



MICROGENERATION PRODUCT STANDARD: MCS 008

MCS Product Certification
Scheme Requirements:

Biomass

This Standard has been approved by the Steering Group of the Microgeneration Certification Scheme.

This document has been prepared by the MCS Working Group 5 'Biomass'.

REVISION OF MICROGENERATION PRODUCT CERTIFICATION STANDARDS

Microgeneration Product Certification Standards will be revised by issue of revised editions or amendments. Details will be posted on the website at www.mcscertified.com

Technical or other changes which affect the requirements for the approval or certification of the product or service will result in a new issue. Minor or administrative changes (e.g. corrections of spelling and typographical errors, changes to address and copyright details, the addition of notes for clarification etc.) may be made as amendments.

The issue number will be given in decimal format with the integer part giving the issue number and the fractional part giving the number of amendments (e.g. Issue 3.2 indicates that the document is at Issue 3 with 2 amendments).

Users of this Standard should ensure that they possess the latest issue and all amendments.

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FOREWORD

The following document contains provisions which, through reference in this text, constitute normative or informative provisions of this document (MCS 008). At the time of publication, the editions indicated were valid. All documents are subject to revision, and parties applying this document MCS 008 are encouraged to investigate the possibility of applying the most recent editions of the documents referenced.

The following document MCS 008 issue 3.0 is a major update to MCS 008 Issue 2.2. It is available for reference from the date of publication [01/11/2016]. Manufacturers, or importers of microgeneration systems who have certificated a microgeneration product in accordance with MCS 008 Issue 2.2, may commence working in accordance with this update from the date of publication [01/11/2016]. The mandatory date of implementation of this standard is [01/02/2017].

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1. INTRODUCTION

This Scheme document identifies the evaluation and assessment practices for the purposes of certification and listing of solid biomass fired heating products. Certification and listing of products is based on evidence acceptable to the Certification Body:

- that the product meets the appropriate standards listed below;
- that the manufacturer has staff, processes, and systems in place to ensure that the product delivered meets the standard.

And on:

- periodic audits of the manufacturer, including testing as appropriate;
- compliance with the contract with the Certification Body for listing and approval including agreement to rectify faults as appropriate.

2. SCOPE

For the purposes of this Microgeneration Standard, solid biofuel heating products are defined as: biofuel appliances designed and tested to burn only solid renewable biofuels under the following standards.

This Scheme provides ongoing independent, third party assessment and approval of companies who wish to demonstrate that their solid biomass fired heating product, with nominal heat output up to 45 kW, meets and continues to meet the requirements of:

- BS EN 13240:2001+A2:2004 - Room heaters fired by solid fuel. Requirements and test methods. This Standard is applicable to non-mechanically fired products that provide heat into the space where they are installed and where a boiler is fitted. They also provide heat to domestic hot water and/or heating.

Or;

- BS EN 14785:2006 - Residential space heating appliances fired by wood pellets. Requirements and test methods. This can be used for boilers and room-heaters which are designed to also provide space heating in the room of installation.

Or;

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- BS EN 12809:2001+A1:2004 – Residential independent boilers fired by solid fuel. Nominal heat output up to 50 kW. Requirements and test methods. This applies to boilers for open vented systems only with a design pressure not exceeding 2 bar, and which are designed to provide some space heating in the room of installation.

Or;

- BS EN 303-5:2012 Heating boilers – Part 5: Heating boilers for solid fuels, manually and automatically stoked, nominal heat output of up to 500 kW. Terminology, requirements, testing and marking.

Or;

- Annex A – Condensing heating boilers, installed and operated according to the product instructions, up to a nominal heat output of 45 kW designed for the:
Burning of wood pellets certified to EN 14961-2 Class A1 (e.g. ENplus A1), and
Discharge of combustion products in accordance with relevant applicable national regulations.

Or;

- Annex B – Requirements for Biomass Boilers with incidental cooking capability, installed and operated according to the product instructions, up to a nominal heat output of 45 kW.

And;

- The performance and emission criteria detailed in Clause 7.

