



TEST REPORT

No. 32-0103/3

Product: Hot-water boiler burning wood pellets (with automatic fuel supply)

Type designation: ORLIGNO 100

Customer: EKO-VIMAR ORLAŃSKI Sp. Z o.o.
ul. Nyska 17 B
48-385 Otmuchów
Poland

Manufacturer: EKO-VIMAR ORLAŃSKI Sp. Z o.o.
ul. Nyska 17 B
48-385 Otmuchów
Poland

Place of manufacture:	EKO-VIMAR ORLAŃSKI Sp. Z o.o.	EKO - VIMAR ORLAŃSKI CZ, s.r.o.
	ul. Warszawska 20 48-385 Otmuchów Poland	Míru 371 790 70 Javorník Czech Republic

Responsible employee: Ing. Stanislav Buchta

Report issue date: 2011-05-31

Distribution list: 1 copy to the Engineering Test Institute
1 copy to the Customer



The tests were conducted on the basis of Order B-37728 dated 2010-06-17, Contract B-37728/32 dated 2010-07-13, and Contract Supplement No. 1.

I. Product description

The steel hot-water boiler with automatic fuel supply, type ORLIGNO 100, is designed for the burning of wood pellets.

The boiler is designed for the central heating of family homes, residential premises, etc.

The boiler body is made of welded steel and is divided into the following sections: combustion chamber, exchanger section and ash-pan compartments. The upper part of the combustion chamber features a door for cleaning the combustion product exchanger; the lower part features a door for access into the combustion chamber and for the removal of ash from the boiler. The pellet burner is mounted to the bottom door. The exchanger section is of horizontal orientation.

The combustion air can be regulated both using a throttling rosette at the burner fan suction, and using the electronic control of the burner fan speed. The boiler shell consists of coated steel plates lined with mineral wool.

Water connection branches in the rear part of the boiler have the dimension of G 5/4 for heating water inlet and outlet, and G1/2 for the drainage and filling. The exhaust branch with a horizontal axis is situated at the back of the boiler.

There is a control panel in the upper part of the boiler with an electronic regulation (Igneo Compact) guaranteeing the control and safety functions, including the indication of the water temperature in the boiler.

Basic technical specifications:

Size	Rated capacity Wood pellets [kW]	Water volume [l]	Max. operating temperature [°C]	Max. operating pressure [bar]	Weight [kg]
ORLIGNO 100	4.8 ÷ 16	60	90	3.0	305

II. Sample tested

Boiler capacity version	Reg. No.	Serial number	Place of testing	Quantity
ORLIGNO 100	0211.10.13756.000	Prototype	Engineering Test Institute in Brno	1

The visual inspection, tests and evaluations were conducted at the heating and environmental system test station of the Engineering Test Institute in Brno, on 2011-05-27 and 2011-05-28, by technician Milan Holomek.

The testing was conducted using measurement and testing equipment with valid calibration.



III. Measuring and testing equipment

No.	Description	Inventory number	Calibration valid until	Precision
1.	Combustion product analyzer Horiba, type 680 P	92-0004	Calibrated prior to each measurement *)	see CRM 103000077337 see CRM 103000118414
2.	Weighing machine	02-2290	10/2012	see Calibration Sheet 6051-KL-H-0651-10
3.	Water meter NW 20	02-1575	03/2015	see Calibration Sheet AKL-P/006/2009
4.	Recorder	02-2241	12/2013	see Calibration Sheet 110002
5.	Humidity meter, thermometer	11-6258	11/2012	see Calibration Sheet 7630F/09
6.	Barometer	11-2541	11/2013	see Calibration Sheet 613-KL-K011-08
7.	Draught gauge	11-7275	01/2013	see Calibration Sheet 0144F/11
8.	Chronometer	99-0760	10/2012	see Calibration Sheet 2850E-07
9.	Calorimeter IKA type C 5000	02-2236	09/2011	± 0.12 MJ/kg
10.	Elementary analyzer Perkin Elmer type 2400 CHNS	02-2107	9/2011	± 0.2 % rel.
11.	Gravimat SHC 501	02-2328	12/2011	see Calibration Sheet 090177 (8, 9) 090180
12.	Laboratory weighing machine	02-1458	06/2012	see Calibration Sheet 6051-KL-H376-09
13.	Ohaus MB 45 weighing machine	02-2274	06/2012	see Calibration Sheet 6051-KL-H374-09
14.	Pressure gauge	18-0511	10/2011	see Calibration Sheet 090162

Note: * Calibrated prior to each measurement, with the use of certified reference material



IV. Test results

No.	Name and specification	Technical standard and regulation applied	Source materials	Result		
				Test	Evaluation	
1.**	Accompanying technical documentation	ČSN EN 303-5:2000, Art. 8, 8.1, 8.2 ČSN 06 1008:1997, Art. 12.2	Page 5 + 8		+	
2.**	Product data, marking	ČSN EN 303-5:2000, Art. 7, 7.1, 7.2	Page 9		+	
3.**	Construction and design	ČSN EN 303-5:2000, Art. 4.1.1, 4.1.3.4, 4.1.5.1 + 4.1.5.8, 4.1.5.11, 4.1.5.11.1, 4.1.5.11.2, 4.1.5.12, 4.1.5.13, 4.1.5.14.2, 4.1.5.15	Page 10+13		+	
4.**	Material, surface finish	ČSN EN 303-5:2000, Art. 4.1.1, 4.1.2.1, 4.1.3.3, Ministry of Health Decree 409/2005 Coll., Art. 9	Page 14		+	
5.	Test of strength and tightness of pressurized components	ČSN EN 303-5:2000, Art. 5.4.1, 5.4.2	page 15	+		
6.	Test of surface temperatures	ČSN EN 303-5:2000, Art. 4.2.7	Page 16+17	+		
7.	Test of heat capacity, input and efficiency; Test of combustion product temperature	ČSN EN 303-5:2000, Art. 4.2, 4.2.1 + 4.2.5, 5.8.2	Page 18+21	+		
		ČSN EN 303-5:2000, Annex A, Deviation A.1.1	Page 22	+		
8.	Combustion efficiency test - emissions	ČSN EN 303-5:2000, Art. 4.2.6	Page 23	+		
		ČSN EN 303-5:2000 Annex A (Deviations A.1.2, A.2, A.5)	A.1.2	Page 24	+	
			A. 2	Page 25	+	
			A. 5	Page 26	+	
9.	Test of tightness of combustion product ducts	ČSN EN 303-5:2000 Art. 4.1.5.10		0		
10.	Test of control, regulation and security elements	ČSN EN 303-5:2000 Art. 5.13	Page 27	+		
11.	Test of excess heat removal device	ČSN EN 303-5:2000 Art. 4.1.5.11.3		0		

