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Report

on the

test of a heating boiler according to EN 303-5

Report A Summarized Validation

Test laboratory	TÜV SÜD Industrie Service GmbH Abteilung Feuerungs- und Wärmetechnik Prüfbereich Wärmetechnik	
Subject of test	Heating boiler for solid fuels	
	Type	BioWIN ..2 or BW ...2
	Sizes	BioWIN 102, BioWIN 152, BioWIN 212, BioWIN 262 and BioWIN 332
	Models / options	see page 2
	Fuel:	compressed wood C1
	Fuel supply:	automatic stoking
	Combustion air supply: with an induced draught fan	
Customer	Windhager Zentralheizung Technik GmbH Anton-Windhager-Strasse 20 5201 SEEKIRCHEN, ÖSTEREICH	
Scope	Summarized validation of the requirements of DIN EN 303-5 on the heating boilers	
Expert	Dipl.-Ing. Uwe Schlosser	
Period of test	July and August 2016	
Basis of test	DIN EN 303-5:2012-10	

Date: 2016-08-04

Our reference:
IS-TAF-MUC/sl

Report No. H-A 1358-03/16
Order no. 2571913

Document:
HA13580316_eng.doc

Page 1

This document includes
18 pages and 8 enclosures

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approval of TÜV SÜD Indus-
trie Service GmbH.

The test results refer exclu-
sively to the units under test.

This test report is also issued in a German version. In any case of doubts the German version is binding.

In this test report a comma is used as a decimal separator.



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1 Summary

Customer	Windhager Zentralheizung Technik GmbH, A-5201 Seekirchen
Manufacturer	Windhager Zentralheizung Technik GmbH, A-5201 Seekirchen
Construction	Heating boiler made of steel according to DIN EN 303-5 with an induced draught fan for not room sealed operation operating mode: modulating Combustion: gasification and combustion in combustion chamber within a burner pot Fuel supply: automatic stoking Grate design: moving grate within burner pot Ash removal: automatic Fittings: turbulators in second section of heat exchanger tubes
Type	BioWIN ..2 or BW ..2, see also clause 6.4
Sizes	BioWIN 102, BioWIN 152, BioWIN 212, BioWIN 262 and BioWIN 332
Models	BioWIN ..2 Klassik, BioWIN ..2 Premium, BioWIN ..2 Exklusiv
Options	- smaller or greater integral fuel hopper, - operating unit, type: InfoWIN (lite) or InfoWIN Touch

Technical data of the heating boiler series (manufacturer's information)

No	Size	Nominal heat output range kW	Fuel –	max. flue gas temp °C	Drawing no. boiler body
1	BioWIN 102	3,0 – 9,9	C1	78	1-464-050450 dated 2013-06-19
2	BioWIN 152	4,3 – 15,0	C1	99	1-464-050450 dated 2013-06-19
3*	BioWIN 212	6,3 – 21,0	C1	107	1-464-048830 dated 2013-06-19
4	BioWIN 262	7,6 – 25,9	C1	114	1-464-048830 dated 2013-06-19
5	BioWIN 332	9,8 – 32,5	C1	115	1-464-048830 Ä-St. 03 dated 2015-12-09

A: Log wood B1: Chipped wood (water content 15 to 35 %) B2: Chipped wood (water content greater 35 %) C1: Compressed wood Pellets (6 mmØ)
D: Sawdust

* not tested intermediate size, data given by manufacturer

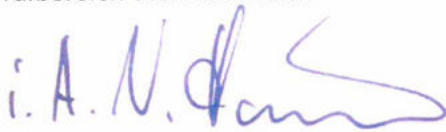
Destination countries	all countries of European community and Swiss, except UK
Boiler class	5
Maximum allowable temperature	85 °C
Max. allowable operating pressure	3 bar
Necessary flue gas draught	5 Pa
Electrical power supply	230 V, 50 Hz

The examined heating boilers comply with the requirements of DIN EN 303-5:2012-10 as well as with the additional requirements on the destination countries AT, HR, DK, DE, CH and IT according to annex C, clauses C.2, C.3, C.4, C.5, C.6 and C.8 of DIN EN 303-5:2012-10 when respecting the measure documented in clause 7.3.

The proof on the national requirements of the destination countries UK according to annex C.7 of DIN EN 303-5:2012-10 was not part of the order by the customer and must be evaluated separately when required.

A sufficient safety is proven according to the results out of the tests of the products.

Feuerungs- und Wärmetechnik
Prüfbereich Wärmetechnik



Johannes Steiglechner
Leiter
Feuerungs- und Wärmetechnik

2 Scope of test

The manufacturer Windhager Zentralheizung Technik GmbH intends to add the heating boiler size BioWIN 332, options with a greater integral fuel hopper and the system control with operating unit type InfoWIN Touch to the heating boiler range type BioWIN ..2.

The manufacturer Windhager Zentralheizung Technik GmbH orders the Summarized Validation on the requirements according to DIN EN 303-5:2012-10 of the heating boilers inclusive the requirements on electrical safety.

The necessary flue gas draught shall also be added according to manufacturer's instructions.

Note:

The designations BioWIN ..2 and BW ..2 of the heating boilers are quoted representively in this report and the here documented reports on partial tests due to a lack of space in some clauses. All information is related to both designations BioWIN ..2 and BW ..2 as well to all further models and options, see also clause 6.4.

3 Basis of test

DIN EN 303-5:2012-10	Heating boilers - Heating boilers for solid fuels, manually and automatically stoked, nominal heat output of up to 500 kW
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4 Applied test documents

- test reports on partial test on the boiler series according to chapter 7 of this report
- manufacturer's documents according to chapter 5 of this report
- supplementary test no. H-A 1358-02/15 dated 2015-07-09 of TÜV SÜD Industrie Service GmbH, boiler performance data on heating boiler range type BioWIN ..2 including intermediate sizes
- test report no. H-A 1358-01/14 dated 2014-12-17 of TÜV SÜD Industrie Service GmbH Summarized Validation on the requirements according to DIN EN 303-5:2012-10 of the heating boilers BioWIN ..2 with system control with operating unit type InfoWIN

5 Enclosures and further applicable documents

Enclosures, the enclosures A, B, C1 to C5 are documented with the German version of this report

A	User manual
B	Installation manual
C1 to C5	Drawings
D	Summarising list of heating boilers of heating boiler range including intermediate sizes

Documents

Quantity	Designation (see also clause 7)
1	Test report B / construction requirements
4	Test reports C / boiler performance requirements
1	Test report E / electric safety
1	Test report SP / operational safety
1	Test report R / evaluation of risk analysis



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6 Description of the boiler series

6.1	Construction	Warm water heating boiler with - integral fuel hopper - automatic stoking device - combustion chamber out of steel with integrated burner pot - automatic cleaning device and a movable grate - turbulators in second section of heat exchanger tubes - flue gas manifold, induced draught fan and a flue gas connector at top of heating boiler
6.2	Operation	Modulating operation within heat output range
6.3	Accessories	
6.3.1	Control system	Control board, type BioWIN FMP BW2, operating unit, type: InfoWIN or operating unit, type: InfoWIN Touch, both as unit with boiler
6.3.1.1	Boiler's water temperature control	PT-1000 sensor positioned in immersion pocket, no further proof according to DIN EN 14597 available at test, processing of signal by control system, sensor length 50 mm, immersion pocket at right, top, rear side of heating boiler with an inner depth of 126 mm
6.3.1.2	Safety temperature limiter (manual reset) (boiler's water)	Type 89, manufacturer Rathgeber, DIN-Register-No. STB 1154 according to DIN EN 14597, sensor placed in same immersion pocket together with boiler's water temperature sensor, inner depth of 126 mm of immersion pocket, sensor length 88 mm, switches of fuel supply and induced draught fan, set point: 100 °C
6.3.1.3	Safety-temperature limiter to prevent back burning (manual reset) (at feeder screw)	Type 89, manufacturer Rathgeber, DIN-Register-No. STB 1154 according to DIN EN 14597, sensor fixed at outside of housing of the feeder screw, sensor length 88 mm, if activated burnout phase started by control system, open and close of grate, intermitted operation of feeder screw for a period of 10 minutes, induced draught fan operated at maximum speed, direct disconnection form electrical power supply of suction turbine, after the 10 minutes stop of feeder screw and continuous operation of induced draught fan at 1500 min ⁻¹ , STB must be manually reset as well as alarm note at operating unit, set point: 95 °C
6.3.1.4	Flue gas temperature sensor	PT-1000 sensor in flue gas way at flue gas connector, processing of signal by control system only to display flue gas temperature

6.3.1.5	Combustion chamber temperature control	Thermocouple type K positioned at top of combustion chamber in flue gas way, processing of signal by control system to control combustion
6.3.2	Water reservoir of fire extinguisher	Reservoir of 8 litres with content indication, sufficient water content must be controlled by operator and must be refilled up to maximum level if necessary
6.3.3	Activator valve of fire extinguisher	Valve out of melting material positioned at feeder screw valve material manufacturer Ögussa, type Sonderweichlot 562 melting point 118 °C (manufacturer's information, functional test was not part of this test)
6.3.4	Position switch at combustion chamber door	Manufacturer OMRON, type Z-15-GW4-B 250 V, AC, 15 AC, CE, control of closed position of combustion chamber door, if activated automatic stoking will be switched off and induced draught fan will be switched to maximum speed by control system
6.3.5	Position switch at grate	Manufacturer Crouzet, type 83.161.8 250 V, AC, 0,1 A
6.3.6	Fuel supply	Integrated automatic fuel supply with an integral fuel hopper automatic fuel supply includes: - proximity switch at bottom of integral fuel hopper to maintain boundary layer in fuel hopper - upwards directed feeder screw - fire extinguisher device with connection at upwards directed feeder screw - Surveillance of temperature at feeder screw, sensor fixed at outside of upwards directed feeder screw - fuel slide Integral fuel hopper could be refilled automatically by means of a suction turbine (only boiler models Premium and Exklusiv). According to manufacturer's information refilling starts only when boiler operation is stopped and additional inductive proximity switch is activated by means of a drop lid. The internal fuel hopper, the automatic refilling system of the internal fuel hopper and the external fuel hopper were not part of the testing.



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6.3.7	Feeder screw drive	Motor driven upwards directed feeder screw Manufacturer SPG, type S8A135A122-A124 Motor: 220 - 240 V, 50 Hz, 15 W, 1200 min⁻¹, with gear box type S8DA250B1-A122 BioWIN 102 and BioWIN 152: gear wheel with 36 teeth on motor shaft, gear wheel with 45 teeth on shaft of feeder screw BioWIN 212 and BioWIN 332: gear wheel with 45 teeth on motor shaft, gear wheel with 36 teeth on shaft of feeder screw
6.3.8	Suction turbine	Manufacturer International Power Components Srl (IPC), Typ Y4Z-A44-003, Motor: 230 V, 50 Hz, 1450 W (only models Premium and Exklusiv) Supervision of control by means of relais and integration of relais contact (opener) in safety chain
6.3.9	Position switch of lid of integral fuel hopper	Proximity switch, manufacturer Gavazi, type IA, 10 - 40 V, DC, 100 mA, surveillance of closed position of lid of internal fuel hopper (only model Klassik)
6.3.10	Position switch of drop lid in integral fuel hopper	Proximity switch, manufacturer Gavazi, type IA, 10 - 40 V, DC, 100 mA, surveillance of closed position of drop lid that is positioned underneath of suction turbine in internal fuel hopper (only models Premium and Exklusiv)
6.3.11	Surveillance of boundary layer in fuel hopper	Proximity switch, manufacturer Gavazi, type EC 3025 NPAPL, 10 - 40 V, DC, 200 mA
6.3.12	Cleaning device of heat exchanger tubes	Motor driven cleaning device of heat exchanger tubes manufacturer SPG, type ISG-3230WHB-1 Motor: 230 V, 50 Hz, 0,26 A, 3,8 min⁻¹, 28,5 W, CE
6.3.13	Cleaning device of area beneath heat exchanger tubes and of burner pot	Two common motor driven screws to transport ash into an external ash box positioned beneath the integral fuel hopper manufacturer Moons, type 64S032L1-80002 Motor: 230 V, 50 Hz, 22 W



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6.3.14	Induced draught fan	BioWIN 102 and BioWIN 152: Motor type Condenser Run Outer Rotor, Motor & Blower, 230 V, 50 Hz, 55 W, 2680 min⁻¹, OSB-9225-A1426A, fan wheel Ø140 mm, 6 blades, 26,5 mm high BioWIN 212 and BioWIN 262: Motor type Condenser Run Outer Rotor, Motor & Blower, 230 V, 50 Hz, 97 W, 2480 min⁻¹, OSB-9225-A1626A, fan wheel Ø160 mm, 8 blades, 26 mm high BioWIN 332: Motor type Condenser Run Outer Rotor, Motor & Blower, 230 V, 50 Hz, 100 VAC, OSB-9235-A2145A, fan wheel Ø210 mm, 6 blades, 45 mm high
6.3.15	Ignition device	Ignition device includes two heating elements with fins to en- large surface manufacturer Loyal, type no information given at test, each heating element 500 W, 115 V, positioned in primary combustion air supply of burner pot
6.3.16	Grate	Two metal plates, one moveable, driven by motor motor manufacturer Feinwerk Technik, type GZ10Z 48,6, 230 V, 50 Hz, 375 min⁻¹, i 48,6, n2 7,7 min⁻¹
6.3.17	Combustion air	Primary: fix with a given free diameter, on the inlet tube is an attachment fixed with two measurement points of a pressure cell with different diameters of the heating boilers size BioWIN 102 or BioWIN 152: type 012570 10/15, length 155 mm, 55/44/25/50 mmØ and BioWIN 212 or BioWIN 332: type 012571 21/26, length 155 mm, 55/44/30/50 mmØ Secondary: fix with a given free diameter The combustion air quantity is given by the number and size of holes in the burner pot. Surveillance of operation of induced draught fan at start phase of heating boiler by measure of differential pressure in the at- tachment of the inlet tube of primary combustion air supply Pressure cell manufacturer Huba Control, type DDS 605.99722, 0.2 (0.1)30~, 19/13 Pa, ADODHH, CE-0085AP0974

6.3.18	Burner pot	Integral burner pot in combustion chamber with fittings and moveable grate upper part of cone: $\varnothing$ 205/199,7/140,4/135,7/135/146/160/170,43/175 mm lower part of cone: BioWIN 102 and BioWIN 152: 11 holes of $\varnothing$ 6,5 mm for secondary combustion air supply, dimensions $\varnothing$ 177,5/158/148/137/161,6/80/129,6/120/156/172 mm, height 83,5/127,5/139,5 mm BioWIN 212 and BioWIN 332: 20 holes of $\varnothing$ 11/6,5 mm for secondary combustion air supply, dimensions $\varnothing$ 177,5/158/148/135/151,6/104/152,2/144/156/172mm, Höhen 98,5/127,5/139,5 mm Primary combustion air inlet in centre position of burner pot: BioWIN 102 and BioWIN 152: upper row 14 holes of $\varnothing$ 5,6 mm, lower row 4 holes of $\varnothing$ 5,6 mm dimensions $\varnothing$ 37,2/43,7/44,7/51,2/57,7 mm, height 13/8/20/65 mm BioWIN 212 and BioWIN 332: upper row 12 holes of $\varnothing$ 5,8 mm, middle row 12 holes of $\varnothing$ 5,8 mm, lower row 4 holes of $\varnothing$ 5,8 mm dimensions $\varnothing$ 37,2/43,7/44,7/51,2/57,7 mm, height 13/10/17/24/65 mm
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6.4	Special features	The heating boiler size BioWIN 102 is identical to the heating boiler size BioWIN 152 and heating boiler size BioWIN 212 is identical to the heating boiler size BioWIN 262 except the parameters in the control system which are adapted to the different heat output. The heating boiler size BioWIN 262 is identical to the heating boiler size BioWIN 332 except the parameters in the control system which are adapted to the different heat output and further constructional feature, see clause 6.6. There are three different models available of the heating boiler series type BioWIN ..2 or BW ...2: BioWIN ..2 Klassik or BWK ..2 Manual refilling of the integral fuel hopper (capacity 107 l), manual ash removal of ash beneath heat exchanger and burner pot, automatic cleaning of the heat exchanger fittings and the grate BioWIN ..2 Klassik-L or BWK ..2-L BioWIN ..2 Klassik-L or BWK-L ..2 identical with BioWIN ..2 Klassik or BWK ..2 except equipped with larger integral fuel hopper (capacity 200 l) BioWIN ..2 Premium or BWP ..2 Automatic refilling of the internal fuel hopper (capacity 107 l), manual ash removal of ash beneath heat exchanger and burner pot, automatic cleaning of the heat exchanger fittings and the grate BioWIN ..2 Exklusiv-S or BWE-S ..2 Manual refilling of the internal fuel hopper (capacity 107 l), automatic ash removal of ash beneath heat exchanger and burner pot into an external ash box positioned beneath the integral fuel hopper, automatic cleaning of the heat exchanger fittings and the grate BioWIN ..2 Exklusiv-SL or BWE-SL ..2 identical with BioWIN ..2 Exklusiv-S or BWE-S ..2 except equipped with larger integral fuel hopper (capacity 200 l) BioWIN ..2 Exklusiv or BWE ..2 Automatic refilling of the internal fuel hopper (capacity 107 l), automatic ash removal of ash beneath heat exchanger and burner pot into an external ash box positioned beneath the integral fuel hopper, automatic cleaning of the heat exchanger fittings and the grate BioWIN ..2T or BW ...2T equipped with operating unit, type: InfoWIN Touch, heating boiler housing with round edges and boundary areas BioWIN ..2 lite (L) or BW ...2 lite (L) equipped with operating unit, type: InfoWIN
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6.5	Data plate	Manufacturer: Windhager Zentralheizung Technik GmbH Anton-Windhager-Strasse 20 A-5201 SEEKIRCHEN Type: will be added Article number: will be added Serial number: will be added Year of manufacture: will be added Nominal heat output: will be added Nominal heat output range: will be added Heat input range: will be added Boiler class: will be added Fuel: will be added Maximum allowable operating pressure: will be added Maximum allowable temperature: will be added Water content: will be added Electrical supply: will be added Electrical power consumption: will be added Basis of test will be added
6.6	Equality of construction	Heating boiler BioWIN 332 is constructional identical with heating boiler BioWIN 262 except the following: - individually set parameters in control system for each heat output range - induced draught fan - fan wheel - turbulators - fan wheel housing - insulation of back side of heating boiler
6.7	Boundary conditions for operation	See test reports H-SP 1358-01/16 and H-R 1358-00/14 of TÜV SÜD Industrie Service GmbH



7 Performed tests and evaluations

The list of measurement devices used for the test are documented in the below listed test reports.