EUROPEAN DIRECTIVES AND LABELLING

Products shall be labelled with the CE Mark to signal the manufacturer's declaration that the product meets the essential requirements of the applicable European Directives.

The Directives that apply to a particular solid wood-fired boiler will depend upon its design. However, for information, the following Directives are those that are likely to be relevant:

- Machinery Directive, e.g. boilers with automatic stoking;
- Construction Products Directive (CPD) boilers with a rating of less than 50kW, which is replaced by the Construction Products Regulation from 1st July 2013;
- Pressure Equipment Directive (PED), boilers forming part of sealed systems (CE marking under this Directive only applies above certain pressure and volume minimal);

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- Low Voltage Directive (LVD) and Electromagnetic Compatibility Directive (EMC), boilers fitted with electrical equipment.

3. APPLICATIONS TO JOIN THE SCHEME

Applications should be made to an accredited Certification Body operating this Scheme, who will provide the appropriate application form and details of the applicable fees.

4. MANAGEMENT SYSTEMS CERTIFICATION

Manufacturers shall operate a documented manufacturing quality control system, certified in accordance with the requirements of MCS 010 – factory production control requirements.

5. CERTIFICATION AND APPROVAL

Certification and approval is based on the following:

- Evidence of compliance with one or more of the options listed in the scope and the performance and emission criteria detailed in Clause 7.

Evidence of compliance is generally accepted as independent third party testing by a UKAS (or equivalent) accredited test laboratory. However, other evidence of compliance may be considered at the discretion of the Certification Body (see document MCS 011 Testing Acceptance Criteria).

- Verification of the establishment and maintenance of the manufacturing company's quality management system in accordance with the Factory Production Control Requirements (FPC) (see MCS 010).
- Review of the technical documentation relating to the material or product.

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Applications for a range of common products (product families) will be dealt with on a case by case basis in accordance with MCS 011 Clause 2.4 and with the provisions of the standard with which conformity is being claimed.

A certificate is awarded following demonstration of satisfactory compliance with the appropriate standard and this Scheme document, taking into account any limitations imposed by the Standard and other appropriate guidelines and satisfactory verification/assessment of the manufacturer's Factory Production Control and technical documentation.

Certificates contain the name and address of the manufacturer, model and reference number of the biomass product, a unique certificate reference number, and the issue number and date.

Certificates are valid from the date of issue and are maintained and held in force subject to satisfactory completion of the requirements for maintenance of certification (see Item 8) but remain the property of the issuing Certification Body.

Details of the manufacturer and the certificated product(s) are listed at www.mcscertified.com

6. TECHNICAL DOCUMENTATION

Technical documentation for the product must be submitted for review. This documentation shall be presented in English, and shall be such that it can be assured that the products submitted for test are equivalent to those that are to be manufactured for normal production. The documentation must consist of the following as a minimum:

- a) Details of intended use, application and classifications (if any) required;
- b) Manufacturing drawings and/or specifications including tolerances, issue and revision numbers;
- c) The revision number of the product;
- d) Raw material and components specifications;
- e) Details of the quality plan applied during manufacture to ensure ongoing compliance;
- f) Where historical test data is requested to be considered for the application, full test report and details of any existing approvals (*NOTE: each application will be dealt with on a case by case basis and further information about the acceptance of previous testing is available on request*);
- g) User and installation documentation, including commissioning requirements, use and maintenance instructions with evidence that the installed system is able to meet the

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- installation requirements of Building Regulations of the country where the product will be installed;
- h) Intended fuel and its specification.

7. PERFORMANCE AND TESTING CRITERIA

For compliance with this Scheme, biomass products must be optimised for heating and must achieve the following minimum efficiency and emissions when tested by an independent test body (other evidence of compliance may be considered at the discretion of the Certification Body please refer to document MCS 011 'Testing Acceptance Criteria') and in accordance with the appropriate Standards (see Section 5).

