded by combustion air, with all its joints excluding the joint tested above</td><td>0,4</td><td>0,4 $Q_n/40$</td></tr>
<tr><td colspan="2">Air supply duct with all its joint excluding the joint tested above</td><td>2</td><td>2 $Q_n/40$</td></tr>
</table></td><td>ČSN EN 15502-2-1: 2017, Art. 8.2.2.102.1</td><td>0
0
0
0
0
0
</td><td></td></tr>
</table>

Requirements for combustion products evacuation duct for appliances with indirect air proving Requirements The soundness of the combustion products evacuation duct for installation both inside and outside the room where the boiler is installed, permitted for alternative control systems, is ensured if, under the test conditions, the leakage rate per surface area of the duct does not exceed 0,006 $dm^3/s \cdot m^2$.	ČSN EN 15502-2-1+A1 2017, Art. 8.2.2.102.2	0	
Requirements for separate combustion products evacuation duct Requirements The soundness of a separate combustion products evacuation duct with respect to areas other than the room where the boiler is installed is ensured if under the test conditions the leakage rate per surface area of the duct does not exceed 0,006 $dm^3/(s \cdot m^2)$.	ČSN EN 15502-2-1+A1 2017, Art. 8.2.2.102.3	0	
Requirements for the air supply circuit Requirements The soundness of the air supply circuit with respect to all areas other than the room where the boiler is installed, is ensured if under the test conditions of the leakage rate per surface area of the duct does not exceed 0,5 $dm^3/(s \cdot m^2)$.	ČSN EN 15502-2-1+A1 2017, Art. 8.2.2.102.4	0	
Requirements for leakage of combustion products for type C_7 boilers Requirements Under the test conditions combustion products shall only escape from the secondary flue outlet.	ČSN EN 15502-2-1+A1 2017, Art. 8.2.2.102.5	0	
Soundness of the combustion product circuit of type B boilers	ČSN EN 15502-2-1+A1:2017, Art. 8.2.2.103		
General requirements Boilers shall comply with 8.2.2.103.2 or 8.2.2.103.3. Ducts of type B_5 boilers shall comply with 8.2.2.103.4. Soundness shall be verified before and after all the tests.	ČSN EN 15502-2-1+A1 2017, Art. 8.2.2.103.1	+	
Type B_2 and B_5 boilers Requirements The combustion products circuit of a boiler incorporating a fan shall be sound with respect to the room where the boiler is installed. This soundness is ensured if, under the following test conditions, combustion products only escape from the flue outlet. Additionally the ducts of type B_5 boilers should also meet the requirements of 8.2.2.103.4.	ČSN EN 15502-2-1+A1 2017, Art. 8.2.2.103.2	+	
Type B_3 boilers Requirements Soundness is ensured if one of the following requirements is met a) The leakage rate of the combustion products circuit does not exceed: 1) 3,0 m^3/h for boilers with a nominal heat input until 40 kW or 2) 3 Q_n/40 m^3/h for boilers above 40 kW; b) The leakage rate of the combustion circuit (with all the ducts and joints) does not exceed: 1) 5,0 m^3/h for boilers with a nominal heat input until 40 kW or 2) 5 Q_n/40 m^3/h for boilers above 40 kW.	ČSN EN 15502-2-1+A1 2017, Art. 8.2.2.103.3	0	
Combustion products evacuation ducts of type B_5 boilers B_5 boilers include all the components necessary to exhaust the combustion products to the outside of the building.	ČSN EN 15502-2-1+A1 2017, Art. 8.2.2.103.4		

Requirements If the installation instructions specify that parts of its combustion products evacuation circuit could pass through areas other than the area where the boiler is installed, the soundness of a combustion products evacuation circuit to those other areas should be ensured. This soundness is assured if: a) The combustion products evacuation circuit is completely surrounded by combustion air circuit or b) Under the following test conditions the leakage rate per square metre surface of the duct does not exceed 0,006 $dm^3/(s \cdot m^2)$. Test conditions The test checks all the joints specified in the installation instructions, including the connections between: c) the boiler and its ducts; d) interconnecting ducts; e) the ducts and any bends and f) the ducts and any fitting piece or terminal. To guard against the possibility of leakage along the length of its ducts, the tests are also carried out with the maximum length of duct as specified in the installation instructions. The boiler's wall connections, its joint with the terminal or its joint with the fitting piece with another system of its combustion products evacuation circuit must be made sound In accordance with the installation instruction. The flue duct and its joint to the boiler shall be connected to a pressure source on one side and blocked on the other side with a pressure corresponding to the maximum pressure measured in 8.2.2.103.2. It is checked that the above requirement is met.		0	

Note: + Requirement fulfilled x Not assessed
- Requirement not fulfilled 0 Not applicable

Measurement results:

Date of testing:	2019-03-07	t_{amb} = 21,7	°C	rel. humidity = 29,4	%	p_a = 972,2	mbar
Date of testing:	2019-03-04	t_{amb} = 21,4	°C	rel. humidity = 49,4	%	p_a = 967,6	mbar

Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.2.2.102.1					
Test object	Surrounding of the combustion products circuit by the combustion air circuit	Measured leakage rate (m^3/h)		Maximum leakage rate (m^3/h)	
		ONGAS MEGA 05	ONGAS MEGA 13	$Q_n \leq 40kW$	$Q_n \geq 40kW$
Boiler with its air supply and combustion products evacuation ducts and all their joints	completely	-	-	5	5 $Q_n/40$
	not completely	-	-	1	$Q_n/40$
Boiler and the joint to the air supply and combustion products evacuation duct	completely	-	-	3	3 $Q_n/40$
	not completely	-	-	0,6	0,6 $Q_n/40$
Combustion products evacuation ducts, not completely surrounded by combustion air, with all its joints excluding the joint tested above		-	-	0,4	0,4 $Q_n/40$
Air supply duct with all its joint excluding the joint tested above		-	-	2	2 $Q_n/40$

Test according to ČSN EN 15502-2-1+A1:2017, Art.	Measured leakage rate (m^3/hour, $dm^3/s.m^2$)	Max. leakage rate (m^3/hour, $dm^3/s.m^2$)
Requirements for combustion products evacuation duct for appliances with indirect air proving		
8.2.2.102.2	-	0,006 $dm^3/s.m^2$
Requirements for separate combustion products evacuation duct		
8.2.2.102.3	-	0,006 $dm^3/s.m^2$
Requirements for the air supply circuit		
8.2.2.102.4	-	0,5 $dm^3/s.m^2$
Requirements for leakage of combustion products for type C_7 boilers		
8.2.2.102.5	-	

Test according to ČSN EN 15502-2-1+A1:2017, Art.	Test result	Note
	ONGAS MEGA 05, ONGAS MEGA 13	
Type B_2 and B_5 boilers		
8.2.2.103.2	No leakage was found out. Combustion products escaped only from the flue outlet.	

Test according to ČSN EN 15502-2-1+A1:2017, Art.	Measured leakage rate (m^3/hour, $dm^3/s.m^2$)	Max. leakage rate (m^3/hour, $dm^3/s.m^2$)
Type B_3 boilers		
8.2.2.103.3 test a)	-	3 m^3/h ($Q_n \leq 40kW$)
	-	3 $Q_n/40$ m^3/h ($Q_n \geq 40kW$)
8.2.2.103.3 test b)	-	5 m^3/h ($Q_n \leq 40kW$)
	-	5 $Q_n/40$ m^3/h ($Q_n \geq 40kW$)
Combustion products evacuation ducts of type B_5 boilers		
8.2.2.103.4	-	0,006 $dm^3/s.m^2$

Accredited test number: **T 001** Test title: **Soundness of the water circuit**

Testing method: ČSN EN 15502-1+A1:2017, Art. 8.2.3, 8.2.3.1, 8.2.3.4.2, 8.2.3.4.2.1, 8.2.3.4.2.2

Sample tested: ONGAS MEGA 05, ONGAS MEGA 13

Measuring equipment used: No. 1, 5, 16

Test results:

Requirement	Specification of requirement	Test evaluation	Note
Soundness of the water circuit	ČSN EN 15502-1+A1:2017, Art. 8.2.3		
General Requirements: The boilers and/or their sections shall withstand a hydraulic test according to their classification as stated in 4.3. Test conditions: The tests are carried out with the water at ambient temperature and at the test pressures stated in 8.2.3.2, 8.2.3.3 or 8.2.3.4. The test pressure is maintained for at least 10 min.	ČSN EN 15502-1 +A1:2017, Art. 8.2.3.1	+	
Boilers of pressure class 1 Requirements: Under the test conditions below, there shall be neither leakage during the test nor permanent visible distortionat the end of the test. Test conditions: The test pressure is 1,5 bar for boilers < 70 kW, and 2 x PMS for boilers > 70 kW. It is checked that the above requirements are met.	ČSN EN 15502-1 +A1:2017, Art. 8.2.3.2	0	
Boilers of pressure class 2 Requirements: Under the test conditions below, there shall be neither leakage during the test nor permanent visible distortion at the end of the test. Test conditions: The test pressure is 4,5 bar for boilers < 70 kW, and 2 x PMS for boilers > 70 kW. It is checked that the above requirements are met.	ČSN EN 15502-1 +A1:2017, Art. 8.2.3.3	0	
Boilers of pressure class 3	ČSN EN 15502-1+A1:2017, Art. 8.2.3.4		
Boilers of sheet steel or non-ferrous metals Requirements: Under the test conditions below, there shall be neither leakage during the test, nor permanent visible distortion, at the end of the test. Test conditions: The test pressure is (2 × PMS) bar. It is checked that the above requirements are met.	ČSN EN 15502-1 +A1:2017, Art. 8.2.3.4.1	0	

Requirement	Specification of requirement	Test evaluation	Note
Boilers of cast iron and cast materials	ČSN EN 15502-1+A1:2017, Art. 8.2.3.4.2		
Boiler body Requirements: At a test pressure of 2 × PMS, with a minimum of 8 bar, there shall be neither leakage nor permanent visible distortion at the end of the test. Test conditions: It is checked that the above requirements are met.	ČSN EN 15502-1 +A1:2017, Art. 8.2.3.4.2.1	+	
Resistance to bursting Requirements: Under the test conditions below, the sections shall remain sound at a pressure of 4 × PMS + 2 bar. Test conditions: Three samples of each type of section are subjected to the pressure. It is checked that the above requirements are met.	ČSN EN 15502-1 +A1:2017, Art. 8.2.3.4.2.2	+	
Tie bars Requirements: The tie bars shall withstand a pressure of 4 × PMS. Verification method It is checked by either calculation or testing that these requirements are met.	ČSN EN 15502-1 +A1:2017, Art. 8.2.3.4.2.3	0	

Note: + Requirement fulfilled x Not assessed
- Requirement not fulfilled 0 Not applicable

Measurement results:

a) Sample tested: ONGAS MEGA 05

Date of testing: 2019-03-07	t_{amb} = 21,7 °C	rel. humidity = 29,4 %	p_a = 972,2 mbar

Test conditions	Maximum working pressure [bar]	Test pressure [bar]	Test duration [min]	Test evaluation	Note
ČSN EN 15502-1 +A1:2017, Art. 8.2.3.4.2.1	6,0	12,0	10	There is no leakage and no permanent visible distortion.	
ČSN EN 15502-1 +A1:2017, Art. 8.2.3.4.2.2 *) Tested part: front section	6,0	26	10	There is no leakage.	Result is taken from test report of manufacturer of the heat exchanger. Minimum bursting pressure was 33 bar.
ČSN EN 15502-1 +A1:2017, Art. 8.2.3.4.2.2 *) Tested part: middle section	6,0	26	10	There is no leakage.	Result is taken from test report of manufacturer of the heat exchanger. Minimum bursting pressure was 33 bar.
ČSN EN 15502-1 +A1:2017, Art. 8.2.3.4.2.2 *) Tested part: back section	6,0	26	10	There is no leakage.	Result is taken from test report of manufacturer of the heat exchanger. Minimum bursting pressure was 32 bar.

Notice: *) this test was performed out of scope of accreditation

b) Sample tested: ONGAS MEGA 13

Date of testing:	2019-03-04	t_{amb} = 21,4	°C	rel. humidity = 49,4	%	p_a = 967,6	mbar

Test conditions	Maximum working pressure [bar]	Test pressure [bar]	Test duration [min]	Test evaluation	Note
ČSN EN 15502-1 +A1:2017, Art. 8.2.3.4.2.1	6,0	12,0	10	There is no leakage and no permanent visible distortion.	
ČSN EN 15502-1 +A1:2017, Art. 8.2.3.4.2.2 *) Tested part: front section	6,0	26	10	There is no leakage.	Result is taken from test report of manufacturer of the heat exchanger. Minimum bursting pressure was 33 bar.
ČSN EN 15502-1 +A1:2017, Art. 8.2.3.4.2.2 *) Tested part: middle section	6,0	26	10	There is no leakage.	Result is taken from test report of manufacturer of the heat exchanger. Minimum bursting pressure was 33 bar.
ČSN EN 15502-1 +A1:2017, Art. 8.2.3.4.2.2 *) Tested part: back section	6,0	26	10	There is no leakage.	Result is taken from test report of manufacturer of the heat exchanger. Minimum bursting pressure was 32 bar.

Notice: *) this test was performed out of scope of accreditation

Accredited test number: **T 001** Test title: **Hydraulic resistance**

Testing method: ČSN EN 15502-1+A1:2017, Art. 8.3

Sample tested: ONGAS MEGA 05, ONGAS MEGA 13

Measuring equipment used: No. 1, 2, 5, 8

Test results:

Requirement	Specification of requirement	Test evaluation	Note
Hydraulic resistance Requirements: Under the test conditions below, the values of the hydraulic resistance or available pressure shall comply with the values given by the manufacturer in the technical instructions for the installer. Test conditions: The hydraulic resistance of a boiler (measured in mbar) has to be determined for the water rate corresponding to operation of the boiler at the nominal heat input with a water flow temperature of 80 °C and a temperature difference between the flow and the return water of 20 K generally, or that stated by the manufacturer. The test is carried out with the water at ambient temperature. The test rig is specified in Figure 5. Before or after the test itself, the two test pipes are connected directly to each other in order to determine their own resistance for different flow rates. Under the same test conditions, the curve of available pressures supplied by the manufacturer for boilers with integral pumps is checked.	ČSN EN 15502-1 +A1:2017, Art. 8.3	+	

Note: + Requirement fulfilled x Not assessed
- Requirement not fulfilled 0 Not applicable

Measurement results:

a) Sample tested: ONGAS MEGA 05

Date of testing:	2019-03-07	t_{amb} = 21,7	°C	rel. humidity = 29,4	%	p_a = 972,2	mbar

Sample tested: Ongas Mega 05

Test conditions	Water flow [m^3/h]	Hydraulic resistance [kPa]	Test evaluation:
ČSN EN 15502-1+A1:2017, Art. 8.3	3,870	0,13	The measured hydraulic resistance comply with the value given by the manufacturer in manual.
	17,504	5,54	
	31,600	17,18	
	34,148	20,21	

b) Sample tested: ONGAS MEGA 13

Date of testing: 2019-03-04	t_{amb} = 21,4 °C	rel. humidity = 49,4 %	p_a = 967,6 mbar

Test conditions	Water flow [m^3/h]	Hydraulic resistance [kPa]	Test evaluation:
ČSN EN 15502-1+A1:2017, Art. 8.3	8,932	0,98	The measured hydraulic resistance comply with the value given by the manufacturer in manual.
	48,131	6,76	
	87,472	21,03	
	93,504	24,54	

Accredited test number: **T 001** Test title: **Heat input, heat output and useful efficiency**

Testing method: ČSN EN 15502-1+A1:2017, Art. 8.4, 8.4.1, 8.4.4, 8.4.5, 9, 9.1, 9.1.1, 9.2, 9.2.1, 9.2.2, 9.3, 9.3.1, 9.3.2, 9.3.2.1, 9.3.2.2

Sample tested: ONGAS MEGA 05, ONGAS MEGA 08, ONGAS MEGA 13, ONGAS MEGA 17

Measuring equipment used: No. 1 - 7, 9 - 12

Test results:

Requirement	Specification of requirement	Test evaluation	Note
Heat inputs and heat output	ČSN EN 15502-1+A1:2017, Art. 8.4		
Determination of the nominal heat input or the maximum and minimum heat input Requirements: The corrected heat input obtained under the test conditions below shall not differ by more than 5 % from: a) the nominal heat input, for boilers without a range rating device, or, b) the maximum and minimum heat input for boilers with a range rating device. If this 5 % is less than 500 W, a tolerance of 500 W is acceptable.	ČSN EN 15502-1 +A1:2017, Art. 8.4.1	+	
Adjustment of the heat input by the downstream gas pressure Requirements: When the manufacturer's instructions specify the value of the downstream pressure that enables the nominal heat input to be obtained, the heat input obtained under the test conditions below shall not differ by more than 5 % from the nominal heat input. If this 5 % is less than 500 W, a tolerance of 500 W is acceptable.	ČSN EN 15502-1 +A1:2017, Art. 8.4.2	0	
Ignition rate Requirements: For boilers, which may be ignited at a heat input less than the nominal heat input under the test conditions below, the ignition rate of the boiler shall not exceed the ignition rate declared by the manufacturer.	ČSN EN 15502-1 +A1:2017, Art. 8.4.3	0	
Nominal output Requirements: The product of the efficiency determined under test condition 9.2 and the nominal heat input shall be no less than the nominal output.	ČSN EN 15502-1 +A1:2017, Art. 8.4.4	+	
Verification of the nominal condensing output Requirements If the manufacturer states the nominal condensing output it is verified under the following test conditions.	ČSN EN 15502-1 +A1:2017, Art. 8.4.5	+	
Nominal domestic hot water heat input Requirement Under the test conditions below, the nominal domestic hot water heat input shall be obtained or may be adjusted to within ± 5 %.	ČSN EN 15502-1 +A1:2017, Art. 8.4.6	0	