Note:

No. 1, 2, 3, 4

(**) Not a test

Evaluation:

+ Requirement fulfilled

- Requirement not fulfilled

x Not assessed

0 Not applicable



Requirement assessed: **Accompanying technical documentation**

Requirement specification: ČSN EN 303-5:2000, Art. 8, 8.1, 8.2; ČSN 06 1008:1997, Art. 12.2

Sample assessed: ORLIGNO 100

Evaluation results: see the table below

Requirement	Specification of requirement	Evaluation	Note
Content of accompanying technical documentation			
The documentation specified below must be available for each boiler in the corresponding language of the country of destination. Documents in accordance with Art. 8.1 and 8.2 must be supplied with each boiler.	ČSN EN 303-5:2000, Art. 8	+	
Technical information and installation instructions These documents must contain at least the following particulars: <ul style="list-style-type: none"> - Required draught (mbar) - Water capacity (litres) - Outlet temperature of combustion products at the rated and minimum heat capacity (°C) - Outlet mass flow rate of the combustion products at the rated and minimum heat capacity (kg/s) - Flue connecting dimension (mm) - Boiler hydraulic loss (mbar) - Rated heat capacity and regulating range of the heat capacity for each fuel type (kW) - Boiler class - Burning time for each fuel type at QN (hours) - Temperature control range (°C) - Minimum inlet water temperature at the boiler supply water connection (°C) - Fuel type, water content in the fuel, fuel size - Volume of fuel duct (litres) and dimensions of the feeding hole (mm) - Required storage tank in litres if $Q_{min} > 0.3 Q_a$ - Requirements for auxiliary power input (W) - Cold water temperature and pressure in bar for the safety heat exchanger - Electrical connections including boiler switch-off and power supply The installation instructions must contain the following particulars: <ul style="list-style-type: none"> - Assembly of the boiler at the point of operation (if necessary) and the required water testing pressure in accordance with 5.4.2 or 5.5.2.2 - Installation procedure - Boiler commissioning incl. information about the boiler capacity, which must be set within the regulation range of heat capacities - Information concerning the placement of the probes of the control, measuring and safety equipment In addition, it is necessary to provide reference to standards	ČSN EN 303-5:2000, Art. 8.1	+ + + + + + + + + + + + + 0 + 0 + + + + + +	



Requirement	Specification of requirement	Evaluation	Note
and regulations in the documentation, which must be considered during the safety equipment installation.			
Content of accompanying technical documentation			
<p>Operating instructions</p> <p>The operating instructions must contain information concerning:</p> <ul style="list-style-type: none"> - Risk-free operation of the boiler, fuel supply method and door opening method - Cleaning and intervals between the individual cleaning operations, including the necessary cleaning equipment - Measures that must be taken in the event of a failure - Reasons for regular servicing interventions performed by authorized staff and intervals between the individual servicing interventions - Type of fuel, including water content and size of fuel - Maximum fuel filling height in the fuel duct - Burning time for the individual fuel types at the rated heat capacity <p>Other printed materials (brochures, etc.) must not contain information contrary to the operating instructions.</p>	<p>ČSN EN 303-5:2000, Art. 8.2</p>	<p>+</p> <p>+</p> <p>+</p> <p>+</p> <p>+</p> <p>+</p> <p>+</p> <p>+</p>	
<p>Each heating equipment must be supplied with technical documentation in Czech, including the following:</p> <p>a) Characteristics of the environment where the heating equipment may be located</p> <p>b) installation and operating instructions containing the following:</p> <ol style="list-style-type: none"> 1) Installation guideline 2) Operation and servicing guideline <p>The installation guideline must contain the following data:</p> <ul style="list-style-type: none"> - Use of protective equipment (protective curtains, protective and insulation mats) - Safe installation and use of the combustion product exhaust system (flues, chimneys) and the warning that the installation must comply with the applicable regulations and technical standards, such as ČSN 73 4201 - Manner of attachment of the heating equipment - Safe distances from the surfaces of the materials of individual combustibility grades and information regarding the combustibility grade of standard constructions materials - Safe installation and operation of the in-built appliance <p>The operation and maintenance guideline must contain:</p> <ul style="list-style-type: none"> - Prescribed fuel (for liquid and gas fuels their rated supply pressure or maximum admissible pressure at which the corresponding heating equipment may be operated) - For electric power, its rated supply voltage or range of the rated supply voltage, type of current - direct, alternating current, and/or frequency and total installed power input in kW or kVA of the heating equipment concerned - Instructions for commissioning and use of the heating equipment with warnings with respect to its professional operation whenever necessary and required. 	<p>ČSN 06 1008:1997, Art. 12.2</p>	<p>+</p> <p>+</p> <p>0</p> <p>+</p> <p>0</p> <p>+</p> <p>+</p> <p>+</p>	



Requirement	Specification of requirement	Evaluation	Note
<p>The operation and maintenance guideline must contain: For electrical equipment to be used by persons without electrical engineering qualification, the safety regulations shall apply, including requirements for the accompanying technical documentation as per ČSN 33 1310</p> <ul style="list-style-type: none"> - Method for in-operation heating equipment supervision (not applicable to heating equipment which is designed to be operated without supervision) - Instructions for regular intervals in which the surfaces and the surrounding of the equipment shall be cleaned if the equipment is designed to work in fire- or explosion-hazardous environment; - Warning that no combustible objects shall be placed or located on the equipment or within a distance lower than the safety distance - Measures to adopt prior to starting the work which might change or cause a change to the environment in which the heating equipment is installed (e.g. equipment shut-down during painting works, gluing, etc.) - Warning with respect to the intervals for regular maintenance and person allowed to carry out the maintenance - Measures to adopt with the heating equipment installed in road vehicles before and after relocation of the vehicle (operation interrupted, fuel supply closed, equipment secured in position, etc.) - Warnings concerning improper use of the heating equipment concerned (e.g. thermal overload prohibited, etc.) - Warning with respect to safe removal of ash in appliances burning solid fuels - Data for safe refilling of the liquid fuel operated equipment - Data for use of cylinders with liquid hydrocarbon gas in equipment with in-built gas fuel cylinders - Warning with respect to other regulations, or standards which shall be followed with respect to fire safety 	<p>ČSN 06 1008:1997, Art. 12.2</p>	<p style="text-align: center;">+</p> <p style="text-align: center;">+</p> <p style="text-align: center;">0</p> <p style="text-align: center;">+</p> <p style="text-align: center;">+</p> <p style="text-align: center;">+</p> <p style="text-align: center;">0</p> <p style="text-align: center;">0</p> <p style="text-align: center;">0</p> <p style="text-align: center;">+</p>	