7.1 EFFICIENCY

Solid biomass fired room heaters including those incorporating biomass boilers and those with incidental cooking capability

Solid biomass room heaters shall achieve at least 75% Gross Efficiency at Full Load or 70% Gross Efficiency at Part Load when tested in accordance with BS EN14785:2006 (for pellet fired room heaters with or without heating boilers with total nominal heat output up to 50 kW). When tested to BS EN 13240:2001+A2:2004, the product shall meet the minimum Gross Efficiency level given in Table 21 of HM Government's Domestic Building Services Compliance Guide for England; 2013 Edition and HM Government's Domestic Building Services Compliance Guide for Scotland; 2015.

Solid biomass fired boilers

Solid biomass fired boilers must meet the following requirements (as applicable):

- When tested according to BS EN 12809:2001+A1:2004 and BS EN 303-5:2012 shall achieve an efficiency of at least 75% Gross Efficiency at Full Load or 70% Gross Efficiency at Part Load.

Condensing wood pellet fired boilers

Shall achieve an efficiency of:

- In the condensing mode, of $94 + \log Q$
- In the non-condensing mode, of $87 + \log Q$

Where Q is the full or part load heat output measured in accordance with Annex A.

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7.2 EMISSIONS

General

Where the product is to be installed in a **Smoke Control Area**, under Section 21 of the Clean Air Act 1993, it must be a recorded exempt appliance showing that it meets the limits agreed by DEFRA for operation of solid fuel appliances in a Smoke Control Area. See: <https://www.gov.uk/smoke-control-area-rules>

Note 1: Similar legislation (the Clean Air Order 1981) covers Northern Ireland.

Note 2: The listing of a solid fuel product within the MCS does NOT confer exempt appliances status.

The **Domestic Renewable Heat Incentive** (RHI) scheme, set limits for emissions of PM and NO_x from biomass heating systems. This involves confirming that emissions of PM did not exceed 30 grams per gigajoule (g/GJ) net heat input when a biomass product was tested in an accredited test laboratory with both parameters being measured on the same occasion. This testing must be in accordance with the applicable version of EN 14792:2005 for NO_x and, for PM, EN 13284-1:2002 or BS ISO 9096:2003. Details of current requirements should be checked with Ofgem before measurements are undertaken.

Solid biomass fired room heaters including those incorporating biomass boilers and those with incidental cooking capability

UK legislation is currently based on particulate emissions only, but levels of carbon monoxide (CO) emissions when tested according to BS EN 13240:2001+A2:2004 shall not exceed 1.0% calculated to 13% O₂ and shall not exceed the manufacturer's declared value. When tested in accordance to BS EN14785:2006 (for pellet fired room heaters with or without heating boilers with total nominal heat output up to 50 kW) the mean CO concentration calculated for 13% oxygen content in the flue gas (mean of at least two results) shall not exceed 500mg/m³ Part Load.

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Solid biomass fired boilers up to 45kW

Shall not exceed the Class 5 emission limits of BS EN 303-5:2012.

When measured in accordance to BS EN12809:2001+A1:2004 A.4.7 the mean CO concentration calculated for 13% oxygen content in the flue gas shall be less than or equal to the manufacturer's declared value or shall not exceed 1.0%, when tested with an appropriate test fuel defined in Table B.1 representative of the commercial fuel as suitable for use with the product.

Condensing wood pellet fired boilers

When measured under the test conditions of 3.9 of Annex A, boilers shall achieve the Class 5 emission limits of BS EN 303-5: 2012.

8. MAINTENANCE OF CERTIFICATION AND LISTING

Certificates and listing are maintained and held in force subject to satisfactory completion of the following requirements for maintenance of certification:

8.1 FACTORY AUDITS

Certification is maintained through on-going FPC quality system audits as appropriate, during which time a detailed check will be made that the product being manufactured is the same as the specification tested.

8.2 PRODUCT AUDITS

Product audits will be conducted as follows:

- 8.2.1 Review of the product technical data files including materials.
- 8.2.2 Review of end of line tests in accordance with the manufacturer's quality plan.

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8.2.3 Repeat testing of elements from the product standard as appropriate to confirm that the product continues to meet the requirements for certification and listing.

9. CERTIFICATION MARK AND LABELLING

All approved products listed under this Scheme shall be traceable to identify that they have been tested and certificated in accordance with the requirements of the test standard. See below for details.