7.1 Testing of construction requirements

Test laboratory: TÜV SÜD Industrie Service GmbH, Feuerungs- und Wärmetechnik

Type designation/boiler size	Test report B
BioWIN ..2	H-B 1358-00/14 dated 2014-03-31

The in report no. H-B 1358-00/14 noted report no. H-A 1358-00/14 dated 2014-03-31 is not prepared, see also notes in report no. H-A 1358-01/14 dated 2014-12-17.

There are expected no negative influence on water carrying parts of boiler bodies by the constructional changes at boiler bodies as position and dimensions of holder of position switch and noted dimension tolerances of boiler bodies. Due to this there was resigned to carry out again a pressure test on boiler body. There are no objections against the changes.

The construction requirements are fulfilled according to clauses 4.1, 4.2 and 5.4 of DIN EN 303-5:2012-10.

7.2 Testing of boiler performance requirements

Test laboratory: TÜV SÜD Industrie Service GmbH, Feuerungs- und Wärmetechnik

Type designation/boiler size	Output performance ratio of the tested boiler size	Test report C
BioWIN 102	1 : 1	H-C1 1358-00/13 dated 2013-11-15
BioWIN 152	1 : 1	H-C2 1358-00/13 dated 2013-11-15
BioWIN 212	0,8 : 1	intermediate size
BioWIN 262	1 : 1	H-C3 1358-00/13 dated 2013-11-15
BioWIN 332	1 : 1	H-C4 1358-00/16 dated 2016-08-04

The control concept of the control system with operating unit InfoWIN Touch is identical to that one of control system with operating unit InfoWIN.

The enlargement of the integral fuel hopper takes place widely on the far side of the heating boiler. The fixation of the larger integral fuel hopper and the insulation of the heating boiler to the side of the integral fuel hopper are identical. There is expected no noticeable change of heat conduction.

The changes in design are only related on the outer housing parts. The holder points are identical.

There are expected no negative influence on boiler performance requirements. The test on boiler performance requirements on heating boiler BioWIN 332 confirms this expectation. There are no objections against the changes.

Even the tests on heating boilers BioWIN 102 to BioWIN 262 were carried out with a draught of 3 Pa (negative pressure value). The requirements according to clause 5.7.1 of the standard are also fulfilled under a specification of a maximum allowable operating pressure of 5 Pa. There are expected no negative influence on boiler performance requirements. There are no objections against a specification of a maximum allowable operating pressure of 5 Pa.

The boiler performance requirements of boiler class 5 are fulfilled according to clause 4.4 of DIN EN 303-5:2012-10.

7.3 Risk analysis

Test laboratory: TÜV SÜD Industrie Service GmbH, Feuerungs- und Wärmetechnik

Type designation/boiler size	Test report R
BioWIN ..2	H-R 1358-00/14 dated 2014-12-17

There are expected no negative influences on the manufacturer's risk analysis by introducing the option with larger integral fuel hopper, the model with control system with operating unit InfoWIN Touch, the adaption of design of heating boiler housing because the safety concept stays identical.

The manufacturer documents also measures to minimise risks as following:
design: design respecting the defined environmental conditions according to EN 60335-2-102 and EN 61000-6-2.

But a proof on requirements on DIN EN 303-5:2012-10, clause 4.3.9.3 (emc, in combination with operation unit type InfoWIN Touch) was not presented at test.

Due to this the results documented in the above listed report are transferable except to the following points.

There are no objections against the changes when a proof on requirements out of EN 61000-6-2 and EN 61000-6-3 is given also on heating boilers in unit with operating unit type InfoWIN Touch, see following points:

- Electrical Hazards, electromagnetic processes
- Hazards due to radiation, low-frequency elektromagnetic radiation and high-frequency elektromagnetic radiation
- Hazards in connection with operational enviroment, hazards due to environmental impact

The requirements are fulfilled according to clauses 5.16.1 of DIN EN 303-5:2012-10 on the test on completeness, accuracy and plausibility of the risk analysis of the manufacturer and corresponding measures were respected to minimize risks.

The additional measure on the need to maintain the function of fire extinguisher device, as documented in report H-A 1358-01/14 is sufficiently fulfilled by manufacturer instructions in user manual, clause 3.9.

7.4 Testing of operational safety

Test laboratory: TÜV SÜD Industrie Service GmbH, Feuerungs- und Wärmetechnik

Type designation/boiler size	Test report SP
BioWIN ..2	H-SP 1358-01/16 dated 2016-08-04

The tests were carried out with a draught of 3 Pa (negative pressure value). The requirements according to clause 5.7.1 of the standard are also fulfilled under a specification of a maximum allowable operating pressure of 5 Pa. There are expected no negative influence on operational safety. There are no objections against a specification of a maximum allowable operating pressure of 5 Pa.

The requirements are fulfilled according to clauses 4.3 of DIN EN 303-5:2012-10 when respecting the conditions for installation and operation of the heating boiler except the clauses 4.3.9.2 (electric safety, see following clause) and 4.3.9.3 (EMC, only in combination with operating unit type InfoWIN Touch, see also following last sentence).

The requirements on rapidly disconnectable firing systems are also fulfilled according to clause 5.14 of DIN EN 303-5:2012-10.

Usability is given in closed vented systems (e.g. for Germany as described in DIN EN 12828).

The requirements on DIN EN 303-5:2012-10, clause 4.3.9.2 (electrical safety) are tested and documented with a separate test report.

A proof on requirements on DIN EN 303-5:2012-10, clause 4.3.9.3 (emc, in combination with operation unit type InfoWIN Touch) was not presented at test.



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Sprawozdanie

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badania kotła grzewczego, zgodnie z normą EN 303-5

Sprawozdanie A Podsumowanie zatwierdzenia

Laboratorium badawcze	TÜV SÜD Industrie Service GmbH Abteilung Feuerungs- und Wärmetechnik Prüfbereich Wärmetechnik	
Przedmiot badania	Kocioł grzewczy na paliwa stałe	
	Typ	BioWIN ..2 lub BW ..2
	Wielkości	BioWIN 102, BioWIN 152, BioWIN 212, BioWIN 262 oraz BioWIN 332
	Modele/opcje	zobacz: strona 2
	Paliwo:	drewno prasowane C1
	Dostarczanie paliwa:	automatyczny zasyp paliwa
	Doprowadzanie powietrza do procesu spalania:	za pomocą wentylatora wyciągowego
Zamawiający	Windhager Zentralheizung Technik GmbH Anton-Windhager-Strasse 20 5201 SEEKIRCHEN, ÖSTEREICH	
Zakres	Podsumowanie zatwierdzenia wymagań normy DIN EN 303-5 dotyczącej kotłów grzewczych	
Specjalista	Dipl.-Ing. Uwe Schlosser	
Okres badania	lipiec i sierpień 2016	
Podstawa badania	DIN EN 303-5:2012-10	

Data: 2016-08-04

Nasz numer referencyjny:
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Nr zamówienia: 2571913

Dokument:
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Dokument zawiera 18 stron i
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Niemcy

1 Podsumowanie

Zamawiający	Windhager Zentralheizung Technik GmbH, A-5201 Seekirchen
Producent	Windhager Zentralheizung Technik GmbH, A-5201 Seekirchen
Wykonanie	Kocioł grzewczy wykonany ze stali, zgodnie z DIN EN 303-5, wyposażony w wentylator wyciągowy do pracy w przypadku otwartej komory spalania
	Tryb pracy: modułowany
	Spalanie: gazyfikacja i spalanie w komorze spalania z palnikiem
	Dostarczanie paliwa: automatyczny zasyp paliwa
	Projekt rusztu: ruszt ruchomy z palnikiem
	Odpopielanie: automatyczne
	Wyposażenie: turbulizatory w drugim odcinku kanałów wymiennika ciepła
Typ	BioWIN ..2 lub BW ..2, zobacz również punkt 6.4
Wielkości	BioWIN 102, BioWIN 152, BioWIN 212, BioWIN 262 oraz BioWIN 332
Modele	BioWIN ..2 Klassik, BioWIN ..2 Premium, BioWIN ..2 Exklusiv
Opcje	- zintegrowany mniejszy lub większy zasobnik paliwa, - jednostka operacyjna, typ: InfoWIN (lite) lub InfoWIN Touch

Dane techniczne serii kotłów grzewczych (informacje producenta)

Nr	Wielkość	Zakres nominalnej mocy cieplnej kW	Paliwo	Maks. temp. gazów spalinowych °C	Nr rysunku korpus kotła
1	BioWIN 102	3,0-9,9	C1	78	1-464-050450 z dnia 2013-06-19
2	BioWIN 152	4,3-15,0	C1	99	1-464-050450 z dnia 2013-06-19
3*	BioWIN 212	6,3-21,0	C1	107	1-464-048830 z dnia 2013-06-19
4	BioWIN 262	7,6-25,9	C1	114	1-464-048830 z dnia 2013-06-19
5	BioWIN 332	9,8-32,5	C1	115	1-464-048830 A-St. 03 z dnia 2015-12-09

A: Polana drewna B1: Zrębki (zawartość wody 15 do 35 %) B2: Zrębki (zawartość wody większa niż 35 %)
 C1: Drewno prasowane w postaci peletów (6 mmφ) D: Trociny

* nie badano wielkości pośredniej, dane udostępnione przez producenta

Kraje docelowe	wszystkie kraje Wspólnoty Europejskiej oraz Szwajcaria, z wyjątkiem Zjednoczonego Królestwa
Klasa kotła	5
Maks.dopuszczalna temperatura	85 °C
Maks. dopuszczalne ciśnienie robocze	3 bary
Wymagany ciąg spalin	5 Pa
Zasilanie elektryczne	230 V, 50 Hz

Badane kotły grzewcze są zgodne z wymaganiami normy DIN EN 303-5:2012-10, a także dodatkowymi wymaganiami krajów docelowych AT, HR, DK, DE, CH oraz IT, zgodnie z załącznikiem C, punkty C.2, C.3, C.4, C 5, C 6 oraz C.8 normy DIN EN 303-5:2012-10 w odniesieniu do pomiarów udokumentowanych w punkcie 7.3.

Potwierdzenie krajowych wymagań krajów docelowych Zjednoczonego Królestwa, zgodnie z załącznikiem C.7 normy DIN EN 303-5:2012-10, nie było częścią zamówienia złożonego przez Zamawiającego i należy poddać je odrębnej ocenie, w razie konieczności.

Na podstawie wyników badań produktów dowiedziono wystarczającego bezpieczeństwa produktów.

Feuerungs- und Wärmetechnik
Prüfbereich Wärmetechnik

[podpis]

Johannes Steiglechner

Leiter

Feuerungs- und Wärmetechnik

2 Zakres badania

Producent Windhager Zentralheizung Technik GmbH zamierza dodać kocioł grzewczy o wielkości BioWIN 332 z opcjami większego integralnego zasobnika paliwa oraz systemem sterowania za pomocą jednostki operacyjnej typu InfoWIN Touch do zakresu kotłów grzewczych typu BioWIN ..2.

Producent Windhager Zentralheizung Technik GmbH zamawia Podsumowanie Zatwierdzenia wymagań, zgodnie z normą DIN EN 303-5:2012-10, dla kotłów grzewczych, w tym wymagań dotyczących bezpieczeństwa elektrycznego.

Należy również uwzględnić wymagany ciąg spalin, zgodnie z wytycznymi producenta.

Uwaga:

W niniejszym sprawozdaniu kotły grzewcze oznaczone jako BioWIN ..2 oraz BW ..2 są przytaczane jako typowe przykłady, a udokumentowane tutaj sprawozdania dotyczą badań przeprowadzonych częściowo w wyniku braku wolnego miejsca w niektórych z punktów. Wszystkie informacje dotyczą zarówno kotłów oznaczonych jako BioWIN ..2 oraz BW ..2, a także wszystkich innych modeli i opcji; zob. również punkt 6.4.

3 Podstawa badania

DIN EN 303-5:2012-10

Kotły grzewcze - Kotły grzewcze na paliwa stałe z ręcznym i automatycznym zasypem paliwa, o mocy nominalnej do 500 kW

4 Zastosowane dokumenty dotyczące badań

- sprawozdania z badań dotyczące badań częściowych serii kotłów, zgodnie z rozdziałem 7 niniejszego sprawozdania
- dokumenty producenta, zgodnie z rozdziałem 5 niniejszego sprawozdania
- badanie dodatkowe nr H-A 1358-02/15 z dnia 2015-07-09 przeprowadzone przez TÜV SÜD Industrie Service GmbH, dane dotyczące sprawności kotłów dla kategorii kotłów grzewczych typu BioWIN ..2, w tym wielkości pośrednich
- sprawozdanie z badania nr H-A 1358-01/14 z dnia 2014-12-17 przeprowadzonego przez TÜV SÜD Industrie Service GmbH, Podsumowanie Zatwierdzenia wymagań, zgodnie z normą DIN EN 303-5:2012-10, dla kotłów grzewczych BioWIN ..2 z systemem sterowania za pomocą jednostki operacyjnej typu InfoWIN

5 Załączniki i inne dokumenty mające zastosowanie

Załączniki, załączniki A, B, C1 do C5 zostały udokumentowane w wersji niniejszego sprawozdania w języku niemieckim

A	Podręcznik użytkownika
B	Podręcznik instalacji
C1 do C5	Rysunki
D	Lista podsumowująca dla kotłów grzewczych z kategorii kotłów grzewczych, w tym wielkości pośrednich

Dokumenty

Ilość	Oznakowanie (zob. również punkt 7)
1	Sprawozdanie z badania B / wymagania dotyczące budowy
4	Sprawozdania z badania C / wymagania dotyczące sprawności kotłów
1	Sprawozdanie z badania E / bezpieczeństwo elektryczne
1	Sprawozdanie z badania SP / bezpieczeństwo eksploatacji
1	Sprawozdanie z badania R / ocena analizy ryzyka

6 Opis serii kotłów

6.1	Budowa	Kocioł grzewczy umożliwiający grzanie ciepłej wody użytkowej, wyposażony w: - zintegrowany zasobnik paliwa - urządzenie do automatycznego zasypu paliwa - komorę spalania wykonaną ze stali z wbudowanym palnikiem - urządzenie do automatycznego czyszczenia oraz ruchomy ruszt - turbulizatory w drugim odcinku kanałów wymiennika ciepła - kolektor spalin, wentylator wyciągowy oraz przyłącze spalin u góry kotła grzewczego
6.2	Praca	Praca w trybie modulacji w zakresie mocy cieplnej
6.3	Akcesoria	
6.3.1	System sterowania	Tablica sterowania, typ: BioWIN FMP BW2, jednostka operacyjna, typ: InfoWIN lub jednostka operacyjna, typ: InfoWIN Touch, obie jako jednostki kotłowe
6.3.1.1	Regulacja temperatury wody w kotle	Czujnik PT-1000 umiejscowiony w kieszeni czujnika zanurzeniowego, brak innego potwierdzenia zgodnie z normą DIN EN 14597 dostępną w trakcie badania, przetworzenie sygnału przez system sterowania, długość czujnika 50 mm, kieszeń czujnika zanurzeniowego o głębokości 126 mm umiejscowiona w prawym górnym rogu z tyłu kotła grzewczego
6.3.1.2	Ogranicznik temperatury bezpieczeństwa (resetowanie ręczne) (woda w kotle)	Typ 89, producent: Rathgeber, nr w rejestrze DIN: STB 1154 zgodnie z DIN EN 14597, czujnik umieszczony w kieszeni czujnika zanurzeniowego, wraz z czujnikiem temperatury wody w kotle, głębokość kieszeni: 126 mm, długość czujnika 88 mm, przełączniki podawania paliwa oraz wentylator wyciągowy, wartość zadana: 100 °C
6.3.1.3	Ogranicznik temperatury bezpieczeństwa dla zapobiegania cofaniu płomienia (resetowanie ręczne) (przy podajniku ślimakowym)	Typ 89, producent: Rathgeber, nr w rejestrze DIN: STB 1154 zgodnie z DIN EN 14597, czujnik zamocowany po zewnętrznej stronie obudowy podajnika ślimakowego, długość czujnika 88 mm, jeżeli faza wygaszania została uruchomiona przez system sterowania, ruszt otwiera się i zamyka, praca podajnika ślimakowego zostaje przerwana na 10 min, wentylator wyciągowy pracuje z maksymalną prędkością, turbina ssąca zostaje bezpośrednio odłączona od źródła zasilania, po 10 minutach podajnik ślimakowy zatrzymuje się, a wentylator wyciągowy pracuje nieprzerwanie z prędkością 1500 min ⁻¹ , Należy ręcznie zresetować ogranicznik temperatury bezpieczeństwa STB oraz powiadomienie o alarmie na jednostce operacyjnej, wartość zadana: 95 °C
6.3.1.4	Czujnik temperatury spalin	Czujnik PT-1000 w ciągu gazów spalinowych przy przyłączy spalin, przetworzenie sygnału przez system sterowania w celu wyświetlenia temperatury spalin

6.3.1.5	Regulacja temperatury w komorze spalania	Termopara typu K umieszczona u góry komory spalania, w ciągu gazów spalinowych, przetworzenie sygnału przez system sterowania w celu regulacji spalania
6.3.2	Zbiornik wody gaśnicy	Zbiornik o pojemności 8 litrów ze wskaźnikiem zawartości, wystarczająca ilość wody musi być kontrolowana przez operatora, a w razie konieczności należy ją uzupełnić do maksymalnego poziomu
6.3.3	Zawór aktywatora gaśnicy	Zawór wykonany z materiału ulegającemu stopieniu, znajdujący się przy zaworze podajnika ślimakowego producent materiału zaworu: Ögussa, typ: Sonderweichlot 562, temperatura topnienia: 118°C (informacja producenta, badanie funkcjonalne nie było częścią niniejszego badania)
6.3.4	Przełącznik pozycyjny na drzwiach komory spalania	Producent: OMRON, typ Z-15-GW4-B 250 V, AC, 15 AC, CE, sterowanie zamykaniem drzwi komory spalania, w przypadku aktywacji automatyczne podawanie paliwa zostanie wyłączone, a system sterowania przełączy wentylator wyciągowy na maksymalną prędkość
6.3.5	Przełącznik pozycyjny na ruszcie	Producent: Crouzet, typ 83.161.8 250 V, AC, 0,1 A
6.3.6	Załadunek paliwa	Wbudowany system automatycznego załadunku paliwa ze zintegrowanym zasobnikiem paliwa umożliwiającym automatyczne podawanie paliwa obejmuje: - czujnik zbliżeniowy na dnie zintegrowanego zasobnika paliwa w celu zachowania warstwy granicznej w zasobniku paliwa - podajnik ślimakowy skierowany ku górze - urządzenie gaśnicze z przyłączem na podajniku ślimakowym skierowanym ku górze - kontrola temperatury na podajniku ślimakowym, czujnik zamocowany po zewnętrznej stronie podajnika ślimakowego skierowanego ku górze - zjazd paliwa Paliwo w zintegrowanym zasobniku paliwa można automatycznie uzupełniać za pomocą turbiny ssącej (wyłącznie w modelach kotłów Premium oraz Exklusiv). Zgodnie z informacją producenta, ponowne napełnianie rozpoczyna się tylko wtedy, gdy praca kotła została zatrzymana, a dodatkowy indukcyjny czujnik zbliżeniowy jest aktywowany poprzez opuszczenie pokrywy. Wewnętrzny zasobnik paliwa, system automatycznego napełniania wewnętrznego zasobnika paliwa oraz zewnętrzny zasobnik paliwa nie były poddawane badaniom.