Water pressure to obtain the nominal heat input for instantaneous combination boilers Requirements Under the test conditions below, the heat input obtained shall be at least 95 % of the heat input obtained in 8.4.6.	ČSN EN 15502-1 +A1:2017, Art. 8.4.7	0	
Obtaining the domestic hot water temperature for instantaneous combination boilers Requirements Under the conditions below, it shall be possible to achieve or adjust to, a water rate that corresponds to a temperature of between 50 °C and 80 °C for boilers with a thermostatic control or a temperature rise at the boiler outlet of between 45 K and 65 K for boilers with proportioning control.	ČSN EN 15502-1 +A1:2017, Art. 8.4.8	0	
Heating-up time of the domestic hot water Requirement Under the test conditions below, the heating-up time shall not exceed 2 min.	ČSN EN 15502-1 +A1:2017, Art. 8.4.9	0	
Useful efficiencies	ČSN EN 15502-1+A1:2017, Art. 9		
General	ČSN EN 15502-1+A1:2017, Art. 9.1		
Use of correction formula If the actual test conditions differ from the reference conditions (20 °C, 70 % relative humidity, 1 013,25 mbar) and/or the return water temperature differs from the specified value, the correction formulae given in Annex T are used to correct the determined useful efficiency for tests executed following the requirements of 9.1 and 9.2.	ČSN EN 15502-1 +A1:2017, Art. 9.1.1	+	
Useful efficiency at the nominal heat input	ČSN EN 15502-1+A1:2017, Art. 9.2		
Requirements Under the test conditions of 9.2.2, the useful efficiency at the nominal heat input, or the maximum heat input for range rated boilers, expressed in percent, shall be at least: $84 + 2 \log_{10} P_n$; $87{,}5 + 1{,}5 \log_{10} P_n$ for low temperature boilers; $91 + \log_{10} P_n$ for condensing boilers. where P_n is the nominal output (maximum output for range rated boilers), expressed in kilowatts (kW). Where the nominal heat output P_n is > 400 kW, the value of efficiency is calculated using 400 kW as the maximum nominal output. In addition, for range rated boilers, the efficiency at a rate, corresponding to the arithmetic mean of the maximum and minimum heat input, expressed in percent, shall be at least: $84 + 2 \log_{10} P_a$; $87{,}5 + 1{,}5 \log_{10} Pa$ for low temperature boilers; $91 + \log_{10} Pa$ for condensing boilers. where P_a is the arithmetic mean of the maximum and minimum useful heat output as stated by the manufacturer, expressed in kilowatts (kW). Where P_a is > 400 kW, the value of efficiency is calculated using 400 kW as the maximum nominal output. If the minimum useful heat output is also > 400 kW, then the efficiency will be calculated using 400 kW as P_a.	ČSN EN 15502-1 +A1:2017, Art. 9.2.1	0 0 + 0 0 +	

Useful efficiency at part load	ČSN EN 15502-1+A1:2017, Art. 9.3		
Requirements Under the test conditions of 9.3.2, the useful efficiency for a load corresponding to 30 % of the nominal heat input or for range rated boilers to 30 % of the arithmetic mean of the maximum and minimum heat input, expressed in percent, shall be at least: 80 + 3 log10 Pi; 87,5 + 1,5 log10 Pi for low temperature boilers 97 + log10 Pi for condensing boilers where P_i is the nominal output P_n, or the arithmetic mean P_a of the maximum and minimum useful output as stated by the manufacturer for range rated boilers. Where P_i is > 400 kW, the value of efficiency is calculated using 400 kW as the maximum nominal output. If the minimum useful heat output is also > 400 kW, then the efficiency will be calculated using 400 kW as P_i.	ČSN EN 15502-1 +A1:2017, Art. 9.3.1	0 0 +	
Compliance with the eco-design regulation for efficiency	ČSN EN 15502-1+A1:2017, Art. 9.5		
Requirements for seasonal space heating energy efficiency	ČSN EN 15502-1+A1:2017, Art. 9.5.1		
Type B1 boilers with rated heat output ≤ 10kW and Type B1 Combination boilers with rated heat output ≤ 30kW As from 26 September 2015 the seasonal space heating efficiency calculated according to 9.5.2 shall be at least 75 %.	ČSN EN 15502-1 +A1:2017, Art. 9.5.1.1	0	
Boilers and combination boilers with rated heat output ≤ 70 kW, with the exception of type B1 boilers with rated heat output ≤ 10 kW and type B1 combination boilers with rated heat output ≤ 30 kW As from 26 September 2015 the seasonal space heating efficiency calculated according to 9.5.2 shall be at least 86 %.	ČSN EN 15502-1 +A1:2017, Art. 9.5.1.2	0	
Useful efficiency for nominal heat output > 70kW and ≤ 400kW Requirement: The full load useful efficiency η_4 shall be at least 86 % and the useful efficiency at 30 % of the rated heat output η_1 shall be at least 94%.	ČSN EN 15502-1 +A1:2017, Art. 9.5.3	0	

Note: + Requirement fulfilled x Not assessed
- Requirement not fulfilled 0 Not applicable

Measurement results:

a) Sample tested: ONGAS MEGA 05

Test according to ČSN EN 15502-1+A1:2017, Art. 8.4.1			
Type of fuel:		**G20**	
Sample tested:		**ONGAS MEGA 05**	
Date:		2019-03-07	2019-03-07
Fuel flow:		Maximum	Minimum
Stated heat input corrected *) (expressed in terms of NCV)	(kW)	800,0	100,0
Fuel pressure before the boiler	(mbar)	19,8	20,3
Fuel pressure at the measuring gauge	(mbar)	164,8	166,6
Ambient temperature	(°C)	21,7	22,5
Relative air humidity	(%)	29,4	29,1
Barometric pressure	(mbar)	972,2	970,9
Fuel temperature	(°C)	20,6	22,7
Fuel consumption, measured	($m^3.h^{-1}$)	69,738	8,764
Fuel consumption, **corrected**	($m^3.h^{-1}$)	82,193	10,322
Heat input (corrected) (expressed in terms of NCV)	**(kW)**	**793,6**	**99,7**
Uncertainty of heat input	(kW)	5,41	0,68
Deviation	**(%)**	**-0,80**	**-0,34**
Permitted deviation	**(%)**	**± 5**	**± 5**

Note: *) ... heat input specified by the manufacturer

Measurement results:

Test according to ČSN EN 15502-1+A1:2017, Art. 8.4.4, 8.4.5							
Type of fuel:		**G20**					
Sample tested:		**ONGAS MEGA 05**					
Date:		2019-03-07	2019-03-07	2019-03-07	2019-03-07	2019-03-07	2019-03-07
Heat output:		**Nominal**	**Arithm. mean**	**Minimum**	**Nominal condensing**	**Minimum**	**Partial**
Temperature gradient	**(°C)**	**80/60**	**80/60**	**80/60**	**50/30**	**50/30**	**37/30**
ENTERED VALUES AND AVERAGE VALUES MEASURED:							
Heat input *) (expressed in terms of NCV)	(kW)	800,0	-	100,0	800,0	100,0	-
Heat output *)	(kW)	778,0	-	96,0	830,0	107,0	-
Barometric pressure	(mbar)	972,2	971,9	970,9	972,1	971,1	973,3
Ambient temperature	(°C)	21,7	23,0	22,5	21,3	22,0	20,8
Relative air humidity	(%)	29,4	29,0	29,1	30,7	30,1	32,9
Fuel pressure at the gas gauge	(mbar)	164,8	165,2	166,6	164,6	166,4	166,5
Fuel pressure before the appliance	(mbar)	19,8	20,8	20,3	19,7	20,3	20,3
Fuel temperature	(°C)	20,6	23,0	22,7	21,0	23,0	22,4
Fuel net calorific value (NCV) at 15°C and 1013.25 mbar	($MJ.m^{-3}$)	34,76	34,76	34,76	34,76	34,76	34,76
Fuel gross calorific value (GCV) at 15°C and 1013.25 mbar	($MJ.m^{-3}$)	38,56	38,56	38,56	38,56	38,56	38,56
Fuel consumption, measured	($m^3.h^{-1}$)	69,74	39,65	8,76	70,98	9,15	12,09
Fuel consumption, converted	($m^3.h^{-1}$)	76,77	43,29	9,58	78,0	10,0	13,26
Circulating water flow	($m^3.h^{-1}$)	31,600	17,504	3,870	34,148	4,437	17,490
Average outlet water temperature	(°C)	80,0	80,0	80,3	49,8	50,5	36,6
Average inlet water temperature	(°C)	60,0	59,9	60,2	30,1	30,3	29,7
Average temperature of combustion products	(°C)	68,3	61,3	59,0	45,2	30,6	30,1
CALCULATED VALUES:							
Heat input (expressed in terms of NCV)	(kW)	741,22	417,98	92,53	753,17	96,54	128,01
Heat output	(kW)	721,45	402,27	88,85	780,25	103,28	138,30
Uncertainty of heat output	(kW)	6,16	3,43	0,76	6,68	0,88	2,09
Heat output / rated heat output x 100	(%)	92,73	51,71	11,42	94,01	12,44	16,66
Calorific efficiency (expressed in terms of NCV)	**(%)**	**97,33**	**96,24**	**96,02**	**104,0**	**107,41**	**108,39**
Uncertainty of calorific efficiency (expressed in terms of NCV)	(%)	1,06	1,08	1,08	1,17	1,20	1,81
Required boiler calorific efficiency (expressed in terms of NCV) according to ČSN EN 15502-1+A1:2017 Art. 9.2.1, 9.3.1 (must be ≥ than)	**(%)**	**93,6**	**93,4**	**-**	**-**	**-**	**99,4**
Calorific efficiency (expressed in terms of GCV)	(%)	87,74	86,76	86,56	93,75	96,83	97,70
Calculated boiler heat output according to ČSN EN 15502-1+A1: 2017, Art. 8.4.4.	(kW)	**778,66**	**-**	**-**	**832,0**	**-**	**-**

Note:*)...Values declared by the manufacturer

Measurement results:

b) Sample tested: ONGAS MEGA 08

Test according to ČSN EN 15502-1+A1:2017, Art. 8.4.1			
Type of fuel:		**G20**	
Sample tested:		**ONGAS MEGA 08**	
Date:		2019-03-20	2019-03-20
Fuel flow:		Maximum	Minimum
Stated heat input corrected *) (expressed in terms of NCV)	(kW)	1400,0	180,0
Fuel pressure before the boiler	(mbar)	21,3	20,0
Fuel pressure at the measuring gauge	(mbar)	267,0	270,6
Ambient temperature	(°C)	20,7	20,1
Relative air humidity	(%)	44,4	24,0
Barometric pressure	(mbar)	1001,6	1001,2
Fuel temperature	(°C)	19,3	20,4
Fuel consumption, measured	($m^3.h^{-1}$)	113,633	14,625
Fuel consumption, **corrected**	($m^3.h^{-1}$)	144,846	18,644
Heat input (corrected) (expressed in terms of NCV)	**(kW)**	**1399,8**	**180,2**
Uncertainty of heat input	(kW)	9,89	1,27
Deviation	**(%)**	**-0,02**	**+0,09**
Permitted deviation	**(%)**	**± 5**	**± 5**

Note: *) ... heat input specified by the manufacturer

Measurement results:

Test according to ČSN EN 15502-1+A1:2017, Art. 8.4.4, 8.4.5							
Type of fuel:		**G20**					
Sample tested:		**ONGAS MEGA 08**					
Date:		2019-03-20	2019-03-21	2019-03-20	2019-03-20	2019-03-20	2019-03-21
Heat output:		**Nominal**	**Arithm. mean**	**Minimum**	**Nominal condensing**	**Minimum**	**Partial**
Temperature gradient	**(°C)**	**80/60**	**80/60**	**80/60**	**50/30**	**50/30**	**37/30**
ENTERED VALUES AND AVERAGE VALUES MEASURED:							
Heat input *) (expressed in terms of NCV)	(kW)	1400,0	-	180,0	1400,0	180,0	-
Heat output *)	(kW)	1360,0	-	173,0	1455,0	192,0	-
Barometric pressure	(mbar)	1001,6	1003,8	1001,2	1001,9	1001,4	1003,7
Ambient temperature	(°C)	20,7	19,5	20,1	19,2	19,4	18,9
Relative air humidity	(%)	44,4	38,7	24,0	33,2	25,2	30,7
Fuel pressure at the gas gauge	(mbar)	267,0	271,7	270,6	269,9	274,1	272,2
Fuel pressure before the appliance	(mbar)	21,3	19,0	20,0	23,8	19,9	20,5
Fuel temperature	(°C)	19,3	18,2	20,4	18,7	20,7	19,3
Fuel net calorific value (NCV) at 15°C and 1013.25 mbar	($MJ.m^{-3}$)	34,79	34,79	34,79	34,79	34,79	34,79
Fuel gross calorific value (GCV) at 15°C and 1013.25 mbar	($MJ.m^{-3}$)	38,61	38,61	38,61	38,61	38,61	38,61
Fuel consumption, measured	($m^3.h^{-1}$)	113,63	63,84	14,63	112,85	14,72	19,50
Fuel consumption, converted	($m^3.h^{-1}$)	140,18	79,49	18,02	139,86	18,17	24,19
Circulating water flow	($m^3.h^{-1}$)	56,903	32,179	7,206	60,770	8,068	32,486
Average outlet water temperature	(°C)	80,3	80,3	80,2	50,1	49,7	36,7
Average inlet water temperature	(°C)	60,1	60,0	59,8	30,2	29,7	30,0
Average temperature of combustion products	(°C)	69,9	61,5	56,4	44,2	30,0	30,3
CALCULATED VALUES:							
Heat input (expressed in terms of NCV)	(kW)	1354,67	768,18	174,15	1351,62	175,62	233,77
Heat output	(kW)	1316,51	743,64	167,55	1402,38	187,01	250,32
Uncertainty of heat output	(kW)	11,21	6,33	1,42	11,98	1,60	3,86
Heat output / rated heat output x 100	(%)	96,80	54,68	12,32	96,38	12,85	17,20
Calorific efficiency (expressed in terms of NCV)	**(%)**	**97,18**	**96,80**	**96,21**	**104,20**	**106,96**	**107,54**
Uncertainty of calorific efficiency (expressed in terms of NCV)	(%)	1,09	1,09	1,08	1,17	1,20	1,83
Required boiler calorific efficiency (expressed in terms of NCV) according to ČSN EN 15502-1+A1:2017 Art. 9.2.1, 9.3.1 (must be ≥ than)	**(%)**	**93,6**	**93,5**	-	-	-	**99,5**
Calorific efficiency (expressed in terms of GCV)	(%)	87,57	87,23	86,69	93,89	96,38	96,90
Calculated boiler heat output according to ČSN EN 15502-1+A1: 2017, Art. 8.4.4.	(kW)	**1360,57**	-	-	**1458,85**	-	-

Note:*)...Values declared by the manufacturer

Measurement results:

c) Sample tested: ONGAS MEGA 13

Test according to ČSN EN 15502-1+A1:2017, Art. 8.4.1			
Type of fuel:		**G20**	
Sample tested:		**ONGAS MEGA 13**	
Date:		2019-03-04	2019-03-04
Fuel flow:		Maximum	Minimum
Stated heat input corrected *) (expressed in terms of NCV)	(kW)	2200,0	230,0
Fuel pressure before the boiler	(mbar)	19,7	20,1
Fuel pressure at the measuring gauge	(mbar)	328,9	334,6
Ambient temperature	(°C)	21,4	21,7
Relative air humidity	(%)	49,4	30,7
Barometric pressure	(mbar)	967,6	966,5
Fuel temperature	(°C)	18,5	21,0
Fuel consumption, measured	($m^3.h^{-1}$)	166,653	17,274
Fuel consumption, **corrected**	($m^3.h^{-1}$)	224,439	23,279
Heat input (corrected) (expressed in terms of NCV)	**(kW)**	**2167,1**	**224,8**
Uncertainty of heat input	(kW)	14,85	1,53
Deviation	**(%)**	**-1,50**	**-2,27**
Permitted deviation	**(%)**	**± 5**	**± 5**

Note: *) ... heat input specified by the manufacturer

Measurement results:

Test according to ČSN EN 15502-1+A1:2017, Art. 8.4.4, 8.4.5							
Type of fuel:		**G20**					
Sample tested:		**ONGAS MEGA 13**					
Date:		2019-03-04	2019-03-04	2019-03-04	2019-03-04	2019-03-04	2019-03-05
Heat output:		**Nominal**	**Arithm. mean**	**Minimum**	**Nominal condensing**	**Minimum**	**Partial**
Temperature gradient	**(°C)**	**80/60**	**80/60**	**80/60**	**50/30**	**50/30**	**37/30**
ENTERED VALUES AND AVERAGE VALUES MEASURED:							
Heat input *) (expressed in terms of NCV)	(kW)	2200,0	-	230,0	2200,0	230,0	-
Heat output *)	(kW)	2140,0	-	223,0	2335,0	248,0	-
Barometric pressure	(mbar)	967,6	967,4	966,5	969,7	966,5	976,5
Ambient temperature	(°C)	21,4	21,6	21,7	19,3	20,3	20,9
Relative air humidity	(%)	49,4	31,4	30,7	47,6	33,6	28,2
Fuel pressure at the gas gauge	(mbar)	328,9	331,4	334,6	327,8	334,2	335,1
Fuel pressure before the appliance	(mbar)	19,7	20,4	20,1	20,0	20,1	20,4
Fuel temperature	(°C)	18,5	20,4	21,0	17,7	21,6	19,1
Fuel net calorific value (NCV) at 15°C and 1013.25 mbar	($MJ.m^{-3}$)	34,76	34,76	34,76	34,76	34,76	34,76
Fuel gross calorific value (GCV) at 15°C and 1013.25 mbar	($MJ.m^{-3}$)	38,56	38,56	38,56	38,56	38,56	38,56
Fuel consumption, measured	($m^3.h^{-1}$)	166,65	94,33	17,27	165,77	17,83	28,45
Fuel consumption, converted	($m^3.h^{-1}$)	210,68	118,68	21,73	210,31	22,37	36,31
Circulating water flow	($m^3.h^{-1}$)	87,472	48,131	8,932	93,504	9,806	47,550
Average outlet water temperature	(°C)	79,7	80,2	79,3	50,5	50,3	36,9
Average inlet water temperature	(°C)	59,9	59,9	59,4	30,6	29,7	30,0
Average temperature of combustion products	(°C)	67,9	61,7	57,8	42,9	30,0	30,2
CALCULATED VALUES:							
Heat input (expressed in terms of NCV)	(kW)	2034,19	1145,94	209,84	2030,63	215,96	350,56
Heat output	(kW)	1987,13	1118,75	203,57	2151,08	232,91	377,74
Uncertainty of heat output	(kW)	17,0	9,51	1,74	18,39	1,97	5,69
Heat output / rated heat output x 100	(%)	92,86	52,28	9,51	92,12	9,97	16,18
Calorific efficiency (expressed in terms of NCV)	**(%)**	**97,69**	**97,63**	**97,01**	**106,25**	**108,20**	**108,19**
Uncertainty of calorific efficiency (expressed in terms of NCV)	(%)	1,10	1,09	1,09	1,19	1,21	1,80
Required boiler calorific efficiency (expressed in terms of NCV) according to ČSN EN 15502-1+A1:2017 Art. 9.2.1, 9.3.1 (must be ≥ than)	**(%)**	**93,6**	**93,5**	**-**	**-**	**-**	**99,5**
Calorific efficiency (expressed in terms of GCV)	(%)	88,06	88,01	87,45	95,78	97,54	97,53
Calculated boiler heat output according to ČSN EN 15502-1+A1: 2017, Art. 8.4.4.	(kW)	**2149,11**	-	-	**2337,49**	-	-