The Supplier shall use the Certification Mark(s) only in accordance with their Certification Body's instructions.

An example of the Certification Mark(s) that can be used for this Scheme is as follows:

From the 1st December 2019 the new MCS Certification Mark is available for use:



Prior to the 1st December 2019 but still in use until a product is phased out or a Manufacturer wishes to migrate over to the new Certification Mark:



Certificate Number MCS "XXX"

"Description of the Technology certificated"

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Where 'XXX' is the certificate number, and the logo of the Certification Body issuing the certification would sit on the right hand side of the logo.

Companies may only use the Mark while certification is maintained.

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REVISION OF MICROGENERATION CERTIFICATION SCHEME (MCS) REQUIREMENTS

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ANNEX A - MINIMUM REQUIREMENTS ADDITIONAL TO BS EN 303-5: 2012 TO ENABLE ASSESSMENT OF CONDENSING BIOMASS BOILERS

1. SCOPE

Condensing heating boilers, installed and operated according to the product instructions, up to a nominal heat output of 45 kW designed for the:

- burning of wood pellets certified to EN 14961-2 class A1 (e.g. ENplus A1); and
- discharge of combustion products in accordance with relevant applicable national regulations.

NOTE: Fuel scope is limited to wood pellets and specified quality criteria as this is the only fuel specification in which there is currently confidence that the fuel will enable a condensing biomass product to consistently deliver the performance claimed.

2. DEFINITIONS

Shall be according to BS EN 303-5: 2012, with the following additions:

2.1 Condensing boiler

Boiler in which, under normal operating conditions and at certain operating water temperatures, the water vapour in the combustion products is partially condensed, in order to make use of the latent heat of this water vapour for heating purposes; the condensate leaving the heat exchanger in liquid form by way of a condensate drain.

Note: Boilers not so designed, or without the means to remove the condensate in liquid form, are called 'non-condensing'.

2.2 Condensate discharge

Liquid formed from the combustion products during the condensation process.

2.3 Grey-water

Water originating from the mains water supply that has been used for bathing or washing, washing dishes, or laundering clothes.

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2.4 Wash-down water

Water used to clean the condensing unit of the boiler.

2.5 Wash-down discharge

Liquid formed from the wash-down process of the boiler condensing unit.

2.6 Combustion circuit

Circuit from the air inlet to the combustion products outlet of the product.

NOTE: This will include the combustion chamber and heat exchanger and depending on the boiler type, include any air supply duct and combustion products evacuation duct up to the final spigot connection to the chimney.

3. REQUIREMENTS AND TESTS

NOTE: Except where stated below, the requirements and tests of BS EN 303-5: 2012 apply.

3.1.1 Chemical composition of the condensate

No requirement to specify the chemical composition of the condensate.

NOTE: Comparison of independent third party reports of condensate analysis from current kerosene condensing boilers and biomass condensing boilers fuelled by the wood pellets, as described in the Scope, showed the chemical constituents of the latter to either be “cleaner” or of an equal standard to the former. Hence the requirement is considered unnecessary due to:

- The confidence that the quality of wood pellet specified in the Scope will deliver condensate to a consistent specification; and*
- There is no requirement in Building Regulations or Standards to specify the chemical composition of the condensate from oil-fired boilers.*

3.2 Resistance to condensate

Without compromising the fire resistance and safety of operation assured by Clauses 4.1 to 4.2.3.3 of BS EN 303-5: 2012, all parts of the boiler likely to come into contact with condensate shall be

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constructed of sufficiently corrosion resistant materials or materials protected by a suitable coating in order to ensure a reasonable life for a boiler when it is installed, used and maintained in accordance with the product instructions.

NOTE: Where the word boiler is used, it shall be read as the boiler including any air supply and combustion products evacuation ducts up to the final spigot connection to the chimney.

Except where otherwise stated, the above requirement is verified by inspection of the boiler and its technical documents.

3.2.1 Durability against corrosion of metallic materials

The durability against corrosion of metallic materials is demonstrated by either:

- a) Using a material(s) selected from the EN 10088-2 variants in Table 1 of BS EN 303-5: 2012; or
- b) Meeting the requirements of an appropriate corrosion test method from normative Annex A of BS EN 1856-1:2009.