6.3.7	Napęd podajnika ślimakowego	Podajnik ślimakowy skierowany ku górze z napędem silnikowym Producent: SPG, typ: S8A135A122-A124 Silnik: 220-240 V, 50 Hz, 15 W, 1200 min⁻¹, z przekładnią typu S8DA250B1-A122 BioWIN 102 oraz BioWIN 152: koło zębate z 36 zębami na wale silnika, koło zębate z 45 zębami na wale podajnika ślimakowego BioWIN 212 oraz BioWIN 332: koło zębate z 45 zębami na wale silnika, koło zębate z 36 zębami na wale podajnika ślimakowego
6.3.8	Turbina ssąca	Producent: International Power Components Srl (IPC), Typ Y4Z-A44-003, Silnik: 230 V, 50 Hz, 1450 W (tylko modele Premium oraz Exklusiv) Kontrola sterowania za pomocą przekaźników oraz integracji styków przekaźników (otwieracz) w łańcuchu bezpieczeństwa
6.3.9	Przełącznik pozycyjny pokrywy zintegrowanego zasobnika paliwa	Czujnik zbliżeniowy, producent: Gavazi, typ: IA, 10-40 V, DC, 100 mA, kontrola zamknięcia pokrywy wewnętrznego zasobnika paliwa (tylko model Klassik)
6.3.10	Przełącznik pozycyjny opuszczania pokrywy w zintegrowanym zasobniku paliwa	Czujnik zbliżeniowy, producent: Gavazi, typ: IA, 10-40 V, DC, 100 mA, kontrola zamknięcia opuszczania pokrywy, która znajduje się pod turbiną ssącą w wewnętrznym zasobniku paliwa (tylko modele Premium i Exklusiv)
6.3.11	Kontrola warstwy granicznej w zasobniku paliwa	Czujnik zbliżeniowy, producent: Gavazi, typ: EC 3025 NPAPL, 10-40 V, DC, 200 mA
6.3.12	Urządzenie czyszczące kanały wymiennika ciepła	Urządzenie czyszczące kanały wymiennika ciepła z napędem silnikowym producent: SPG, typ: ISG-3230WHB-1 Silnik: 230 V, 50 Hz, 0,26 A, 3,8 min⁻¹, 28,5 W, CE
6.3.13	Urządzenie czyszczące przestrzeń poniżej kanałów wymiennika ciepła oraz palnik	Dwa standardowe podajniki z napędem silnikowym do transportowania popiołu do szuflady popielnika zewnętrznego znajdującego się poniżej zintegrowanego zasobnika paliwa producent: Moons, typ: 64S032L1-80002 Silnik: 230 V, 50 Hz, 22 W

6.3.14	Wentylator wyciągowy	BioWIN 102 oraz BioWIN 152: Typ silnika: Kondensator silnikowy rozruchu zewnętrznego wirnika, silnika i dmuchawy, 230 V, 50 Hz, 55 W, 2680 mm⁻¹, OSB-9225-A1426A, wirnik wentylatora ϕ140 mm, 6 łopatek, wysokość: 26,5 mm BioWIN 212 oraz BioWIN 262: Typ silnika: Kondensator silnikowy rozruchu zewnętrznego wirnika, silnika i dmuchawy, 230 V, 50 Hz, 97 W, 2480 min⁻¹, OSB-9225-A1626A, wirnik wentylatora ϕ160 mm, 8 łopatek, wysokość: 26 mm BioWIN 332: Typ silnika: Kondensator silnikowy rozruchu zewnętrznego wirnika, silnika i dmuchawy, 230 V, 50 Hz, 100 VAC, OSB-9235-A2145A, wirnik wentylatora ϕ210 mm, 6 łopatek, wysokość: 45 mm
6.3.15	Urządzenie zapalające	Urządzenie zapalające składa się z dwóch elementów grzewczych z żeberkami dla zwiększenia powierzchni producent: Loval, typ: podczas badania nie podano żadnych informacji, każdy element grzewczy 500 W, 115 V, znajduje się w kanale doprowadzania powietrza pierwotnego do procesu spalania do palnika
6.3.16	Ruszt	Dwie metalowe płyty, jedna ruchoma, z napędem silnikowym producent silnika: Feinwerk Technik, typ: GZ10Z 48,6, 230 V, 50 Hz, 375 min⁻¹, i 48,6, n2 7,7 min⁻¹
6.3.17	Powietrze do procesu spalania	Pierwotne: ustalone dla danej, dowolnej średnicy, na kanale wlotowym zamocowano przyłącze z dwoma punktami pomiarowymi mostka ciśnienia z różnymi średnicami kotłów grzewczych o wielkości BioWIN 102 lub BioWIN 152: typ: 012570 10/15, długość 155 mm, 55/44/25/50 mmϕ oraz BioWIN 212 lub BioWIN 332: typ: 012571 21/26, długość 155 mm, 55/44/30/50 mmϕ Wtórne: ustalone dla danej, dowolnej średnicy, Ilość powietrza potrzebnego do procesu spalania określana jest przez ilość i wielkość otworów w palniku. Kontrola pracy wentylatora wyciągowego w fazie rozruchu kotła grzewczego poprzez mierzenie zróżnicowanych wartości ciśnienia na przyłączy kanału wlotowego doprowadzającego pierwotne powietrze do procesu spalania Producent mostka ciśnienia: Huba Control, typ: DDS 605.99722, 0.2 (0.1)30~ 19/13 Pa, ADODHH, CE-0085AP0974

6.3.18	Palnik	Zintegrowany palnik w komorze spalania z osprzętem i ruchomym rusztem górna część stożka: ϕ 205/199,7/140,4/135,7/135/146/160/170,43/175 mm dolna część stożka: BioWIN 102 oraz BioWIN 152: 11 otworów o ϕ 6,5 mm dla dostarczania wtórnego powietrza do procesu spalania, wymiary ϕ 177,5/158/148/137/161,6/80/129,6/120/156/172 mm, wysokość 83,5/127,5/139,5 mm BioWIN 212 oraz BioWIN 332: 20 otworów o ϕ 11/6,5 mm dla dostarczania wtórnego powietrza do procesu spalania, wymiary ϕ 177,5/158/148/135/151,6/104/152,2/144/156/172mm, wysokość 98,5/127,5/139,5 mm Wlot pierwotnego powietrza do procesu spalania umiejscowiony na środku palnika: BioWIN 102 oraz BioWIN 152: rząd górny: 14 otworów o ϕ 5,6 mm, rząd dolny: 4 otwory o ϕ 5,6 mm wymiary ϕ 37,2/43,7/44,7/51,2/57,7mm, wysokość 13/8/20/65 mm BioWIN 212 oraz BioWIN 332: rząd górny: 12 otworów o ϕ 5,8 mm, rząd środkowy: 12 otworów o ϕ 5,8 mm, rząd dolny: 4 otwory o ϕ 5,8 mm wymiary ϕ 37,2/43,7/44,7/51,2/57,7 mm, wysokość 13/10/17/24/65 mm
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6.4	Cechy specjalne	Kocioł grzewczy o wielkości BioWIN 102 jest taki sam jak kocioł grzewczy o wielkości BioWIN 152, a kocioł grzewczy o wielkości BioWIN 212 jest taki sam jak kocioł grzewczy o wielkości BioWIN 262, z wyjątkiem parametrów w systemie sterowania, które zostały dostosowane do różnej mocy cieplnej. Kocioł grzewczy o wielkości BioWIN 262 jest taki sam jak kocioł grzewczy o wielkości BioWIN 332, z wyjątkiem parametrów w systemie sterowania, które zostały dostosowane do różnej mocy cieplnej oraz kolejnej cechy konstrukcyjnej, zob. punkt 6.6. Dostępne są trzy różne modele z serii kotłów grzewczych typu BioWIN ..2 lub BW ...2: BioWIN ..2 Klassik lub BWK..2 Ręczne napełnianie zintegrowanego zasobnika paliwa (pojemność 107 l), ręczne wybieranie popiołu z przestrzeni pod wymiennikiem ciepła i palnikiem, automatyczne czyszczenie oprzyrządowania wymiennika ciepła i rusztu BioWIN ..2 Klassik-L lub BWK ..2-L BioWIN ..2 Klassik-L lub BWK-L ..2 taki sam jak BioWIN ..2 Klassik lub BWK ..2, z wyjątkiem modeli wyposażonych w większy zintegrowany zasobnik paliwa (pojemność 200 l) BioWIN ..2 Premium lub BWP ..2 Automatyczne napełnianie wewnętrznego zasobnika paliwa (pojemność 107 l), ręczne wybieranie popiołu z przestrzeni pod wymiennikiem ciepła i palnikiem, automatyczne czyszczenie oprzyrządowania wymiennika ciepła i rusztu BioWIN ..2 Exklusiv-S lub BWE-S ..2 Ręczne napełnianie wewnętrznego zasobnika paliwa (pojemność 107 l), automatyczne wybieranie popiołu z przestrzeni pod wymiennikiem ciepła i palnikiem do szuflady popielnika zewnętrznego znajdującego się pod zintegrowanym zasobnikiem paliwa, automatyczne czyszczenie oprzyrządowania wymiennika ciepła i rusztu BioWIN ..2 Exklusiv-SL lub BWE-SL ..2 Taki sam jak BioWIN ..2 Exklusiv-S lub BWE-S ..2, z wyjątkiem modeli wyposażonych w większy zintegrowany zasobnik paliwa (pojemność 200 l) BioWIN ..2 Exklusiv lub BWE ..2 Automatyczne napełnianie wewnętrznego zasobnika paliwa (pojemność 107 l), automatyczne wybieranie popiołu z przestrzeni pod wymiennikiem ciepła i palnikiem do szuflady popielnika zewnętrznego znajdującego się pod zintegrowanym zasobnikiem paliwa, automatyczne czyszczenie oprzyrządowania wymiennika ciepła i rusztu BioWIN ..2T lub BW ...2T wyposażony w jednostkę operacyjną, typ: InfoWIN Touch, obudowa kotła grzewczego z zaokrąglonymi krawędziami i obszarami granicznymi BioWIN ..2 lite (L) lub BW ...2 lite (L) wyposażony w jednostkę operacyjną, typ: InfoWIN
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6.5	Tabliczka znamionowa	Producent: Windhager Zentralheizung Technik GmbH Anton-Windhager-Strasse 20 A-5201 SEEKIRCHEN Typ: zostanie dodany Numer artykułu: zostanie dodany Numer seryjny: zostanie dodany Rok produkcji: zostanie dodany Nominalna moc cieplna: zostanie dodana Zakres nominalnej mocy cieplnej: zostanie dodany Zakres ciepła doprowadzanego: zostanie dodany Klasa kotła: zostanie dodana Paliwo: zostanie dodane Maksymalne dopuszczalne ciśnienie robocze: zostanie dodane Maksymalna dopuszczalna temperatura: zostanie dodana Zawartość wody: zostanie dodana Zasilanie elektryczne: zostanie dodane Zużycie energii elektrycznej: zostanie dodane Podstawa badania: zostanie dodana
6.6	Równość budowy	Kocioł grzewczy BioWIN 332 jest identyczny pod względem budowy z kotłem grzewczym BioWIN 262, z wyjątkiem następujących cech: - indywidualne ustawianie parametrów w systemie sterowania dla każdego zakresu mocy cieplnej - wentylator wyciągowy - wirnik wentylatora - turbulizatory - obudowa wirnika wentylatora - izolacja tylnej części kotła grzewczego
6.7	Graniczne warunki pracy	Zobacz: sprawozdanie z badań H-SP 1358-01/16 oraz H-R 1358-00/14 dla TÜV SÜD Industrie Service GmbH

7 Wykonane badania i oceny

Wykaz urządzeń pomiarowych wykorzystanych do badania został udokumentowany w poniższych sprawozdaniach z badania:

7.1 Badanie wymagań dotyczących budowy

Laboratorium badawcze: TÜV SÜD Industrie Service GmbH, Feuerungs- und Wärmetechnik

Oznaczenie typu / wielkość kotła	Sprawozdanie z badania B
BioWIN ..2	H-B 1358-00/14 z dnia 2014-03-31

W sprawozdaniu nr H-B 1358-00/14 nie przygotowano sprawozdania nr H-A 1358-00/14 z dnia 2014-03-31, zobacz również uwagi w sprawozdaniu nr H-A 1358-01/14 z dnia 2014-12-17.

Nie przewiduje się negatywnego wpływu na części systemu transportującego wodę kotłów grzewczych na skutek wprowadzenie zmian konstrukcyjnych w korpusach kotłów, takich jak pozycja i wymiary uchwytu przełącznika pozycyjnego oraz odnotowane tolerancje w zakresie wymiarów korpusów kotłów. Z tego względu zrezygnowano z przeprowadzenia ponownego badania ciśnienia w korpusie kotła. Brak zastrzeżeń w odniesieniu do zmian.

Spełniono wymagania w zakresie budowy, zgodnie z punktami 4.1, 4.2 oraz 5.4 normy DIN EN 303-5:2012-10.

7.2 Badanie wymagań dotyczących sprawności kotła

Laboratorium badawcze: TÜV SÜD Industrie Service GmbH, Feuerungs- und Wärmetechnik

Oznaczenie typu / wielkość kotła	Wskaźnik sprawności przebadanej wielkości kotła	Sprawozdanie z badania C
BioWIN 102	1 : 1	H-C1 1358-00/13 z dnia 2013-11-15
BioWIN 152	1 : 1	H-C2 1358-00/13 z dnia 2013-11-15
BioWIN 212	0,8 : 1	wielkość pośrednia
BioWIN 262	1 : 1	H-C3 1358-00/13 z dnia 2013-11-15
BioWIN 332	1 : 1	H-C4 1358-00/16 z dnia 2016-08-04

Koncepcja sterowania systemem sterowania za pomocą jednostki operacyjnej InfoWIN Touch jest taka sama, jak koncepcja sterowania za pomocą jednostki operacyjnej InfoWIN.

Powiększenie zintegrowanego zasobnika paliwa odbywa się z dala od kotła grzewczego.

Mocowanie większego zintegrowanego zasobnika paliwa oraz izolacja kotła grzewczego po stronie zintegrowanego zasobnika paliwa są takie same. Nie przewiduje się zauważalnej zmiany przewodnictwa cieplnego.

Zmiany projektu dotyczą wyłącznie zewnętrznych części obudowy. Punkty chwytów są identyczne.

Nie przewiduje się negatywnego wpływu na wymagania dotyczące sprawności kotła. Badanie wymogów sprawności kotła przeprowadzone na kotle grzewczym BioWIN 332 potwierdzają to założenie. Brak zastrzeżeń w odniesieniu do zmian.

Badania kotłów grzewczych BioWIN 102 do BioWIN 262 zostały przeprowadzone przy ciągu wynoszącym 3 Pa (wartość podciśnienia). Spełniono również wymagania zgodnie z punktem 5.7.1 normy, zgodnie ze specyfikacją maksymalnego dopuszczalnego ciśnienia roboczego wynoszącego 5 Pa. Nie przewiduje się negatywnego wpływu na wymagania dla sprawności kotła. Brak zastrzeżeń w odniesieniu do specyfikacji maksymalnego dopuszczalnego ciśnienia roboczego wynoszącego 5 Pa.

Spełniono wymagania w zakresie sprawności kotła dla kotła klasy 5, zgodnie z punktem 4.4 normy DIN EN 303-5:2012-10.