Note:*)...Values declared by the manufacturer

Measurement results:

d) Sample tested: ONGAS MEGA 17

Test according to ČSN EN 15502-1+A1:2017, Art. 8.4.1			
Type of fuel:		**G20**	
Sample tested:		**ONGAS MEGA 17**	
Date:		2019-05-23	2019-05-23
Fuel flow:		Maximum	Minimum
Stated heat input corrected *) (expressed in terms of NCV)	(kW)	3100,0	360,0
Fuel pressure before the boiler	(mbar)	20,5	20,2
Fuel pressure at the measuring gauge	(mbar)	168,9	177,6
Ambient temperature	(°C)	22,2	21,6
Relative air humidity	(%)	61,9	40,5
Barometric pressure	(mbar)	985,4	984,9
Fuel temperature	(°C)	20,2	22,6
Fuel consumption, measured	($m^3.h^{-1}$)	263,509	33,096
Fuel consumption, **corrected**	($m^3.h^{-1}$)	310,489	39,082
Heat input (corrected) (expressed in terms of NCV)	**(kW)**	**2997,1**	**377,2**
Uncertainty of heat input	(kW)	20,78	2,61
Deviation	**(%)**	**-3,32**	**+4,79**
Permitted deviation	**(%)**	**± 5**	**± 5**

Note: *) ... heat input specified by the manufacturer

Measurement results:

Test according to ČSN EN 15502-1+A1:2017, Art. 8.4.4, 8.4.5							
Type of fuel:		**G20**					
Sample tested:		**ONGAS MEGA 17**					
Date:		2019-05-23	2019-05-24	2019-05-23	2019-05-24	2019-05-24	2019-05-24
Heat output:		**Nominal**	**Arithm. mean**	**Minimum**	**Nominal condensing**	**Minimum**	**Partial**
Temperature gradient	**(°C)**	**80/60**	**80/60**	**80/60**	**50/30**	**50/30**	**36/30**
ENTERED VALUES AND AVERAGE VALUES MEASURED:							
Heat input *) (expressed in terms of NCV)	(kW)	3100,0	-	360,0	3100,0	360,0	-
Heat output *)	(kW)	2990,0	-	346,0	3225,0	385,0	-
Barometric pressure	(mbar)	985,4	984,4	984,9	984,4	983,6	982,7
Ambient temperature	(°C)	22,2	24,7	21,6	20,9	23,0	23,1
Relative air humidity	(%)	61,9	32,4	40,5	56,5	35,1	30,2
Fuel pressure at the gas gauge	(mbar)	168,9	171,1	177,6	166,4	177,5	177,3
Fuel pressure before the appliance	(mbar)	20,5	19,9	20,2	20,7	20,3	20,3
Fuel temperature	(°C)	20,2	22,8	22,6	19,7	23,8	23,9
Fuel net calorific value (NCV) at 15°C and 1013.25 mbar	($MJ.m^{-3}$)	34,75	34,75	34,75	34,75	34,75	34,75
Fuel gross calorific value (GCV) at 15°C and 1013.25 mbar	($MJ.m^{-3}$)	38,56	38,56	38,56	38,56	38,56	38,56
Fuel consumption, measured	($m^3.h^{-1}$)	263,51	151,41	33,10	265,71	30,56	46,06
Fuel consumption, converted	($m^3.h^{-1}$)	294,91	168,06	36,99	296,93	33,99	51,15
Circulating water flow	($m^3.h^{-1}$)	117,135	71,400	14,913	124,838	15,400	72,471
Average outlet water temperature	(°C)	80,5	79,4	81,2	50,7	49,9	36,2
Average inlet water temperature	(°C)	59,7	60,0	60,8	29,8	30,1	29,9
Average temperature of combustion products	(°C)	69,5	62,8	59,2	46,9	30,5	30,2
CALCULATED VALUES:							
Heat input (expressed in terms of NCV)	(kW)	2846,74	1622,29	357,07	2866,17	328,07	493,78
Heat output	(kW)	2749,10	1570,95	343,28	2982,16	350,28	528,41
Uncertainty of heat output	(kW)	23,23	13,52	2,92	25,17	3,00	8,50
Heat output / rated heat output x 100	(%)	91,94	52,54	11,48	92,47	10,86	16,38
Calorific efficiency (expressed in terms of NCV)	**(%)**	**96,57**	**96,84**	**96,14**	**104,11**	**107,07**	**107,36**
Uncertainty of calorific efficiency (expressed in terms of NCV)	(%)	1,08	1,09	1,08	1,16	1,20	1,89
Required boiler calorific efficiency (expressed in terms of NCV) according to ČSN EN 15502-1+A1:2017 Art. 9.2.1, 9.3.1 (must be ≥ than)	**(%)**	**93,6**	**93,6**	**-**	**-**	**-**	**99,6**
Calorific efficiency (expressed in terms of GCV)	(%)	87,03	87,27	86,64	93,82	96,49	96,75
Calculated boiler heat output according to ČSN EN 15502-1+A1: 2017, Art. 8.4.4.	(kW)	**2993,68**	**-**	**-**	**3227,37**	**-**	**-**

Note:*)...Values declared by the manufacturer

Required properties	Test result	Note
Obtaining the domestic hot water temperature for instantaneous combination boilers		
ČSN EN 15502-1+A1:2017, Art. 8.4.8	0	
Heating-up time of the domestic hot water		
ČSN EN 15502-1+A1:2017, Art. 8.4.9	0	

Note: + Requirement fulfilled
- Requirement not fulfilled
x Not assessed
0 Not applicable

Accredited test number: **T 001** Test title: **Limiting temperatures**

Testing method: ČSN EN 15502-1+A1:2017, Art. 8.5, 8.5.1, 8.5.2, 8.5.3, 8.5.4
ČSN EN 15502-2-1+A1:2017, Art. 8.5.101

Sample tested: ONGAS MEGA 05, ONGAS MEGA 13

Measuring equipment used: No. 1, 5, 13

Test results:

Requirement	Specification of requirement	Test evaluation	Note
General The boiler is installed as stated in 8.1.2, supplied with one of the reference gases, or an actually distributed gas distribute, at the nominal heat input and an adjustable thermostat or adjustable control temperature set point is set to the position or value giving the highest temperature. The limiting temperatures are measured when thermal equilibrium is reached.	ČSN EN 15502-1 +A1:2017, Art. 8.5.1	+	
Limiting temperatures of the adjusting, control and safety devices Requirements: Under the test conditions below, the temperature of the adjusting, control and safety devices shall not exceed the value stated by the manufacturer and their operation shall remain satisfactory. The surface temperatures of the control knobs and of all the parts that have to be touched during normal use of the boiler, measured only in the zones intended to be gripped, and under the conditions stated below, shall not exceed the ambient temperature by more than: 35 K for metals; 45 K for porcelain; 60 K for plastics. Nevertheless, parts of the case within 5 cm of the edge of the lighting hole or sight glass, if any, and within 15 cm of the flue duct are exempt from this requirement.	ČSN EN 15502-1 +A1:2017, Art. 8.5.2	+ 0 0 + +	
Limiting temperatures of the side walls, the front and the top Requirements: The temperature of the side walls, front and top of the boiler shall not exceed the ambient temperature by more than 80 K, when measured under the test conditions below. Nevertheless, parts of the case within 5 cm of the edge of the lighting hole or sight glass, and within 15 cm of the flue duct are exempt from this requirement.	ČSN EN 15502-1 +A1:2017, Art. 8.5.3	+	
Limiting temperatures of the test panels and the floor Requirements: The temperature of the floor on which the boiler is placed, where appropriate, and that of the panels placed at the side of and behind the boiler shall not, at any point, exceed the ambient temperature by more than 80 K under the test conditions below. When this temperature rise is between 60 K and 80 K, the manufacturer shall state in the technical instructions for the installer the nature of the protection, which has to be applied	ČSN EN 15502-1 +A1:2017, Art. 8.5.4	+ 0	

Requirement	Specification of requirement	Test evaluation	Note
between the boiler and the floor or walls when these latter are made of inflammable materials. This protection shall be supplied to the test laboratory which shall check that, with the boiler fitted with it, the floor and panel temperatures measured under the test conditions below do not exceed the ambient temperature by more than 60 K.	ČSN EN 15502-1 +A1:2017, Art. 8.5.4	0	
External temperature of the ducts where the ducts are in contact with and or passing through a wall Requirements The temperature of the ducts in contact with or passing through the walls of a dwelling shall not exceed the ambient temperature by more than 60 K under the test conditions below. However, when this temperature rise exceeds 60 K, the installation instructions shall state the nature of the protection which has to be applied between the ducts and the walls in case they are constructed from inflammable materials. This protection shall be supplied to the test laboratory which shall check that, with the boiler fitted with it, the external surface temperature in contact with the wall measured under the following test conditions does not exceed the ambient temperature by more than 60 K.	ČSN EN 15502-2-1: 2013, Art. 8.5.101	+	

Note: + Requirement fulfilled
- Requirement not fulfilled
x Not assessed
0 Not applicable

Measurement results:

a) Sample tested: ONGAS MEGA 05

Date of testing:	2019-03-07	t_{amb} = 21,7	°C	rel. humidity = 29,4	%	p_a = 972,2	mbar

Test according to ČSN EN 15502-1+A1:2017, Art. 8.5.2			
Point measured	**Contact material**	**Temperature rise (K)**	
		Value measured	**Max. permitted value**
Button "AUTO, winter trafic, night traffic, OFF"	plastic	3	60
Button "tap"	plastic	3	60
Button "i"	plastic	3	60
Button "ESC"	plastic	3	60
Button "OK"	plastic	3	60
Button "RESET"	plastic	3	60
Button "HAND"	plastic	3	60
Button "KEY"	plastic	3	60
Rotary knob "Plus-minus"	plastic	3	60

Test according to ČSN EN 15502-1+A1:2017, Art. 8.5.3		
Measured point (grid method)	**Temperature rise (K)**	
	Value measured	**Max. permitted value**
Front wall of the boiler	11,0	80
Left wall of the boiler	15,0	80
Right wall of the boiler	13,5	80
Bottom wall of the boiler	2,0	80
Top wall of the boiler	15,0	80
Rear wall of the boiler	16,0	80

Test according to ČSN EN 15502-1+A1:2017, Art. 8.5.4		
Measured point (grid method)	**Temperature rise (K)**	
	Value measured	**Max. permitted value**
Left wall of the corner	7,5	60
Back wall of the corner	8,0	60

Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.5.101		
Measured point (grid method)	**Temperature rise (K)**	
	Value measured	**Max. permitted value**
Flue ducts DN 200 mm	25	60

b) Sample tested: ONGAS MEGA 13

Date of testing: 2019-03-05	t_{amb} = 17,1 °C	rel. humidity = 28,3 %	p_a = 971,3 mbar

Test according to ČSN EN 15502-1+A1:2017, Art. 8.5.2			
Point measured	**Contact material**	**Temperature rise (K)**	
		Value measured	**Max. permitted value**
Button "AUTO, winter trafic, night traffic, OFF"	plastic	3	60
Button "summer traffic"	plastic	3	60
Button "i"	plastic	4	60
Button "ESC"	plastic	4	60
Button "OK"	plastic	4	60
Button "RESET"	plastic	4	60
Button "HAND"	plastic	3	60
Button "KEY"	plastic	3	60
Rotary knob "Plus-minus"	plastic	3	60

Test according to ČSN EN 15502-1+A1:2017, Art. 8.5.3		
Measured point (grid method)	**Temperature rise (K)**	
	Value measured	**Max. permitted value**
Front wall of the boiler	13,0	80
Left wall of the boiler	14,0	80
Right wall of the boiler	12,0	80
Bottom wall of the boiler	2,0	80
Top wall of the boiler	13,0	80
Rear wall of the boiler	21,0	80

Test according to ČSN EN 15502-1+A1:2017, Art. 8.5.4		
Measured point (grid method)	**Temperature rise (K)**	
	Value measured	**Max. permitted value**
Right wall of the corner	6,0	60
Back wall of the corner	12,0	60

Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.5.101		
Measured point (grid method)	**Temperature rise (K)**	
	Value measured	**Max. permitted value**
Flue ducts DN 315 mm	30	60

Accredited test number: **T 001** Test title: **Ignition – Cross lighting – Flame stability**

Testing method: ČSN EN 15502-1+A1:2017, Art. 8.6, 8.6.1, 8.6.2
ČSN EN 15502-2-1+A1:2017, Art. 8.6.3.101, 8.6.3.111

Sample tested: ONGAS MEGA 05, ONGAS MEGA 13

Measuring equipment used: No. 1 - 7, 9 - 12, 14

Test results:

Requirement	Specification of requirement	Test evaluation	Note
Ignition, cross lighting, flame stability	ČSN EN 15502-1 +A1:2017, Art. 8.6		
General The tests are carried out twice, with the boiler at ambient temperature and at thermal equilibrium.	ČSN EN 15502-1 +A1:2017, Art. 8.6.1	+	
Limit conditions Requirements: Under the test conditions specified below and in still air, ignition and cross lighting shall be capable of being effected correctly, rapidly and quietly. The flames shall be stable. A slight tendency to lift at the moment of ignition is permissible, but the flames shall be stable thereafter. Ignition of the burner shall occur at all gas rates, which can be given by the controls as stated by the manufacturer and there shall be neither light-back nor prolonged flame lift. However, brief light-back during ignition or extinction of the burner is accepted if this does not affect correct operation. A permanent ignition burner shall not be extinguished during ignition or extinction of the burner; while the boiler is operating, the ignition burner flame shall not change to such an extent that it can no longer fulfil its function (ignition of the burner, operation of the flame supervision device). When the ignition burner has been alight for a sufficient time for normal and regular operation of the boiler to be obtained, it shall always be ready to operate without fail, even if the gas supply to the burner is turned off and on by several quick and successive adjustments of the thermostat or electronic temperature control system. For boilers fitted with a range rating-device, these requirements are checked both at the maximum heat input and minimum heat input stated by the manufacturer. In addition, to test flame stability for boilers, which have an indirect means of indicating the presence of the flame, the carbon monoxide concentration, at thermal equilibrium, of the dry, air-free combustion products using flame lift limit gas shall not be more than 1000 ppm. NOTE 1 ppm = 1 cm^3/m^3 The above requirements shall also be fulfilled where spark restoration or recycling is provided.	ČSN EN 15502-1 +A1:2017, Art. 8.6.2	+ + 0 0 + 0 +	

Additional requirements for type $C_{(10)}$ and $C_{(11)}$ boilers	ČSN EN 15502-2-1+A1:2017, Art. 8.6.2.101		
Maximum pressure Requirements Shall be according to EN 15502-1+A1:2017, Art. 8.6.2 Requirements.	ČSN EN 15502-2-1+A1:2017, Art. 8.6.2.101.1	0	
Special flue conditions	ČSN EN 15502-2-1+A1:2017, Art. 8.6.3		
General Requirements Under the following test conditions for ignition of the ignition burner; ignition of the main burner by the ignition burner; or direct ignition of the main burner, complete cross lighting of the main burner and also stability of the ignition burner when it alone is alight, or of the ignition burner and main burner operating simultaneously, shall be assured. Slight flame disturbance is permitted but there shall be no flame extinction.	ČSN EN ČSN EN 15502-2-1+A1:2017, Art. 8.6.3.101	+	
Reduction of the gas rate of the ignition burner Requirements: Under the test conditions below and when the gas rate of the ignition burner is reduced to the minimum required to keep open the gas valve of the flame supervision device, ignition of the main burner shall be assured without damage to the boiler. Ignition of the main burner shall be assured without flame roll-out outside the case.	ČSN EN 15502-1+A1:2017, Art. 8.6.4	0	
Resistance to draught for type B boilers Requirements The flames shall be stable under the following test conditions.	ČSN EN 15502-2-1+A1:2017, Art. 8.6.101	0	

Note: + Requirement fulfilled
- Requirement not fulfilled
x Not assessed
0 Not applicable

Measurement results:

a) Sample tested: ONGAS MEGA 05

Date of testing: 2019-03-19	t_{amb} = 18,9 °C	rel. humidity = 26,1 %	p_a = 994,4 mbar

Operating conditions	Heat input	Fuel supply pressure (mbar)	Test gas	Results	Note
Limit conditions					
Limit conditions according to Test No. 1 of ČSN EN 15502-1+A1, Art. 8.6.2	Q_n	14	G20	+	
	Q_m			+	
Limit conditions according to Test No. 2 of ČSN EN 15502-1+A1, Art. 8.6.2 and annex U.2	Q_n – 9%	17	G20	+	
	Q_m – 9%			+	
Limit conditions according to Test No. 3 of ČSN EN 15502-1+A1, Art. 8.6.2 and annex U.2	Q_n + 9 %	17	G20	+	
	Q_m + 9 %			+	