The actual minimum thickness of the materials shall always be greater than 90 % of the minimum nominal thicknesses.

3.2.2 Durability against corrosion of other materials

For materials other than metals, the product manufacturer shall provide appropriate evidence in support of the suitability of the materials and wall thicknesses used.

Appropriate evidence shall be at least:

- a) The specification of the materials documented by a works certificate in accordance with BS EN 10204; and, either;
- b) Independent third party verified corrosion durability when tested against relevant ISO, EN, BS or recognised Industry Standards for the specific material; or
- c) Verifiable evidence of “in-life” corrosion durability, where “in-life” shall represent the equivalent duration and conditions of the boiler operating in the condensing mode over at least five winter seasons when installed and operated in accordance with the product instructions.

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3.2.3 Long-term resistance to condensate exposure of elastomeric seals and elastomeric sealants

Requirements

The material shall be capable of withstanding exposure to test condensate as described in Table 1.

After exposure the following requirements shall be met:

After 56 days (d) of exposure the properties given in Table 1 should not deviate from the original value by more than the values as listed in Table 1, Column A. If the change of a property is higher, then the deviation from the original value shall not be more than the values as listed in Table 1, Column B.

Additionally, the change in properties between 28 d and 56 d of exposure shall be less than the change between the original value and 28 d of exposure (stabilisation of the material).

Table 1 – Criteria for testing long term resistance to condensate exposure

Property	A	B
Hardness (shore A)	≤ 7 units	≤ 10 units
Tensile strength	≤ 30 %	≤ 50 %
Volume	-5 / +25 %	-5 / +25 %
Stress at 100 % of elongation	35 %	45 %

Test conditions

The test pieces are exposed for 56 d in test condensate at 90 °C.

The composition of the test condensate is given in Table 2.

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Table 2 – Condensate composition

Chemical Component	Concentration mg/l
Chloride	100
Nitrate	200
Sulphate	100

The test is carried out in accordance with ISO 1817.

After exposure it is checked that the requirements are met, where:

- a) Hardness is determined in accordance with ISO 7619 (all parts) on a minimum of six test pieces;
- b) Tensile strength is determined in accordance with ISO 37 on a minimum of six test pieces;
- c) Volume is determined in accordance with ISO 1817 on a minimum of six test pieces;
- d) Stress at 100% of elongation is determined in accordance with ISO 37 on a minimum of six test pieces.

3.2.4 Cyclic condensate resistance test of elastomeric seals and elastomeric sealants

Requirements

After exposure in accordance with the test conditions the test pieces or seals are inspected.

The seals shall not show damage, e.g. cracks. The inspection shall be performed visually at approximately 100% elongation. If the performance of the visual inspection is not applicable (depending on the properties of the test pieces, e.g. diameter, hardness) or in case of any suspected change of the material, it shall be checked that the tensile strength and the stress at 100 % of elongation will not have changed by more than 30% when tested in accordance with ISO 37 on a minimum of six test pieces.

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Test conditions

This test comprises the following 24 hour (h) cycle:

At least six test pieces are mounted on a base plate in such a way that they have an elongation of 25%, and that one side of the test pieces is in contact with the base plate. Throughout the full test sequence the base plate is kept horizontal with the test pieces on top. The base plate shall consist of a material that is sufficiently resistant to the influence of condensate and shall have a maximum surface roughness of 5 µm.

The test pieces mounted on the base plate are immersed in condensate for 6 h at 60 °C.

The composition of the test condensate shall be in accordance with Table 2.

After the exposure to condensate the test pieces mounted on the base plate are removed from the condensate.

It is important not to dry the test pieces before immediately transferring them to a ventilated oven.

The oven is operated for 0,5 h at a temperature of 60 °C and for 17,5 h at the nominal working temperature with a maximum of 110 °C.

The above cycle is repeated 12 times.

After exposure it is checked that the requirements are met.

3.2.5 Durability of joints in elastomeric seals

Requirements

If an elastomeric seal has a joint, the requirements specified in “long term resistance to condensate exposure” shall also be met for test pieces that include the joint.