7.3 Analiza ryzyka

Laboratorium badawcze: TÜV SÜD Industrie Service GmbH, Feuerungs- und Wärmetechnik

Oznaczenie typu / wielkość kotła	Sprawozdanie z badania R
BioWIN ..2	H-R 1358-00/14 z dnia 2014-12-17

Nie przewiduje się negatywnego wpływu na analizę ryzyka producenta poprzez wprowadzenie możliwości zastosowania większego, zintegrowanego zasobnika paliwa, modelu z systemem sterowania obsługiwany przez jednostkę operacyjną InfoWIN Touch, dostosowanie projektu obudowy kotła grzewczego, ponieważ koncepcja dotycząca bezpieczeństwa pozostaje niezmienna. Producent dokumentuje również środki mające na celu zminimalizowanie ryzyka w następujący sposób:

projekt: projekt spełniający określone warunki środowiskowe, zgodnie z normą EN 60335-2-102 oraz EN 61000-6-2.

Niemniej jednak, potwierdzenie wymagań normy DIN EN 303-5:2012-10, punkt 4.3.9.3 (kompatybilność elektromagnetyczna w odniesieniu do jednostki operacyjnej typu InfoWIN Touch) nie zostało przedstawione w badaniu.

Z tego względu wyniki udokumentowane w powyższych sprawozdaniach mogą zostać przeniesione, z wyjątkiem następujących punktów.

Brak zastrzeżeń w stosunku do zmian, jeżeli potwierdzenie wymagań wynikających z normy EN 61000-6-2 oraz EN 61000-6-3 odnosi się również do egzemplarzy kotłów grzewczych z jednostką operacyjną typu InfoWIN Touch, zobacz poniższe punkty:

- Zagrożenia elektryczne, procesy elektromagnetyczne
- Zagrożenia na skutek promieniowania, promieniowania elektromagnetycznego małej częstotliwości oraz promieniowania elektromagnetycznego wysokiej częstotliwości
- Zagrożenia związane ze środowiskiem pracy, zagrożenia na skutek wpływu środowiska

Spełniono wymagania zgodnie z punktami 5.16.1 normy DIN EN 303-5:2012-10 dotyczące badania kompletności, dokładności i wiarygodności analizy ryzyka producenta oraz podjęto odpowiednie działania w celu zminimalizowania ryzyka.

Dodatkowe działania dotyczące konieczności zachowania funkcjonalności urządzenia gaśniczego, jak zostało to udokumentowane w sprawozdaniu H-A 1358-01/14, zostały w wystarczający sposób zrealizowane, zgodnie z wytycznymi producenta podanymi w podręczniku użytkownika, punkt 3.9.

7.4 Badanie bezpieczeństwa eksploatacji

Laboratorium badawcze: TÜV SÜD Industrie Service GmbH, Feuerungs- und Wärmetechnik

Oznaczenie typu / wielkość kotła	Sprawozdanie z badania SP
BioWIN .. 2	H-SP 1358-01/16 z dnia 2016-08-04

Badania zostały przeprowadzone przy ciągu wynoszącym 3 Pa (wartość podciśnienia). Spełniono również wymagania zgodnie z punktem 5.7.1 normy, zgodnie ze specyfikacją maksymalnego dopuszczalnego ciśnienia roboczego wynoszącego 5 Pa. Nie przewiduje się negatywnego wpływu na bezpieczeństwo eksploatacji. Brak zastrzeżeń w stosunku do specyfikacji maksymalnego dopuszczalnego ciśnienia roboczego wynoszącego 5 Pa.

Spełniono wymagania, zgodnie z punktem 4.3 normy DIN EN 303-5:2012-10 w odniesieniu do warunków instalacji i eksploatacji kotła grzewczego, z wyjątkiem punktów 4.3.9.2 (bezpieczeństwo elektryczne, zobacz następny punkt) oraz 4.3.9.3 (kompatybilność elektromagnetyczna, wyłącznie w odniesieniu do jednostki operacyjnej typu InfoWIN Touch, zobacz również poniższe ostatnie zdanie).

Spełniono również wymagania dotyczące szybko wyłączalnych systemów opalania, zgodnie z punktem 5.14 normy DIN EN 303-5:2012-10.

Użyteczność podano dla zamkniętych systemów wentylacyjnych (np. dla Niemiec zgodnie z normą DIN EN 12828).

Wymagania normy DIN EN 303-5:2012-10, punkt 4.3.9.2 (bezpieczeństwo elektryczne) zostały przebadane i udokumentowane w oddzielnym sprawozdaniu z badania.

Potwierdzenie wymagań normy DIN EN 303-5:2012-10, punkt 4.3.9.3 (kompatybilność elektromagnetyczna w odniesieniu do jednostki operacyjnej typu InfoWIN Touch) nie zostało przedstawione w badaniu.

7.5 Badanie wymagań dotyczących bezpieczeństwa elektrycznego

Laboratorium badawcze: TÜV SÜD Industrie Service GmbH, Feuerungs- und Wärmetechnik

Oznaczenie typu / wielkość kotła	Sprawozdanie z badania E
BioWIN ..2 wyposażony w jednostkę operacyjną, typ: InfoWIN Touch	H-E 1358-01/16 dnia 2016-05-19

Spełniono wymagania dotyczące bezpieczeństwa elektrycznego zgodnie z punktem 4.3.9.2 normy DIN EN 303-5:2012-10.

8 Podręcznik instalacji i użytkowania

Podręczniki instalacji i użytkowania zawierają istotne informacje na temat instalacji i eksploatacji kotła grzewczego, zgodnie z punktami 8.2 oraz 8.3 normy DIN EN 303-5:2012-10.

Dane techniczne dotyczące kotła grzewczego BioWIN 332 udokumentowane we wstępnych wersjach podręczników należy skorygować zgodnie z wynikami badań.

9 Tabliczka znamionowa

Tabliczka znamionowa zawiera istotne informacje, zgodnie z punktem 7.2 normy DIN EN 303-5:2012-10.

10 Opinia

Kotły grzewcze wyprodukowane przez:	Windhager Zentralheizung Technik GmbH Anton-Windhager-Strasse 20 5201 SEEKIRCHEN, ÖSTEREICH
przedstawione do badań	kotłów grzewczych, zgodnie z normą DIN EN 303-5
typ	BioWIN ..2 lub BW ..2, zobacz również punkt 6.4
wielkości	BioWIN 102, BioWIN 152, BioWIN 212, BioWIN 262 oraz BioWIN 332
modele	BioWIN ..2 Klassik, BioWIN ..2 Premium oraz BioWIN ..2 Exklusiv
opcje	- zintegrowany mniejszy lub większy zasobnik paliwa, - jednostka operacyjna, typ: InfoWIN (lite) lub InfoWIN Touch

zostały przebadane zgodnie z wymaganiami punktu 3 stanowiącego podstawę badania przeprowadzonego przez laboratorium badawcze TÜV SÜD Industrie Service GmbH.

Spełniono wymagania normy DIN EN 303-5:2012-10, jak również dodatkowe wymagania dla krajów docelowych AT, HR, DK, DE, CH oraz IT podane w załączniku C, punkty C.2, C.3, C.4, C.5, C.6 oraz C.8 normy DIN EN 303-5:2012-10, w odniesieniu do pomiarów udokumentowanych w sprawozdaniu w punkcie 7.3.

Potwierdzenie dodatkowych wymagań krajów docelowych Zjednoczonego Królestwa, zgodnie z załącznikiem C, punkt C.7 normy DIN EN 303-5:2012-10, nie było częścią badania zamówionego przez producenta i należy poddać je odrębnemu badaniu, w razie konieczności.

Należy przestrzegać obowiązujących praw i regulacji w celu zapewnienia odpowiedniego bezpieczeństwa podczas eksploatacji kotłów grzewczych w krajach docelowych.

Feuerungs- und Wärmetechnik
Prüfbereich Wärmetechnik

Specjalista

[podpis]

Johannes Steiglechner
Leiter

Feuerungs- und Wärmetechnik

[podpis]

Uwe Schlosser



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**Mehr Sicherheit.
Mehr Wert.**

Report

on the

test of a heating boiler according to DIN EN 303-5

Report C Test on the boiler performance requirements

Test laboratory	TÜV SÜD Industrie Service GmbH Abteilung Feuerungs- und Wärmetechnik Prüfbereich Wärmetechnik	
Subject of test	Heating boiler for solid fuels	
	Type	BioWIN ..2
	Size/Models	BioWIN 102 BioWIN 102 Klassik BioWIN 102 Premium and BioWIN 102 Exklusiv
	Fuel:	compressed wood C1
	Fuel feed:	automatic stoking
	Combustion air supply:	with an induced draught fan
Customer	Windhager Zentralheizung Technik GmbH Anton-Windhager-Strasse 20 5201 SEEKIRCHEN, ÖSTEREICH	
Scope	Validation of the boiler performance requirements of DIN EN 303-5 as a part of the test on the heating boiler series	
Expert	Dipl.-Ing. Uwe Schlosser	
Period of test	June till November 2013	
Basis of test	DIN EN 303-5:2012-10, clause 4.4	

Date: 2013-11-15

Our reference:
IS-TAF-MUC/sl

Report No. H-C1 1358-00/13
Order no. 2041276

Document:
HC113580013_eng.doc

Page 1

This document includes
15 pages

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trie Service GmbH.

The test results refer exclusively
to the units under test.

This test report is also issued in a German version. In any case of doubts the German version is binding.
In this test report a comma is used as a decimal separator.



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1 Summary

Customer Windhager Zentralheizung Technik GmbH, A-5201 Seekirchen
 Manufacturer Windhager Zentralheizung Technik GmbH, A-5201 Seekirchen
 Construction Heating boiler made of steel according to DIN EN 303-5 with an induced draught fan for not room sealed operation
 operating mode: modulating
 Combustion: gasification and combustion in combustion chamber within a burner pot
 Fuel feed: automatic stoking
 Grate design: moving grate within burner pot
 Ash removal: automatic
 Fittings: turbulators in second section of heat exchanger tubes

Type BioWIN ..2
 Size BioWIN 102

Technical data of the heating boiler series (manufacturer's information)

No	Size	Nominal heat output range kW	Fuel –	max. flue gas temp °C	Drawing no. boiler body
1	BioWIN 102 Klassik, BioWIN 102 Premium, BioWIN 102 Exklusiv	3 – 9,9	C1	78	1-464-050450 dated 2013-06-19

A: Log wood B: Chipped wood C1: Compressed wood Pellets D: Sawdust

Destination countries all countries of European community and Swiss except DK, HR, UK and IT
 Boiler class 5
 Maximum allowable temperature 85 °C
 Max. allowable operating pressure 3 bar
 Necessary flue gas draught 0 Pa (negative pressure, manufacturer's information)
 Electrical power supply 230 V, 50 Hz

The test was performed by the expert in the laboratory of Windhager Zentralheizung Technik GmbH, 5201 SEEKIRCHEN, ÖSTEREICH using a test rig according to picture A.1 of DIN EN 304: 2004-01. The conditions for the test, the results and the evaluation are documented in chapter 7.



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The boiler performance requirements of **boiler class 5** are fulfilled according to clause 4.4 of DIN EN 303-5:2012-10 as well as the specific additional requirements of the above listed destination countries according to annex C of DIN EN 303-5:2012-10 except the national deviations of the destination countries DK, HR, UK and IT according to annexes C.3, C.4, C.7 and C.8 of DIN EN 303-5:2012-10 which were not part of the order by the customer and must be evaluated separately when required.

Feuerungs- und Wärmetechnik
Prüfbereich Wärmetechnik

A handwritten signature in blue ink, appearing to read 'J. Steiglechner', written over the printed name.

Johannes Steiglechner
Leiter
Feuerungs- und Wärmetechnik

2 Scope of test

The manufacturer orders the test on the boiler performance requirements of the heating boiler type BioWIN ..2, size BioWIN 102, models BioWIN 102 Klassik, BioWIN 102 Premium and BioWIN 102 Exklusiv.

3 Basis of test

DIN EN 303-5:2012-10 Heating boilers - Heating boilers for solid fuels, manually and automatically stoked, nominal heat output of up to 500 kW, clause 4.4

4 Applied test documents

-



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5 Description of heating boiler

5.1	Construction	Warm water heating boiler with - automatic stoking device - combustion chamber out of steel with integrated burner pot - automatic cleaning device and a movable grate - turbulators in second section of heat exchanger tubes - flue gas manifold, induced draught fan and a flue gas connector at top of heating boiler
5.2	Operation	Modulating operation within heat output range
5.3	Accessories	
5.3.1	Control system	Control board, type BioWIN FMP BW2, operating unit, type: InfoWIN, as unit with boiler
5.3.2	Boiler's water temperature control	PT-1000 sensor positioned in immersion pocket, no further proof according to DIN EN 14597 available at test, processing of signal by control system, sensor length 50 mm, immersion pocket at right, top, rear side of heating boiler with an inner depth of 126 mm
5.3.3	Safety temperature limiter (manual reset) (boiler's water)	Type LS1 6035, manufacturer IMIT, DIN-Register-No. TR/STB1211 according to DIN EN 14597, sensor placed in same immersion pocket together with boiler's water temperature sensor, sensor length 100 mm, switches of fuel feed and induced draught fan, set point: 100 °C
5.3.4	Safety-temperature limiter to prevent back burning (manual reset) (at feeder screw)	Type 89.66, manufacturer Rathgeber, DIN-Register-No. STB 115408 according to DIN EN 14597, sensor fixed at outside of housing of the feeder screw, sensor length 88 mm, if activated burnout phase started by control system, open and close of grate, intermitted operation of feeder screw for a period of 10 minutes, induced draught fan operated at maximum speed, direct disconnection from electrical power supply of suction turbine, after the 10 minutes stop of feeder screw and continuous operation of induced draught fan at 1500 min ⁻¹ , STB must be manually reset as well as alarm note at operating unit, set point: 95 °C
5.3.5	Flue gas temperature sensor	PT-1000 sensor in flue gas way at flue gas connector, processing of signal by control system only to display flue gas temperature

5.3.6	Combustion chamber temperature control	Thermocouple positioned at top of combustion chamber in flue gas way, processing of signal by control system to control combustion
5.3.7	Water reservoir of fire extinguisher	Reservoir of 8 litres with content indication, sufficient water content must be controlled by operator (within a period of two weeks time)
5.3.8	Activator valve of fire extinguisher	Valve out of melting material positioned at feeder screw
5.3.9	Position switch at combustion chamber door	Manufacturer OMRON, type Z-15-GW4-B 250 V, AC, 15 AC, CE, control of closed position of combustion chamber door, if activated automatic stoking will be switched off and induced draught fan will be switched to maximum speed by control system
5.3.10	Position switch at grate	Manufacturer Crouzet, type 83.161.8 250 V, AC, 0,1 A
5.3.11	Fuel feed	Integrated automatic fuel feed with an integral fuel hopper automatic fuel feed includes: - proximity switch at bottom of integral fuel hopper to maintain boundary layer in fuel hopper - upwards directed feeder screw - fire extinguisher device with connection at upwards directed feeder screw - Surveillance of temperature at feeder screw, sensor fixed at outside of upwards directed feeder screw - fuel slide Integral fuel hopper could be refilled automatically by means of a suction turbine (only boiler models Premium and Exklusiv). According to manufacturer's information refilling starts only when boiler operation is stopped and additional inductive proximity switch is activated by means of a drop lid. The automatic refilling system was not presented and not part of the testing. The automatic fuel feed was presented by the manufacturer as described but not part of the testing.



