Biomass Boilers
(Formerly Biomass Boilers and Roomheaters)
Date added to ETL 2001/2003 (Revised 2016).

1. Definition of Technology
Biomass boilers are products that are specifically designed to burn solid biomass fuels in order to heat water.

2. Technology Description
Biomass boilers are used to heat water for process or space heating.

Biomass boilers are available with a wide range of efficiencies. The ECA Scheme aims to encourage the purchase of products with the highest thermal efficiency.

The fuels used in biomass boilers are renewable so their use will also reduce the amount of fossil fuel that might otherwise have been consumed.

Investments in biomass boilers can only qualify for Enhanced Capital Allowances if the specific product is named on the Energy Technology Product List. To be eligible for inclusion on the Energy Technology Product List, products must meet the eligibility criteria as set out below.

3. Eligibility Criteria
To be eligible, products must:

- Be designed to burn wood, cereal straw, or solid fuels derived from them.
- Heat water for process or space heating.
- Be CE Marked.
- Meet the following air quality emission limits:
  - Particulate matter (PM) emissions must not exceed 30 grams per gigajoule (g/GJ) net heat input
  - Oxides of nitrogen (NOₓ) emissions must not exceed 150 grams per gigajoule (g/GJ) net heat input

Compliance with these emissions limits should be demonstrated by providing valid Renewable Heat Incentive (RHI) emissions certificates for the specific biomass boiler listed, or a certificate confirming that the boiler is part of range (as per the RHI emissions limits type testing rules) that meets these emission limits.

Performance criteria
Eligible products must exceed the minimum thermal efficiency set out in Tables 1 and 2 based on based upon the maximum continuous rated output of the product covered.

Required test procedures
All products must be tested in accordance with the procedures and test conditions set out in Table 1 or 2 based upon the maximum continuous rated output of the product covered.
For products up to and including 300kW all tests must be carried out by, or witnessed by, an accredited laboratory, where “accredited” means accredited by the United Kingdom Accreditation Scheme (UKAS), or other equivalent national accreditation bodies recognised via the European Co-operation for Accreditation, the International Accreditation Forum, or the International Laboratory Accreditation Co-operation (ILAC) agreements.

For products above 300kW, products can be either tested in an accredited laboratory OR performance may be determined from measurements made during field trials or acceptance tests, provided that the measurements have been made by, or witnessed by, an accredited laboratory or contractor that is accredited to make those measurements. The product’s net thermal efficiency must be calculated by an independent body that is competent to verify the measurement data.

For the avoidance of doubt net thermal efficiency test data must be presented to one decimal place. As an example, a Biomass hot water boiler with a maximum continuous rated output above 300kW and a net thermal efficiency of 89.9% when tested at between 60% and 100% of its maximum continuous rating (MCR) (as specified in Table 2B) would be deemed to be a fail.

The requirements for testing of PM and NOx are:

- That testing is carried out in accordance with the provisions relevant to emissions of PM and NOx specified in whichever of the following standards applies: EN 303-5:1999; or, EN 303-5:2012.

- That testing is carried out in accordance with EN 14792:2005 for NOx and EN 13284-1: 2002 or BS ISO 9096: 2003 for PM.

**Representative Testing**

Where applications are being made for products of the same constructional design, which are less than or equal to 300kW, to be included on the Energy Technology Product List (ETPL), the type testing procedures set out in Annex F of BS EN 303-3:1999 or section 5.1.4 of EN 303-5:2012 or Annex C.2.1 of BS EN 304:1992 (as amended) may be used to select representative models for testing and to reduce the overall number of performance tests that must be completed.

Where applications are being made for products of the same constructional design, which are greater than 300kW, to be included on the Energy Technology Product List (ETPL), test data may be submitted for a single representative model provided that the maximum rated output of the products being applied for is not more than twice, or less than half, the maximum rated output of the product tested. Where the range of rated outputs exceeds these limits, products should be grouped into size ranges that comply with these rules, and test data submitted for one representative model for each group.