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3.3 Formation of condensate

Requirements

Condensate shall only form at the points intended for this purpose and shall be readily drained.

Condensate shall not find its way to parts of the boiler which are not intended for formation, collection and discharge of condensate, nor may the condensate cause any nuisance to the operation of the boiler and the surroundings.

Surfaces in contact with condensate (except purpose provided drains, water traps and siphons) shall be designed to prevent condensate retention.

There may be a common condensate drain for flue gas exhaust and the boiler.

Test conditions

The test is carried out when the boiler is in thermal equilibrium and running in its condensing mode.

By measurements, visual inspection or manual tests it is checked whether the requirements for the condensate discharge are fulfilled.

3.4 Discharge of condensate and wash-down water

Requirements

All wash-down water shall pass through the boiler condensate discharge system.

The internal diameter of the condensate discharge connection at the boiler shall be sufficient to handle the combined volume of wash-down water and condensate.

The combined discharge system, forming part of the boiler or supplied with the boiler, shall be such that it:

- a) Can be easily inspected and cleaned in accordance with the product instructions; and
- b) Cannot transmit combustion products into the room where the boiler is installed.

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The latter requirement is met if the disposal system incorporates a water trap.

3.5 Water trap

The water trap shall meet two requirements:

- a) The water trap shall have a seal of at least 25 mm water column; and
 - b) Under progressive blockage of the combustion products evacuation ducts, there shall be no leakage of combustion products from the water trap into the room where the boiler is installed.
- The means of carrying out the blockage shall not give rise to recirculation of the products of combustion.

3.6 Effect of condensate on correct operation of the boiler

Requirement

The formation of condensate shall not impair the correct operation of the boiler.

When the condensate discharge is blocked, the boiler shall be shut off before the CO concentration exceeds 0.3% of the combustion products.

There shall be no spillage of condensate from the boiler.

Test conditions

The boiler is operated and the CO is measured in the continuous condensing mode. The condensate discharge is blocked.

NOTE: artificially filling the condensate discharge system with water may shorten the test.

3.7 Heat Output

3.7.1 Nominal (full load) and minimum (part load) non-condensing heat output

Shall be measured in accordance with 5.8 of BS EN 303-5: 2012.

3.7.2 Nominal (full load) condensing heat output

Shall be measured in accordance with 5.8 of BS EN 303-5: 2012, except that during the test the mean value of flow and return temperature shall be 40°C 1K with a temperature difference between flow and return of ≤ 20 K.

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3.7.3 Minimum (part load) condensing heat output

Shall be measured at a fuel input rate of 30% \pm 2% of the fuel input rate measured during the nominal (full load) condensing heat output test.

The test may be conducted using either of the two boiler water conditions given below, but in either condition the mean boiler water temperature will be 40°C \pm 1K;

Condition 1: The volume flow rate of water through the heat exchanger is kept the same as that determined in the nominal (full load) condensing heat output test.

Condition 2: The volume flow rate of water through the heat exchanger may be adjusted to achieve the required mean water temperature of 40°C but with a differential temperature between flow and return \leq 20K and a return temperature 30°C.

3.8 Efficiency

Efficiency shall be at least;

Without condensation (if applicable), measured in accordance with 5.8 of BS EN 303- 5: 2012:

$$K = 87 + \log Q$$

Where K is the boiler efficiency in % and Q is the heat output (full and part load) without condensation in kW.

With condensation, measured in accordance with 5.8 of BS EN 303-5: 2012, except that during the test the mean value of flow and return temperature shall be 40°C \pm 1K with a temperature difference between flow and return of \leq 20 K:

$$K = 94 + \log Q$$

Where K is the boiler efficiency in % and Q is the heat output (full and part load) with condensation in kW.

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3.9 Exhaust Emissions

Requirement

Emission values at the non-condensing full and part load shall not exceed the Class 5 emissions limits of BS EN 303-5: 2012.

Test

Measured in the non-condensing mode using the boiler water temperature conditions set out in 5.8 of EN 303-5: 2012.