Industrie Service

5.3.12	Feeder screw drive	Motor driven upwards directed feeder screw Manufacturer SPG, type S8A135A122-A124 Motor: 220 - 240 V, 50 Hz, 15 W, 1200 min ⁻¹ , with gear box type S8DA250B1-A122 BioWIN 102 and BioWIN 152: gear wheel with 36 teeth on motor shaft, gear wheel with 45 teeth on shaft of feeder screw
5.3.13	Surveillance of boundary layer in fuel hopper	Proximity switch, manufacturer Gavazi, type EC 3025 NPAPL, 10 - 40 V, DC, 200 mA
5.3.14	Induced draught fan	BioWIN 102 and BioWIN 152: Motor type Condenser Run Outer Rotor, Motor & Blower, 230 V, 50 Hz, 55 W, 2680 min ⁻¹ , OSB-9225-A1426A, fan wheel Ø140 mm, 6 blades, 26,5 mm high
5.3.15	Cleaning device of heat exchanger tubes	Motor driven cleaning device of heat exchanger tubes manufacturer SPG, type ISG-3230WHB-1 Motor: 230 V, 50 Hz, 0,26 A, 3,8 min ⁻¹ , CE
5.3.16	Cleaning device of area beneath heat exchanger tubes and of burner pot	Two common motor driven screws to transport ash into an external ash box positioned beneath the integral fuel hopper manufacturer SPG, type ISG-3230WHB-1 Motor: 230 V, 50 Hz, 0,26 A, 3,8 min ⁻¹ , CE
5.3.17	Ignition device	Ignition device with two heating elements with fins to enlarge surface manufacturer no information given at test, type no information given at test, article no. 011643, Fabrik no. 2220733, positioned in primary combustion air supply of burner pot
5.3.18	Grate	Two metall plates, one moveable, driven by motor type no information given at test, manufacturer no information given at test, data on data plate 170.02.00.00.000, 1. Bemu, i = 50:1

5.3.19	Combustion air	Primary: fix with a given free diameter, on the inlet tube is an attachment fixed with two measurement points of a pressure cell with different diameters of the heating boilers size BioWIN 102 or BioWIN 152 and BioWIN 212 or BioWIN 262 Secondary: fix with a given free diameter The combustion air quantity is given by the number and size of holes in the burner pot. Surveillance of operation of induced draught fan at start phase of heating boiler by measure of differential pressure in the attachment of the inlet tube of primary combustion air supply Pressure cell manufacturer Huba Control, type DDS 605.99722, 0.2 (0.1)30~, 19/13 Pa, ADODHH, CE-0085AP0974
5.3.20	Burner pot	Intergrated burner pot in combustion chamber with fittings and moveable grate upper part of cone: $\varnothing$ 205/199,7/140,4/135,7/135/146/160/170,43/175 mm BioWIN 102 and BioWIN 152: lower part of cone: 11 holes of $\varnothing$ 6,5 mm for secondary combustion air supply, dimensions $\varnothing$ 177,5/158/148/137/161,6/80/129,6/120/156/172 mm, height 83,5/127,5/139,5 mm Primary combustion air inlet in centre position of burner pot: upper row 14 holes of $\varnothing$ 5,6 mm, lower row 4 holes of $\varnothing$ 5,6 mm dimensions $\varnothing$ 37,2/43,7/44,7/51,2/57,7 mm, height 13/8/20/65 mm



Industrie Service

5.4	Data plate	Manufacturer: Windhager Zentralheizung Technik GmbH Anton-Windhager-Strasse 20 A-5201 SEEKIRCHEN Type: e.g. BioWIN 102 Premium BWP 102 Article number: will be added Serial number: will be added Year of manufacture: will be added Nominal heat output: will be added Nominal heat output range: will be added Heat input range: will be added Boiler class: will be added Fuel: will be added Maximum allowable operating pressure: will be added Maximum allowable temperature: will be added Water content: will be added Electrical supply: will be added Electrical power consumption: will be added Basis of test DIN EN 303-5:2012-10
5.5	Special features	The heating boiler size BioWIN 102 is identical to the heating boiler size BioWIN 152 but the parameters in the control system are adapted to the different heat output. There are three different models available of the heating boiler series: BioWIN ..2 Klassik or BWK ..2 Manual refilling of the internal fuel hopper, manual ash removal of ash beneath heat exchanger and burner pot, automatic cleaning of the heat exchanger fittings and the grate BioWIN ..2 Premium or BWP ..2 Automatic refilling of the internal fuel hopper, manual ash removal of ash beneath heat exchanger and burner pot, automatic cleaning of the heat exchanger fittings and the grate BioWIN ..2 Exklusiv or BWE ..2 Automatic refilling of the internal fuel hopper, automatic ash removal of ash beneath heat exchanger and burner pot into an external ash box positioned beneath the integral fuel hopper, automatic cleaning of the heat exchanger fittings and the grate

6 Measurement devices

Measurement device no.	Sort	Type
410 1387	Data logging	DA100/MCPS
410 2666	Flow meter	BadgerMeter Primo Advanced IN
410 2139	Flue gas measurement device	Avrigo STMG 40
410 2510	Flue gas measurement device	ZRE Gas Analyzer
410 2555	Flue gas measurement device	JGA 100, JNOX
411 1372	Flue gas measurement device	Testa FID 123
410 1112	Temperature-sensor	Thermoelement K
410 2338	Temperature-sensor	Thermoelement K
410 2339	Temperature-sensor	Thermoelement K
410 1183	Temperature-sensor	Fe Const
410 1357	Temperature-sensor	Thermoelement K
410 1129	Temperature-sensor	Thermoelement K
410 1125	Temperature-sensor	Thermoelement K
410 1127	Temperature-sensor	Thermoelement K
410 1244	Temperature-sensor	Thermoelement K
410 1128	Temperature-sensor	Thermoelement K
410 2164	Pressure meter	Huba Control 694, 0-3mbar
410 2137	Pressure meter	Huba Control 698, 0-1mbar
410 2347	Pressure meter	Halstrup 0 - 500 Pa
410 2155	Pressure meter	Revue Tommen, HM28D0B10000, 0-25 mbar
410 2346	Electrical power meter	WSE LVT311+Omron
410 1080	Scale	Mettler ID 1
410 2138	Scale	WEDO Digi2000
QS-33-02M0429	Temperature-sensor	Testo 925 mit Oberflächenfühler
QS-33-02M0134	Time measurement	Hanhart Prisma 200
QS-33-02M0353	Pressure meter	AMR, atmosphärischer Druck
410 2623	Scale	OHAUS Adventurer pro



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7 Test of boiler performance requirements and results

Test no.	1 nominal load	2 part load	-	-
7.1 Test conditions				
Heat transfer fluid: water		heat loss of test rig: -0,08 kW/ -0,08 kW		
Heating boiler type	BioWIN 102 Exklusiv, BWE 102			
Date of test	2013-06-24	2013-06-26	-	-
Test duration	h	6,0	6,0	-
Number of combustion periods		-	-	-
Control system	BioWIN mit InfoWIN			
The fuel analysis was carried out by: TÜV SÜD Industrie Service GmbH				
7.2 Fuel				
Type	Pellets	Pellets	-	-
Sort	spruce	spruce	-	-
Size/dimension	mm	Ø6	Ø6	-
Water content	%	7	7	-
Ash content	kg/kg	0,006	0,006	-
Lower calorific value	kWh/kg	4,83	4,83	-
Fed amount of fuel	kg	13,4	4,0	-
Fed amount of fuel per hour	kg/h	2,2	0,7	-
Ash	kg	0,1	0,0	-
Combustible fraction in the ash	%	10	10	-
Heat input	kW	10,8	3,2	-



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7.3 Measured parameters and losses of flue gas					
Average flue gas temperature	°C	78	58	-	-
Room temperature T_R	°C	24	23	-	-
Combustion air temperature	°C	24	23	-	-
CO ₂ -content	Vol. %	13,4	9,7	-	-
CO-content	ppm	54	149	-	-
NO _x -content	ppm	101	64	-	-
C _x H _y -content	ppm	1	3	-	-
Dust content ^{a)} (related to sucked f. gas v.)	mg/m _N ³	16	17	-	-
Draught (negative pressure value)	mbar	0,03	0,03	-	-
Combustion chamber (neg. pressure v.)	mbar	0,90	0,17	-	-
Specific flue gas volume (dry)	m ³ /kg	6,4	8,8	-	-
Specific steam volume	m ³ /kg	0,7	0,7	-	-
Flue gas mass flow (wood pellets) according to DIN EN 13384-1:2008-08	g/s	6	2	-	-
Losses due to:					
sensible heat of the products of combustion q_A	%	3,0	2,5	-	-
incomplete combustion q_U	%	0,0	0,1	-	-
unburned fuel in ash q_F	%	0,1	0,1	-	-
radiation, convection and conduction q_S (respected system limit at test rig till position of flue gas temperature measurement point)	%	2,6	6,4	-	-
Boiler efficiency indirect	%	94,3	90,9	-	-
radiation, convection and conduction q_S (respected system limit heating boiler till flue gas connector)	%	2,3	5,9	-	-

a) Dust content measurement according to method of CEN/TS 15883:2009, annex A

7.4 Measured water parameters					
Test no.:		1 nominal load	2 part load	-	-
Water flow	kg/h	413	89	-	-
Water pressure	bar	1,7	1,8	-	-
Flow temperature	°C	71,9	77,9	-	-
Return temperature	°C	50,6	49,8	-	-
Rated output including losses of test rig	kW	10,2	2,9	-	-
According to	Nominal heat output	%	102	29	-
	Part load	%	-	96	-
Boiler efficiency direct	%	94,4	89,6	-	-

7.5 Surface temperatures measured at test no. 1		Average values	Max. Values	Limits
Cover	°C	-	40	60+t _R
Doors, directly accessible	°C	-	34	60+t _R
Base stands	°C	-	41	60+t _R
Flue gas tube, insulated	°C	-	37	60+t _R
Operating levers, directly accessible	°C	-	29	60+t _R
Integrated fuel hopper, inner side	°C	-	38	85
Feeder screw, outer side	°C	-	37	85

7.6 Electrical power consumption	Measured value	Test duration
Mean power consumption at nominal heat output	28 W	360 Min.
Mean power consumption at minimum heat output	16 W	360 Min.
Maximum power consumption (operation)	186 W	---
Mean power consumption at Standby	6 W	10 Min.
Mean power consumption at ignition period	128 Wh	610 Sec.
Maximum power consumption at ignition period	1054 W	---

7.7 Comparison of values with the requirements of DIN EN 303-5:2012 for class 5		Test No. 1		Test No. 2	
		achieved	required	achieved	required
Boiler efficiency	%	94,4	≥88,0	89,6	≥88,0
CO-emissions (related to 10 % O ₂)	mg/m ³	53	≤500	202	≤500
NO _x -emissions (related to 10 % O ₂)	mg/m ³	163	---	143	---
OGC-emissions (related to 10 % O ₂)	mg/m ³	1	≤20	7	≤20
Dust-emissions (related to 10 % O ₂)	mg/m ³	13	≤40	19	≤40
Flue gas temperature	°C	78 ¹	≥160+t _R	58 ¹	≥160+t _R
Draught (negative pressure value)	mbar	0,03	≥0,00±0,03	0,03	≥0,00±0,03
Ash bin sufficient	--	yes	---	yes	---
Duration of tests	h	6,0	≥6,0	6,0	≥6,0

¹ additional manufacturer's information are given in the installation instructions according to clause 4.4.3 of DIN EN 303-5



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7.8 Comparison		Test No. 1		Test No. 2	
of values with the requirements for Austria according to annex C.2 of DIN EN 303-5:2012 and with the Austrian law paragraph 15 a „Vereinbarung gemäß Art 15a B-VG über das Inverkehrbringen von Kleinfeuerungen und die Überprüfung von Feuerungsanlagen und Blockheizkraftwerken, Oktober 2009“.					
Boiler efficiency	%	94,4	≥80	89,6	≥80
CO-emissions	mg/MJ	25	≤250	94	≤250
NO _x -emissions	mg/MJ	76	≤100 ²	66	--- ³
OGC-emissions	mg/MJ	1	≤20 ²	3	≤20 ²
Dust-emissions	mg/MJ	6	≤20 ²	9	--- ³

7.9 Comparison		Test No. 1		Test No. 2	
of values with the requirements for Germany according to annex C.5 of DIN EN 303-5:2012 as well as with 1. BImSchV ⁴					
CO-emissions (related to 13 % O ₂)	mg/m ³	39	≤400	147	--- ⁵
NO _x -emissions (related to 13 % O ₂)	mg/m ³	119	---	104	---
OGC-emissions (related to 13 % O ₂)	mg/m ³	1	---	5	---
Dust-emissions (related to 13 % O ₂)	mg/m ³	9	≤20	14	--- ⁵

7.10 Comparison		Test No. 1		Test No. 2	
of values with the requirements for Switzerland according to annex C.6 of DIN EN 303-5:2012 as well as with Swiss Ordinance on Air Pollution (LRV)					
CO-emissions (related to 13 % O ₂)	mg/m ³	39	≤300	147	≤300
NO _x -emissions (related to 13 % O ₂)	mg/m ³	119	---	104	---
OGC-emissions (related to 13 % O ₂)	mg/m ³	1	---	5	---
Dust-emissions (related to 13 % O ₂)	mg/m ³	9	≤40	14	≤40

The results on the test of the boiler performance requirements are transferable to the models BioWIN 102 Klassik and BioWIN 102 Premium.

² the limiting values valid from 01. January 2015 are respected according to Austrian law paragraph 15a B-VG, October 2009 or 28. January 2011

³ test not necessary according to Article 6 of the Austrian law 15a B-VG

⁴ the limiting values are respected according to 1. BImSchV dated 26. January 2010, § 5, clause 1, table level 2

⁵ according to 1. BImSchV dated 26. January 2010, annex 2, number 1.3 the measurement is evaluated only at nominal heat output

8 Expertise

The heating boiler of manufacturer

Windhager Zentralheizung Technik GmbH
Anton-Windhager-Strasse 20
5201 SEEKIRCHEN, ÖSTEREICH

as presented for the testing

Heating boiler for solid fuels

type

BioWIN ..2

size

BioWIN 102

models

BioWIN 102 Klassik,
BioWIN 102 Premium and
BioWIN 102 Exklusiv

was tested according to the boiler performance requirements of clause 4.4 of DIN EN 303-5:2012-10 by the test laboratory TÜV SÜD Industrie Service GmbH.

The boiler performance requirements of **boiler class 5** of DIN EN 303-5:2012-10, clause 4.4 are fulfilled as well as the additional requirements for the destination countries AT, DE and CH of annex C, clause C.2, C.5 and C.6 of DIN EN 303-5:2012-10.

The proof on the additional requirements of the destination countries DK, HR, UK and IT according to annex C, clauses C.3, C.4, C.7 and C.8 of DIN EN 303-5:2012-10 was not part of the test order test and must be evaluated separately when required.

Feuerungs- und Wärmetechnik
Prüfbereich Wärmetechnik



Johannes Steiglechner
Leiter
Feuerungs- und Wärmetechnik

The expert



Uwe Schlosser



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Report

on the

test of a heating boiler according to DIN EN 303-5

Report C Test on the boiler performance requirements

Test laboratory	TÜV SÜD Industrie Service GmbH Abteilung Feuerungs- und Wärmetechnik Prüfbereich Wärmetechnik	
Subject of test	Heating boiler for solid fuels	
	Type	BioWIN ..2
	Size/Models	BioWIN 152 BioWIN 152 Klassik BioWIN 152 Premium and BioWIN 152 Exklusiv
	Fuel:	compressed wood C1
	Fuel feed:	automatic stoking
	Combustion air supply:	with an induced draught fan
Customer	Windhager Zentralheizung Technik GmbH Anton-Windhager-Strasse 20 5201 SEEKIRCHEN, ÖSTEREICH	
Scope	Validation of the boiler performance requirements of DIN EN 303-5 as a part of the test on the heating boiler series	
Expert	Dipl.-Ing. Uwe Schlosser	
Period of test	June till November 2013	
Basis of test	DIN EN 303-5:2012-10, clause 4.4	

Date: 2013-11-15

Our reference:
IS-TAF-MUC/si

Report No. H-C2 1358-00/13
Order no. 2041276

Document:
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Page 1

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10 pages

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In this test report a comma is used as a decimal separator.



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Feuerungs- und Wärmetechnik
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Deutschland

1 Summary

Customer Windhager Zentralheizung Technik GmbH, A-5201 Seekirchen
Manufacturer Windhager Zentralheizung Technik GmbH, A-5201 Seekirchen
Construction Heating boiler made of steel according to DIN EN 303-5 with an induced draught fan for not room sealed operation
operating mode: modulating
Combustion: gasification and combustion in combustion chamber within a burner pot
Fuel feed: automatic stoking
Grate design: moving grate within burner pot
Ash removal: automatic
Fittings: turbulators in second section of heat exchanger tubes

Type BioWIN ..2

Size BioWIN 152

Technical data of the heating boiler series (manufacturer's information)

No	Size	Nominal heat output range kW	Fuel —	max. flue gas temp °C	Drawing no. boiler body
1	BioWIN 152 Klassik, BioWIN 152 Premium, BioWIN 152 Exklusiv	4,3 – 15,0	C1	99	1-464-050450 dated 2013-06-19

A: Log wood B: Chipped wood C1: Compressed wood Pellets D: Sawdust

Destination countries all countries of European community and Swiss except DK, HR, UK and IT

Boiler class 5

Maximum allowable temperature 85 °C

Max. allowable operating pressure 3 bar

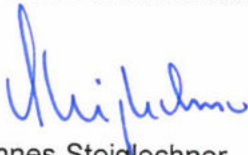
Necessary flue gas draught 0 Pa (negative pressure, manufacturer's information)

Electrical power supply 230 V, 50 Hz

The test was performed by the expert in the laboratory of Windhager Zentralheizung Technik GmbH, 5201 SEEKIRCHEN, ÖSTEREICH using a test rig according to picture A.1 of DIN EN 304: 2004-01. The conditions for the test, the results and the evaluation are documented in chapter 7.

The boiler performance requirements of **boiler class 5** are fulfilled according to clause 4.4 of DIN EN 303-5:2012-10 as well as the specific additional requirements of the above listed destination countries according to annex C of DIN EN 303-5:2012-10 except the national deviations of the destination countries DK, HR, UK and IT according to annexes C.3, C.4, C.7 and C.8 of DIN EN 303-5:2012-10 which were not part of the order by the customer and must be evaluated separately when required.

Feuerungs- und Wärmetechnik
Prüfbereich Wärmetechnik



Johannes Steiglechner
Leiter
Feuerungs- und Wärmetechnik

2 Scope of test

The manufacturer orders the test on the boiler performance requirements of the heating boiler type BioWIN ..2, size BioWIN 152, models BioWIN 152 Klassik, BioWIN 152 Premium and BioWIN 152 Exklusiv.

3 Basis of test

DIN EN 303-5:2012-10 Heating boilers - Heating boilers for solid fuels, manually and automatically stoked, nominal heat output of up to 500 kW, clause 4.4

4 Applied test documents

- Test report no. H-C1 1358-00/13 dated 2013-11-15 on the test of the boiler performance requirements according to DIN EN 303-5 of the heating boiler, type BioWIN 102

5 Description of heating boiler

The heating boiler size BioWIN 152 is identical to the heating boiler size BioWIN 102 but the parameters in the control system are adapted to the different heat output.

The detailed description of the heating boiler is documented in report no. H-C1 1358-00/13.