Operating conditions	Heat input	Fuel supply pressure (mbar)	Test gas	Results	Note
Limit conditions according to Test No. 4 of ČSN EN 15502-1+A1, Art. 8.6.2 and annex U.2	Q_n + 9 %	25	G20	+	
Limit conditions according to Test No. 5 of ČSN EN 15502-1+A1, Art. 8.6.2 and annex U.2	Q_n + 9 %	20	G20	+	
Special conditions					
C_1, C_3 and C_9 design boilers					
Special con. according to 1st series of tests (ČSN EN 15502-2-1, Art. 8.6.3.102)	Q_n	20	G 20	0	
	Q_m			0	
Special con. according to 2nd series of tests (ČSN EN 15502-2-1, Art. 8.6.3.102)	Q_n			0	
	Q_m			0	
Special con. according to 3ed series of tests (ČSN EN 15502-2-1, Art. 8.6.3.102)	Q_n			0	
	Q_m			0	
C_2 design boilers					
Test according to ČSN EN 15502-2-1, Art. 8.6.3.103, test a)	Q_n	20	G 20	0	
	Q_m			0	
Test according to ČSN EN 15502-2-1, Art. 8.6.3.103, test b)	Q_n	20	G 20	0	
	Q_m			0	
C_4 design boilers					
Test according to ČSN EN 15502-2-1, Art. 8.6.3.104	Q_n	20	G 20	0	
	Q_m			0	
C_5 design boilers					
Test according to ČSN EN 15502-2-1, Art. 8.6.3.105	Q_n	20	G 20	0	
	Q_m			0	
C_6 design boilers					
Test according to ČSN EN 15502-2-1, Art. 8.6.3.106	Q_n	20	G 20	0	
	Q_m			0	
C_7 design boilers					
Test according to ČSN EN 15502-2-1, Art. 8.6.3.107	Q_n	20	G 20	0	
	Q_m			0	
C_8 design boilers					
Test according to ČSN EN 15502-2-1, Art. 8.6.3.108	Q_n	20	G 20	0	
	Q_m			0	
$C_{(10)}$ design boilers					
Test according to ČSN EN 15502-2-1, Art. 8.6.3.109	Q_n	20	G 20	0	
	Q_m			0	
$C_{(11)}$ design boilers					
Test according to ČSN EN 15502-2-1, Art. 8.6.3.110	Q_n	20	G 20	0	
	Q_m			0	

B_2, B_3 design boilers					
Test according to ČSN EN 15502-2-1, Art. 8.6.3.111, test 1)	Q_n	20	G 20	+	
	Q_m			+	
Test according to ČSN EN 15502-2-1, Art. 8.6.3.111, test 2)	Q_n	20	G 20	+	
	Q_m			+	
B_5 design boilers					
Test according to ČSN EN 15502-2-1, Art. 8.6.3.112	Q_n	20	G 20	0	
	Q_m			0	
Reduction of the gas rate of the ignition burner					
Test according to ČSN EN 15502-1, Art. 8.6.4	Q_n	18,5	G 20	0	
	Q_m			0	
Resistance to draught, B design boilers					
Test according to ČSN EN 15502-2-1, Art. 8.6.101	Q_n	20	G 20	0	
	Q_m			0	

Note: + Requirement fulfilled
- Requirement not fulfilled
x Not assessed
0 Not applicable

b) Sample tested: ONGAS MEGA 13

Date of testing: 2019-03-06	t_{amb} = 20,5 °C	rel. humidity = 32,5 %	p_a = 985,7 mbar

Operating conditions	Heat input	Fuel supply pressure (mbar)	Test gas	Results	Note
Limit conditions					
Limit conditions according to Test No. 1 of ČSN EN 15502-1+A1, Art. 8.6.2	Q_n	14	G20	+	
	Q_m			+	
Limit conditions according to Test No. 2 of ČSN EN 15502-1+A1, Art. 8.6.2 and annex U.2	Q_n – 9%	17	G20	+	
	Q_m – 9%			+	
Limit conditions according to Test No. 3 of ČSN EN 15502-1+A1, Art. 8.6.2 and annex U.2	Q_n + 9 %	17	G20	+	
	Q_m + 9 %			+	
Limit conditions according to Test No. 4 of ČSN EN 15502-1+A1, Art. 8.6.2 and annex U.2	Q_n + 9 %	25	G20	+	
Limit conditions according to Test No. 5 of ČSN EN 15502-1+A1, Art. 8.6.2 and annex U.2	Q_n + 9 %	20	G20	+	
Special conditions					
C_1, C_3 and C_9 design boilers					
Special con. according to 1st series of tests (ČSN EN 15502-2-1, Art. 8.6.3.102)	Q_n	20	G 20	0	
	Q_m			0	

Operating conditions	Heat input	Fuel supply pressure (mbar)	Test gas	Results	Note
Special con. according to 2nd series of tests (ČSN EN 15502-2-1, Art. 8.6.3.102)	Q_n	20	G 20	0	
	Q_m			0	
Special con. according to 3ed series of tests (ČSN EN 15502-2-1, Art. 8.6.3.102)	Q_n	20	G 20	0	
	Q_m			0	
C_2 design boilers					
Test according to ČSN EN 15502-2-1, Art. 8.6.3.103, test a)	Q_n	20	G 20	0	
	Q_m			0	
Test according to ČSN EN 15502-2-1, Art. 8.6.3.103, test b)	Q_n	20	G 20	0	
	Q_m			0	
C_4 design boilers					
Test according to ČSN EN 15502-2-1, Art. 8.6.3.104	Q_n	20	G 20	0	
	Q_m			0	
C_5 design boilers					
Test according to ČSN EN 15502-2-1, Art. 8.6.3.105	Q_n	20	G 20	0	
	Q_m			0	
C_6 design boilers					
Test according to ČSN EN 15502-2-1, Art. 8.6.3.106	Q_n	20	G 20	0	
	Q_m			0	
C_7 design boilers					
Test according to ČSN EN 15502-2-1, Art. 8.6.3.107	Q_n	20	G 20	0	
	Q_m			0	
C_8 design boilers					
Test according to ČSN EN 15502-2-1, Art. 8.6.3.108	Q_n	20	G 20	0	
	Q_m			0	
$C_{(10)}$ design boilers					
Test according to ČSN EN 15502-2-1, Art. 8.6.3.109	Q_n	20	G 20	0	
	Q_m			0	
$C_{(11)}$ design boilers					
Test according to ČSN EN 15502-2-1, Art. 8.6.3.110	Q_n	20	G 20	0	
	Q_m			0	
B_2, B_3 design boilers					
Test according to ČSN EN 15502-2-1, Art. 8.6.3.111, test 1)	Q_n	20	G 20	+	
	Q_m			+	
Test according to ČSN EN 15502-2-1, Art. 8.6.3.111, test 2)	Q_n	20	G 20	+	
	Q_m			+	
B_5 design boilers					
Test according to ČSN EN 15502-2-1, Art. 8.6.3.112	Q_n	20	G 20	0	
	Q_m			0	
Reduction of the gas rate of the ignition burner					
Test according to ČSN EN 15502-1, Art. 8.6.4	Q_n	18,5	G 20	0	
	Q_m			0	

Resistance to draught, B design boilers					
Test according to ČSN EN 15502-2-1, Art. 8.6.101	Q_n	20	G 20	0	
	Q_m			0	

Note: + Requirement fulfilled
- Requirement not fulfilled
x Not assessed
0 Not applicable

Accredited test number: **T 001** Test title: **Adjusting, control and safety devices**

Testing method: ČSN EN 15502-1+A1:2017, Art. 7.3.3, 7.3.3.1, 7.3.3.2, 7.3.3.3, 7.3.3.3.2, 8.7, 8.9, 8.11, 8.11.1, 8.11.4, 8.11.4.1, 8.11.4.2, 8.11.5, 8.11.5.2, 8.11.5.2.1, 8.11.5.2.2, 8.11.6, 8.11.6.2, 8.11.6.2.1, 8.11.6.2.2, 8.11.6.2.4, 8.11.6.2.5, 8.11.7, 8.11.8, 8.11.8.1, 8.11.8.2, 8.11.8.2.1, 8.11.8.2.3
ČSN EN 15502-2-1+A1:2017, Art. 8.9.101, 8.11.101, 8.11.101.1, 8.11.101.3, 8.11.101.3.2, 8.11.101.3.3

Sample tested: ONGAS MEGA 05, ONGAS MEGA 13

Measuring equipment used: No. 1 - 6, 8 - 12

Test results:

Requirement	Specification of requirement	Test evaluation	Note
Performance	ČSN EN 15502-1 +A1:2017, Art. 7.3.3		
General Requirements: Under the test conditions as mentioned below, the opening and closing temperatures of the thermostats shall not differ from those stated by the manufacturer by more than 6 K. For adjustable thermostats, this requirement applies at the minimum and maximum temperatures of the control range.	ČSN EN 15502-1 +A1:2017, Art. 7.3.3.1	+	
Control thermostat – Endurance Requirements: Thermostats shall withstand an endurance test of 250 000 cycles under the test conditions as specified. At the end of the tests, their operation shall comply with the following requirements: — the switch point of a fixed setting thermostat shall be within ± 10 K of the temperature stated by the manufacturer; — for an adjustable thermostat, it shall be possible to select the switch point, to within ± 10 K of a temperature in the range as stated by the manufacturer.	ČSN EN 15502-1 +A1:2017, Art. 7.3.3.2	+ 0 +	
Water temperature limiting devices – Endurance	ČSN EN 15502-1+A1:2017, Art. 7.3.3.3		
Temperature limiters Requirements: Temperature limiters shall withstand an endurance test of 10 000 cycles under the test conditions as specified. At the end of the tests, their operation shall comply with the requirements of 7.3.3.1.	ČSN EN 15502-1 +A1:2017, Art. 7.3.3.3.1	0	
Overheat cut-out devices Requirements: The devices shall withstand an endurance test of 4 500 thermal cycles without activation and 500 cycles of locking and resetting, under the test conditions as specified. At the end of the tests, their operation shall comply with the requirements of 7.3.3.1. Under the test conditions, an interruption of the link between the sensor and the device responding to its signal shall result in at least safety shut-down.	ČSN EN 15502-1 +A1:2017, Art. 7.3.3.3.2	+ + +	

Requirement	Specification of requirement	Test evaluation	Note
Reduction of the gas pressure Requirements: Under the test conditions below, there shall be no dangerous situation for the user or damage to the boiler.	ČSN EN 15502-1 +A1:2017, Art. 8.7	+	
Defective closure of the gas valve immediately upstream of the main burner Requirements: Where the gas line is designed such that the gas supply to the ignition burner is taken from between the two main burner gas valves, it is checked under the test conditions below that no dangerous situation can arise in the event of defective closure of the gas valve immediately upstream of the main burner when the ignition burner is ignited.	ČSN EN 15502-1 +A1:2017, Art. 8.8	0	
Pre-purge	ČSN EN 15502-1+A1:2017, Art. 8.9		
General Requirements For fan-assisted boilers, pre-purge is mandatory before each ignition of the main burner (a single ignition attempt or several consecutive automatic ignition attempts) unless one of the following conditions is fulfilled: a) boilers with a permanent or alternating ignition burner; b) boilers in which the main burner gas line is fitted with a leakage control device; c) boilers above 0.25 kW and up to 150 kW, fitted with two Class C valves or a Class B and a Class J valve, which close simultaneously; d) boilers above 150 kW and up to 300kW, fitted with two Class B valves; e) boilers above 300 kW, fitted with two Class A valves; f) boilers below 70 kW satisfying 8.9.102 (Verification of the protected nature of a combustion chamber); g) boilers below 70 kW satisfying 8.9.103. (Verification of normal ignition in a combustible air/gas mixture for type C boilers incorporating a fan) This condition is only applicable for type C_{12} and C_{13} boilers. Pre-purge is always necessary after a safety shutdown or a lock out situation unless, when tested in accordance with the test sequence as described below, no hazard or damage occurs. The boiler is installed as indicated in 8.1.2. The boiler is supplied successively with each of the reference gases of the boiler category, at normal pressure. A series of tests is carried out with gas admitted to the boiler or module boiler at the maximum nominal heat input ($Q_{n,max}$) of the boiler or boiler module in the hot condition. The ignition sequence is deactivated. The first test is carried out by supplying gas for a period of 1 s after which the ignition sequence, including any delay times within the sequence, is activated. Subsequent tests are carried out by increasing the time up to the end of the time given by the sum of the TSE and the valve(s) closing time declared in the installation instructions. At the end of each period of time, the ignition sequence, including any delay times within the sequence, is activated. It is checked that the requirement for pre-purge under safety of operation is met. The pre-purge shall correspond to the values listed in the text below or as illustrated in table 103:	ČSN EN 15502-2-1+A1:2017, Art. 8.9.101	+ 0 0 0 0 + 0 0 + + + + +	

Requirement	Specification of requirement	Test evaluation	Note
h) For boilers or boiler modules with a nominal heat input (Q_n) not exceeding 70 kW. Under the following test conditions, the volume or the duration of the pre-purge shall be: 1) for boilers where the pre-purge air is induced over the whole cross section of the combustion chamber inlet: at least the volume of the combustion chamber or at least 5s at the air rate corresponding to the nominal heat input, 2) for other boilers: at least three times the volume of the combustion chamber or at least 15s at the air rate at the nominal heat input (Q_n). i) For boilers or boiler modules with a nominal heat input (Q_n) exceeding 70 kW: The pre-purge shall correspond to either: 1) a volume of at least three times the volume of the combustion chamber at an air rate of at least 40% of the air rate at the nominal heat input (Q_n), or 2) a time of: i) at least 30s at an air rate equal to at least the air rate at the nominal heat input (Q_n), or ii) a proportionally longer time when the air rate is between 40% of the air rate at nominal heat input and 100% of the air rate at nominal heat input (Q_n). For modular boilers, in which the products of combustion from each module vent into a common chamber before entering the flue system, the pre-purge at the time of each initial startup shall be at least three times the volume of the complete assembly of modules. When at least one module is already operating, the pre-purge for the startup of any other modules shall be that provided for the individual module. For modular boilers in which the products of combustion from each module vent directly into the flue system, the pre-purge shall be that provided for the individual module.	ČSN EN 15502-2-1+A1:2017, Art. 8.9.101	0 0 0 + 0 0 0 0	
Verification of the protected nature of a combustion chamber Requirements If the protected nature of a combustion chamber is claimed, then under the following test conditions it is checked that an ignition within the combustion chamber does not ignite a combustible mixture of air and gas outside the combustion chamber.	ČSN EN 15502-2-1+A1:2017 Art. 8.9.102	0	
Verification of normal ignition in a combustible air/gas mixture for type C boilers incorporating a fan If normal ignition in a combustible gas/air mixture for type C boilers incorporating a fan is claimed then under the following test conditions it is checked that ignition occurs correctly without deterioration of the boiler when the combustion chamber is first filled with a combustible air/gas mixture.	ČSN EN 15502-2-1+A1:2017 Art. 8.9.103	0	
Functioning of a permanent ignition burner when the fan stops during the standby time Requirements: Under the test conditions below, the flame stability of the ignition burner shall be correct.	ČSN EN 15502-1 +A1:2017, Art. 8.10	0	

Requirement	Specification of requirement	Test evaluation	Note
— The boiler is installed in accordance with the conditions of 8.1.2. The ignition burner is adjusted using the reference gases at the normal pressure in accordance with the manufacturer's instructions.	ČSN EN 15502-1 +A1:2017, Art. 8.10		
Adjustment, control and safety devices	ČSN EN 15502-1+A1:2017, Art. 8.11		
General Except where otherwise stated, the tests are carried out at ambient temperature and at the maximum temperature. The maximum temperature is that to which the device is subjected in the boiler, adjusted to the nominal heat input with the reference gas when thermal equilibrium is reached, with an adjustable thermostat or electronic temperature control system set to the position corresponding the maximum water temperature.	ČSN EN 15502-1 +A1:2017, Art. 8.11.1	+	
Boilers intended to be installed in a partially protected place For boilers intended to be installed in a partially protected place, the devices shall operate correctly at the temperatures to which they are subjected on the basis of: a) the "minimum declared installation temperature for boilers in partially protected places" (see definition); b) eventually the maximum ambient temperature declared by the manufacturer.	ČSN EN 15502-1 +A1:2017, Art. 8.11.2	0	
Safety of the domestic hot water circuit	ČSN EN 15502-1+A1:2017, Art. 8.11.3.1		
Instantaneous and storage types	ČSN EN 15502-1+A1:2017, Art. 8.11.3.1.1		
Soundness of parts containing domestic water Requirements Under the following test conditions, the parts containing domestic water shall withstand the test pressure without permanent distortion or soundness defects, with respect to the outside or the heating circuit.	ČSN EN 15502-1 +A1:2017, Art. 8.11.3.1.1.1	0	
Overheating of the domestic hot water by the heating circuit Requirements Under the following test conditions, the domestic hot water temperature shall not exceed 95 °C.	ČSN EN 15502-1 +A1:2017, Art. 8.11.3.1.1.2	0	
Failure of the domestic hot water temperature control device Requirements For boilers in which the sanitary water circuit is not in contact with the combustion products, with normal control out of operation and according to the option chosen, at least the requirement relating to the temperature limiter (see 8.11.8.2.2 Test no.1) or the overheat cut-out device (see 8.11.8.2.3 Test no.1 or nr.2 – depending of the used option) shall be met. For boilers in which the sanitary water circuit does come into total or partial contact with the combustion products, the temperature limiter shall at least cause safety shutdown before the tap water reaches a temperature of 100 °C.	ČSN EN 15502-1 +A1:2017, Art. 8.11.3.1.1.3	0	
Instantaneous type	ČSN EN 15502-1+A1:2017, Art. 8.11.3.1.2		
Maximum temperature of the domestic hot water Requirements Under the test conditions below, the domestic hot water temperature shall not exceed 95 °C.	ČSN EN15502-1 +A1:2017, Art. 8.11.3.1.2.1	0	