Requirement	Specification of requirement	Evaluation	Note
Information about the use and/or disposal of the packaging or unconsumed parts of the product	Act 185/2001 Coll., on waste, Art. 10	+	
The packaging or packed product or its label must bear information with respect to: Material of which the packaging is made Method for disposal of the packaging used The marking must be well visible and easily legible. It must be resistant and durable even after the packaging is opened.	Act 477/2001 Coll., on packaging, Art. 6	+	
It is strictly forbidden to deceive the consumer, particularly by false, unsubstantiated, incomplete, inaccurate, obscure, ambiguous, or exaggerated data or by concealing information about actual properties of products.	Act 34/1996 Coll. on consumer protection, as amended Art. 8 to 11, 13	+	

Note:

+	Compliant
-	Non-compliant
0	Not applicable
x	Not assessed

Evaluation drafted by: Milan Holomek

Date: 2011-05-28

Signed: 

Person responsible for the evaluation:

Ing. Stanislav Buchta

Date: 2011-05-28

Signed: 



Requirement assessed: **Product data, marking**

Requirement specification: ČSN EN 303-5:2000, Art. 7, 7.1, 7.2

Sample assessed: ORLIGNO 100

Evaluation results: see the table below

Requirement	Specification of requirement	Evaluation	Note
Marking – boiler name plate			
- Marking of the boiler with a label, accessibility, country of destination	ČSN EN 303-5:2000, Art. 7	+	
Data on the name plate			
- Manufacturer's name and address, its brand name	ČSN EN 303-5:2000, Art. 7.1	+	
- Registered trademark, type			
- Serial number and year of manufacture (or code)			
- Rated heat capacity or regulating range of heat capacity (kW)			
- Boiler class			
- Permissible operating pressure (bar)			
- Permissible operating temperature (°C)			
- Water capacity (litres)			
- Power connection (V, Hz, A) and wattage (W)			
Requirements regarding the name plate			
- Durability, readability, resistance to wear	ČSN EN 303-5:2000, Art. 7.2	+	

Note: + Compliant
- Non-compliant
0 Not applicable
x Not assessed

Evaluation drafted by: Milan Holomek

Date: 2011-05-28

Signed: 

Person responsible for the evaluation:

Ing. Stanislav Buchta

Date: 2011-05-28

Signed: 



Requirement	Specification of requirement	Evaluation	Note
efficiency. The tolerances for walls made of carbon steel must comply with the data specified in EN 10029. The minimum rated wall thickness according to Table 3 applies to pressurized sheet metal, pipes (except for the in-built through-flow heaters and safety heat exchangers) and forged pieces. Lower wall thickness is acceptable only after the presentation of evidence expressing the equivalent functionality, as regards corrosion, thermal resistance and stress.			



Requirement	Specification of requirement	Evaluation	Note
<p><i>Air bleeding of the area for the heat transfer substance (water) and combustion product ducts</i></p> <p>The boiler and its parts must be constructed so that the heat transfer (water) compartment allows for proper air bleeding. The boiler must be constructed so that under standard operation according to the manufacturer's instructions, no excessive noise is generated while the water is boiling. The combustion chamber and the combustion product routes must be designed so as to avoid hazardous accumulation of combustion gases.</p>	<p>ČSN EN 303-5:2000, Art. 4.1.5.1</p>	+	
<p><i>Cleaning of heated surfaces</i></p> <p>Heated surfaces must be accessible from the combustion product side through an adequate number of suitably arranged cleaning openings for inspection and cleaning using chemical products and brushes. If cleaning and maintenance of the boiler require special tools (e.g. special brushes), such tools must be included in the delivery.</p>	<p>ČSN EN 303-5:2000, Art. 4.1.5.2</p>	+	
<p><i>Flame observation</i></p> <p>Technical equipment must be used for the observation of the flame or the fuel layer. If the device in question is the door, the observation must be prevented if dangerous.</p>	<p>ČSN EN 303-5:2000, Art. 4.1.5.3</p>	+	
<p><i>Water tightness</i></p> <p>The openings for bolts and similar components used for the connection of removable parts must not lead to areas where the heat transfer substance (water) is flowing. This does not apply to the connection of measuring, regulating or safety devices.</p>	<p>ČSN EN 303-5:2000, Art. 4.1.5.4</p>	+	
<p><i>Replaceable components</i></p> <p>Replaceable components and spare parts (e.g. inserts, fire clay bricks, combustion gas valves, etc.) must be designed, manufactured and labelled so that they can be correctly installed according to the manufacturer's instructions.</p>	<p>ČSN EN 303-5:2000, Art. 4.1.5.5</p>	+	
<p><i>Water connections</i></p> <p>Water connections must comply with ISO 7-1, ISO 7-2, ISO 228-1 and ISO 228-2; flange connections must comply with ISO 7005-1, ISO 7005-2 and ISO 7005-3.</p> <p>The connections must be arranged so that they are easily accessible and must be chosen in order to ensure due functioning.</p> <p>Around the connection branches there must be a sufficiently large area enabling the fitting of connection tubes and the use of adequate tools.</p> <p>Threaded pipe connections exceeding DN 50 are not recommended. Threaded pipe connections with the rated diameters exceeding DN 80 are not permissible. If there are flanges fitted, it is also necessary to supply counterflanges and sealing, unless standardized flanges are supplied.</p> <p>The boiler must have at least one connection point for filling and drainage.</p> <p>This connection can be shared. The connection dimension must be at least:</p> <ul style="list-style-type: none"> - G 1/2 for rated heat capacity not exceeding 70 kW - G 3/4 for rated heat capacity exceeding 70 kW. 	<p>ČSN EN 303-5:2000, Art. 4.1.5.6</p>	+	