The minimum heat output shall be set on the basis of the **Fuel Input** and should be 30% $\pm 2\%$ of the input measured during the nominal (full load) non-condensing heat output test.

4. MARKING

4.1 Information on the boiler plate

In addition to relevant requirements of 7.2 of BS EN 303-5: 2012:

- The pellet type and quality criteria;
- The nominal **condensing** heat output in kW.

4.2 Marking on the packaging

One or more labels shall give at least the following warnings, such that they are visible and readable:

- This is a condensing boiler;
- Use only the fuel type designated on the boiler plate;
- Only for connection to a chimney with the minimum performance designation of T400 N2 W V3(or Vm) L40040 G(xx) in accordance with 9 of BS EN 1856-1: 2009;
- Read the technical instructions before installing the boiler;
- Read the users instructions before lighting the boiler;
- The boiler shall be commissioned in accordance with the product instructions.

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5 TECHNICAL DOCUMENTATION SUPPLIED WITH THE BOILER

5.1 Installation, commissioning, service and maintenance product instructions

In addition to the relevant requirements of BS EN 303-5: 2012, the installation, commissioning, service and maintenance product instructions shall advise on:

a) The minimum performance designation for the chimney and flue pipe components, i.e. T400 N2 W V3 (or Vm) L40040 G(xx) in accordance with 9 of BS EN 1856-1: 2009.

b) The size of the flue, e.g. for England as set out in Approved Document J.

NOTE: Devolved Administrations and Ireland might have variations on this.

c) The siting of the flue terminal, e.g. in England the flue terminal shall be sited in accordance with Approved Document J.

NOTE: Devolved Administrations and Ireland might have variations on this.

d) Wash-down of the condensing unit. As a minimum they shall advise on:

- A list of suitable pipe materials and minimum internal diameter for transporting the wash-down water and condensate discharge from the boiler to the drain;
- The maximum and minimum supply pressure for the wash-down water;
- Whether grey-water can be used;
- The maximum and minimum volume of wash-down water required to ensure the condensing chamber is clean;
- How to determine the optimum volume of wash-down water required to ensure the condensing chamber is clean;
- The minimum wash-down frequency required to ensure the condensing chamber is clean.

The maximum temperature of wash-down water leaving the boiler when the boiler is set to its maximum operating temperature.

e) Installation of the wash-down/condensate discharge pipework. As a minimum the instructions should include advice on:

- The necessity of avoiding horizontal runs in the pipe;
- Protection against freezing of the pipe, e.g. internal discharge points are strongly recommended as they are less likely to become blocked (for example, by leaves or by frozen condensate);
- That the discharge pipework shall be accessible and readily dismantled for cleaning;

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- Whether there any length restriction of the pipe for condensate removal by gravity;
- Discharge removal by use of a condensate pump and, if a pump is to be used, the requirement that the pump manufacturer should be consulted for suitability;
- Supporting the pipe, e.g. common advice is that the pipe should be supported at a maximum spacing of 0.5 m for near horizontal sections and 1.0 m for vertical sections.

f) The choice of wash-down/condensate discharge arrangement and how to connect it to the disposal point:

NOTE: It is not mandatory for the instructions to include all these options. The more options given, the greater the flexibility is for the Installer.

- A soil and vent stack (internal and external);
- An internal waste pipe;
- An external drain or gully, which discharges into a foul water system and does not discharge into a surface water or storm drain;
- A rainwater hopper that is part of a combined system, i.e. a sewer that carries both foul water and rainwater;

NOTE: Further information on the identification of a combined system can be obtained from the local water undertaker.

- A rainwater downpipe.

g) That because of the volume of wash-down/condensate discharge it is not recommended to discharge into a purpose-made soak-away.

NOTE: Surface water drains, or storm drains, carry rainwater from road surfaces and rooftops into local rivers and streams which flow into the river untreated. Foul water drains carry waste water from toilets, sinks, baths, and household products to the sewage treatment works. This water is treated before it can safely flow back into river and streams. However, some houses have a combined drainage system meaning that foul and surface water all drain to the foul sewer. If this is the case, all the water from the house goes to a sewage plant for treatment.