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6 Measurement devices

Messmittel Nr.	Gruppe	Typ
410 1387	Data logging	DA100/MCPS
410 2666	Flow meter	BadgerMeter Primo Advanced IN
410 2139	Flue gas measurement device	Avrigo STMG 40
410 2510	Flue gas measurement device	ZRE Gas Analyzer
410 2555	Flue gas measurement device	JGA 100, JNOX
411 1372	Flue gas measurement device	Testa FID 123
410 1112	Temperature-sensor	Thermoelement K
410 2338	Temperature-sensor	Thermoelement K
410 2339	Temperature-sensor	Thermoelement K
410 1183	Temperature-sensor	Fe Const
410 1357	Temperature-sensor	Thermoelement K
410 1129	Temperature-sensor	Thermoelement K
410 1125	Temperature-sensor	Thermoelement K
410 1127	Temperature-sensor	Thermoelement K
410 1244	Temperature-sensor	Thermoelement K
410 1128	Temperature-sensor	Thermoelement K
410 2164	Pressure meter	Huba Control 694, 0-3mbar
410 2137	Pressure meter	Huba Control 698, 0-1mbar
410 2347	Pressure meter	Halstrup 0 - 500 Pa
410 2155	Pressure meter	Revue Tommen, HM28D0B10000, 0-25 mbar
410 2346	Electrical power meter	WSE LVT311+Omron
410 1080	Scale	Mettler ID 1
410 2138	Scale	WEDO Digi2000
QS-33-02M0429	Temperature-sensor	Testo 925 mit Oberflächenfühler
QS-33-02M0134	Time measurement	Hanhart Prisma 200
QS-33-02M0353	Pressure meter	AMR, atmosphärischer Druck
410 2623	Scale	OHAUS Adventurer pro

7 Test of boiler performance requirements and results

Test no.	1 nominal load	2 part load	-	-
7.1 Test conditions				
Heat transfer fluid: water		heat loss of test rig: -0,08 kW/ -0,08 kW		
Heating boiler type	BioWIN 152 Exklusiv, BWE 152			
Date of test	2013-06-27	2013-06-28	-	-
Test duration	h	6,0	6,0	-
Number of combustion periods	-	-	-	-
Control system	BioWIN mit InfoWIN			
The fuel analysis was carried out by: TÜV SÜD Industrie Service GmbH				
7.2 Fuel				
Type	Pellets	Pellets	-	-
Sort	spruce	spruce	-	-
Size/dimension	mm	Ø6	Ø6	-
Water content	%	7	7	-
Ash content	kg/kg	0,006	0,006	-
Lower calorific value	kWh/kg	4,83	4,83	-
Fed amount of fuel	kg	20,0	5,6	-
Fed amount of fuel per hour	kg/h	3,3	0,9	-
Ash	kg	0,1	0,0	-
Combustible fraction in the ash	%	10	10	-
Heat input	kW	16,1	4,5	-



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7.3 Measured parameters and losses of flue gas					
Average flue gas temperature	°C	99	62	-	-
Room temperature T_R	°C	24	23	-	-
Combustion air temperature	°C	24	23	-	-
CO ₂ -content	Vol. %	14,2	10,1	-	-
CO-content	ppm	37	132	-	-
NO _x -content	ppm	109	66	-	-
C _x H _y -content	ppm	1	2	-	-
Dust content ^{a)} (related to sucked f. gas v.)	mg/m _N ³	22	12	-	-
Draught (negative pressure value)	mbar	0,03	0,02	-	-
Combustion chamber (neg. pressure v.)	mbar	0,80	0,21	-	-
Specific flue gas volume (dry)	m ³ /kg	6,0	8,4	-	-
Specific steam volume	m ³ /kg	0,7	0,7	-	-
Flue gas mass flow (wood pellets) according to DIN EN 13384-1:2008-08	g/s	8	3	-	-
Losses due to:					
sensible heat of the products of combustion q_A	%	4,0	2,8	-	-
incomplete combustion q_U	%	0,0	0,1	-	-
unburned fuel in ash q_F	%	0,1	0,1	-	-
radiation, convection and conduction q_S (respected system limit at test rig till position of flue gas temperature measurement point)	%	2,1	4,9	-	-
Boiler efficiency indirect	%	93,8	92,1	-	-
radiation, convection and conduction q_S (respected system limit heating boiler till flue gas connector)	%	1,9	4,5	-	-

a) Dust content measurement according to method of CEN/TS 15883:2009, annex A



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7.4 Measured water parameters					
Test no.:		1 nominal load	2 part load	-	-
Water flow	kg/h	658	136	-	-
Water pressure	bar	1,7	1,7	-	-
Flow temperature	°C	70,4	76,8	-	-
Return temperature	°C	50,7	50,1	-	-
Rated output including losses of test rig	kW	15,1	4,2	-	-
According to	Nominal heat output	%	101	28	-
	Part load	%	-	98	-
Boiler efficiency direct	%	93,8	92,0	-	-

7.5 Surface temperatures measured at test no. 1		Average values	Max. Values	Limits
Cover	°C	-	40	60+t _R
Doors, directly accessible	°C	-	34	60+t _R
Base stands	°C	-	41	60+t _R
Flue gas tube, insulated	°C	-	37	60+t _R
Operating levers, directly accessible	°C	-	31	60+t _R
Integrated fuel hopper, inner side	°C	-	38	85
Feeder screw, outer side	°C	-	36	85

7.6 Electrical power consumption	Measured value	Test duration
Mean power consumption at nominal heat output	33 W	360 Min.
Mean power consumption at minimum heat output	18 W	360 Min.
Maximum power consumption (operation)	186 W	---
Mean power consumption at Standby	6 W	10 Min.
Mean power consumption at ignition period	128 Wh	610 Sec.
Maximum power consumption at ignition period	1054 W	---

7.7 Comparison of values with the requirements of DIN EN 303-5:2012 for class 5		Test No. 1		Test No. 2	
		achieved	required	achieved	required
Boiler efficiency	%	94,0	≥88,2	92,0	≥88,2
CO-emissions (related to 10 % O ₂)	mg/m ³	34	≤500	172	≤500
NO _x -emissions (related to 10 % O ₂)	mg/m ³	166	---	142	---
OGC-emissions (related to 10 % O ₂)	mg/m ³	1	≤20	5	≤20
Dust-emissions (related to 10 % O ₂)	mg/m ³	17	≤40	13	≤40
Flue gas temperature	°C	99 ¹	≥160+t _R	62 ¹	≥160+t _R
Draught (negative pressure value)	mbar	0,03	≥0,00±0,03	0,02	≥0,00±0,03
Ash bin sufficient	--	yes	---	yes	---
Duration of tests	h	6,0	≥6,0	6,0	≥6,0

¹ additional manufacturer's information are given in the installation instructions according to clause 4.4.3 of DIN EN 303-5

7.8 Comparison		Test No. 1		Test No. 2	
of values with the requirements for Austria according to annex C.2 of DIN EN 303-5:2012 and with the Austrian law paragraph 15 a „Vereinbarung gemäß Art 15a B-VG über das Inverkehrbringen von Kleinfeuerungen und die Überprüfung von Feuerungsanlagen und Blockheizkraftwerken, Oktober 2009“.					
Boiler efficiency	%	94,0	≥81,4	92,0	≥81,4
CO-emissions	mg/MJ	16	≤250	80	≤250
NO _x -emissions	mg/MJ	77	≤100 ²	66	--- ³
OGC-emissions	mg/MJ	0	≤20 ²	2	≤20 ²
Dust-emissions	mg/MJ	8	≤20 ²	6	--- ³

7.9 Comparison		Test No. 1		Test No. 2	
of values with the requirements for Germany according to annex C.5 of DIN EN 303-5:2012 as well as with 1. BImSchV ⁴					
CO-emissions (related to 13 % O ₂)	mg/m ³	25	≤400	125	--- ⁵
NO _x -emissions (related to 13 % O ₂)	mg/m ³	121	---	103	---
OGC-emissions (related to 13 % O ₂)	mg/m ³	1	---	3	---
Dust-emissions (related to 13 % O ₂)	mg/m ³	12	≤20	9	--- ⁵

7.10 Comparison		Test No. 1		Test No. 2	
of values with the requirements for Switzerland according to annex C.6 of DIN EN 303-5:2012 as well as with Swiss Ordinance on Air Pollution (LRV)					
CO-emissions (related to 13 % O ₂)	mg/m ³	25	≤300	125	≤300
NO _x -emissions (related to 13 % O ₂)	mg/m ³	121	---	103	---
OGC-emissions (related to 13 % O ₂)	mg/m ³	1	---	3	---
Dust-emissions (related to 13 % O ₂)	mg/m ³	12	≤40	9	≤40

The results on the test of the boiler performance requirements are transferable to the models BioWIN 152 Klassik and BioWIN 152 Premium.

² the limiting values valid from 01. January 2015 are respected according to Austrian law paragraph 15a B-VG, October 2009 or 28. January 2011

³ test not necessary according to Article 6 of the Austrian law 15a B-VG

⁴ the limiting values are respected according to 1. BImSchV dated 26. January 2010, § 5, clause 1, table level 2

⁵ according to 1. BImSchV dated 26. January 2010, annex 2, number 1.3 the measurement is evaluated only at nominal heat output



Industrie Service

8 Expertise

The heating boiler of manufacturer

Windhager Zentralheizung Technik GmbH
Anton-Windhager-Strasse 20
5201 SEEKIRCHEN, ÖSTEREICH

as presented for the testing

Heating boiler for solid fuels

type

BioWIN ..2

size

BioWIN 152

models

BioWIN 152 Klassik,
BioWIN 152 Premium and
BioWIN 152 Exklusiv

was tested according to the boiler performance requirements of clause 4.4 of DIN EN 303-5:2012-10 by the test laboratory TÜV SÜD Industrie Service GmbH.

The boiler performance requirements of **boiler class 5** of DIN EN 303-5:2012-10, clause 4.4 are fulfilled as well as the additional requirements for the destination countries AT, DE and CH of annex C, clause C.2, C.5 and C.6 of DIN EN 303-5:2012-10.

The proof on the additional requirements of the destination countries DK, HR, UK and IT according to annex C, clauses C.3, C.4, C.7 and C.8 of DIN EN 303-5:2012-10 was not part of the test order test and must be evaluated separately when required.

Feuerungs- und Wärmetechnik
Prüfbereich Wärmetechnik

A handwritten signature in blue ink, appearing to read 'J. Steiglechner'.

Johannes Steiglechner
Leiter
Feuerungs- und Wärmetechnik

The expert

A handwritten signature in blue ink, appearing to read 'U. Schlosser'.

Uwe Schlosser



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Report

on the

test of a heating boiler according to DIN EN 303-5

Report C Test on the boiler performance requirements

Test laboratory	TÜV SÜD Industrie Service GmbH Abteilung Feuerungs- und Wärmetechnik Prüfbereich Wärmetechnik	
Subject of test	Heating boiler for solid fuels	
	Type	BioWIN ..2
	Size/Models	BioWIN 262 BioWIN 262 Klassik BioWIN 262 Premium and BioWIN 262 Exklusiv
	Fuel:	compressed wood C1
	Fuel feed:	automatic stoking
	Combustion air supply:	with an induced draught fan
Customer	Windhager Zentralheizung Technik GmbH Anton-Windhager-Strasse 20 5201 SEEKIRCHEN, ÖSTEREICH	
Scope	Validation of the boiler performance requirements of DIN EN 303-5 as a part of the test on the heating boiler series	
Expert	Dipl.-Ing. Uwe Schlosser	
Period of test	July till November 2013	
Basis of test	DIN EN 303-5:2012-10, clause 4.4	

Date: 2013-11-15

Our reference:
IS-TAF-MUC/sl

Report No. H-C3 1358-00/13
Order no. 2041276

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The test results refer exclusively to the units under test.

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In this test report a comma is used as a decimal separator.



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Feuerungs- und Wärmetechnik
Ridlerstraße 65
80339 München
Deutschland



Industrie Service

1 Summary

Customer Windhager Zentralheizung Technik GmbH, A-5201 Seekirchen
 Manufacturer Windhager Zentralheizung Technik GmbH, A-5201 Seekirchen
 Construction Heating boiler made of steel according to DIN EN 303-5 with an induced draught fan for not room sealed operation
 operating mode: modulating
 Combustion: gasification and combustion in combustion chamber within a burner pot
 Fuel feed: automatic stoking
 Grate design: moving grate within burner pot
 Ash removal: automatic
 Fittings: turbulators in second section of heat exchanger tubes

Type BioWIN ..2

Size BioWIN 262

Technical data of the heating boiler series (manufacturer's information)

No	Size	Nominal heat output range kW	Fuel —	max. flue gas temp °C	Drawing no. boiler body
1	BioWIN 262 Klassik, BioWIN 262 Premium, BioWIN 262 Exklusiv	7,6 – 25,9	C1	114	1-464-048830 dated 2013-06-19

A: Log wood B: Chipped wood C1: Compressed wood Pellets D: Sawdust

Destination countries all countries of European community and Swiss except DK, HR, UK and IT

Boiler class 5

Maximum allowable temperature 85 °C

Max. allowable operating pressure 3 bar

Necessary flue gas draught 0 Pa (negative pressure, manufacturer's information)

Electrical power supply 230 V, 50 Hz

The test was performed by the expert in the laboratory of Windhager Zentralheizung Technik GmbH, 5201 SEEKIRCHEN, ÖSTEREICH using a test rig according to picture A.1 of DIN EN 304: 2004-01. The conditions for the test, the results and the evaluation are documented in chapter 8.



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The boiler performance requirements of **boiler class 5** are fulfilled according to clause 4.4 of DIN EN 303-5:2012-10 as well as the specific additional requirements of the above listed destination countries according to annex C of DIN EN 303-5:2012-10 except the national deviations of the destination countries DK, HR, UK and IT according to annexes C.3, C.4, C.7 and C.8 of DIN EN 303-5:2012-10 which were not part of the order by the customer and must be evaluated separately when required.

Feuerungs- und Wärmetechnik
Prüfbereich Wärmetechnik

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Johannes Steiglechner
Leiter
Feuerungs- und Wärmetechnik

2 Scope of test

The manufacturer orders the test on the boiler performance requirements of the heating boiler type BioWIN ..2, size BioWIN 262, models BioWIN 262 Klassik, BioWIN 262 Premium and BioWIN 262 Exklusiv.

3 Basis of test

DIN EN 303-5:2012-10 Heating boilers - Heating boilers for solid fuels, manually and automatically stoked, nominal heat output of up to 500 kW, clause 4.4

4 Applied test documents

- Test report no. H-C1 1358-00/13 dated 2013-11-15 on the test of the boiler performance requirements according to DIN EN 303-5 of the heating boiler, type BioWIN 102

5 Note

The heating boiler size BioWIN 212 with the models BioWIN 212 Klassik, BioWIN 212 Premium and BioWIN 212 Exklusiv is an intermediate size of the heating boiler series BioWIN ..2 according to DIN EN 303-5:2012-10, clause 5.1.4.



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6 Description of heating boiler

6.1 General description of the heating boiler

The general description of the heating boiler is documented in report no. H-C1 1358-00/13.

6.2 Detailed description of the heating boiler, as far as different to clause 5.1

6.2.1	Feeder screw drive	BioWIN 212 and BioWIN 262: gear wheel with 45 teeth on motor shaft, gear wheel with 36 teeth on shaft of feeder screw
6.2.2	Induced draught fan	BioWIN 212 and BioWIN 262: motor type Condenser Run Outer Rotor, Motor & Blower, 230 V, 50 Hz, 97 W, 2480 min ⁻¹ , OSB-9225-A1626A, fan wheel Ø160 mm, 8 blades, 26 mm high
6.2.3	Combustion air	Primary: fix with a given free diameter, on the inlet tube is an attachment fixed with two measurement points of a pressure cell with different diameters of the heating boilers size BioWIN 102 or BioWIN 152 and BioWIN 212 or BioWIN 262
6.2.4	Burner pot	BioWIN 212 and BioWIN 262: Secondary combustion air inlet, outer shell of burner pot lower part of cone: 20 holes of Ø 11/6,5 mm, dimensions Ø177,5/158/148/135/151,6/104/152,2/144/156/172mm, height 98,5/127,5/139,5 mm Primary combustion air inlet in centre position of burner pot: upper row 12 holes of Ø 5,8 mm, middle row 12 holes of Ø 5,8 mm, lower row 4 holes of Ø 5,8 mm dimensions Ø 37,2/43,7/44,7/51,2/57,7 mm, height 13/10/17/24/65 mm
6.2.5	Special features	The heating boiler size BioWIN 212 is identical to the heating boiler size BioWIN 262 but the parameters in the control system are adapted to the different heat output.