Requirement	Specification of requirement	Evaluation	Note
It is possible to design these connection points outside the boiler on condition that satisfactory filling and drainage of the boiler is ensured.			
<p>Connection of regulating and indicating devices and safety temperature regulators</p> <p>Each boiler must be fitted with at least one connection for a submerged temperature control sensor, temperature limiter and thermometer.</p> <p>Its minimum nominal diameter must be G 1/2. Deviations are only acceptable in the case that the control devices are supplied with a boiler and cannot be replaced with other components.</p> <p>The connections must be placed so that the water temperature in the boiler is measured with a sufficient accuracy. If there are additional connections on the boiler for safety devices, e.g. for a pressure reader, for a manometer, for the drop in the water level below the permissible limit or for a safety valve, the size – of particularly the safety valve – must be chosen according to the boiler capacity.</p>	ČSN EN 303-5:2000, Art. 4.1.5.7	+	
<p>Thermal insulation</p> <p>All boilers must have thermal insulation. The thermal insulation must be resistant to standard thermal and mechanical load. The insulation must be made of non-combustible material and under standard conditions it must not release any substances damaging health.</p>	ČSN EN 303-5:2000, Art. 4.1.5.8	+	
<p>Fuel hopper</p> <p>The fuel hopper must be constructed so that the fuel moves freely and the corresponding burning time is guaranteed.</p>	ČSN EN 303-5:2000, Art. 4.1.5.12	+	
<p>Ash-pan</p> <p>With the use of the determined fuel and at the rated heat capacity, the volume of the ash-pan must allow the fire to burn for at least 12 hours; free flow of combustion air under the grid must be allowed.</p> <p>If the boiler is designed to feature a device for automatic removal of ash and clinker, the requirement above shall be deemed fulfilled.</p>	ČSN EN 303-5:2000, Art. 4.1.5.13	+	
<p>Manual fuel supply</p> <p>Boilers with manual fuel charging must be constructed so that the operating person cannot suffer any injury during the use of the boiler for the designed purpose, while opening the charging door or the combustion chamber.</p>	ČSN EN 303-5:2000, Art. 4.1.5.14.1	0	
<p>Automatic fuel supply</p> <p>The device for the automatic fuel supply must feature a safety element which will prevent burning in the feeder or distributor as well as the lick-through of the flame into this device.</p>	ČSN EN 303-5:2000, Art. 4.1.5.14.2	+	
<p>Boiler accessories</p> <p>If the manufacturer provides the boiler with additional accessories (for a safe and reliable performance) requiring maintenance, such maintenance must be easy and must not require excessive disassembly operations.</p>	ČSN EN 303-5:2000, Art. 4.1.5.15	+	



Requirement	Specification of requirement	Evaluation	Note
<p>Temperature control regulator and limit temperature regulators</p> <p>The control and safety devices described and further specified in the articles below and the choice thereof, depending on the manner of installation, must secure each boiler depending on the type of the heating system and the security of the determined installation within which the boiler is to be installed. The manufacturer shall supply the devices required for individual cases together with the boiler; otherwise, an exact specification must be specified in the instructions for installation, especially as regards limit values and time constants for temperature limiters.</p>	<p>ČSN EN 303-5:2000, Art. 4.1.5.11</p>	+	
<p>Temperature control regulator and limit temperature regulators for open heating systems</p> <p>If the boiler's operation within a heating system is secured physically (temperature limited by the system pressure), the boiler must be equipped with the following devices:</p> <ul style="list-style-type: none"> - Temperature control regulator; - Temperature limiter with automatic recovery. <p>The temperature limiter is not necessary provided that the heating system cannot be quickly or partly disconnected; in these cases (e.g. in boiler without forced exhaust with automatic control), excess heat is released by the opening of the discharge pipeline, in the form of steam released to the environment.</p>	<p>ČSN EN 303-5:2000, Art. 4.1.5.11.1</p>	+	
<p>Temperature control regulator and limit temperature regulators for closed heating systems</p> <p>If the boiler's operation within a heating system is secured thermally, it must be possible to quickly or partly disconnect the heating system, and/or the heat or excess heat capacity not utilized by the heating system must be reliably transmitted to the backup heat accumulator or an equivalent device. For these reasons, the following devices are required:</p> <p>a) Quickly disconnecting heating system; the required devices include:</p> <ul style="list-style-type: none"> - Temperature control regulator; - Temperature limiter with automatic recovery; <p>b) Partly disconnecting heating system; the required devices include:</p> <ul style="list-style-type: none"> - Temperature control regulator; - temperature limiter with automatic recovery; - Reliable equipment for the release of the residual heat capacity in accordance with 4.1.5.11.3; <p>c) non-disconnecting system with a rated heat capacity < 100kW; the required devices include:</p> <ul style="list-style-type: none"> - Temperature control regulator; - Reliable device (in accordance with 4.1.5.11.3) for the discharge of the maximum possible heat capacity in the event of a failure. 	<p>ČSN EN 303-5:2000, Art. 4.1.5.11.2</p>	<p>+</p> <p>0</p> <p>0</p>	

Note: + Compliant
- Non-compliant
0 Not applicable
x Not assessed

Evaluation drafted by: Milan Holomek
Person responsible for the evaluation: Ing. Stanislav Buchta

Date: 2011-05-28 Signed: 

Date: 2011-05-28 Signed: 



Requirement assessed: **Material, surface finish**

Requirement specification: ČSN EN 303-5:2000, Art. 4.1.1, 4.1.2.1, 4.1.3.3

Sample assessed: ORLIGNO 100

Evaluation results: see the table below

Requirement	Specification of requirement	Evaluation	Note
<p>Drawings</p> <p>The following must be specified in the boiler drawings or the respective documentation:</p> <ul style="list-style-type: none"> - Materials used; - Welding procedures, type of weld joints (generally the weld type mark is sufficient) and the filler materials; - Maximum permissible operating temperature (°C); - Maximum permissible operating pressure (bar); - Testing pressure (bar); - Rated heat capacity or the range of heat capacities in accordance with the prescribed fuel for each boiler size (kW) 	ČSN EN 303-5:2000, Art. 4.1.2.1	<p style="text-align: center;">+</p> <p style="text-align: center;">+</p> <p style="text-align: center;">+</p> <p style="text-align: center;">+</p> <p style="text-align: center;">+</p> <p style="text-align: center;">+</p>	
<p>Pressurized steel components</p> <p>The steel specified in Table 1 must be used.</p>	ČSN EN 303-5:2000, Art. 4.1.3.3	+	
<p>Products made of metal materials</p> <p>(1) The following metals and alloys comply with the requirements regarding the manufacturing of products made of metal materials, coming in direct contact with water:</p> <p>a) Corrosion resisting steels (stainless steels): 1.4401 (X5CrNiMo17-12-2), 1.4404 (X2CrNiMo17-12-2), 1.4571 (X6CrNiMo17-12-2), 1.4521 (X2CrMoTi18-2), 1.4462 (X2CrNiMoN22-5-3), 1.4301 (X5CrNi18-10), 1.4307 (X2CrNi18-10), 1.4510 (X3CrTi17), 1.4520 (X2CrTi17), 1.4539 (X1NiCrMoCu25-20-5)</p> <p>c) Copper containing at least 99.90% Cu+Ag and phosphorus (P), ranging from 0.015 – 0.040%.</p>	Ministry of Health Decree 409/2005 Coll., Art. 9	0	

Note:

- + Compliant
- Non-compliant
- 0 Not applicable
- x Not assessed

Evaluation drafted by: Milan Holomek

Date: 2011-05-28

Signed: 

Person responsible for the evaluation:

Ing. Stanislav Buchta

Date: 2011-05-28

Signed: 



Accredited test number: **1001.1** Test title: **Pressurized component tightness and strength test**