Requirement	Specification of requirement	Test evaluation	Note
Overheating of the domestic hot water Requirements Under the test below conditions, the domestic hot water temperature shall not exceed 95 °C.	ČSN EN15502-1 +A1:2017, Art. 8.11.3.1.2.2	0	
Control devices	ČSN EN 15502-1+A1:2017, Art. 8.11.4		
Rotary knob Requirements: Under the test conditions below, the operating torque of a knob shall not exceed 0,6 N.m or 0,017 N.m/mm of knob diameter.	ČSN EN 15502-1 +A1:2017, Art. 8.11.4.1	+	
Push-button Requirements: Under the below test conditions the force required to open and/or to keep open the closure element shall not exceed 45 N or 0,5 N/mm^2 of the area of the button.	ČSN EN 15502-1 +A1:2017, Art. 8.11.4.2	+	
Ignition devices	ČSN EN 15502-1+A1:2017, Art. 8.11.5		
Manual ignition device for the ignition burner Requirements: Under the test conditions below, at least half the manual ignition attempts shall result in correct ignition of the ignition burner. The effectiveness of the ignition device shall be independent of the operating speed and sequence. The operation of manually operated electrical ignition devices shall remain satisfactory at the maximum temperature to which they are subjected in the boiler and when the voltage is varied between 0,85 times and 1,1 times the nominal voltage and under any combination of these conditions. The supply of gas to the main burner shall only be permitted after detection of the ignition burner flame.	ČSN EN 15502-1 +A1:2017, Art. 8.11.5.1	0	
Automatic ignition system for the ignition burner and main burner	ČSN EN 15502-1+A1:2017, Art. 8.11.5.2		
General Ignition shall be effected within a maximum of 5 automatic ignition attempts. Each ignition attempt starts with the opening of the valve(s) and ends either by detecting flame or by closing of the gas valve(s).	ČSN EN 15502-1 +A1:2017, Art. 8.11.5.2.1	+	
Ignition Requirements: Under the test conditions below, ignition devices shall ensure safe ignition. The ignition system shall be activated at the latest at the same time as the signal to open the valve(s). The ignition shall continue at least to the moment flame is sensed but not exceeding the end of the T_{SA} . If flame sensing can be influenced by ignition, interruption of ignition is allowed to check availability of flame signal.	ČSN EN 15502-1 +A1:2017, Art. 8.11.5.2.2	+ + + 0	
Ignition burner Requirements: Under the test conditions below, the heat input of any ignition burner that remains alight when the main burner is extinguished shall not exceed 0,250 kW. The signal to open the gas supply to the main burner shall only be given after the ignition burner flame has been detected.	ČSN EN 15502-1 +A1:2017, Art. 8.11.5.3	0	

Flame supervision device	ČSN EN 15502-1+A1:2017, Art. 8.11.6		
Thermoelectric device	ČSN EN 15502-1+A1:2017, Art. 8.11.6.1		
Ignition opening time (T_{1A}) Requirements: Under the test conditions below, the T_{IA} of a permanent ignition burner shall not exceed 30 s. This time can be raised to 60 s if no manual intervention is required during it.	ČSN EN 15502-1 +A1:2017, Art. 8.11.6.1.1	0	
Extinction delay time (T_{1E}) Requirements: Under the test conditions below, the extinction delay time of a thermoelectric flame supervision device shall not exceed: a) 60 s if $Q_n \leq 35$ kW; b) 45 s if $Q_n > 35$ kW. When a safety device acts on the thermoelectric flame supervision device, closure shall occur without delay.	ČSN EN 15502-1 +A1:2017, Art. 8.11.6.1.2	0	
Automatic burner control system	ČSN EN 15502-1+A1:2017, Art. 8.11.6.2		
Ignition safety time (T_{SA}) Requirements: The T_{SA} is stated by the manufacturer. If the heat input of the ignition burner does not exceed 0,250 kW, there is no requirement in respect of the T_{SA}. Where the heat input of the ignition burner is between 0,250 kW and 1 kW, there is no requirement in respect of T_{SA} if suitable evidence is given by the manufacturer that no dangerous situation for the user or damage to the boiler occurs. In all other cases, the T_{SA} is chosen by the manufacturer in accordance with 8.11.6.2.5 (Delayed ignition) However, a delayed ignition test is not necessary if the T_{SA}, determined under the test conditions below, complies with the following requirement: for $Q_n \leq 150$ kW: $T_{SA} \leq 5 \cdot \frac{Q_n}{Q_{ign}}$ seconds but without exceeding 10 s; for $Q_n > 150$ kW: $T_{SA} \leq \cdot \frac{5 \times 150}{Q_{ign}}$ seconds but without exceeding 10 s where Qn is the nominal input in kW; Q_{ign} is the ignition rate in kW. Where several automatic ignition attempts are made without being followed by a purge corresponding to 8.9, the sum of the duration of the ignition attempts shall comply with the above requirement for T_{SA}. Where several automatic ignition attempts are made followed by a purge corresponding to 8.9 the ignition safety time shall be less than T_{SA} for each attempt. For B_{11} and B_{11BS} boilers with several automatic ignition attempts, a waiting time of at least 30 s between the attempts is required. When these boilers burn gases with relative densities greater than 1,0, the maximum number of ignition attempts is 2. When these boilers burn gases with relative densities less than 1,0, the maximum number of ignition attempts is 5.	ČSN EN 15502-1 +A1:2017, Art. 8.11.6.2.1	+ 0 0 + 0 + 0 + 0	

Extinction safety time (T_{SE}) Requirements: Under the test conditions below, unless spark restoration occurs, the extinction safety time of the ignition burner and main burner shall not exceed, for heat inputs: a) ≤ 70 kW 5 s b) > 70 kW 3 s	ČSN EN 15502-1 +A1:2017, Art. 8.11.6.2.2	0 +	
Spark restoration Requirements: If spark restoration takes place, under the test conditions below, the ignition device shall be re-energised within a maximum time of 1 s after the disappearance of the flame signal. In this case the T_{SA} is the same as is used for ignition and it starts when the ignition device is energised.	ČSN EN 15502-1 +A1:2017, Art. 8.11.6.2.3	0	
Recycling Requirements: If recycling takes place, under the test conditions below, this shall be preceded by an interruption of the gas supply; the ignition sequence shall restart from the beginning. In this case, the T_{SA} is the same as is used for ignition and starts when the ignition device is energised.	ČSN EN 15502-1 +A1:2017, Art. 8.11.6.2.4	+	
Delayed ignition Requirements: Under the test conditions below, there shall be no deterioration of the boiler, no hazard to the user. The test as stated below is repeated with the delay starting at one second and increased by one second each time up to a maximum of T_{SA}.	ČSN EN 15502-1 +A1:2017, Art. 8.11.6.2.5	+	
Gas pressure regulator Requirements: Under the test conditions below, the gas rate of boilers fitted with a regulator shall not differ from the gas rate obtained at normal pressure by more than: a) 7,5 % and - 10 % for first family gases; b) + 5 % and - 7,5 % for second family gases without a pressure couple; c) ± 5 % for second and third family gases with a pressure couple; d) ± 5 % for third family gases without a pressure couple. In the case where boilers, using gases of the second and third family without a pressure couple, do not meet the requirements between p_n and p_{min}, these boilers shall meet the requirements for a boiler without a Gas pressure regulator, for this pressure range.	ČSN EN 15502-1 +A1:2017, Art. 8.11.7	0 0 + 0 0	
Thermostats and water temperature limiting devices	ČSN EN 15502-1+A1:2017, Art. 8.11.8		
Water control thermostats For electronic temperature control systems, the terms: a) fixed setting thermostat should be read as fixed control temperature setpoint; b) adjustable thermostat should be read as adjustable control temperature setpoint. Requirements: Under the test conditions below, a) the maximum water temperature of boilers fitted with a fixed setting thermostat shall be within ± 10 K of the	ČSN EN 15502-1 +A1:2017, Art. 8.11.8.1	0	

temperature stated by the manufacturer; b) for boilers fitted with an adjustable thermostat, it shall be possible to select, to within ± 10 K, the water flow temperatures stated by the manufacturer; c) the flow temperature shall not exceed the maximum temperature declared by the manufacturer; however, when the control thermostat is located on the return, this requirement may be met by action of the temperature limiter located on the water flow.		+ +	
Water temperature limiting devices	ČSN EN 15502-1+A1:2017, Art. 8.11.8.2		
Inadequate water circulation Requirements: No deterioration of the boiler shall occur under the test conditions below. This requirement does not apply to boilers intended exclusively for a central heating system with an open expansion vessel.	ČSN EN 15502-1 +A1:2017, Art. 8.11.8.2.1	+	
Overheating of boilers of pressure classes 1 and 2 For electronic temperature control systems, the terms: a) control thermostat should be read as control temperature set point; b) temperature limiter should be read as temperature limit set point; c) overheat cut-out device should be read as overheat cut-out set point. Requirements: Under the test conditions below (Test no 1) the temperature limiter shall cause safety shutdown before the water flow temperature exceeds the preset value (See 5.7.8.3). Under the test conditions of below (Test no 2) the overheat cut-out device shall cause non-volatile lockout of the boiler before a situation occurs that is dangerous to the user or capable of damaging the boiler.	ČSN EN 15502-1 +A1:2017, Art. 8.11.8.2.2	0	
Overheating of boilers of pressure class 3 For electronic temperature control systems, the terms: a) control thermostat should be read as control temperature set point; b) temperature limiter should be read as temperature limit set point; c) overheat cut-out device should be read as overheat cut-out set point. **Test no 1** Requirements for Test no 1: Under the test conditions below (Test no 1) the temperature limiter shall cause safety shutdown before the water flow temperature exceeds the preset value. **Test no 2** Requirements for Test **no 2**: Under the test conditions of below (Test no 2) **the overheat cut-out device shall cause non-volatile lockout** of the boiler before a situation occurs that is dangerous to the user or capable of damaging the boiler or if the temperature exceeds 110 °C. **Test no 3** Requirements for Test **no 3**: Under the test conditions of below (Test no 3) **the overheat cut-out device shall cause non-volatile lockout** of the boiler before the temperature exceeds 110 °C.	ČSN EN 15502-1 +A1:2017, Art. 8.11.8.2.3	+ + +	

Air proving device	ČSN EN 15502-2-1+A1:2017, Art. 8.11.101		
General Depending on the principle of air proving, the applicable requirements are described in the clauses below. The boiler is installed as stated in 8.1.2.1. The boiler is supplied with one of the reference gases for the category to which it belongs. The boiler is fitted with the longest combustion air supply and combustion products evacuation ducts stated in the installation instructions. The tests may be carried out without the terminal or fitting piece. The CO concentration is determined as stated in 8.12.1.	ČSN EN 15502-2-1+A1:2017, Art. 8.11.101.1	+	
Supervision of the combustion air rate or the combustion products rate Requirements At a reduced flow rate the CO concentration (dry, air-free) may not exceed a specific value. The following methods of flow reduction are to be examined: a) Progressive blockage of the air inlet; b) Progressive blockage of the combustion products evacuation ducts; c) Progressive reduction of the fan speed, for example by reduction of the fan voltage. There are two alternative supervision strategies for the air proving; a start up supervision or a continuous supervision. Based on the supervision strategy the boiler shall at a reduced flow rate meet one of the following two requirements: d) Continuous supervision: Shutdown before the CO concentration exceeds 0,2 %, or e) Start up supervision: Not start if the CO concentration exceeds 0,1 %.	ČSN EN 15502-2-1+A1:2017, Art. 8.11.101.2	0	
Gas/air ratio controls	ČSN EN 15502-2-1+A1:2017, Art. 8.11.101.3		
Leakage of control tubes Requirements When control tubes are not made of metal or of other materials with at least equivalent properties, their disconnection, breakage or leakage shall not lead to an unsafe situation. This implies either locking out or safe operation with no leakage of gas outside the boiler.	ČSN EN 15502-2-1+A1:2017, Art. 8.11.101.3.1	0	
Supervision of the combustion air rate or the combustion products rate Requirements At a reduced flow rate the CO concentration may not exceed a specific value. The following methods of flow reduction are to be examined: a) Progressive blockage of the air inlet; b) Progressive blockage of the combustion products evacuation ducts; c) If internal recirculation can occur then an additional test must be carried out by progressive reduction of the fan speed, for example by reduction of the fan voltage. There are two alternative supervision strategies for the air proving; a start up supervision or a continuous supervision. Based on the supervision strategy the boiler shall at a reduced flow rate meet one of the following two requirements:	ČSN EN 15502-2-1+A1:2017, Art. 8.11.101.3.2	+ + + 0	

d) Continuous supervision: Shutdown before the CO concentration (dry, air free) exceeds: 1) 0,20 % over the range of modulation specified in the installation instructions), or 2) CO_{mes} x Q / Q_{KB} ≤ 0,20% below the minimum rate of the modulation range. *where:* — Q is the instantaneous heat input, in kW; — Q_{KB} is the heat input at the minimum rate, in kW; — CO_{mes} is the measured CO concentration (dry, air free). e) Start up supervision: Not start if the CO concentration (dry, air free) exceeds 0,1 %.		+ 0 0	
Adjustment of the gas/air ratio Requirements The installation instructions shall declare (see 12.2.1.2.d) values which give rise to minimum and maximum CO_2 levels between which no adjustment action is required. If the gas/air ratio is adjustable for CO_2 the test of 8.11.101.3.2 shall be repeated at the test conditions below.	ČSN EN 15502-2-1+A1:2017, Art. 8.11.101.3.3	+ +	
Functioning of the fan of a type C_4 boiler Requirements For type C_{42} and C_{43} boilers, when controlled shutdown or safety shutdown occurs, the fan shall stop after any post-purge. If the boiler is fitted with a permanent or alternating ignition burner, it is permissible for the fan to function at the lowest speed corresponding to the flow which is necessary for the ignition burner.	ČSN EN 15502-2-1+A1:2017, Art. 8.11.101.4	0 0	

Note: + Requirement fulfilled x Not assessed
- Requirement not fulfilled 0 Not applicable

Measurement results:

a) Sample tested: ONGAS MEGA 05

Date of testing: 2019-03-19	t_{amb} = 21,7 °C	rel. humidity = 31,2 %	p_a = 980,9 mbar

Required properties	Test result	Note
Performance ČSN EN 15502-1+A1:2017, Art. 7.3.3		
General		
ČSN EN 15502-1+A1, Art. 7.3.3.1	+	EU Declaration of Conformity No. 2018/13 of 2018-04-23 for boiler management systems types LMS14.xxx.B1yy, LMS14.xxx.B2yy LMS14.xxx.B3yy, LMS14.xxx.C3yy made by Siemens AG, BT CPS
Control thermostat – Endurance		
ČSN EN 15502-1+A1, Art. 7.3.3.2	+	EU Declaration of Conformity No. 2018/13 of 2018-04-23 for boiler management systems types LMS14.xxx.B1yy, LMS14.xxx.B2yy LMS14.xxx.B3yy, LMS14.xxx.C3yy made by Siemens AG, BT CPS

Required properties	Test result	Note
Water temperature limiting devices – Endurance		
Temperature limiters		
ČSN EN 15502-1+A1, Art. 7.3.3.3.1	0	
Overheat cut-out devices		
ČSN EN 15502-1+A1, Art. 7.3.3.3.2	+	EU Declaration of Conformity No. 2018/13 of 2018-04-23 for boiler management systems types LMS14.xxx.B1yy, LMS14.xxx.B2yy LMS14.xxx.B3yy, LMS14.xxx.C3yy made by Siemens AG, BT CPS

Note: + Requirement fulfilled x Not assessed
- Requirement not fulfilled 0 Not applicable

Operating conditions	Heat input	Fuel supply pressure (mbar)	Test gas	Results	Note
Fuel pressure reduction					
Test according to ČSN EN 15502-1+A1, Art. 8.7	Q_n	14, 13 ... 0	G 20	+	The boiler switches off after supply pressure drops below 10 mbar.
Defective closure of the gas valve immediately upstream of the main burner					
Test according to ČSN EN 15502-1+A1, Art. 8.8	Q_n	20	G 20	0	

Note: + Requirement fulfilled x Not assessed Q_n rated heat input, Q_m minimum heat input
- Requirement not fulfilled 0 Not applicable

Required properties	Test result	Note
General		
Test according to ČSN EN 15502-2-1, Art. 8.9.101 paragraph i) point 1)	0	
Test according to ČSN EN 15502-2-1, Art. 8.9.101 paragraph i) point 2)i)	+	Measured pre-purge time was 51 seconds at the air rate at the nominal heat input (Q_n). Together are performed three consecutive automatic ignition attempts.
Verification of protected combustion chamber		
ČSN EN 15502-2-1, Art. 8.9.102	0	
Verification of normal ignition in a combustible air/gas mixture for type C boilers incorporating a fan		
ČSN EN 15502-2-1, Art. 8.9.103	0	
Functioning of a permanent ignition burner when the fan stops during the standby time		
Test according to ČSN EN 15502-1+A1, Art. 8.10	0	
Soundness of parts containing domestic water		
ČSN EN 15502-1+A1, Art. 8.11.3.1.1.1	0	
Overheating of the domestic hot water by the heating circuit		
ČSN EN 15502-1+A1, Art. 8.11.3.1.1.2	0	
Failure of the domestic hot water temperature control device		
ČSN EN 15502-1+A1, Art. 8.11.3.1.1.3	0	

Required properties	Test result	Note
Maximum temperature of the domestic hot water		
ČSN EN 15502-1+A1, Art. 8.11.3.1.2.1	0	
Overheating of the domestic hot water		
ČSN EN 15502-1+A1, Art. 8.11.3.1.2.2	0	
Control devices		
Test according to ČSN EN 15502-1+A1, Art. 8.11.4.1	+	The operating torque of the manual rotary knobs didn't exceed 0.6 N.m or 0,017N.m per 1 mm of the knob diameter.
Test according to ČSN EN 15502-1+A1, Art. 8.11.4.2	+	The force required to open and/or to keep open the closure element didn't exceed 45 N or 0,5 N per 1 mm^{-2} of the area of the button.
Ignition devices		
Manual ignition device for the ignition burner		
ČSN EN 15502-1+A1, Art. 8.11.5.1	0	
Automatic ignition system for the ignition burner and main burner		
General		
ČSN EN 15502-1+A1, Art. 8.11.5.2.1	+	EU Declaration of Conformity No. 2018/13 of 2018-04-23 for boiler management systems types LMS14.xxx.B1yy, LMS14.xxx.B2yy LMS14.xxx.B3yy, LMS14.xxx.C3yy made by Siemens AG, BT CPS
Ignition		
ČSN EN 15502-1+A1, Art. 8.11.5.2.2	+	Ignition devices ensures safe ignition. EU Declaration of Conformity No. 2018/13 of 2018-04-23 for boiler management systems types LMS14.xxx.B1yy, LMS14.xxx.B2yy LMS14.xxx.B3yy, LMS14.xxx.C3yy made by Siemens AG, BT CPS
ČSN EN 15502-1+A1, Art. 8.11.5.3	0	
Flame supervision device		
Thermoelectric device		
Ignition opening time (T_{IA})		
ČSN EN 15502-1+A1, Art. 8.11.6.1.1	0	
Extinction delay time (T_{IE})		
ČSN EN 15502-1+A1, Art. 8.11.6.1.2	0	
Automatic burner control system		
Ignition safety time (T_{SA})		
ČSN EN 15502-1+A1, Art. 8.11.6.2.1	+	Measured value of ignition safety time (T_{SA}) was 3,9 s.
Extinction safety time (T_{SE})		
ČSN EN 15502-1+A1, Art. 8.11.6.2.2	+	Measured value of extinction safety time (T_{SE}) was 1,0 s.
Spark restoration		
ČSN EN 15502-1+A1, Art. 8.11.6.2.3	0	
Recycling		
ČSN EN 15502-1+A1, Art. 8.11.6.2.4	+	Recycling is preceded by an interruption of the gas supply; the ignition sequence restarts from the beginning. The ignition safety time T_{SA} is the same as is used for ignition.