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7 Measurement devices

Messmittel Nr.	Gruppe	Typ
410 1387	Data logging	DA100/MCPS
410 2666	Flow meter	BadgerMeter Primo Advanced IN
410 2139	Flue gas measurement device	Avriso STMG 40
410 2510	Flue gas measurement device	ZRE Gas Analyzer
410 2555	Flue gas measurement device	JGA 100, JNOX
411 1372	Flue gas measurement device	Testa FID 123
410 1112	Temperature-sensor	Thermoelement K
410 2338	Temperature-sensor	Thermoelement K
410 2339	Temperature-sensor	Thermoelement K
410 1183	Temperature-sensor	Fe Const
410 1357	Temperature-sensor	Thermoelement K
410 1129	Temperature-sensor	Thermoelement K
410 1125	Temperature-sensor	Thermoelement K
410 1127	Temperature-sensor	Thermoelement K
410 1244	Temperature-sensor	Thermoelement K
410 1128	Temperature-sensor	Thermoelement K
410 2164	Pressure meter	Huba Control 694, 0-3mbar
410 2137	Pressure meter	Huba Control 698, 0-1mbar
410 2347	Pressure meter	Halstrup 0 - 500 Pa
410 2155	Pressure meter	Revue Tommen, HM28D0B10000, 0-25 mbar
410 2346	Electrical power meter	WSE LVT311+Omron
410 1080	Scale	Mettler ID 1
410 2138	Scale	WEDO Digi2000
QS-33-02M0429	Temperature-sensor	Testo 925 mit Oberflächenfühler
QS-33-02M0134	Time measurement	Hanhart Prisma 200
QS-33-02M0353	Pressure meter	AMR, atmosphärischer Druck
410 2623	Scale	OHAUS Adventurer pro



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8 Test of boiler performance requirements and results

Test no.	1 nominal load	2 part load	-	-	
8.1 Test conditions					
Heat transfer fluid: water		heat loss of test rig: -0,08 kW/ -0,08 kW			
Heating boiler type	BioWIN 262 Exklusiv, BWE 262				
Date of test	2013-07-01	2013-07-02	-	-	
Test duration	h	6,0	6,0	-	-
Number of combustion periods		-	-	-	-
Control system	BioWIN mit InfoWIN				
The fuel analysis was carried out by: TÜV SÜD Industrie Service GmbH					
8.2 Fuel					
Type		Pellets	Pellets	-	-
Sort		spruce	spruce	-	-
Size/dimension	mm	Ø6	Ø6	-	-
Water content	%	7	7	-	-
Ash content	kg/kg	0,006	0,006	-	-
Lower calorific value	kWh/kg	4,83	4,83	-	-
Fed amount of fuel	kg	34,4	10,1	-	-
Fed amount of fuel per hour	kg/h	5,7	1,7	-	-
Ash	kg	0,2	0,1	-	-
Combustible fraction in the ash	%	10	10	-	-
Heat input	kW	27,7	8,1	-	-



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8.3 Measured parameters and losses of flue gas					
Average flue gas temperature	°C	114	70	-	-
Room temperature T_R	°C	23	25	-	-
Combustion air temperature	°C	23	25	-	-
CO ₂ -content	Vol. %	14,2	12,1	-	-
CO-content	ppm	51	70	-	-
NO _x -content	ppm	113	84	-	-
C _x H _y -content	ppm	1	1	-	-
Dust content ^{a)} (related to sucked f. gas v.)	mg/m _N ³	21	13	-	-
Draught (negative pressure value)	mbar	0,03	0,02	-	-
Combustion chamber (neg. pressure v.)	mbar	1,30	0,23	-	-
Specific flue gas volume (dry)	m ³ /kg	6,0	7,0	-	-
Specific steam volume	m ³ /kg	0,7	0,7	-	-
Flue gas mass flow (wood pellets) according to DIN EN 13384-1:2008-08	g/s	15	5	-	-
Losses due to:					
sensible heat of the products of combustion q_A	%	4,8	2,7	-	-
incomplete combustion q_U	%	0,0	0,0	-	-
unburned fuel in ash q_F	%	0,1	0,1	-	-
radiation, convection and conduction q_S (respected system limit at test rig till position of flue gas temperature measurement point)	%	1,3	2,9	-	-
Boiler efficiency indirect	%	93,8	94,3	-	-
radiation, convection and conduction q_S (respected system limit heating boiler till flue gas connector)	%	1,2	2,6	-	-

a) Dust content measurement according to method of CEN/TS 15883:2009, annex A



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8.4 Measured water parameters					
Test no.:		1 nominal load	2 part load	-	-
Water flow	kg/h	1149	244	-	-
Water pressure	bar	1,8	1,9	-	-
Flow temperature	°C	70,1	77,4	-	-
Return temperature	°C	50,7	50,5	-	-
Rated output including losses of test rig	kW	26,0	7,6	-	-
According to	Nominal heat output	%	100	29	-
	Part load	%	-	100	-
Boiler efficiency direct	%	93,9	93,8	-	-

8.5 Surface temperatures measured at test no. 1		Average values	Max. Values	Limits
Cover	°C	-	37	60+t _R
Doors, directly accessible	°C	-	33	60+t _R
Base stands	°C	-	46	60+t _R
Flue gas tube, insulated	°C	-	40	60+t _R
Operating levers, directly accessible	°C	-	31	60+t _R
Integrated fuel hopper, inner side	°C	-	38	85
Feeder screw, outer side	°C	-	36	85

8.6 Electrical power consumption	Measured value	Test duration
Mean power consumption at nominal heat output	48 W	360 Min.
Mean power consumption at minimum heat output	21 W	360 Min.
Maximum power consumption (operation)	278 W	---
Mean power consumption at Standby	6 W	10 Min.
Mean power consumption at ignition period	128 Wh	610 Sec.
Maximum power consumption at ignition period	1054 W	---

8.7 Comparison of values with the requirements of DIN EN 303-5:2012 for		Test No. 1		Test No. 2	
	class 5	achieved	required	achieved	required
Boiler efficiency	%	93,9	≥88,4	93,8	≥88,4
CO-emissions (related to 10 % O ₂)	mg/m ³	47	≤500	76	≤500
NO _x -emissions (related to 10 % O ₂)	mg/m ³	172	---	150	---
OGC-emissions (related to 10 % O ₂)	mg/m ³	1	≤20	2	≤20
Dust-emissions (related to 10 % O ₂)	mg/m ³	15	≤40	11	≤40
Flue gas temperature	°C	114 ¹	≥160+t _R	70 ¹	≥160+t _R
Draught (negative pressure value)	mbar	0,03	≥0,00±0,03	0,02	≥0,00±0,03
Ash bin sufficient	--	yes	---	yes	---
Duration of tests	h	6,0	≥6,0	6,0	≥6,0

¹ additional manufacturer's information are given in the installation instructions according to clause 4.4.3 of DIN EN 303-5



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8.8 Comparison		Test No. 1		Test No. 2	
of values with the requirements for Austria according to annex C.2 of DIN EN 303-5:2012 and with the Austrian law paragraph 15 a „Vereinbarung gemäß Art 15a B-VG über das Inverkehrbringen von Kleinfeuerungen und die Überprüfung von Feuerungsanlagen und Blockheizkraftwerken, Oktober 2009“.					
Boiler efficiency	%	93,9	≥83,2	93,8	≥83,2
CO-emissions	mg/MJ	22	≤250	35	≤250
NO _x -emissions	mg/MJ	80	≤100 ²	70	--- ³
OGC-emissions	mg/MJ	1	≤20 ²	1	≤20 ²
Dust-emissions	mg/MJ	7	≤20 ²	5	--- ³

8.9 Comparison		Test No. 1		Test No. 2	
of values with the requirements for Germany according to annex C.5 of DIN EN 303-5:2012 as well as with 1. BImSchV ⁴					
CO-emissions (related to 13 % O ₂)	mg/m ³	34	≤400	55	--- ⁵
NO _x -emissions (related to 13 % O ₂)	mg/m ³	125	---	109	---
OGC-emissions (related to 13 % O ₂)	mg/m ³	1	---	1	---
Dust-emissions (related to 13 % O ₂)	mg/m ³	11	≤20	8	--- ⁵

8.10 Comparison		Test No. 1		Test No. 2	
of values with the requirements for Switzerland according to annex C.6 of DIN EN 303-5:2012 as well as with Swiss Ordinance on Air Pollution (LRV)					
CO-emissions (related to 13 % O ₂)	mg/m ³	34	≤300	55	≤300
NO _x -emissions (related to 13 % O ₂)	mg/m ³	125	---	109	---
OGC-emissions (related to 13 % O ₂)	mg/m ³	1	---	1	---
Dust-emissions (related to 13 % O ₂)	mg/m ³	11	≤40	8	≤40

The results on the test of the boiler performance requirements are transferable to the models BioWIN 262 Klassik and BioWIN 262 Premium.

² the limiting values valid from 01. January 2015 are respected according to Austrian law paragraph 15a B-VG, October 2009 or 28. January 2011

³ test not necessary according to Article 6 of the Austrian law 15a B-VG

⁴ the limiting values are respected according to 1. BImSchV dated 26. January 2010, § 5, clause 1, table level 2

⁵ according to 1. BImSchV dated 26. January 2010, annex 2, number 1.3 the measurement is evaluated only at nominal heat output



Industrie Service

9 Expertise

The heating boiler of manufacturer

Windhager Zentralheizung Technik GmbH
Anton-Windhager-Strasse 20
5201 SEEKIRCHEN, ÖSTEREICH

as presented for the testing

Heating boiler for solid fuels

type

BioWIN ..2

size

BioWIN 262

models

BioWIN 262 Klassik,
BioWIN 262 Premium and
BioWIN 262 Exklusiv

was tested according to the boiler performance requirements of clause 4.4 of DIN EN 303-5:2012-10 by the test laboratory TÜV SÜD Industrie Service GmbH.

The boiler performance requirements of **boiler class 5** of DIN EN 303-5:2012-10, clause 4.4 are fulfilled as well as the additional requirements for the destination countries AT, DE and CH of annex C, clause C.2, C.5 and C.6 of DIN EN 303-5:2012-10.

The proof on the additional requirements of the destination countries DK, HR, UK and IT according to annex C, clauses C.3, C.4, C.7 and C.8 of DIN EN 303-5:2012-10 was not part of the test order test and must be evaluated separately when required.

Feuerungs- und Wärmetechnik
Prüfbereich Wärmetechnik

A blue ink signature of Johannes Steiglechner.

Johannes Steiglechner
Leiter
Feuerungs- und Wärmetechnik

The expert

A blue ink signature of Uwe Schlosser.

Uwe Schlosser



Report

on the

test of a heating boiler according to DIN EN 303-5

Report C Test on the boiler performance requirements

Test laboratory	TÜV SÜD Industrie Service GmbH Abteilung Feuerungs- und Wärmetechnik Prüfbereich Wärmetechnik
Subject of test	Heating boiler for solid fuels
Type	BioWIN ..2 or BW ...2
Sizes/ Models/	BioWIN 332 BioWIN 332 Klassik, BioWIN 332 Premium and BioWIN 332 Exklusiv, see page 2
Options	see page 2
Fuel:	compressed wood C1
Fuel supply:	automatic stoking
Combustion air supply:	with an induced draught fan
Customer	Windhager Zentralheizung Technik GmbH Anton-Windhager-Strasse 20 5201 SEEKIRCHEN, ÖSTEREICH
Manufacturer	Windhager Zentralheizung Technik GmbH Anton-Windhager-Strasse 20 5201 SEEKIRCHEN, ÖSTEREICH
Scope	Validation of the boiler performance requirements of DIN EN 303-5 as a part of the test on the heating boiler series
Expert	Dipl.-Ing. Uwe Schlosser
Period of test	July and August 2016
Basis of test	DIN EN 303-5:2012-10, clause 4.4

Date: 2016-08-04

Our reference:
IS-TAF-MUC/si

Report No. H-C4 1358-00/16
Order no. 2571913

Document:
HC413580016_eng.doc

Page 1

This document includes
17 pages

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approval of TÜV SÜD Indus-
trie Service GmbH.

The test results refer exclu-
sively to the units under test.

This test report is also issued in a German version. In any case of doubts the German version is binding.

In this test report a comma is used as a decimal separator.



1 Summary

Customer	Windhager Zentralheizung Technik GmbH, A-5201 Seekirchen
Manufacturer	Windhager Zentralheizung Technik GmbH, A-5201 Seekirchen
Construction	Heating boiler made of steel according to DIN EN 303-5 with an induced draught fan for not room sealed operation operating mode: modulating Combustion: gasification and combustion in combustion chamber within a burner pot Fuel supply: automatic stoking Grate design: moving grate within burner pot Ash removal: automatic Fittings: turbulators in second section of heat exchanger tubes
Type	BioWIN ..2 or BW ..2
Sizes	BioWIN 332 or BW 332
Models	BioWIN 332 Klassik, BioWIN 332 Premium, BioWIN 332 Exklusiv
Options	- smaller or greater integral fuel hopper, - operating unit, type: InfoWIN (lite) or InfoWIN Touch

Technical data of the heating boiler series

No	Size	Nominal heat output range kW	Fuel –	max. flue gas temp °C	Drawing no. boiler body
1	BioWIN 332	9,8 – 32,5	C1	115	1-464-048830 Ä-St. 03 dated 2015-12-09

A: Log wood B1: Chipped wood (water content 15 to 35 %) B2: Chipped wood (water content greater 35 %) C1: Compressed wood Pellets (6 mmØ) D: Sawdust

Destination countries	all countries of European community and Swiss, except UK
Boiler class	5
Maximum allowable temperature	85 °C
Max. allowable operating pressure	3 bar
Necessary flue gas draught	5 Pa
Electrical power supply	230 V, 50 Hz



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The test was performed by the expert in the laboratory of Windhager Zentralheizung Technik GmbH, 5201 SEEKIRCHEN, ÖSTEREICH using a test rig according to picture A.1 of DIN EN 304: 2004-01. The conditions for the test, the results and the evaluation are documented in chapter 8.

The boiler performance requirements of **boiler class 5** are fulfilled according to clause 4.4 of DIN EN 303-5:2012-10 as well as the specific additional requirements of the destination countries AT, HR, DK, DE, CH and IT according to annex C, clauses C.2, C.3, C.4, C.5, C.6 and C.8 of DIN EN 303-5:2012-10.

The proof on the national deviations of the destination country UK according to annexes C.7 of DIN EN 303-5:2012-10 was not part of the order by the customer and must be evaluated separately when required.

Feuerungs- und Wärmetechnik
Prüfbereich Wärmetechnik

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Johannes Steiglechner
Leiter
Feuerungs- und Wärmetechnik

2 Scope of test

The manufacturer orders the test on the boiler performance requirements of the heating boiler type BioWIN 332 or BW 332 (nominal heat output 32,5 kW).

Note:

The designations BioWIN ..2 and BW ..2 of the heating boilers are quoted representively in this report and the here documented reports on partial tests due to a lack of space in some clauses. All information is related to both designations BioWIN ..2 and BW ..2 as well to all further models and options, see also clause 1.

3 Basis of test

DIN EN 303-5:2012-10	Heating boilers - Heating boilers for solid fuels, manually and automatically stoked, nominal heat output of up to 500 kW, clause 4.4
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4 Applied test documents

-

5 Notes

-

6 Description of the boiler series

6.1	Construction	Warm water heating boiler with - integral fuel hopper - automatic stoking device - combustion chamber out of steel with integrated burner pot - automatic cleaning device and a movable grate - turbulators in second section of heat exchanger tubes - flue gas manifold, induced draught fan and a flue gas connector at top of heating boiler
6.2	Operation	Modulating operation within heat output range
6.3	Accessories	
6.3.1	Control system	Control board, type BioWIN FMP BW2, operating unit, type: InfoWIN Touch, in unit with boiler
6.3.1.1	Boiler's water temperature control	PT-1000 sensor positioned in immersion pocket, no further proof according to DIN EN 14597 available at test, processing of signal by control system, sensor length 50 mm, immersion pocket at right, top, rear side of heating boiler with an inner depth of 126 mm
6.3.1.2	Safety temperature limiter (manual reset) (boiler's water)	Type 89, manufacturer Rathgeber, DIN-Register-No. STB 1154 according to DIN EN 14597, sensor placed in same immersion pocket together with boiler's water temperature sensor, inner depth of 126 mm of immersion pocket, sensor length 88 mm, switches of fuel supply and induced draught fan, set point: 100 °C
6.3.1.3	Safety-temperature limiter to prevent back burning (manual reset) (at feeder screw)	Type 89, manufacturer Rathgeber, DIN-Register-No. STB 1154 according to DIN EN 14597, sensor fixed at outside of housing of the feeder screw, sensor length 88 mm, if activated burnout phase started by control system, open and close of grate, intermitted operation of feeder screw for a period of 10 minutes, induced draught fan operated at maximum speed, direct disconnection form electrical power supply of suction turbine, after the 10 minutes stop of feeder screw and continuous operation of induced draught fan at 1500 min⁻¹, STB must be manually reset as well as alarm note at operating unit, set point: 95 °C

6.3.1.4	Flue gas temperature sensor	PT-1000 sensor in flue gas way at flue gas connector, processing of signal by control system only to display flue gas temperature
6.3.1.5	Combustion chamber temperature control	Thermocouple type K positioned at top of combustion chamber in flue gas way, processing of signal by control system to control combustion
6.3.2	Water reservoir of fire extinguisher	Reservoir of 8 litres with content indication, sufficient water content must be controlled by operator and must be refilled up to maximum level if necessary
6.3.3	Activator valve of fire extinguisher	Valve out of melting material positioned at feeder screw valve material manufacturer Ogussa, type Sonderweichtot 562 melting point 118 °C (manufacturer's information, functional test was not part of this test)
6.3.4	Position switch at combustion chamber door	Manufacturer OMRON, type Z-15-GW4-B 250 V, AC, 15 AC, CE, control of closed position of combustion chamber door, if activated automatic stoking will be switched off and induced draught fan will be switched to maximum speed by control system
6.3.5	Position switch at grate	Manufacturer Crouzet, type 83.161.8 250 V, AC, 0,1 A
6.3.6	Fuel supply	Integrated automatic fuel supply with an integral fuel hopper automatic fuel supply includes: - proximity switch at bottom of integral fuel hopper to maintain boundary layer in fuel hopper - upwards directed feeder screw - fire extinguisher device with connection at upwards directed feeder screw - Surveillance of temperature at feeder screw, sensor fixed at outside of upwards directed feeder screw - fuel slide Integral fuel hopper could be refilled automatically by means of a suction turbine (only boiler models Premium and Exklusiv). According to manufacturer's information refilling starts only when boiler operation is stopped and additional inductive proximity switch is activated by means of a drop lid. The internal fuel hopper, the automatic refilling system of the internal fuel hopper and the external fuel hopper were not part of the testing.