Testing method: ČSN EN 303-5:2000, Art. 5.4.1, 5.4.2

Sample tested: ORLIGNO 100

Measuring equipment used: No. 5, 8, 6, 14

Date of testing:	2010-08-10	$t_{ok} = 24.1$ °C	r.h. = 55.2 %	$p_a = 99.138$ kPa
Place of testing:	at the Engineering Test Institute <input checked="" type="checkbox"/>	at the manufacturer <input type="checkbox"/>	at the customer <input type="checkbox"/>	other:

Test results:

Requirement	Specification of requirement	Test evaluation	Note
<i>Pressure test in boilers made from steel sheets or other metal sheets</i>	ČSN EN 303-5:2000, Art. 5.4		
<i>Tests required to be conducted prior to the commencement of manufacture</i> The maximum test pressure is $2 \times p_1$ (p_1 is the maximum operating pressure). The test duration must be at least 10 minutes and, should the testing apply for the whole of the boiler type series, it must be conducted on at least three boiler sizes (smallest, medium and largest). No leakage or visible permanent deformation may appear during the test. A test report must be issued containing the following data: - Exact description of the boiler tested, specifying the drawing number; - Test pressure in bar and test duration; - Test result; - Place and date of testing and the names of the individuals conducting the tests. The test report must be signed by an authorized test engineer and one witness.	ČSN EN 303-5:2000, Art. 5.4.1	+ + + + +	$p_1 = 3.0$ bar
<i>Test conducted in the course of the manufacturing process</i> The test pressure must be 1.3 times p_1 , but at least 4 bar.	ČSN EN 303-5:2000, Art. 5.4.2	+	Without leakage and deformations

Test evaluation: Leakage or visible permanent deformation appeared during the test.

Tested by: Milan Holomek

Date: 2011-05-28

Signed: 

Reviewed by: Ing. Stanislav Buchta

Date: 2011-05-28

Signed: 



Accredited test number:

1003 Test title: **Surface temperature test**

Testing method:

ČSN EN 303-5:2000, Art. 5.12

Sample tested:

ORLIGNO 100

Measuring equipment used:

No. 5, 6, 7, 8

Place of testing:	at the Engineering Test Institute	<input checked="" type="checkbox"/>	at the manufacturer	<input type="checkbox"/>	at the customer	<input type="checkbox"/>	other:
-------------------	---	-------------------------------------	------------------------	--------------------------	--------------------	--------------------------	--------

Test results:

Requirement	Specification of requirement	Test evaluation	Note
<p>Surface temperature</p> <p>During the tests according to 5.12, the average temperature of the boiler door surface and the cleaning eye covers on the operator's side must not exceed the ambient temperature by more than 100 K.</p> <p>During the tests according to 5.12, the surface temperature of the outer side of the boiler bottom must not exceed the ambient temperature by more than 65 K. This test is not performed if the manufacturer requires that the boiler is installed on a non-combustible material base. Alternative testing method: The surface temperature below the boiler (according to EN 304) at any place must not exceed 80°C.</p> <p>During the tests according to 5.12, the surface temperature of the operating handles and all parts with which the operating staff will come in contact must not exceed the ambient temperature by more than:</p> <ul style="list-style-type: none"> - 35 K as regards metals and similar materials; - 45 K as regards porcelain and similar materials; - 60 K as regards plastic material and similar materials 	ČSN EN 303-5 Art. 4.2.7	+	



Measurement results:

Date of testing:	2011-05-27	$t_{ok} = 23.1$	$^{\circ}\text{C}$	r.h. = 54	%	$p_a = 98.658$	kPa
------------------	------------	-----------------	--------------------	-----------	---	----------------	-----

Average temperatures of boiler walls, doors and covers ($^{\circ}\text{C}$):	
Fuel type	Wood pellets
Front wall	59.7
Rear wall	34.0
Right wall	35.2
Left wall	35.2
Upper wall	33.0
Lower wall	51.3
Upper door	68.7
Ash-pan door	70.0
Temperatures of control elements ($^{\circ}\text{C}$):	
Upper door handle - plastic	46
Ash pan door handle - plastic	52
Electr. regulation - plastic	34



Measurement uncertainty: 2°C for temperatures within the range of $(0 \div 250)^{\circ}\text{C}$

The above-specified 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."

Test evaluation: The prescribed temperature rise values have not been exceeded.

Tested by: Milan Holomek Date: 2011-05-28

Reviewed by: Ing. Stanislav Buchta Date: 2011-05-28

Signed: 
Signed: 



Accredited test number: **1004.1** Test title: **Test of heat capacity, input and efficiency**
 1004.2 **Test of combustion product temperature**

Testing method: ČSN EN 303-5:2000, Art. 5.7 to 5.10

Sample tested: ORLIGNO 100

Measuring equipment used: No. 1 ÷ 13

Place of testing:	at the Engineering Test Institute	<input checked="" type="checkbox"/>	at the manufacturer	<input type="checkbox"/>	at the customer	<input type="checkbox"/>	other:
-------------------	-----------------------------------	-------------------------------------	---------------------	--------------------------	-----------------	--------------------------	--------

Test results:

Requirement	Specification of requirement	Test evaluation	Note
<p>Requirements regarding boiler capacity Fulfilment of the requirements specified below regarding the boiler capacity must be checked with the use of test fuels. The rated heat capacity and the heat output range may fluctuate depending on the fuel. The requirements regarding the boiler efficiency and emissions are divided into three categories. So that the requirements for the given category can be deemed fulfilled, all efficiency and emission limit values for the category concerned must be fulfilled.</p>	ČSN EN 303-5 Art. 4.2	+	
<p>Boiler efficiency During tests according to 5.7, 5.8 and 5.10, the boiler efficiency for the rated heat capacity must not be lower than the values specified in the formulas shown in Fig. 1.</p>	ČSN EN 303-5 Art. 4.2.1	+	
<p>Combustion product temperature In boilers operated under the rated heat capacity and at temperatures lower than 160 K above the ambient temperature, the manufacturer must provide recommendations regarding the mounting of the flue duct for adequate draught and to prevent condensation and soot depositing in the entire chimney.</p>	ČSN EN 303-5 Art. 4.2.2	+	
<p>Draught The determined values of draught, as specified in Fig. 2, are the maximum values. They also serve as the recommended values for the chimney. If the maximum draught values are exceeded, there must be a special reference to technical instruction manuals.</p>	ČSN EN 303-5 Art. 4.2.3	+	
<p>Period of burning In boilers with manual fuel charging and under the rated heat capacity, the period of burning must be declared by the manufacturer and must be at least: - 2 hours as regards biological fuels - 4 hours as regards fossil fuels In boilers with automatic fuel charging, the period of burning must be at least 6 hours.</p>	ČSN EN 303-5 Art. 4.2.4	+	



