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Test report no. H-A 1358-04/16
supplementary to test report no. H-A 1358-03/16 dated 2016-08-04

Test laboratory TÜV SÜD Industrie Service GmbH
Feuerungs- und Wärmetechnik
Prüfbereich Wärmetechnik

Subject of test Heating boiler for solid fuels

Type: BioWIN ..2

Sizes: BioWIN 102,
BioWIN 152,
BioWIN 212
BioWIN 262 and
BioWIN 332

Models: BioWIN ..2 Klassik,
BioWIN ..2 Premium and
BioWIN ..2 Exklusiv

Fuel: compressed wood C1

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

Basis of test EN 303-5:2012

Period of test Oktober 2016

Date: 2016-10-20

Our reference:
IS-TAF-MUC/td

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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.



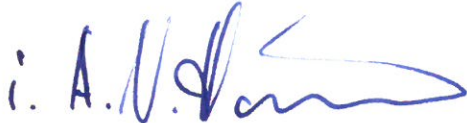
Designation of interpolated values of not on performance requirements tested intermediate size BioWIN 212

The heating boiler BioWIN 212 is a not on boiler performance tested intermediate size according to EN 303-5, clause 5.1.4. The manufacturer determined interpolated values on efficiency and emissions which are documented in enclosure A of this test report together with the values of the tested heating boilers.

A test on plausibility on the interpolated values was carried out on the basis of the measured values as tested and documented in report no. H-A 1358-03/16 dated 2016-08-04. The test on plausibility on the interpolated values by the manufacturer shows a positive result.

According to the Summarised Validation the heating boiler range including the different models fulfils the requirements of EN 303-5, clauses 4.1, 4.2, 4.3.1 to 4.3.8, 4.3.9.2, 4.4, 5.4, 5.16.1, 7.2, 8.2 and 8.3.

Feuerungs- und Wärmetechnik
Prüfbereich Wärmetechnik



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Thomas Dambor



Heating boiler range, type: BioWIN ..2

| Heating boiler Models/Sizes | Fuel ¹⁾ | Nominal Heat output kW | Necessary flue gas draught Pa | Flue gas temperature °C | Boiler class | Efficiency η % | Emission values ²⁾ | | | |
|------------------------------------|--------------------|-------------------------------|--------------------------------------|--------------------------------|--------------|------------------------------|-------------------------------|--|--|-------------------------------|
| | | | | | | | CO mg/m ³ | NO _x mg/m ³ | C _x H _y mg/m ³ | Dust mg/m ³ |
| 102 | C1 | 9,9 3,0 | 5 | 78 | 5 | 94,4 | 53 | 163 | 1 | 13 |
| | | | | 58 | | 89,6 | 202 | 7 | 19 | |
| 152 | C1 | 15,0 4,3 | 5 | 99 | 5 | 93,8 | 34 | 166 | 1 | 17 |
| | | | | 62 | | 92,1 | 172 | 5 | 13 | |
| 212 ³⁾ | C1 | 21,0 6,3 | 5 | 107 | 5 | 93,9 | 41 | 1679 | 1 | 16 |
| | | | | 67 | | 93,1 | 113 | 3 | 12 | |
| 262 | C1 | 25,9 7,6 | 5 | 114 | 5 | 93,9 | 47 | 172 | 1 | 15 |
| | | | | 70 | | 93,8 | 76 | 2 | 11 | |
| 332 | C1 | 32,5 9,8 | 5 | 115 | 5 | 94,8 | 23 | 193 | 1 | 13 |
| | | | | 67 | | 95,7 | 26 | 1 | 15 | |

| Heating boiler Models/Sizes | Nominal Heat output kW | Emission values ⁴⁾ | | | | |
|------------------------------------|-------------------------------|-------------------------------|--|------------------------------|--------------------------------|--|
| | | CO mg/m ³ | NO _x mg/m ³ | OGC mg/m ³ | Staub mg/m ³ | Particles ⁵⁾ (PPBT) mg/m ³ |
| 102 | 9,9 3,0 | 39 | 119 | 1 | 9 | 9 |
| | | 119 | 104 | 5 | 14 | 16 |
| 152 | 15,0 4,3 | 25 | 121 | 1 | 12 | 12 |
| | | 125 | 103 | 3 | 9 | 10 |
| 212 ³⁾ | 21,0 6,3 | 30 | 123 | 1 | 12 | 12 |
| | | 82 | 107 | 2 | 8 | 9 |
| 262 | 25,9 7,6 | 34 | 125 | 1 | 11 | 11 |
| | | 55 | 109 | 1 | 8 | 8 |
| 332 | 32,5 9,8 | 16 | 140 | 1 | 9 | 9 |
| | | 19 | 117 | 1 | 11 | 11 |

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

2) related to 10 % O₂ in flue gas

3) not tested intermediate size, data given by manufacturer

4) related to 13 % O₂ in flue gas

5) CO or particels (mg/m³) = dust (mg/m³) + 0,42*OGC (mg/m³) at 13% O₂-Content in flue gas according to *DECRETO 28 dicembre 2012 - "Incentivazione della produzione di energia termica da fonti rinnovabili ed interventi di efficienza energetica di piccole dimensioni"*, table 11