Required properties	Test result	Note
		EU Declaration of Conformity No. 2018/13 of 2018-04-23 for boiler management systems types LMS14.xxx.B1yy, LMS14.xxx.B2yy LMS14.xxx.B3yy, LMS14.xxx.C3yy made by Siemens AG, BT CPS
Delayed ignition		
ČSN EN 15502-1+A1, Art. 8.11.6.2.5	+	There was no deterioration of the boiler, no hazard to the user. EU Declaration of Conformity No. 2018/13 of 2018-04-23 for boiler management systems types LMS14.xxx.B1yy, LMS14.xxx.B2yy LMS14.xxx.B3yy, LMS14.xxx.C3yy made by Siemens AG, BT CPS
Gas governor		
ČSN EN 15502-1+A1, Art. 8.11.7	+	The gas rate of boiler didn´t differ from the gas rate obtained at normal pressure by more than fixed limits.
Thermostats and water temperature limiting devices		
Water control thermostats		
ČSN EN 15502-1+A1, Art. 8.11.8.1	+	It is possible to select, to within ± 10 K, the water flow temperatures stated by the manufacturer. The maximum adjustable boiler flow temperature is 80 °C. The maximum measured boiler flow temperature at this adjustment was 83,1 °C. After the flow temperature had reached this value, the boiler was turned off through the control thermostat.
Water temperature limiting devices		
Inadequate water circulation		
ČSN EN 15502-1+A1, Art. 8.11.8.2.1	0	
Overheating of boilers of pressure classes 1 and 2		
ČSN EN 15502-1+A1, Art. 8.11.8.2.2	0	
Overheating of Boilers of pressure class 3		
ČSN EN 15502-1+A1, Art. 8.11.8.2.3	+	The overheat cut-out device caused non-volatile lockout of the boiler. The situation wasn't dangerous to the user and wasn't capable of damaging the boiler. **The mechanical safety device** causes the boiler shut-down at **99,6 °C**. **Boiler was permanently blocked.** For unblocking it is necessary press button "RESET". Limiting thermostat is set up to 105 °C.
Air proving device		
General		
ČSN EN 15502-2-1, Art. 8.11.101.1	+	
Supervision of the combustion air rate or the combustion products rate		
ČSN EN 15502-2-1, Art. 8.11.101.2	0	
Gas/air ratio controls		
Supervision of the combustion air rate or the combustion products rate		
ČSN EN 15502-2-1, Art. 8.11.101.3.2	+	The fuel supply will close before the concentration of CO exceeds 0,20%. a) The maximum concentration of CO was reached by blockage 70% of the air inlet. The maximum value of CO was 0,0138 % (at n=1). b) The maximum concentration of CO was reached by blockage 30% of the flue gas discharge. The maximum of CO was 0,0168 %.
Adjustment of the gas/air ratio		
ČSN EN 15502-2-1, Art. 8.11.101.3.3	+	The fuel supply will close before the concentration of CO exceeds 0,20%.

Required properties	Test result	Note
Functioning of the fan of a type C_4 boiler		
ČSN EN 15502-2-1, Art. 8.11.101.4	0	

Note: + Requirement fulfilled
- Requirement not fulfilled
x Not assessed
0 Not applicable

b) Sample tested: ONGAS MEGA 13

Date of testing: 2019-03-05	t_{amb} = 20,8 °C	rel. humidity = 28,9 %	p_a = 973,1 mbar

Required properties	Test result	Note
Performance ČSN EN 15502-1+A1:2017, Art. 7.3.3		
General		
ČSN EN 15502-1+A1, Art. 7.3.3.1	+	EU Declaration of Conformity No. 2018/13 of 2018-04-23 for boiler management systems types LMS14.xxx.B1yy, LMS14.xxx.B2yy LMS14.xxx.B3yy, LMS14.xxx.C3yy made by Siemens AG, BT CPS
Control thermostat – Endurance		
ČSN EN 15502-1+A1, Art. 7.3.3.2	+	EU Declaration of Conformity No. 2018/13 of 2018-04-23 for boiler management systems types LMS14.xxx.B1yy, LMS14.xxx.B2yy LMS14.xxx.B3yy, LMS14.xxx.C3yy made by Siemens AG, BT CPS
Water temperature limiting devices – Endurance		
Temperature limiters		
ČSN EN 15502-1+A1, Art. 7.3.3.3.1	0	
Overheat cut-out devices		
ČSN EN 15502-1+A1, Art. 7.3.3.3.2	+	EU Declaration of Conformity No. 2018/13 of 2018-04-23 for boiler management systems types LMS14.xxx.B1yy, LMS14.xxx.B2yy LMS14.xxx.B3yy, LMS14.xxx.C3yy made by Siemens AG, BT CPS

Note: + Requirement fulfilled
- Requirement not fulfilled
x Not assessed
0 Not applicable

Operating conditions	Heat input	Fuel supply pressure (mbar)	Test gas	Results	Note
Fuel pressure reduction					
Test according to ČSN EN 15502-1+A1, Art. 8.7	Q_n	14, 13 ... 0	G 20	+	The boiler switches off after supply pressure drops below 10 mbar.
Defective closure of the gas valve immediately upstream of the main burner					
Test according to ČSN EN 15502-1+A1, Art. 8.8	Q_n	20	G 20	0	

Note: + Requirement fulfilled
- Requirement not fulfilled
x Not assessed
0 Not applicable
Q_n rated heat input, Q_m minimum heat input

Required properties	Test result	Note
General		
Test according to ČSN EN 15502-2-1, Art. 8.9.101 paragraph i) point 1)	0	
Test according to ČSN EN 15502-2-1, Art. 8.9.101 paragraph i) point 2)i)	+	Measured pre-purge time was 53,0 seconds at the air rate at the nominal heat input (Q_n). Together are performed three consecutive automatic ignition attempts.
Verification of protected combustion chamber		
ČSN EN 15502-2-1, Art. 8.9.102	0	
Verification of normal ignition in a combustible air/gas mixture for type C boilers incorporating a fan		
ČSN EN 15502-2-1, Art. 8.9.103	0	
Functioning of a permanent ignition burner when the fan stops during the standby time		
Test according to ČSN EN 15502-1+A1, Art. 8.10	0	
Soundness of parts containing domestic water		
ČSN EN 15502-1+A1, Art. 8.11.3.1.1.1	0	
Overheating of the domestic hot water by the heating circuit		
ČSN EN 15502-1+A1, Art. 8.11.3.1.1.2	0	
Failure of the domestic hot water temperature control device		
ČSN EN 15502-1+A1, Art. 8.11.3.1.1.3	0	
Maximum temperature of the domestic hot water		
ČSN EN 15502-1+A1, Art. 8.11.3.1.2.1	0	
Overheating of the domestic hot water		
ČSN EN 15502-1+A1, Art. 8.11.3.1.2.2	0	
Control devices		
Test according to ČSN EN 15502-1+A1, Art. 8.11.4.1	+	The operating torque of the manual rotary knobs didn't exceed 0.6 N.m or 0,017N.m per 1 mm of the knob diameter.
Test according to ČSN EN 15502-1+A1, Art. 8.11.4.2	+	The force required to open and/or to keep open the closure element didn't exceed 45 N or 0,5 N per 1 mm^{-2} of the area of the button.
Ignition devices		
Manual ignition device for the ignition burner		
ČSN EN 15502-1+A1, Art. 8.11.5.1	0	
Automatic ignition system for the ignition burner and main burner		
General		
ČSN EN 15502-1+A1, Art. 8.11.5.2.1	+	EU Declaration of Conformity No. 2018/13 of 2018-04-23 for boiler management systems types LMS14.xxx.B1yy, LMS14.xxx.B2yy LMS14.xxx.B3yy, LMS14.xxx.C3yy made by Siemens AG, BT CPS

Ignition		
ČSN EN 15502-1+A1, Art. 8.11.5.2.2	+	Ignition devices ensures safe ignition. EU Declaration of Conformity No. 2018/13 of 2018-04-23 for boiler management systems types LMS14.xxx.B1yy, LMS14.xxx.B2yy LMS14.xxx.B3yy, LMS14.xxx.C3yy made by Siemens AG, BT CPS
ČSN EN 15502-1+A1, Art. 8.11.5.3	0	
Flame supervision device		
Thermoelectric device		
Ignition opening time (T_{IA})		
ČSN EN 15502-1+A1, Art. 8.11.6.1.1	0	
Extinction delay time (T_{IE})		
ČSN EN 15502-1+A1, Art. 8.11.6.1.2	0	
Automatic burner control system		
Ignition safety time (T_{SA})		
ČSN EN 15502-1+A1, Art. 8.11.6.2.1	+	Measured value of ignition safety time (T_{SA}) was 3,5 s.
Extinction safety time (T_{SE})		
ČSN EN 15502-1+A1, Art. 8.11.6.2.2	+	Measured value of extinction safety time (T_{SE}) was 0,9 s.
Spark restoration		
ČSN EN 15502-1+A1, Art. 8.11.6.2.3	0	
Recycling		
ČSN EN 15502-1+A1, Art. 8.11.6.2.4	+	Recycling is preceded by an interruption of the gas supply; the ignition sequence restarts from the beginning. The ignition safety time T_{SA} is the same as is used for ignition. EU Declaration of Conformity No. 2018/13 of 2018-04-23 for boiler management systems types LMS14.xxx.B1yy, LMS14.xxx.B2yy LMS14.xxx.B3yy, LMS14.xxx.C3yy made by Siemens AG, BT CPS
Delayed ignition		
ČSN EN 15502-1+A1, Art. 8.11.6.2.5	+	There was no deterioration of the boiler, no hazard to the user. EU Declaration of Conformity No. 2018/13 of 2018-04-23 for boiler management systems types LMS14.xxx.B1yy, LMS14.xxx.B2yy LMS14.xxx.B3yy, LMS14.xxx.C3yy made by Siemens AG, BT CPS
Gas governor		
ČSN EN 15502-1+A1, Art. 8.11.7	+	The gas rate of boiler didn´t differ from the gas rate obtained at normal pressure by more than fixed limits.
Thermostats and water temperature limiting devices		
Water control thermostats		
ČSN EN 15502-1+A1, Art. 8.11.8.1	+	It is possible to select, to within ± 10 K, the water flow temperatures stated by the manufacturer. The maximum adjustable boiler flow temperature is 80 °C. The maximum measured boiler flow temperature at this adjustment was 86,3 °C. After the flow temperature had reached this value, the boiler was turned off through the control thermostat.
Water temperature limiting devices		
Inadequate water circulation		
ČSN EN 15502-1+A1, Art. 8.11.8.2.1	0	

Overheating of boilers of pressure classes 1 and 2		
ČSN EN 15502-1+A1, Art. 8.11.8.2.2	0	
Overheating of Boilers of pressure class 3		
ČSN EN 15502-1+A1, Art. 8.11.8.2.3	0	The overheat cut-out device caused non-volatile lockout of the boiler. The situation wasn't dangerous to the user and wasn't capable of damaging the boiler. **The mechanical safety device** causes the boiler shut-down at **107,3 °C. Boiler was permanently blocked.** For unblocking it is necessary press button "RESET". Limiting thermostat is set up to 105 °C.
Air proving device		
General		
ČSN EN 15502-2-1, Art. 8.11.101.1	+	
Supervision of the combustion air rate or the combustion products rate		
ČSN EN 15502-2-1, Art. 8.11.101.2	0	
Gas/air ratio controls		
Supervision of the combustion air rate or the combustion products rate		
ČSN EN 15502-2-1, Art. 8.11.101.3.2	+	The fuel supply will close before the concentration of CO exceeds 0,20%. a) The maximum concentration of CO was reached by 50% blockage of the air inlet. The maximum value of CO was 0,0167 % (at n=1). b) The maximum concentration of CO was reached by 30% blockage of the flue gas discharge. The maximum of CO was 0,0169 %.
Adjustment of the gas/air ratio		
ČSN EN 15502-2-1, Art. 8.11.101.3.3	+	The fuel supply will close before the concentration of CO exceeds 0,20%.
Functioning of the fan of a type C_4 boiler		
ČSN EN 15502-2-1, Art. 8.11.101.4	0	

Note: + Requirement fulfilled
- Requirement not fulfilled
x Not assessed
0 Not applicable

Accredited test number: **T 001** Test title: **Combustion efficiency**

Testing method:	ČSN EN 15502-1+A1:2017, Art. 8.12, 8.12.1, 8.12.3, 8.12.3.1, 8.12.3.2, 8.12.3.3, 8.12.5, 8.13, 8.13.1, 8.13.2.1.,8.13.2.6 ČSN EN 15502-2-1+A1:2017, Art. 8.12.2, 8.12.2.101, 8.12.2.102, 8.12.3.1, 8.12.3.101, 8.12.3.101.10
Sample tested:	ONGAS MEGA 05, ONGAS MEGA 13
Measuring equipment used:	No. 1 – 7, 9, 10, 12, 14

Test results:

Requirement	Specification of requirement	Test evaluation	Note
Carbon monoxide	ČSN EN 15502-1+A1:2017, Art. 8.12		
General Requirements: The CO concentration in the dry, air-free, products of combustion shall not exceed the values stated in 8.12.2 and 8.12.3.	ČSN EN 15502-1 +A1:2017, Art. 8.12.1	+	
Limit conditions	ČSN EN 15502-2-1+A1:2017, Art. 8.12.2		
Requirements: Under the test conditions below, the CO concentration shall not exceed 0,10 %.	ČSN EN 15502-2-1 +A1:2017, Art. 8.12.2.101	+	
Boilers using Gas/air Ratio Controls Appliances using gas/air ratio control systems are subjected to the following tests. The CO and CO_2 concentrations are measured: a) The gas/air ratio control is adjusted in accordance with the technical instructions (or left as factory set if the control is not adjustable). The boiler or boiler module is operated at both maximum and minimum heat input allowed by the controls; b) Simulate reasonable maladjustment of any adjustable "throttle" setting by adjusting the CO_2 at maximum rate to be 0.5% higher than the maximum value to which the gas/air ratio control should be set. For gas/air ratio controls that are adjustable then the maximum value shall include the maximum extent of the setting tolerance. For non - adjustable gas/air ratio controls the maximum value shall include the maximum extent of the factory setting tolerance. Following this adjustment, the boiler or boiler module is operated at both maximum and minimum heat input allowed by the controls; c) Simulate reasonable maladjustment of any adjustable "offset" setting by measuring the gas/air ratio control differential pressure (with the boiler operating at minimum rate) and adjusting the offset screw sufficiently to increase the differential pressure by 5 Pa. Following this adjustment, the appliance is again operated at both maximum and minimum heat input allowed by the control system. The tests are repeated by adjusting the offset screw sufficiently to decrease the differential pressure by 5 Pa. For each test condition it is checked that the requirement of 8.12.2.101 is met.	ČSN EN 15502-2-1+A1:2017, Art. 8.12.2.102	+	

Requirement	Specification of requirement	Test evaluation	Note
Special conditions	ČSN EN 15502-1+A1:2017, Art. 8.12.3		
Incomplete combustion Requirements: Under the test conditions below, the CO concentration shall not exceed 0,20 %.	ČSN EN 15502-1 +A1:2017, Art. 8.12.3.1	+	
Supplementary test for fan assisted boilers Requirements: Under the test conditions below, the CO concentration shall not exceed 0,20 %.	ČSN EN 15502-1 +A1:2017, Art. 8.12.3.2	+	
Flame lift Requirements: Under the test conditions below, the CO concentration shall not exceed 0,20 %.	ČSN EN 15502-1 +A1:2017, Art. 8.12.3.3	+	
Special flue conditions	ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101		
Type C_1, C_3 and C_9 boilers The test is carried out as stated in the first and third test series in 8.6.3.102, as appropriate. For each of the test series, the value of the arithmetic mean of the CO concentrations determined at the nine combinations of wind speed and angle of incidence that produce the highest CO concentration in the combustion products is calculated. It is checked that the above requirement is met.	ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.1	0	
Type C_2 boilers Under the test conditions of 8.6.3.103 it is checked that the above requirements are met.	ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.2	0	
Type C_4 boilers Under the test conditions of 8.6.3.104 it is checked that the above requirements are met.	ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.3	0	
Type C_5 boilers Under the test conditions of 8.6.3.105 it is checked that the above requirements are met.	ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.4	0	
Type C_6 boilers In accordance with CEN/TR 1749 these boilers are intended to be connected to a separately approved and marketed system for the supply of combustion air and discharge of the combustion products. Type C_6 boilers are fitted with a restriction to simulate the minimum pressure loss stated in the installation instructions. The air supply is fitted with a mixing device which permits adjustment of the recirculation of the products of combustion. The mixing device is adjusted such that 10 % of the combustion products are recirculated to the air supply. It is checked that the above requirement is met. A supplementary test is carried out by adjusting the restric-tion such that the air proving device just fails to operate. If the boiler is fitted with an air proving device that does not interrupt the gas rate before the CO concentration exceeds 0,20 %, the test is done with a blockage that generates a CO concentration of 0,10 % at equilibrium. For appliances with gas/air ratio controls the supplementary test is done at the minimum adjustable heat input. Under the test conditions of 8.6.3.106, it is checked that the above requirement is met.	ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.5	0	
Type C_7 boilers Under the test conditions of 8.6.3.107 it is checked that the above requirement is met.	ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.6	0	