<p>Minimum heat capacity The minimum heat capacity must not be higher than 30% of the rated heat capacity. In boilers with manual fuel charging, the minimum heat output may be higher. In such a case, the manufacturer must state in the technical documentation how the generated heat will be dissipated.</p>	<p>ČSN EN 303-5 Art. 4.2.5</p>	<p>+</p>	
<p>Determination of rated heat capacity The heat capacity declared by the manufacturer must be verified by testing, with tolerance of $\pm 8\%$. The rated heat capacity declared by the manufacturer must be achieved at least during one burning period. Otherwise, the rated heat capacity must be modified.</p>	<p>ČSN EN 303-5 Art. 5.8.2</p>	<p>+</p>	

Measurement results:

Average measured and calculated values (solid fuels):

	I. ORLIGNO 100 2011-05-27 Rated capacity	II. ORLIGNO 100 2011-05-28 Minimum capacity
Test (period of burning) No.:		
Type of boiler:		
Date of testing:		
Test conditions:		
Type of fuel:	Wood pellets	Wood pellets
Rated heat capacity (specified by manufacturer) [kW]	16	16
Combustion product temperature [°C]	156.7	89.4
Fuel consumption [kg/hour]	3.606	1.182
Inlet water temperature [°C]	56.2	56.6
Outlet water temperature [°C]	82.8	75.2
Cooling water temperature [°C]	15.7	20.7
Cooling water flow rate [m ³ /hour]	0.188	0.071
Draught behind boiler [Pa]	13.0	13.0
Ambient temperature [°C]	23.1	24.1
Relative air humidity [%]	54.0	55.0
Barometric pressure [kPa]	98.658	99.858

Analysis of combustion products:

	I. ORLIGNO 100 2011-05-27 Rated capacity	II. ORLIGNO 100 2011-05-28 Minimum capacity
Test (period of burning) No.:		
Type of boiler:		
Date of testing:		
Test conditions:		
Type of fuel:	Wood pellets	Wood pellets
Oxygen, O ₂ [%]	8.81	12.26
Carbon dioxide CO ₂ [%]	11.07	7.86
Carbon monoxide CO [ppm]	79	347
Higher hydrocarbons OGC [ppm]	3	6
Nitrogen oxides NO _x [ppm]	106	66



Auxiliary combustion values (solid fuels):

Test (period of burning) No.: Type of boiler: Date of testing: Test conditions:	I. ORLIGNO 100 2011-05-27 Rated capacity	II. ORLIGNO 100 2011-05-28 Minimum capacity
Type of fuel:	Wood pellets	Wood pellets
Stoichiometric oxygen volume [m ³ /kg]	0.959	0.960
Stoichiometric air volume [m ³ /kg]	4.568	4.571
Stoich. vol. of dry comb. products [m ³ /kg]	4.481	4.483
Maximum content of CO ₂ [%]	19.4	19.4
Stoichiometric air multiple [-]	1.71	2.37
Vol. of dry comb. products, actual [m ³ /kg]	7.852	11.021
Content of H ₂ O in combustion air [m ³ /kg]	0.123	0.182
Content of H ₂ O in combustion products [m ³ /kg]	0.920	0.979

Calculated values - thermal overview

Test (period of burning) No.: Type of boiler: Date of testing: Test conditions:	I. ORLIGNO 100 2011-05-27 Rated capacity	II. ORLIGNO 100 2011-05-28 Minimum capacity
Type of fuel:	Wood pellets	Wood pellets
Loss of sensible heat of combustion products (chimney) [%]	9.4	6.2
Loss of gas underburning [%]	0.1	0.3
Loss of mechanical underburning [%]	0.1	0.1
Loss of heat transfer into the environ. [%]	4.0	8.8
Total loss [%]	13.5	15.3
Efficiency – indirect method [%]	86.5	84.7
Heat input [kW]	17.2	5.6
Heat capacity [kW]	14.8	4.7
Uncertainty of determining heat capacity [kW]	0.3	0.1
Efficiency – direct method [%]	86.0	84.1
Capacity / rated capacity [%]	92.4	29.6

At the rated capacity, the boiler efficiency regarding wood pellet burning meets the requirements applicable to Class 3 according to ČSN EN 303-5:2000, Fig. 1.



Fuel analysis

Fuel type	Wood pellets			
Analytical indicator	Symbol	Unit	Value	Uncertainty
Heat of combustion	Q_s	[MJ/kg]	18.72	0.14
Caloric value	Q_j	[MJ/kg]	17.15	0.14
All water in original condition	W_t^r	[% by weight]	7.61	0.03
Ash	A	[% by weight]	0.16	0.01
Carbon	C	[% by weight]	47.05	0.25
Hydrogen	H	[% by weight]	6.33	0.10
Nitrogen	N	[% by weight]	0.29	0.10
Sulphur	S	[% by weight]	0.031	0.001
Chlorine	Cl	[% by weight]	0.015	0.002
Oxygen – calculation for 100%	O	[% by weight]	38.50	
CO ₂ max	CO _{2max}	[% by volume]	19.38	
Conversion factor f_{emis} for the conversion of emissions in [mg/m ³] to [mg/MJ]	f_{emis}	[-]	0.26187	
Min. required volume of O ₂	$V_{O_2 min}$	[m ³ /kg]	0.959	
Min. required dry air volume	$V_{air min}$	[m ³ /kg]	4.568	
Min. quantity of dry chimney gas	$V_{qty min}$	[m ³ /kg]	4.481	

Note: Sample in the original condition

Measurement uncertainty: specified in the table of measurement results

The above-specified 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."

The heat capacity measured is within the tolerance of 8%;±
Boiler class 3;
The temperature of combustion products is lower than 160°C above the ambient temperature, see the respective data in the technical documentation;

Test evaluation:

The measured draught values do not exceed the maximum values according to Figure 2;
The period of burning is more than 6 hours during wood pellet burning;
The minimum heat capacity does not exceed 30% of the rated heat capacity.