6.3.7	Feeder screw drive	Motor driven upwards directed feeder screw Manufacturer SPG, type S8A135A122-A124 Motor: 220 - 240 V, 50 Hz, 15 W, 1200 min ⁻¹ , with gear box type S8DA250B1-A122 gear wheel with 45 teeth on motor shaft, gear wheel with 36 teeth on shaft of feeder screw
6.3.8	Suction turbine	Manufacturer International Power Components Srl (IPC), Typ Y4Z-A44-003, Motor: 230 V, 50 Hz, 1450 W (only models Premium and Exklusiv) Supervision of control by means of relais and integration of relais contact (opener) in safety chain
6.3.9	Position switch of lid of integral fuel hopper	Proximity switch, manufacturer Gavazi, type IA, 10 - 40 V, DC, 100 mA, surveillance of closed position of lid of internal fuel hopper (on- ly model Klassik)
6.3.10	Position switch of drop lid in integral fuel hopper	Proximity switch, manufacturer Gavazi, type IA, 10 - 40 V, DC, 100 mA, surveillance of closed position of drop lid that is positioned un- derneath of suction turbine in internal fuel hopper (only models Premium and Exklusiv)
6.3.11	Surveillance of boundary layer in fuel hopper	Proximity switch, manufacturer Gavazi, type EC 3025 NPAPL, 10 - 40 V, DC, 200 mA
6.3.12	Cleaning device of heat exchanger tubes	Motor driven cleaning device of heat exchanger tubes manufacturer SPG, type ISG-3230WHB-1 Motor: 230 V, 50 Hz, 0,26 A, 3,8 min ⁻¹ , 28,5 W, CE
6.3.13	Cleaning device of area beneath heat exchanger tubes and of burner pot	Two common motor driven screws to transport ash into an ex- ternal ash box positioned beneath the integral fuel hopper manufacturer Moons, type 64S032L1-80002 Motor: 230 V, 50 Hz, 22 W



Industrie Service

6.3.14	Induced draught fan	Motor type Condenser Run Outer Rotor, Motor & Blower, 230 V, 50 Hz, 100 VAC, OSB-9235-A2145A, fan wheel Ø210 mm, 6 blades, 45 mm high
6.3.15	Ignition device	Ignition device includes two heating elements with fins to enlarge surface manufacturer Loval, type no information given at test, each heating element 500 W, 115 V, positioned in primary combustion air supply of burner pot
6.3.16	Grate	Two metal plates, one moveable, driven by motor motor manufacturer Feinwerk Technik, type GZ10Z 48,6, 230 V, 50 Hz, 375 min ⁻¹ , i 48,6, n2 7,7 min ⁻¹
6.3.17	Combustion air	Primary: fix with a given free diameter, on the inlet tube is an attachment fixed with two measurement points of a pressure cell type 012571 21/26, length 155 mm, 55/44/30/50 mmØ Secondary: fix with a given free diameter The combustion air quantity is given by the number and size of holes in the burner pot. Surveillance of operation of induced draught fan at start phase of heating boiler by measure of differential pressure in the attachment of the inlet tube of primary combustion air supply Pressure cell manufacturer Huba Control, type DDS 605.99722, 0.2 (0.1)30~, 19/13 Pa, ADODHH, CE-0085AP0974



6.3.18	Burner pot	Integral burner pot in combustion chamber with fittings and moveable grate upper part of cone: $\varnothing$ 205/199,7/140,4/135,7/135/146/160/170,43/175 mm lower part of cone: 20 holes of $\varnothing$ 11/6,5 mm for secondary combustion air supply, dimensions $\varnothing$ 177,5/158/148/135/151,6/104/152,2/144/156/172mm, Höhen 98,5/127,5/139,5 mm Primary combustion air inlet in centre position of burner pot: upper row 12 holes of $\varnothing$ 5,8 mm, middle row 12 holes of $\varnothing$ 5,8 mm, lower row 4 holes of $\varnothing$ 5,8 mm dimensions $\varnothing$ 37,2/43,7/44,7/51,2/57,7 mm, height 13/10/17/24/65 mm
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6.4	Special features	The heating boiler size BioWIN 262 is identical to the heating boiler size BioWIN 332 except the parameters in the control system which are adapted to the different heat output and the induced draught fan, see also clause 6.6. There are three different models available of the heating boiler series type BioWIN ..2 ... or BW. ..2: BioWIN ..2 Klassik or BWK ..2 Manual refilling of the integral fuel hopper (capacity 107 l), manual ash removal of ash beneath heat exchanger and burner pot, automatic cleaning of the heat exchanger fittings and the grate BioWIN ..2 Klassik-L or BWK-L ..2 identical with BioWIN ..2 Klassik or BWK ..2 except equipped with larger integral fuel hopper (capacity 200 l) BioWIN ..2 Premium or BWP ..2 Automatic refilling of the internal fuel hopper (capacity 107 l), manual ash removal of ash beneath heat exchanger and burner pot, automatic cleaning of the heat exchanger fittings and the grate BioWIN ..2 Exklusiv-S or BWE-S ..2 Manual refilling of the internal fuel hopper (capacity 107 l), automatic ash removal of ash beneath heat exchanger and burner pot into an external ash box positioned beneath the integral fuel hopper, automatic cleaning of the heat exchanger fittings and the grate BioWIN ..2 Exklusiv-SL or BWE-SL ..2 identical with BioWIN ..2 Exklusiv-S or BWE-S ..2 except equipped with larger integral fuel hopper (capacity 200 l) BioWIN ..2 Exklusiv or BWE ..2 Automatic refilling of the internal fuel hopper (capacity 107 l), automatic ash removal of ash beneath heat exchanger and burner pot into an external ash box positioned beneath the integral fuel hopper, automatic cleaning of the heat exchanger fittings and the grate BioWIN ..2T ... or BW. ..2T equipped with operating unit, type: InfoWIN Touch, heating boiler housing with round edges and boundary areas BioWIN ..2 lite (L) ... or BW. ..2 lite (L) equipped with operating unit, type: InfoWIN
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6.5	Data plate	Manufacturer: Windhager Zentralheizung Technik GmbH Anton-Windhager-Strasse 20 A-5201 SEEKIRCHEN Type: will be added Article number: will be added Serial number: will be added Year of manufacture: will be added Nominal heat output: will be added Nominal heat output range: will be added Heat input range: will be added Boiler class: will be added Fuel: will be added Maximum allowable operating pressure: will be added Maximum allowable temperature: will be added Water content: will be added Electrical supply: will be added Electrical power consumption: will be added Basis of test: will be added
6.6	Equality of construction	Heating boiler BioWIN 332 is constructional identical with heating boiler BioWIN 262 except the following: - individually set parameters in control system for each heat output range - induced draught fan - fan wheel - turbulators - fan wheel housing - insulation of back side of heating boiler
6.7	Boundary conditions for operation	See test reports H-SP 1358-01/16 and H-R 1358-00/14 of TÜV SÜD Industrie Service GmbH



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7 Measurement devices

Measurement device no.	Sort	Type
QS-33-02M0134	Time measurement	Hanhart Prisma 200
QS-33-02M0220	Flue gas measurement device	Testo 350-M/XL Testo 454
QS-33-02M0353	Pressure meter	AMR, atmospheric pressure
QS-33-02M0355	Pressure meter	DC 100 Pro
QS-33-02M0431	Surface temperature meter	Testo 925 with surface temperature-sensor
410 1021	Temperature-sensor	FE-Const.
410 1079	Scale	Mettler IND429
411 1372	Flue gas measurement device	Testa FID 123
410 1378	Pressure meter	Huba Control 698, 0-1mbar
410 1387	Data logging	DA100/MCPS
411 2139	Flue gas measurement device	Afriso STMG40
410 2152	Temperature-sensor	PT100
410 2155	Pressure meter	Revue Tommen, HM28D0B10000, 0-25 mbar
410 2338	Temperature-sensor	PT100
410 2339	Temperature-sensor	PT100
410 2347	Pressure meter	Halstrup 0 - 500 Pa
410 2618	Temperature-sensor	Thermoelement K
410 2619	Temperature-sensor	Thermoelement K
410 2620	Temperature-sensor	Thermoelement K
410 2621	Temperature-sensor	Thermoelement K
410 2622	Temperature-sensor	Thermoelement K
410 2623	Scale	OHAUS Adventurer pro
410 2666	Flow meter	BadgerMeter Primo Advanced IN
410 2672	Pressure meter	Halstrup PS10 0 - 500 Pa
410 2775	Flue gas measurement device	ZRE Gas Analyzer
410 2777	Electrical power meter	Christ CLT 311

8 Test of boiler performance requirements and results

Test no.	1 nominal load	2 part load	3 nominal load	4 part load
8.1 Test conditions				
Heat transfer fluid: water		heat loss of test rig: -0,02 kW/ -0,02 kW		
Heating boiler type		BioWIN 332		
Date of test	2016-07-05	2016-07-04	-	-
Test duration	h	6,0	6,0	-
Number of combustion periods		-	-	-
Control system		BioWIN with InfoWIN Touch and greater integral fuel hopper		
The fuel analysis was carried out by: ASG Analytik-Service Gesellschaft mbH				
8.2 Fuel				
Type		Pellets	Pellets	-
Sort		spruce	spruce	-
Size/dimension	mm	Ø6	Ø6	-
Water content	%	7	7	-
Ash content	kg/kg	0,006	0,006	-
Lower calorific value	kWh/kg	4,9	4,9	-
Fed amount of fuel	kg	43,0	12,8	-
Fed amount of fuel per hour	kg/h	7,2	2,1	-
Ash	kg	0,3	0,1	-
Combustible fraction in the ash	%	10	10	-
Heat input	kW	34,7	10,3	-
8.3 Measured parameters and losses of flue gas				
Average flue gas temperature	°C	115	67	-
Room temperature T_R	°C	26	25	-
Combustion air temperature	°C	26	25	-
CO ₂ -content	Vol.%	14,6	12,3	-
CO-content	ppm	25	24	-
NO _x -content	ppm	130	91	-
C _x H _y -content	ppm	1	1	-
Dust content ¹⁾ (related to sucked f. gas v.)	mg/m _N ³	18	17	-
Draught (negative pressure value)	mbar	0,05	0,04	-
Combustion chamber (neg. pressure v.)	mbar	1,43	0,24	-
Specific flue gas volume (dry)	m ³ /kg	5,9	7,0	-
Specific steam volume	m ³ /kg	0,7	0,7	-
Flue gas mass flow (wood pellets) according to DIN EN 13384-1:2008-08	g/s	18	6	-
Losses due to:				
sensible heat of the products of combustion q_A	%	4,6	2,5	-
incomplete combustion q_U	%	0,0	0,0	-
unburned fuel in ash q_F	%	0,1	0,2	-
radiation, convection and conduction q_S (respected system limit at test rig till position of flue gas temperature measurement point)	%	1,1	2,6	-
Boiler efficiency indirect	%	94,1	94,7	-
radiation, convection and conduction q_S (respected system limit heating boiler till flue gas connector)	%	0,7	2,1	-

1) Dust content measurement according to method of CEN/TS 15883:2009, annex A



Industrie Service

8.4 Measured water parameters		1 nominal load	2 part load	3 nominal load	4 part load
Test no.:					
Water flow	kg/h	1249	392	-	-
Water pressure	bar	1,9	1,9	-	-
Flow temperature	°C	73,0	74,7	-	-
Return temperature	°C	50,5	53,3	-	-
Rated output including losses of test rig	kW	32,9	9,8	-	-
According to	Nominal heat output	%	101	30	-
	Part load	%	-	100	-
Boiler efficiency direct	%	94,8	95,7	-	-

8.5 Surface temperatures measured at test no. 1		Average values	Max. Values	Limits
Housing	°C	-	44	60+t _R
Doors, cleaning ports at housing	°C	-	33	60+t _R
Base stands	°C	-	33	60+t _R
Feeder screw	°C	-	34	60+t _R
Integrated fuel hopper	°C	-	42	60+t _R
Flue gas tube, not insulated	°C	-	86 ¹	60+t _R
Operating levers, directly accessible	°C	-	33	35+t _R

8.6 Electrical power consumption	Measured value	Test duration
Mean power consumption at nominal heat output	77	360 min
Mean power consumption at minimum heat output	31	361 min
Maximum power consumption (operation)	209	- min
Mean power consumption at Standby	6	10 min

¹ due to the measured surface temperatures appropriate warnings about danger of high temperatures must be given by the manufacturer

8.7 Comparison		Test No. 1		Test No. 2	
of values with the requirements of DIN EN 303-5:2012 for class 5		achieved	required	achieved	required
Boiler efficiency	%	94,8	$\geq 88,5$	95,7	$\geq 88,5^2$
CO-emissions (related to 10 % O ₂)	mg/m ³	23	≤ 500	26	≤ 500
NO _x -emissions (related to 10 % O ₂)	mg/m ³	193	---	161	---
OGC-emissions (related to 10 % O ₂)	mg/m ³	1	≤ 20	1	≤ 20
Dust-emissions (related to 10 % O ₂)	mg/m ³	13	≤ 40	15	≤ 40
Flue gas temperature	°C	115 ³	$\geq 160+t_R$	67 ³	$\geq 160+t_R$
Draught (negative pressure value)	mbar	0,05	$0,05 \pm 0,03$	0,04 ⁴	$0,05 \pm 0,03$
Ash bin sufficient	--	yes	---	yes	---
Duration of tests	h	6,0	$\geq 6,0$	6,0	$\geq 6,0$

8.8 Comparison		Test No. 1		Test No. 2	
of values with the requirements for Austria according to annex C.2 of DIN EN 303-5:2012 and with the Austrian law paragraph 15 a „Vereinbarung gemäß Art 15a B-VG über das Inverkehrbringen von Kleinf Feuerungen und die Überprüfung von Feuerungsanlagen und Blockheizkraftwerken, Oktober 2009“.					
Boiler efficiency	%	94,8	≥83,9	95,7	≥83,9
CO-emissions	mg/MJ	11	≤250	12	≤250
NO _x -emissions	mg/MJ	90	≤100 ⁵	75	--- ⁶
OGC-emissions	mg/MJ	0	≤20 ⁵	1	≤20 ⁵
Dust-emissions	mg/MJ	6	≤20 ⁵	7	--- ⁶

8.9 Comparison		Test No. 1		Test No. 2	
of values with the requirements for Germany according to annex C.5 of DIN EN 303-5:2012 as well as with 1. BImSchV ⁷					
CO-emissions (related to 13 % O ₂)	mg/m ³	16	≤400	19	--- ⁸
NO _x -emissions (related to 13 % O ₂)	mg/m ³	140	---	117	---
OGC-emissions (related to 13 % O ₂)	mg/m ³	1	---	1	---
Dust-emissions (related to 13 % O ₂)	mg/m ³	9	≤20	11	--- ⁸

² according to clause 4.4.2 of DIN EN 303-5 the measurement is evaluated only at nominal heat output

³ additional manufacturer's information are given in the installation instructions according to clause 4.4.3 of DIN EN 303-5

⁴ draught corresponds after setting at nominal load and reduction of cooling water flow on partial load without adaption of fan of flue gas system of test rig

⁵ the limiting values valid from 01. January 2015 are respected according to Austrian law paragraph 15a B-VG, October 2009 or 28. January 2011

⁶ test not necessary according to Article 6 of the Austrian law 15a B-VG

⁷ the limiting values are respected according to 1. BImSchV dated 26. January 2010, § 5, clause 1, table level 2

⁸ according to 1. BImSchV dated 26. January 2010, annex 2, number 1.3 the measurement is evaluated only at nominal heat output

8.10 Comparison		Test No. 1		Test No. 2	
of values with the requirements for Switzerland according to annex C.6 of DIN EN 303-5:2012 as well as with Swiss Ordinance on Air Pollution (LRV)					
CO-emissions (related to 13 % O ₂)	mg/m ³	16	≤300	19	≤300
NO _x -emissions (related to 13 % O ₂)	mg/m ³	140	---	117	---
OGC-emissions (related to 13 % O ₂)	mg/m ³	1	---	1	---
Dust-emissions (related to 13 % O ₂)	mg/m ³	9	≤40	11	≤40

8.11 Comparison		Test No. 1		Test No. 2	
of values with the requirements for Denmark according to annex C.4 of DIN EN 303-5:2012, class 5 and with the Danish Construction Code BR08, clause 8.5.1.4, subclause 7 ⁹					
Boiler efficiency (direct)	%	94,8	≥ 88,5	95,7	≥ 88,5 ²
CO-emissions (related to 10 % O ₂)	mg/m ³	23	≤500	26	≤500
NO _x -emissions (related to 10 % O ₂)	mg/m ³	193	---	161	---
OGC-emissions (related to 10 % O ₂)	mg/m ³	1	≤20	1	≤20
Dust-emissions (related to 10 % O ₂)	mg/m ³	13	≤40	15	≤40

8.12 Comparison	Test No. 1		Test No. 2	
of values with the requirements for Croatia according to annex C.3 of DIN EN 303-5:2012 and of Croatian Regulation about Maximum Emission Values of Pollution Components from Stationary Sources, (GVE - NN 21/2007) ¹⁰				
Blackening according to Ringelmann–Scale	0	≤1	0	≤1

Due to the identical parameters in the control system the results are transferable to heating boiler equipped with optering unit InfoWIN.

There are expected no negative influences on boiler performance requirements on heating boilers with option smaller integral fuel hopper because no essential differences in surface temperatures are detected. The results are transferable.

Due to the different equipment of heating boilers models BioWIN ..2, Klassik, Premium and Exklusiv there are expected no negative influences on boiler performance requirements. The results are transferable.

⁹ BEK Nr. 46 dated 22.01.2015 and BR10 dated 12.12.2010 including amendment no. 1314 dated 12.12.2012 are respected

¹⁰ comparison with the results of type test, the proof on the national deviations must be evaluated separately on site if necessary

9 Expertise

The heating boilers of manufacturer	Windhager Zentralheizung Technik GmbH Anton-Windhager-Strasse 20 5201 SEEKIRCHEN, ÖSTEREICH
as presented for the testing	heating boilers for solid fuels
type	BioWIN ..2 or BW ..2
size	BioWIN 332
models	BioWIN ..2 Klassik, BioWIN ..2 Premium and BioWIN ..2 Exklusiv
options	- smaller or greater integral fuel hopper, - operating unit, type: InfoWIN (lite) or InfoWIN Touch

was tested according to the boiler performance requirements of clause 4.4 of DIN EN 303-5:2012-10 by the test laboratory TÜV SÜD Industrie Service GmbH.

The boiler performance requirements of **boiler class 5** are fulfilled according to clause 4.4 of DIN EN 303-5:2012-10 as well as the specific additional requirements of the destination countries AT, HR, DK, DE, CH and IT according to annex C, clauses C.2, C.3, C.4, C.5, C.6 and C.8 of DIN EN 303-5:2012-10.

The proof on the national deviations of the destination country UK according to annexes C.7 of DIN EN 303-5:2012-10 was not part of the order by the customer and must be evaluated separately when required.

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