Requirement	Specification of requirement	Test evaluation	Note
Type C_8 boilers Under the test conditions of 8.6.3.108 it is checked that the above requirement is met.	ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.7	0	
Type $C_{(10)}$ boilers The air supply is fitted with a mixing device which permits adjustment of the recirculation of the products of combustion. The mixing device is adjusted such that 10 % of the combustion products are recirculated to the air supply. A supplementary test is carried out by adjusting the restriction such that the air proving device just fails to operate. If the boiler is fitted with an air proving device that does not interrupt the gas rate before the CO concentration exceeds 0,20 %, the test is done with a blockage that generates a CO concentration of 0,10 % at equilibrium. For boilers with gas/air ratio controls the supplementary test is done at the minimum adjustable heat input. **Minimal safety pressure difference at maximum heat input:** Under the test conditions of 8.6.3.109 at maximum heat input it is checked that the above requirement is met. **Maximum safety pressure difference at minimum heat input:** Requirements Under the following test conditions at minimum heat input allowed by the controls it is checked that the above requirements are met.	ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.8	0	
Type $C_{(11)}$ boilers A recirculation as specified in the design documentation (see 8.105.2) is applied to the combustion air inlet duct. **Minimal safety pressure difference at maximum heat input:** Under the test conditions of 8.6.3.110 at maximum heat input it is checked that the above requirement is met. **Maximum safety pressure difference at minimum heat input:** Requirements Under the following test conditions at minimum heat input allowed by the controls it is checked that the above requirements are met.	ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.9	0	
Type B_2 and B_3 boilers Under the test conditions of 8.6.3.109 it is checked that the above requirement is met.	ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.10	+	
Type B_5 boilers Under the test conditions of 8.6.3.110 it is checked that the above requirement is met.	ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.11	0	
Sooting Requirements: Under the test conditions below, no soot deposition shall be observed although yellow tipping is acceptable.	ČSN EN 15502-1 +A1:2017, Art. 8.12.4	0	
Supplementary test for low temperature boilers and condensing boilers Requirements: The formation of condensate shall not impair the correct operation of the boiler. If the is boiler is equipped with a condensate discharge then by choice of the manufacturer, the boiler shall meet one of the following requirements:	ČSN EN 15502-1 +A1:2017, Art. 8.12.5	+	

Requirement	Specification of requirement	Test evaluation	Note
awhen the condensate discharge is blocked, the gas supply of the boiler shall be shut off before the CO concentration exceeds 0,20 %, or when the condensate discharge is blocked, causing a restriction in the flow of combustion products or air for combustion, resulting in a CO concentration equal to or greater than 0,10 % at equilibrium, restart shall not be possible from cold. In either case, there shall be no spillage of condensate from the boiler.		+ 0 +	
NO_x	ČSN EN 15502-1+A1:2017, Art. 8.13		
Requirement The manufacturer shall select the NO_x class of the boiler from Table 4. Under the test and calculation conditions below, the permissible NO_x concentration assigned to this class in the dry, air free products of combustion shall not be exceeded. Table 4: NO_x classes	ČSN EN 15502-1 +A1:2017, Art. 8.13.1	+	

NO_x classes	Limit NO_x concentration mg/kWh based on NCV	Limit NO_x concentration mg/kWh based on GCV
1	260	
2	200	
3	150	
4	100	
5	70	
6		56

Note: + Requirement fulfilled x Not assessed
- Requirement not fulfilled 0 Not applicable

Measurement results:

a) Sample tested: ONGAS MEGA 05

Date of testing: 2019-03-07	t_{amb} = 21,7 °C	rel. humidity = 29,4 %	p_a = 972,2 mbar

Type of gas	Operating conditions	Gas pressure before the appliance (mbar)	O_2 (%vol.)	CO_2 (% vol.)	CO Meas. (ppm)	CO At n=1 (% vol.)	CO limit at n=1 (% vol.)
Limit conditions							
G20	Test according to ČSN EN 15502-2-1+A1:2017 Art. 8.12.2.102, paragraph a) (Q_n)	20	4,1	9,5	126	0,0156	0,10
	Test according to ČSN EN 15502-2-1+A1:2017 Art. 8.12.2.102, paragraph a) (Q_m)		4,72	9,1	1	0,0001	
G20	Test according to ČSN EN 15502-2-1+A1:2017 Art. 8.12.2.102, paragraph b) (Q_n)	20	3,1	10,1	183	0,0213	0,10
	Test according to ČSN EN 15502-2-1+A1:2017 Art. 8.12.2.102, paragraph b) (Q_m)		3,9	9,6	2	0,0002	
Special conditions							
Incomplete combustion							
G21	Test according to ČSN EN 15502-1+A1:2017, Art. 8.12.3.1 (Q_n)	Not applicable.					
	Test according to ČSN EN 15502-1+A1:2017, Art. 8.12.3.1 (Q_m)						

Type of gas	Operating conditions	Gas pressure before the appliance (mbar)	O_2 (%vol.)	CO_2 (% vol.)	CO		CO limit at n=1 (% vol.)
					Meas. (ppm)	At n=1 (% vol.)	
Supplemental test of boilers incorporating fan							
G20	Test according to ČSN EN 15502-1+A1:2017, Art. 8.12.3.2 (Q_n, 85 % of nominal voltage)	20	4,1	9,5	112	0,0138	0,20
	Test according to ČSN EN 15502-1+A1:2017, Art. 8.12.3.2 (Q_m, 85 % of nominal voltage)		4,9	9,0	1	0,0001	
	Test according to ČSN EN 15502-1+A1:2017, Art. 8.12.3.2 (Q_n, 110 % of nominal voltage)		4,0	9,6	117	0,0143	
	Test according to ČSN EN 15502-1+A1:2017, Art. 8.12.3.2 (Q_m, 110 % of nominal voltage)		4,7	9,1	1	0,0001	
Test of combustion level with the use of limit test gas for flame lift							
G20	Test according to ČSN EN 15502-1+A1:2017, Art. 8.12.3.3 and annex U.2 (Qm + 9%)	20	3,2	10,1	4	0,0005	0,20
Special draught conditions							
Boiler types C_1, C_3 and C_9							
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.1	Not applicable.					
Boilers type C_2							
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.2 (2 $m.s^{-1}$, CO_2 1,6 %)	Not applicable.					
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.2 (3 $m.s^{-1}$, CO_2 0,75 %)						
Boilers type C_4							
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.3 (0,5 mbar)	Not applicable.					
Boilers type C_5							
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.4 (2,0 mbar)	Not applicable.					
Boilers type C_6							
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.5 (10 % of combustion products)	Not applicable					
Boilers type C_7							
G20	Test according to ČSN EN 15502-2-1+A1:2017 Art. 8.12.3.101.6 (up to 3 $m.s^{-1}$)	Not applicable					
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.6 (blocked flue)						
Boilers type C_8							
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.7 (2,0 mbar)	Not applicable.					
Boilers type $C_{(10)}$							
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.8 (Q_m)	Not applicable.					
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.8 (Q_n)	Not applicable.					
Boilers type $C_{(11)}$							
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.9 (Q_m)	Not applicable.					
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.9 (Q_n)	Not applicable.					
Boilers type B_{23}							
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.10 test No.1 (underpressure 0,5 mbar); (Q_m)	20	5,5	8,7	3	0,0004	0,20
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.10 test No.1 (underpressure 0,5 mbar); (Q_n)	20	4,1	9,5	124	0,0153	0,20
Boilers type B_{23}							
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.10 No.2 (pressure 50 Pa); (Q_m)	20	3,8	9,7	8	0,0010	0,20
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.10 No.2 (pressure 50 Pa); (Q_n)	20	4,1	9,5	124	0,0153	0,20
Boilers type B_{23P}							
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.10 (pressure 200 Pa); (Q_n)	Not applicable.					

Type of gas	Operating conditions	Gas pressure before the appliance (mbar)	O_2 (%vol.)	CO_2 (% vol.)	CO		CO limit at n=1 (% vol.)
					Meas. (ppm)	At n=1 (% vol.)	
Sooting							
G21	Test according to ČSN EN 15502-1+A1:2017, Art. 8.12.4 (Q_n)	Not applicable.					
Supplementary test for low temperature boilers and condensing boilers							
G20	Test according to ČSN EN 15502-1+A1:2017, Art. 8.12.5 (condensate evacuation pipe blockage)(Q_n)	20	3,6	9,8	125	0,0150	0,20

NO_x

Gas type	Operating conditions	Gas pressure before the appliance (mbar)	O_2 (% of vol.)	NO_x		
				Measured (ppm)	at O_2=0 % [mg/kWh] (based on NCV)	at O_2=0 % [mg/kWh] (based on GCV)
Combustion level tests according to ČSN EN 15502-1+A1:2017, art. 8.13.1						
G20	70 % Q_a	20	4,50	26,7	55	50
	60 % Q_a		4,70	23,5	49	44
	40 % Q_a		4,50	20,5	42	38
	22,2 % Q_a		4,40	11,9	24	22

Limit concentration of $NO_{x,0}$ at O_2 = 0 %: **41 mg/kWh (based on NCV)**
Limit concentration of $NO_{x,0}$ at O_2 = 0 %: **37 mg/kWh (based on GCV)** NO_x class: **6**

b) Sample tested: ONGAS MEGA 13

Date of testing: 2019-03-04	t_{amb} = 21,4 °C	rel. humidity = 49,4 %	p_a = 967,6 mbar

Type of gas	Operating conditions	Gas pressure before the appliance (mbar)	O_2 (%vol.)	CO_2 (% vol.)	CO		CO limit at n=1 (% vol.)
					Meas. (ppm)	At n=1 (% vol.)	
Limit conditions							
G20	Test according to ČSN EN 15502-2-1+A1:2017 Art. 8.12.2.102, paragraph a) (Q_n)	20	3,9	9,6	124	0,0152	0,10
	Test according to ČSN EN 15502-2-1+A1:2017 Art. 8.12.2.102, paragraph a) (Q_m)		4,3	9,3	3	0,0004	
G20	Test according to ČSN EN 15502-2-1+A1:2017 Art. 8.12.2.102, paragraph b) (Q_n)	20	3,1	10,0	179	0,0210	0,10
	Test according to ČSN EN 15502-2-1+A1:2017 Art. 8.12.2.102, paragraph b) (Q_m)		3,65	9,7	3	0,0004	
Special conditions							
Incomplete combustion							
G21	Test according to ČSN EN 15502-1+A1:2017, Art. 8.12.3.1 (Q_n)	20	Not aplicable				
	Test according to ČSN EN 15502-1+A1:2017, Art. 8.12.3.1 (Q_m)						
Supplemental test of boilers incorporating fan							
G20	Test according to ČSN EN 15502-1+A1:2017, Art. 8.12.3.2 (Q_n, 85 % of nominal voltage)	20	4,13	9,4	103	0,0128	0,20
	Test according to ČSN EN 15502-1+A1:2017, Art. 8.12.3.2 (Q_m, 85 % of nominal voltage)		4,3	9,3	2	0,0003	
	Test according to ČSN EN 15502-1+A1:2017, Art. 8.12.3.2 (Q_n, 110 % of nominal voltage)		3,7	9,6	135	0,0165	
	Test according to ČSN EN 15502-1+A1:2017, Art. 8.12.3.2 (Q_m, 110 % of nominal voltage)		5,2	8,8	4	0,0005	
Test of combustion level with the use of limit test gas for flame lift							
G20	Test according to ČSN EN 15502-1+A1:2017, art. 8.12.3.3 and annex U.2 (Qm + 9%)	20	3,3	10,0	1	0,0001	0,20

Type of gas	Operating conditions	Gas pressure before the appliance (mbar)	O_2 (%vol.)	CO_2 (% vol.)	CO		CO limit at n=1 (% vol.)
					Meas. (ppm)	At n=1 (% vol.)	
Special draught conditions							
Boiler types C_1, C_3 and C_9							
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.1	Not applicable.					
Boilers type C_2							
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.2 (2 $m.s^{-1}$, CO_2 1,6 %)	Not applicable.					
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.2 (3 $m.s^{-1}$, CO_2 0,75 %)						
Boilers type C_4							
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.3 (0,5 mbar)	Not applicable.					
Boilers type C_5							
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.4 (2,0 mbar)	Not applicable.					
Boilers type C_6							
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.5 (10 % of combustion products)	Not applicable					
Boilers type C_7							
G20	Test according to ČSN EN 15502-2-1+A1:2017 Art. 8.12.3.101.6 (up to 3 $m.s^{-1}$)	Not applicable					
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.6 (blocked flue)						
Boilers type C_8							
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.7 (2,0 mbar)	Not applicable.					
Boilers type $C_{(10)}$							
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.8 (Q_m)	Not applicable.					
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.8 (Q_n)						
Boilers type $C_{(11)}$							
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.9 (Q_m)	Not applicable.					
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.9 (Q_n)						
Boilers type B_{23}							
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.10 test No.1 (underpressure 0,5 mbar); (Q_n)	20	4,3	9,3	104	0,0131	0,20
Boilers type B_{23}							
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.10 test No.2 (pressure 50 Pa); (Q_n)	20	4,2	9,4	107	0,0134	0,20
Boilers type B_{23P}							
G20	Test according to ČSN EN 15502-2-1+A1:2017, Art. 8.12.3.101.10 (pressure 200 Pa); (Q_n)	Not applicable.					
Sooting							
G21	Test according to ČSN EN 15502-1+A1:2017, Art. 8.12.4 (Q_n)	Not applicable.					
Supplementary test for low temperature boilers and condensing boilers							
G20	Test according to ČSN EN 15502-1+A1:2017, Art. 8.12.5 (condensate evacuation pipe blockage)(Q_n)	20	2,5	10,5	265	0,0296	0,20

NO_x

Gas type	Operating conditions	Gas pressure before the appliance (mbar)	O_2 (% of vol.)	NO_x		
				Measured (ppm)	at O_2=0 % [mg/kWh] (based on NCV)	at O_2=0 % [mg/kWh] (based on GCV)
Combustion level tests according to ČSN EN 15502-1+A1:2017, art. 8.13.1						
G20	70 % Q_a	20	4,5	26	54	49
	60 % Q_a		4,45	25	52	47
	40 % Q_a		4,47	19	39	35
	20 % Q_a		4,10	8	17	16

Limit concentration of $NO_{x,0}$ at O_2 = 0 %: **38 mg/kWh (based on NCV)**
Limit concentration of $NO_{x,0}$ at O_2 = 0 %: **34 mg/kWh (based on GCV)** NO_x class: **6**

Accredited test number: **T 001** Test title: **Formation of condensate**

Testing method: ČSN EN 15502-1+A1:2017, Art. 8.15

Sample tested: ONGAS MEGA 05, ONGAS MEGA 13

Measuring equipment used: No. 1 – 7, 11

Test results:

Requirement	Specification of requirement	Test evaluation	Note
Formation of condensate Requirements When the boiler is installed in accordance with the test conditions for efficiency measurement under 9.3.2 and at the maximum flue length specified by the manufacturer, under the conditions specified the condensate shall only form at the points intended for this purpose and shall be readily drained. Condensate shall not find its way to parts of the boiler which are not intended for formation, collection and discharge of condensate, nor may the condensate cause any nuisance to the operation the boiler and the surroundings.	ČSN EN15502-1 +A1:2017, Art. 8.15	+	

Note: + Requirement fulfilled x Not assessed
- Requirement not fulfilled 0 Not applicable

Measurement results:

Sample tested: ONGAS MEGA 05 and ONGAS MEGA 13

Date of testing:	2019-03-07	t_{amb} = 21,3	°C	rel. humidity = 30,7	%	p_a = 972,1	mbar
Date of testing:	2019-03-04	t_{amb} = 19,3	°C	rel. humidity = 47,6	%	p_a = 967,7	mbar

Test conditions	Time of the test (h)	Test result	Note
ČSN EN 15502-1 +A1:2017, Art. 8.15	4	+	The condensate is drained properly. Condensate didn´t find its way to parts of the boiler which are not intended for formation, collection and discharge of condensate. The condensate didn´t cause any nuisance to the operation the boiler and the surroundings.