Tested by: Milan Holomek Date: 2011-05-28

Signed: 

Reviewed by: Ing. Stanislav Buchta Date: 2011-05-28

Signed: 



Accredited test number: **1004.1** Test title: **Test of heat capacity, input and efficiency Deviation of type A.1.1**

Testing method: ČSN EN 303-5:2000, Art. 5.7, 5.8 and 5.10

Sample tested: ORLIGNO 100

Measuring equipment used: No. 1 ÷ 13

Date of test and ambient conditions - see the "Heat capacity, input and efficiency" test

Place of testing:	at the Engineering Test Institute	<input checked="" type="checkbox"/>	x	at the manufacturer	<input type="checkbox"/>	at the customer	<input type="checkbox"/>	other:
-------------------	-----------------------------------	-------------------------------------	---	---------------------	--------------------------	-----------------	--------------------------	--------

Test results:

Requirement	Specification of requirement	Test evaluation	Note
Type A deviations			
A.1 Deviation for Austria			
Boiler efficiency for rated heat capacity and minimum heat capacity:			
<i>a) Manual fuel supply</i>			
≤ 10 kW	73 %		
> 10 kW ≤ 200 kW	$(65.3 + 7.7 \log Q_N) \%$		
> 200 kW	83 %		
<i>b) Automatic fuel supply</i>			
≤ 10 kW	73 %		
> 10 kW ≤ 200 kW	$(68.3 + 7.7 \log Q_N) \%$		
> 200 kW	86 %		
	ČSN EN 303-5 Annex A Art. A 1.1	+	

Measurement results:

Boiler capacity	Calorific efficiency Required	Calorific efficiency Measured
Rated	77.6	86.0
Minimum	77.6	84.1

Test evaluation:

The measured efficiency is higher than required.

Tested by: Milan Holomek

Date: 2011-05-28

Signed: 

Reviewed by: Ing. Stanislav Buchta

Date: 2011-05-28

Signed: 



Accredited test number:

1005.1 Test title: **Combustion efficiency test - emissions**

Testing method:

ČSN EN 303-5:2000, Art. 5.7, 5.9 and 5.10

Sample tested:

ORLIGNO 100

Measuring equipment used:

No. 1, 5, 6, 7, 11, 12

Date of test and ambient conditions - see the "Heat capacity, input and efficiency" test

Place of testing:	at the Engineering Test Institute	<input checked="" type="checkbox"/>	at the manufacturer	<input type="checkbox"/>	at the customer	<input type="checkbox"/>	other:
-------------------	-----------------------------------	-------------------------------------	---------------------	--------------------------	-----------------	--------------------------	--------

Test results:

Requirement	Specification of requirement	Test evaluation	Note
Limit emission values The emission values must be low during burning. This requirement is considered fulfilled if the emission values specified in table 7 are not exceeded, provided that the boiler is operated under rated heat capacity, or as regards boilers with a range of heat capacity operated under the rated heat capacity and the minimum heat capacity in accordance with 5.7, 5.9 and 5.10. The requirement regarding the limit values of dust emissions under the minimum heat capacity is fulfilled if the requirements concerned are fulfilled under the rated heat capacity.	ČSN EN 303-5 Art. 4.2.6	+	

Measurement results:

Average values of gas emissions of O₂, CO₂, CO, OGC, NO_x and dust:

Boiler capacity	O ₂ [%]	CO ₂ [%]	CO [ppm]	OGC [ppm]	NO _x [ppm]	Dust [mg/m ³]	CO [mg/m ³] O ₂ = 10%	OGC [mg/m ³] O ₂ = 10%	NO _x [mg/m ³] O ₂ = 10 %	Dust [mg/m ³] O ₂ = 10 %
Rated	8.81	11.07	79	3	106	18	89	5	197	16
Minimum	12.26	7.86	347	6	66	-	546	12	170	-

Test evaluation:

Emissions – Class 3 if wood is burned.

Tested by: Milan Holomek

Date: 2011-05-28

Signed: 

Reviewed by: Ing. Stanislav Buchta

Date: 2011-05-28

Signed: 



Accredited test number: **1005.1** Test title: **Combustion efficiency test - emissions Deviation of type A.1.2**

Testing method: ČSN EN 303-5:2000, Art. 5.7, 5.9 and 5.10

Sample tested: ORLIGNO 100

Measuring equipment used: No. 1, 5, 6, 7, 11, 12

Date of test and ambient conditions - see the "Heat capacity, input and efficiency" test

Place of testing:	at the Engineering Test Institute	x	at the manufacturer	<input type="checkbox"/>	at the customer	<input type="checkbox"/>	other:
-------------------	-----------------------------------	---	---------------------	--------------------------	-----------------	--------------------------	--------

Test results:

Requirement	Specification of requirement	Test evaluation	Note				
A.1 Deviation for Austria							
Limit emission values							
	mg/MJ ¹⁾	CO	NO _x	OGC	Dust		
Manual fuel supply	Biological fuels	1100	150 ²⁾	80	60	ČSN EN 303-5 Annex A Art. A 1.2	+
	Fossil fuels	1100	100	80	60		
Automatic fuel supply	Biological fuels	500 ³⁾	150 ²⁾	40	60		
	Fossil fuels	500	100	40	40		
¹⁾ With respect to the calorific value of the fuel used ²⁾ Limit values of NO _x apply for boilers burning wood only ³⁾ At 30% of the rated heat capacity, the limit value may be exceeded by 50%							

Measurement results:

Boiler capacity	Average emission values								
	Measured values					Converted values of O ₂ = 0%			
	O ₂ [%]	CO [ppm]	NO _x [ppm]	OGC [ppm]	Dust [mg/m ³]	CO [mg/MJ]	NO _x [mg/MJ]	OGC [mg/MJ]	Dust [mg/MJ]
Rated	8.81	79	106	3	18	45	98	2	8
Minimum	12.26	347	66	6	-	273	85	6	-

Test evaluation: The measured emission values meet the determined limits.

Tested by: Milan Holomek Date: 2011-05-28

Signed: 

Reviewed by: Ing. Stanislav Buchta Date: 2011-05-28

Signed: 



Accredited test number: **1005.1** Test title: **Combustion efficiency test - emissions Deviation of type A.2**

Testing method: ČSN EN 303-5:2000, Art. 5.7, 5.9 and 5.10

Sample tested: ORLIGNO 100

Measuring equipment used: No. 1, 5, 6, 7, 11, 12

Date of test and ambient conditions - see the "Heat capacity, input and efficiency" test

Place of testing:	at the Engineering Test Institute	x	at the manufacturer	<input type="checkbox"/>	at the customer	<input type="checkbox"/>	other:
-------------------	-----------------------------------	---	---------------------	--------------------------	-----------------	--------------------------	--------

Test results:

Requirement	Specification of requirement	Test evaluation	Note
A.2 Deviation for Germany			
For Germany, only Class 3 in accordance with Table 7 is acceptable. Central heating boilers burning solid fuels with the rated heat capacity exceeding 15 kW must be constructed and operated so that the emissions meet the following requirements, depending on the fuel used:			
Fuel	Emission values [g/m ³]	CO	Dust
Black and brown coal	Reference content of O ₂ = 8%	-	0.15
Wood in natural condition	Reference content of O ₂ = 13%	4 ¹⁾ 2 ²⁾ 1 ³⁾ 0.5 ⁴⁾	0.15
¹⁾ 15 kW < O _N ≤ 50 kW ²⁾ 50 kW < O _N ≤ 150 kW ³⁾ 150 kW < O _N ≤ 500 kW ⁴⁾ O _N > 500 kW			
	ČSN EN 303-5 Annex A Art. A.2	+	

Measurement results:

Boiler capacity	Average emission values								
	Measured values				Converted values				
	O ₂ [%]	CO [ppm]	OGC [ppm]	Dust [mg/m ³]	CO O ₂ = 10 % [mg/m ³]	Dust O ₂ = 10 % [mg/m ³]	OGC O ₂ = 10 % [mg/m ³]	CO O ₂ = 13 % [mg/m ³]	Dust O ₂ = 13 % [mg/m ³]
Rated	8.81	79	3	18	89	16	5	65	12
Minimum	12.26	347	6	-	546	-	12	397	-

Test evaluation:

The measured emission values meet the determined limits.