Where representative testing is used, details of the design calculations and data used to predict the performance of products that have not been tested must be submitted.

It should be noted that:
• If a manufacturer voluntarily removes a representative model from the ETPL then other products linked with that representative model may or may not be permitted to remain on the ETPL.
• If any product submitted under these representative model rules is later found not to meet the performance criteria when independently tested; then all products based on the same representative models will be removed from the ETPL.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>For use with biomass hot water boilers with a maximum continuous rated output up to and including 300kW</th>
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<tbody>
<tr>
<td>SECTION 1A - PERFORMANCE THRESHOLDS</td>
<td>To be eligible products must have, when tested at maximum continuous rated output:</td>
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<tr>
<td>• For boilers with a nominal rating of (\leq 100\text{kW}), a thermal efficiency of at least (90.0 + \log(\text{Nominal Heat Output})) based on the net calorific value of the fuel.</td>
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<tr>
<td>• For boilers with a nominal rating of (&gt;100\text{kW}) and (\leq 300\text{kW}), a thermal efficiency of at least 92.0% based on the net calorific value of the fuel.</td>
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<tr>
<td>SECTION 1B - TEST PROCEDURES</td>
<td>All products (\leq 300\text{kW}) must be tested in accordance with:</td>
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<tr>
<td>• EN 303-5:2012 “Heating boilers for solid fuels, hand and automatically fired, nominal heat output of up to 500 kW. Terminology, requirements, testing and marking”.</td>
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</tbody>
</table>

The tests must be done using a biomass test fuel (designated A, B1, B2, C & D) in accordance with Table 7 of EN 303-5:2012 that is appropriate to the advertised usage of the product.

Please note that performance data obtained in accordance with the procedures and standard rating conditions laid down in EN 303-5:1999 and using a biomass test fuel (designated A1, A2, B1, B2, C & D) in accordance with Table 8 will be accepted as an alternative to testing in accordance with EN303-5:2012 until further notice.
Table 2  -For use with biomass hot water boilers with a maximum continuous rated output above 300kW

SECTION 2A -PERFORMANCE THRESHOLDS

To be eligible products must have, when tested at an output that is between 60% and 100% of Maximum Continuous Rating (MCR):

- A thermal efficiency, of at least 90.0% based on the net calorific value of the test fuel.

SECTION 2B -TEST PROCEDURES

All products >300kW must be tested in accordance with:

EITHER
- BS 845-1:1987 “Methods for assessing thermal performance of boilers for steam, hot water and high temperature heat transfer fluids: Concise procedure”.

OR (for shell boilers only)

OR (for water tube boilers only)

OR
- The testing procedures set out in EN303-5:2012.

OR
- Equivalent procedures within the national standards of EU member states. Where equivalent procedures are used, details of the test procedure used must be supplied in English along with a declaration of equivalence from an accredited laboratory.

The tests must be done using a biomass test fuel (designated A, B1, B2, C & D) in accordance with Table 7 of EN 303-5:2012 that is appropriate to the advertised usage of the product.

Where BS 845-1: 1987 is used, the standard test conditions are:

- A maximum ambient air temperature of 25 degrees Centigrade.
- An excess combustion air level certified as being representative of normal commercial operation.
- The boiler must be operating at a rating of at least 60% of its maximum continuous rating (i.e. 60 - 100% MCR) during the tests.

As an alternative to measurement of losses other than flue gas losses, a standard deduction of 2.0% x 100%/% load may be used.

Please note that performance data obtained in accordance with the procedures and standard rating conditions laid down in EN 303-5:1999 and using a biomass test fuel (designated A1, A2, B1, B2, C & D) in accordance with Table 8 will be accepted as an alternative to testing in accordance with EN303-5:2012 until further notice.
Scope of Claim

Expenditure on the provision of plant and machinery can include not only the actual costs of buying the equipment, but other direct costs such as the transport of the equipment to site, and some of the direct costs of installation. Clarity on the eligibility of direct costs is available from HMRC.