Note: + Requirement fulfilled x Not assessed
- Requirement not fulfilled 0 Not applicable

Accredited test number: **T 001** Test title: **Temperature of combustion products**

Testing method: ČSN EN 15502-2-1+A1:2017, Art. 8.16, 8.16.101, 8.16.102, 8.16.102.1, 8.16.102.2

Sample tested: ONGAS MEGA 05, ONGAS MEGA 13

Measuring equipment used: No. 1 – 7

Test results:

Requirement	Specification of requirement	Test evaluation	Note
Temperature of combustion products	ČSN EN 15502-2-1+A1:2017, Art. 8.16		
General Requirements The temperature of the combustion products shall not exceed the maximum allowable working temperature for the materials of the combustion circuit and/or the flue materials, specified in the installation instructions (see 12.2.1.4 g). If the boiler incorporates a device to limit the maximum temperature of combustion products the operation of the device shall cause non-volatile lock-out of the boiler.	ČSN EN ČSN EN 15502-2-1+A1:2017, Art. 8.16.101	+	
Designation and measurement of reference temperatures of flue systems	ČSN EN 15502-2-1+A1:2017, Art. 8.16.102		
Nominal working combustion products temperature Requirements If the nominal working combustion products temperature is specified in the technical instructions, see (12.2.1.4), the specified value should be higher or equal to the temperatures recorded in the test below .	ČSN EN ČSN EN 15502-2-1+A1:2017, Art. 8.16.102.1	+	
Overheat combustion products temperature Requirements If the overheat combustion products temperature is specified in the technical instructions, see (12.2.1.4), the specified value should be higher or equal to the temperatures recorded in the test below.	ČSN EN ČSN EN 15502-2-1+A1:2017, Art. 8.16.102.2	+	

Note: + Requirement fulfilled
- Requirement not fulfilled
x Not assessed
0 Not applicable

Measurement results:

a) Sample tested: ONGAS MEGA 05

Date of testing:	2019-03-07	t_{amb} = 21,7	°C	rel. humidity = 29,4	%	p_a = 972,2	mbar

Required properties	Test result	Note
Temperature of combustion products		
General		
ČSN EN 15502-2-1+A1:2017 Art. 8.16.101	+	Maximum working temperature of combustion products declared in manual is higher than maximum temperature of combustion products measured during the test.
Designation and measurement of reference temperatures of flue systems		
Nominal working combustion products temperature		
ČSN EN 15502-2-1+A1:2017 Art. 8.16.102.1	+	Maximum working temperature of combustion products declared in manual is higher than maximum temperature of combustion products measured during the test.
Overheat combustion products temperature		
ČSN EN 15502-2-1+A1:2017 Art. 8.16.102.2	+	Overheat combustion products temperature declared in manual is higher than maximum temperature of combustion products measured during the test.

Note: + Requirement fulfilled
- Requirement not fulfilled
x Not assessed
0 Not applicable

b) Sample tested: ONGAS MEGA 13

Date of testing:	2019-03-04	t_{amb} = 21,4	°C	rel. humidity = 49,4	%	p_a = 967,6	mbar

Required properties	Test result	Note
Temperature of combustion products		
General		
ČSN EN 15502-2-1+A1:2017 Art. 8.16.101	+	Maximum working temperature of combustion products declared in manual is higher than maximum temperature of combustion products measured during the test.
Designation and measurement of reference temperatures of flue systems		
Nominal working combustion products temperature		
ČSN EN 15502-2-1+A1:2017 Art. 8.16.102.1	+	Maximum working temperature of combustion products declared in manual is higher than maximum temperature of combustion products measured during the test.
Overheat combustion products temperature		
ČSN EN 15502-2-1+A1:2017 Art. 8.16.102.2	+	Overheat combustion products temperature declared in manual is higher than maximum temperature of combustion products measured during the test.

Note: + Requirement fulfilled
- Requirement not fulfilled
x Not assessed
0 Not applicable

Accredited test number: **T 071** Test title: **Electric auxiliary energy**

Testing method: ČSN EN 15502-1+A1:2017, Art. 10.1, 10.2, 10.3, 10.4, 10.5, 10.6, 10.6.1, 10.6.2, 10.6.3, 10.6.4, 10.6.5

Sample tested: ONGAS MEGA 05, ONGAS MEGA 13, ONGAS MEGA 17

Measuring equipment used: No. 1 – 8

Test results:

Requirement	Requirement specification	Evaluation	Note
General If the manufacturer declares the auxiliary energy consumption then it has to be determined according to this clause. Boilers without a pump can be assessed according to EN 15456.	ČSN EN 15502-1 +A1:2017, Art. 10.1	+	
System boundaries The system boundary contains all electrical components between the manual shut-off device (for water and fuel) and the flue outlet of the combustion circuit, including the circulation pump. At the outlet, the pressure for the correct boiler operation has to be set. The following components shall also be covered by measurement provided they are considered to be a component of the heating boiler required for the design operation: a) Shut-off valves in the fuel supply; b) Supply of combustion air (air fan) respectively flue gas removal (flue exhauster); c) Control and monitoring devices (programming units, monitoring device/detector, etc.), if they are mandatory for the operation of the boiler; d) Circulation pump.	ČSN EN 15502-1 +A1:2017, Art. 10.2	+ + + + +	
Auxiliary energy at nominal heat output Under the test conditions of 9.2.2, the electrical auxiliary energy consumption per hour expressed in kilowatt (kW) shall be recorded and the average shall be determined.	ČSN EN 15502-1 +A1:2017, Art. 10.3	+	
Auxiliary energy at part load Under the test conditions of 9.3.2 the demand of auxiliary energy per hour expressed in kilowatt (kW) for a load corresponding to 30 % of the nominal heat input, shall be recorded and the average consumption determined.	ČSN EN 15502-1 +A1:2017, Art. 10.4	+	
Auxiliary energy at stand-by During the measurement in stand-by the demand of auxiliary energy per hour, expressed in kilowatt (kW), shall be recorded.	ČSN EN 15502-1 +A1:2017, Art. 10.5	+	
Auxiliary electricity consumption measurements required for eco-design and labelling regulations	ČSN EN 15502-1 +A1:2017 Art. 10.6		
General The auxiliary energy consumption values declared in the technical documentation shall be determined according to 10.6.2 to 10.6.5.	ČSN EN 15502-1 +A1:2017, Art. 10.6.1	+	
System boundaries The system boundary contains all electrical components between the manual shut-off device (for water and fuel) and the flue outlet of the combustion circuit, excluding the	ČSN EN 15502-1 +A1:2017, Art. 10.6.2	+	

Requirement	Requirement specification	Evaluation	Note
circulation pump. Energy consumption for all types of temperature control devices as defined in DD.2 of Annex DD are excluded. The following components shall also be covered by measurement provided they are considered to be a component of the heating boiler required for the design operation: a) Shut-off valves in the fuel supply; b) Mechanical supply of combustion air or flue gas removal respectively; c) Control and monitoring devices (programming units, monitoring device/detector, etc.), if they are mandatory for the operation of the boiler	ČSN EN 15502-1 +A1:2017, Art. 10.6.2	+ + +	
Auxiliary electricity consumption [kW] at nominal heat input Requirement: The auxiliary electricity consumption [kW] (el_{max}), shall be recorded and the average shall be determined.	ČSN EN 15502-1 +A1:2017, Art. 10.6.3	+	
Auxiliary electricity consumption at part load [kW] Requirements: The auxiliary electricity consumption [kW] (el_{min}) for a load corresponding to 30 % of the nominal heat input, shall be recorded and the average shall be determined.	ČSN EN 15502-1 +A1:2017, Art. 10.6.4	+	
Auxiliary electricity consumption at stand by [kW] Requirement: During the measurement in stand-by the auxiliary electricity consumption [kW] (P_{SB}), shall be recorded and the average shall be determined.	ČSN EN 15502-1 +A1:2017, Art. 10.6.5	+	

Note: + Requirement fulfilled x Not assessed
- Requirement not fulfilled 0 Not applicable

Measurement results:

a) Sample tested: ONGAS MEGA 05

Date of testing:	2019-03-07	t_{amb} = 21,7	°C	rel. humidity = 29,4	%	p_a = 972,2	mbar

Test methods	Measurement result	Note
Auxiliary energy at nominal heat output		
ČSN EN 15502-1+A1:2017, Art. 10.3	+	The average consumption of auxiliary energy of the boiler ONGAS MEGA 05 at the nominal heat input by burning natural gas G20 is **2,273 kW**. (This value was calculated, because boiler is delivered without circulation pump).
Auxiliary energy at part load		
ČSN EN 15502-1+A1:2017, Art. 10.4	+	The average consumption of auxiliary energy of the boiler ONGAS MEGA 05 at the part load by burning natural gas G20 is **0,317 kW**. (This value was calculated, because boiler is delivered without circulation pump).
Auxiliary energy at stand-by		
ČSN EN 15502-1+A1:2017, Art. 10.5	+	The consumption of auxiliary energy of the boiler ONGAS MEGA 05 in stand-by mode is **0,006 kW**.

Test methods	Measurement result	Note
Auxiliary electricity consumption [kW] at nominal heat input		
ČSN EN 15502-1+A1:2017, Art. 10.6.3	+	The average consumption of auxiliary energy of the boiler ONGAS MEGA 05 without circulation pump at the nominal heat input by burning natural gas G20 is **1,642 kW.**
Auxiliary electricity consumption at part load [kW]		
ČSN EN 15502-1+A1:2017, Art. 10.6.4	+	The average consumption of auxiliary energy of the boiler ONGAS MEGA 05 without circulation pump at the part load by burning natural gas G20 is **0,067 kW**.
Auxiliary electricity consumption at stand by [kW]		
ČSN EN 15502-1+A1:2017, Art. 10.6.5	+	The average consumption of auxiliary energy of the boiler ONGAS MEGA 05 in stand-by mode is **0,006 kW**.

Note: + Requirement fulfilled x Not assessed
- Requirement not fulfilled 0 Not applicable

b) Sample tested: ONGAS MEGA 13

Date of testing: 2019-03-04	t_{amb} = 21,4 °C	rel. humidity = 49,4 %	p_a = 967,6 mbar

Test methods	Measurement result	Note
Auxiliary energy at nominal heat output		
ČSN EN 15502-1+A1:2017, Art. 10.3	+	The average consumption of auxiliary energy of the boiler ONGAS MEGA 13 at the nominal heat input by burning natural gas G20 is **8,016 kW**. (This value was calculated, because boiler is delivered without circulation pump).
Auxiliary energy at part load		
ČSN EN 15502-1+A1:2017, Art. 10.4	+	The average consumption of auxiliary energy of the boiler ONGAS MEGA 13 at the part load by burning natural gas G20 is **0,788 kW**. (This value was calculated, because boiler is delivered without circulation pump).
Auxiliary energy at stand-by		
ČSN EN 15502-1+A1:2017, Art. 10.5	+	The consumption of auxiliary energy of the boiler ONGAS MEGA 13 in stand-by mode is **0,008 kW**.
Auxiliary electricity consumption [kW] at nominal heat input		
ČSN EN 15502-1+A1:2017, Art. 10.6.3	+	The average consumption of auxiliary energy of the boiler ONGAS MEGA 13 without circulation pump at the nominal heat input by burning natural gas G20 is **6,515 kW**.
Auxiliary electricity consumption at part load [kW]		
ČSN EN 15502-1+A1:2017, Art. 10.6.4	+	The average consumption of auxiliary energy of the boiler ONGAS MEGA 13 without circulation pump at the part load by burning natural gas G20 is **0,151 kW**.
Auxiliary electricity consumption at stand by [kW]		
ČSN EN 15502-1+A1:2017, Art. 10.6.5	+	The average consumption of auxiliary energy of the boiler ONGAS MEGA 13 in stand-by mode is **0,008 kW**.

Note: + Requirement fulfilled x Not assessed
- Requirement not fulfilled 0 Not applicable

c) Sample tested: ONGAS MEGA 17

Date of testing:	2019-05-23	t_{amb} = 22,2	°C	rel. humidity = 61,9	%	p_a = 985,4	mbar

Test methods	Measurement result	Note
Auxiliary energy at nominal heat output		
ČSN EN 15502-1+A1:2017, Art. 10.3	+	The average consumption of auxiliary energy of the boiler ONGAS MEGA 17 at the nominal heat input by burning natural gas G20 is **11,295 kW**. (This value was calculated, because boiler is delivered without circulation pump).
Auxiliary energy at part load		
ČSN EN 15502-1+A1:2017, Art. 10.4	+	The average consumption of auxiliary energy of the boiler ONGAS MEGA 17 at the part load by burning natural gas G20 is **1,076 kW**. (This value was calculated, because boiler is delivered without circulation pump).
Auxiliary energy at stand-by		
ČSN EN 15502-1+A1:2017, Art. 10.5	+	The consumption of auxiliary energy of the boiler ONGAS MEGA 17 in stand-by mode is **0,008 kW**.
Auxiliary electricity consumption [kW] at nominal heat input		
ČSN EN 15502-1+A1:2017, Art. 10.6.3	+	The average consumption of auxiliary energy of the boiler ONGAS MEGA 17 without circulation pump at the nominal heat input by burning natural gas G20 is **9,571 kW**.
Auxiliary electricity consumption at part load [kW]		
ČSN EN 15502-1+A1:2017, Art. 10.6.4	+	The average consumption of auxiliary energy of the boiler ONGAS MEGA 17 without circulation pump at the part load by burning natural gas G20 is **0,160 kW**.
Auxiliary electricity consumption at stand by [kW]		
ČSN EN 15502-1+A1:2017, Art. 10.6.5	+	The average consumption of auxiliary energy of the boiler ONGAS MEGA 17 in stand-by mode is **0,008 kW**.

Note: + Requirement fulfilled
- Requirement not fulfilled
x Not assessed
0 Not applicable

Testing engineer responsible for the test results:

Ing. Ondřej Ptáček	2020-07-22	
Name	Date	Signature

Reviewed by:

Ing. Bohdan Brázda	2020-07-22	
Name	Date	Signature

Testing Laboratory
Workplace Brno, Hudcova 424/56b, 621 00 Brno

V. List of referenced documents

- Order No. B-64649 of 2019-01-03
- Contract No. B-64649/30 of 2019-03-05
- Amendment 1 to Contract B-64649/30 of 2019-09-03
- ČSN EN 15502-1+A1:2017 – Gas-fired heating boilers – Part 1: General requirements and tests
- ČSN EN 15502-2-1+A1:2017 – Gas-fired central heating boilers – Part 2-1: Specific standard for type C appliances and type B_2, B_3 and B_5 appliances of a nominal heat input not exceeding 1 000 kW
- ČSN EN 437:2019 – Test gases - Test pressures - Appliance categories
- Burst test of 2020-07-20 for heat exchanger ONGAS MEGA HEX back section, issued by manufacturer ONMETAL DOKUM SAN. VE TIC. LTD. STI.
- Burst test of 2020-07-20 for heat exchanger ONGAS MEGA HEX middle section, issued by manufacturer ONMETAL DOKUM SAN. VE TIC. LTD. STI.
- Burst test of 2020-07-20 for heat exchanger ONGAS MEGA HEX front section, issued by manufacturer ONMETAL DOKUM SAN. VE TIC. LTD. STI.
- Installation manual
- Drawing documentation:
  - drawings archived within the task: No. 30-14242
- EU-Declaration of conformity of 2018-04-21 for GasMultiBloc type MBC...SE/N made by Karl Dungs GmbH & Co. KG
- EU-Type Examination Certificate No.: C5A 18 04 22629 022 of 2018-04-11 for Fittings (Gas) Multifunctional control, models: Series MBC-300, Series MBC-700, Series MBC-1200 made by Karl Dungs GmbH & Co. KG, issued by TÜV SÜD Product Service GmbH
- Certificate No.: Z-IS-TAF-MUC-13-05-112765-026-Rev.01 of 2016-10-19 issued by TÜV SÜD Industrie Service GmbH
- EU-Declaration of Conformity of 2020-05-04 for Radial blower with EC-motor type 55600.06010/G3G250-MW50-01 made by ebm-papst Slovenija proizvodnja elektromotorjev d.o.o.
- EU Declaration of Conformiy of 2017-08-01 for Radial blower with EC-motor type 55600.07000 G3G315-M3G150FF-191 made by ebm-papst Slovenija proizvodnja elektromotorjev d.o.o.
- EU Declaration of Conformity No.: CE1T2357xx3_V3 of 2019-04-15 for operator units AVS37.294/xxx, AVS37.295/xxx, AVS37.394/xxx, AVS37.396/xxx, AVS.398/xxx made by Siemens AG
- EC type examination certificate No.: CE-0085CP0169 of 2018-01-31, valid from 2018-04-21 for burner control for intermittent operation for gas appliances with premix burners, models LMS14...B...; LMS14...C...; LMS15...A... made by Siemens AG, BT CPS, issued by DVGW CERT GmbH
- EU Declaration of Conformity No.: 2018/13 of 2018-04-23 for boiler management systems types LMS14.xxxB1yy, LMS14.xxxB2yy, LMS14.xxxB3yy, LMS14.xxxC3yy made by Siemens AG BT CPS
- EU Declaration of Conformity No.: 8000073890-B of 2018-01-18 for passive temperature sensors QAA.., QAC.., QAD.., QAK.., QAM.., QAP.., QAZ.., QAT.. made by Siemens Schweiz AG
- EU-Declaration of conformity of 2019-07-10 for valve proving system type VPS 504 made by Karl Dungs GmbH & Co. KG
- EU-type examination certificate No.: C5A 022629 0035 Rev. 01 of 2019-07-08 for valve proving system VPS 504, VPS 508 made by Karl Dungs GmbH & Co. KG, issued by TÜV SÜD Product Service GmbH
- Certificate of Conformity No.: AN 50308438 0001 of 2015-05-27 for Temperature control (Thermostat) KSD301A-A made by Zettler Controls (Ningbo) Co., Ltd., issued by TÜV Rheinland LGA Product GmbH
- Certificate No.: R 50308437 of 2015-05-27 for Temperature control (Thermostat) KSD301A-A made by Zettler Controls (Ningbo) Co., Ltd., issued by TÜV Rheinland LGA Product GmbH
- EC Declaration of Conformity of 2020-05-19 for ignition device for gas appliances type designation ZAG 2 Variante: 10 Hz, ZAG 2 Variante: 50 Hz made by Anstoss Regelgerate GmbH
- Declaration of performace No.: CH-03-DOP-23-06-17 of 2017-06-28 for chimney systems with plastic inserts made by Almeva AG
- A set of required technical documentation according to standard ČSN EN 15502-1+A1:2017, materials archived within the task: No. 30-14242

Test Report approved by: Ing. Ondřej Ptáček

Person responsible for correctness of the Report: Ing. Bohdan Brázda

Accredited Testing Laboratory No. 1045.1 * STROJÍRENSKÝ ZKUŠEBNÍ ÚSTAV, s.p. * 1

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