Tested by: Milan Holomek Date: 2011-05-28

Signed: 

Reviewed by: Ing. Stanislav Buchta Date: 2011-05-28

Signed: 



Accredited test number: **1005.1** Test title: **Combustion efficiency test - emissions Deviation of type A.5**

Testing method: ČSN EN 303-5:2000, Art. 5.7, 5.9 and 5.10

Sample tested: ORLIGNO 100

Measuring equipment used: No. 1, 5, 6, 7, 11, 12

Date of test and ambient conditions - see the "Heat capacity, input and efficiency" test

Place of testing:	at the Engineering Test Institute	x	at the manufacturer	<input type="checkbox"/>	at the customer	<input type="checkbox"/>	other:
-------------------	-----------------------------------	---	---------------------	--------------------------	-----------------	--------------------------	--------

Test results:

Requirement					Specification of requirement	Test evaluation	Note
A.5 Deviation for Switzerland							
For boilers burning wood in natural condition, only Class 3 of Table 7 is acceptable. The use of coal, coal briquettes and coke with the specific content of sulphur > 1% is not permitted.					ČSN EN 303-5 Annex A Art. A.5	+	
Fuel	Q _N [kW]	Emissions [mg/m ³]	CO	Dust			
Fossil	O _N ≤ 70 70 < O _N ≤ 1000	Reference content of O ₂ = 7%	4000 1000	- 150			
Wood in natural condition	O _N ≤ 70 70 < O _N ≤ 200 200 < O _N ≤ 500 500 < O _N ≤ 1000	Reference content of O ₂ = 13%	4000 2000 1000 500	- 150 150 150			

Measurement results:

Boiler capacity	Average emission values								
	Measured values				Converted values				
	O ₂ [%]	CO [ppm]	OGC [ppm]	Dust [mg/m ³]	CO O ₂ = 10 % [mg/m ³]	Dust O ₂ = 10 % [mg/m ³]	OGC O ₂ = 10 % [mg/m ³]	CO O ₂ = 13 % [mg/m ³]	Dust O ₂ = 13 % [mg/m ³]
Rated	8.81	79	3	18	89	16	5	65	12
Minimum	12.26	347	6	-	546	-	12	397	-

Test evaluation:

The measured emission values meet the determined limits.

Tested by: Milan Holomek Date: 2011-05-28

Signed: 

Reviewed by: Ing. Stanislav Buchta Date: 2011-05-28

Signed: 



Accredited test number: **1006.1** Test title: **Test of control, regulation and security elements**

Testing method: ČSN EN 303-5:2000, Art. 5.13

Sample tested: ORLIGNO 100

Measuring equipment used: No. 3, 5, 6, 8

Date of test and ambient conditions - see the "Heat capacity, input and efficiency" test

Place of testing:	at the Engineering Test Institute	<input checked="" type="checkbox"/>	at the manufacturer	<input type="checkbox"/>	at the customer	<input type="checkbox"/>	other:
-------------------	-----------------------------------	-------------------------------------	---------------------	--------------------------	-----------------	--------------------------	--------

Test results:

Requirement	Specification of requirement	Test evaluation	Note
Inspection of the function of the temperature regulator and temperature limiter If the temperature regulator is in normal operation, the temperature on the temperature indicator must not exceed 100°C; the thermal fuse or temperature limiter, or the heat dissipation device must not be in operation. The test is repeated with the control temperature regulator out of order. The aim is to check whether the temperature limiter or temperature sensor will stop the heating regime when the maximum temperature declared by the manufacturer (max. 110°C) is reached.	ČSN EN 303-5, Art. 5.13	+	

Measurement results:

Temperature regulator test

Adjusted burner (boiler) output	Heat collection by cooling device	Temperature set at the regulator	Water temperature at regulator off	Temperature at boiler thermometer, with regulator on/off
Rated	(40 ± 5)%	90°C	91.4°C	90°C

Temperature limiter test

Adjusted burner (boiler) output	Heat collection by cooling device	Temperature set at the limiter	Water temperature at limiter off	Temperature at boiler thermometer, with regulator on/off
Rated	(40 ± 5)%	95°C	96.4°C	95°C

Test evaluation:

During the temperature regulator test, the water temperature at the outlet from the boiler did not exceed 100°C.

During the safety temperature regulator test, the water temperature at the outlet from the boiler did not exceed 110°C.

Tested by: Milan Holomek Date: 2011-05-28

Signed: 

Reviewed by: Ing. Stanislav Buchta Date: 2011-05-28

Signed: 



The test methods in this Report were applied without deviations, additions or exceptions.

V. List of referenced documents

- Order B-37728 dated 2010-06-17
- Contract B-37728/32 dated 2010-07-13
- Contract Supplement No. 1, see letter ref. No. 0210-Bs/2930 dated 2011-05-18
- Act 22/1997 Coll., on the technical requirements for products, as amended
- Act 34/1996 Coll., on consumer protection, as amended
- Act 185/2001 Coll., on waste
- Act 477/2001 Coll., on packaging
- ČSN EN 303-5:2000 - Central heating boilers - Part 5: Central heating boilers burning solid fuels, with manual or automatic fuel supply and max. rated heat capacity of 300 kW - Terminology, requirements, testing, and marking
- ČSN 06 1008:1997 – Fire safety of heat equipment
- Instructions for operation, maintenance and installation of ORLIGNO 100 hot-water boilers
- List of drawings: KOR 100-12-00-00, KOR 100-03-00-00, KOR 100-02-00-00
- Material certification No. 727AMBU0/07C, 727NKCG1/01c, 39/2011

The persons stated below are accountable for the accuracy of the above-specified data:

Ing. Stanislav Buchta
Head of Boiler and Industrial Heat
Equipment Team



Ing. Jiří Dvořák
Head of Heat and Ecological
Equipment Test Station