

# Renewable Heat Incentive

## Non-domestic Renewable Heat Incentive Emissions Certificate

This certificate provides evidence that the tested boiler meets the air quality requirements of the non-domestic Renewable Heat Incentive (RHI). It must be issued by a testing laboratory. Applicants applying for the RHI with biomass boilers must submit a certificate with their application, or alternatively, an environmental permit.

| <b>1. TEST HOUSE</b>                                                                                                                                                                                                         |                                                                                                                    |
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| a) name and address of testing laboratory                                                                                                                                                                                    | Prüflabor für Feuerungsanlagen am Institut für<br>Verfahrenstechnik<br>Getreidemarkt 9/166<br>1060 Wien<br>Austria |
| b) name and signature of the person<br>authorised by the testing laboratory to issue<br>the certificate                                                                                                                      | Dipl. Ing. Emmanuel Padouvas                                                                                       |
| c) date of issue of the certificate together<br>with certificate reference number                                                                                                                                            | 16th of January 2012, PL-11183-P<br>RHI Certificate 4 Issue 1.                                                     |
| d) if testing laboratory is accredited to ISO<br>17025, date of accreditation and<br>accreditation number<br>(note: if testing conducted after 24<br>September 2013, the testing laboratory must<br>be ISO 17025 accredited) | Yes, 17.07.2000, PSID 121                                                                                          |

| <b>2. PLANT</b>                                                                                                                      |                            |
|--------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| a) name of the plant tested                                                                                                          | HAPERO HP03                |
| b) model of the plant tested                                                                                                         | Typ K Flash                |
| c) manufacturer of the plant tested                                                                                                  | Hapero Energietechnik GmbH |
| d) installation capacity of the plant in<br>kilowatts (kW)                                                                           | 25                         |
| e) is the plant a <u>manually stoked, natural<br/>draught</u> plant? (that is, without a fan<br>providing forced or induced draught) | no                         |

|                                                                                                                     |                                |
|---------------------------------------------------------------------------------------------------------------------|--------------------------------|
| f) the date the plant was tested                                                                                    | 23 <sup>th</sup> of March 2011 |
| g) list of all the plants in the type-testing range of plants to which the certificate applies, if any <sup>1</sup> | Hapero HP 04/K Flash           |

| <b>3. FUELS</b>                                                                                                                                                                                                                                                                                                         |                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| a) types of fuels used when testing                                                                                                                                                                                                                                                                                     | Wood pellets, spruce                                                                                  |
| b) based on the testing, list the range of fuels that can be used in compliance with the emission limits of 30 grams per gigajoule (g/GJ) net heat input for particulate matter (PM), and 150 g/GJ net heat input for oxides of nitrogen (NOx)<br><i>(based if relevant on classifications from EN14961 or EN303-5)</i> | Wood pellet, Class C, Diameter 6 mm, Moisture max. 12%, Ash content < 0,5%, Calorific Value > 17MJ/kg |
| c) moisture content of the fuel used during testing                                                                                                                                                                                                                                                                     | 6,32 %                                                                                                |
| d) maximum moisture content of the fuel which can be used so as to ensure that the emission limits are not exceeded                                                                                                                                                                                                     | Max. 12 %                                                                                             |

| <b>4. TESTS</b>                                                                                                                                                                                                                                                                                                                                                     |                                                                                  |
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| a) <b>if the plant is 500kW or lower, and BS EN 303-5:1999 or EN 303-5:2012<sup>2</sup> applies to it</b> , please confirm:<br>- tests were conducted to whichever standard was current at the time of testing. <i>(please circle the applicable standard)</i>                                                                                                      | Confirmed<br>BS EN 303-5:1999                                                    |
| b) <b>if the plant is 500kW or lower, and BS EN 303-5:1999 or BS EN 303-5:2012 <u>do not apply to it</u></b> , please confirm:<br><br>- emissions of PM represent the average of at least three measurements, each of at least 30 minutes duration and;<br><br>- the value for NOx emissions is derived from the mean of measurements made throughout the PM tests. | Not applicable tested to BS EN 303-5<br><br>Not applicable tested to BS EN 303-5 |
| c) <b>if the plant is 500kW or higher</b> , please confirm:<br><br>- emissions of PM represent the average of at least three measurements, each of at least 30 minutes duration and;<br><br>- the value for NOx emissions is derived from the mean of PM measurements made throughout the PM tests.                                                                 | Not applicable<br>nominal heat output<br><500kW                                  |
| d) please confirm the tests were conducted to:<br>- EN 14792:2005 in respect of NOx, and;<br>- EN 13284-1:2002 or ISO 9096:2003 in respect of PM <sup>3</sup>                                                                                                                                                                                                       | Not applicable<br>nominal heat output<br><500kW                                  |

<sup>1</sup> The type-testing approach enables testing laboratories to provide assurance that all boilers in a given range meet the air quality requirements, without needing to specifically test each boiler.

<sup>2</sup> BS EN303-5:1999 and 2012 explain what should be measured and when.

<sup>3</sup> These standards explain how to make the PM and NOx measurements.

|                                                                                                  |                                                     |
|--------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| e) please confirm the plant tested at $\geq 85\%$ of its rated output                            | Yes, at 100 %                                       |
| f) please confirm the tests show that emissions were no greater than 30 g/GJ PM and 150 g/GJ NOx | yes                                                 |
| g) measured emissions of PM in g/GJ net heat input                                               | 8 thermal input 35,9 kW<br>10 thermal input 7,8 kW  |
| h) measured emissions of NOx in g/GJ net heat input                                              | 88 thermal input 35,9 kW<br>53 thermal input 7,8 kW |

Vienna, March 11, 2014

Vice supervisor



Dipl. Ing. E. Padouvas