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5.2 Instructions for the User supplied with the boiler

In addition to the relevant requirements of BS EN 303-5: 2012, the instructions for the user shall:

- a) State that wash-down/condensate discharge outlet(s) shall not be modified or blocked; and
- b) Include advice relevant to the user:
 - About the wash-down cycle;
 - The recommended service frequency for the boiler installation; and
 - If the installation instructions include the use of a neutraliser as an option, the servicing frequency to ensure continued effective operation of the neutraliser.

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ANNEX B - REQUIREMENTS FOR BIOMASS BOILERS WITH INCIDENTAL COOKING CAPABILITY

1. SCOPE

The scope of this annex applies only to Biomass Boiler products with the ability to provide incidental cooking capabilities but that operate in exactly the same way whether cooking is occurring or not.

The occurrence of cooking in the product is incidental. The heat demand for the space or space heating system is the parameter which determines the products operation.

A small amount of heat which would otherwise be transferred directly to the space around the product is transferred indirectly to it via food or water.

The key characteristics for such a product are its safety for use in a kitchen environment. Such products must comply with the requirements of the industry standards specified in the main part of this standard.

In this Annex, requirements specific to a product functioning as a cooking appliance are defined.

These are drawn from BS EN 12815:2001+A1:2004 Incorporating corrigenda September 2003, June 2006 and August 2007 "Residential cookers fired by solid fuel – Requirements and test methods".

For this Annex of MCS 008; Normative References, Terms and definitions, Classification of appliances and system boundary for room-sealed appliances are as presented in the relevant clauses of BS EN 12815:2001+A1:2004.

Further, the requirements for domestic cooking appliances with regards to surface temperatures have also been considered, as set out in BS EN 30-1-1:2008+A3:2013 Domestic cooking appliances burning gas. Safety.

This Annex includes requirements considered necessary for protection of end users.

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2. REQUIREMENTS

Where such a product is intended for unguarded use the following requirements apply:

When the boiler is operated at nominal output the requirements defined in:

- EN 30-1-1:2008+A3:2013 clause 6.1.5.1.1.1 General.

AND

- EN 30-1-1:2008+A3:2013 clause 6.1.5.1.1.2 Front of the oven door and any protective means.

For all such products, full compliance with BS EN 12815:2001+A1:2004, is deemed to demonstrate compliance with the requirements for characteristics and performance of products set out in this annex. Compliance must be evidenced by a type testing report.

As a minimum, compliance with the following requirements is mandatory.

All testing with regards to the following requirements must be carried out with the biomass boiler operating at nominal load as defined in:

- BS EN 14785:2006 - Residential space heating appliances fired by wood pellets. Requirements and test methods.

AND the relevant requirements in:

- BS EN 12809:2001+A1:2004 - Residential independent boilers fired by solid fuel. Nominal heat output up to 50 kW. Requirements and test methods.

In particular, the water outlet temperature must be $80\pm 5^{\circ}\text{C}$.

2.1 Materials, design and construction

2.1.1 Oven door

Products shall meet the requirements of: Clause 4.10 of BS EN 12815:2001+A1:2004.

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2.1.2 Hotplate and top plate

Products shall meet the requirements of: Clause 4.17 of BS EN 12815:2001+A1:2004.

2.1.3 Main/additional ovens

Products shall meet the requirements of: Clause 4.18 of BS EN 12815:2001+A1:2004.

2.1.4 Oven temperature indicators Products shall meet the requirements of: Clause 4.22 of BS EN 12815:2001+A1:2004.

2.1.5 Temperature rise of the operating components

Products shall meet the requirements of: Clause 5.3 of BS EN 12815:2001+A1:2004.

2.2 Performance requirements

2.2.1 Oven heating

Products shall be tested in accordance with and meet the requirements of the requirements of: Clause 6.7 of BS EN 12815:2001+A1:2004.

2.2.2 Boiling test

Products shall be tested in accordance with and meet the requirements of Clause 6.9 of BS EN 12815:2001+A1:2004.

2.3 Instructions

2.3.1 Product performance

Instructions supplied with these products must state clearly that the testing was carried out at nominal load and that cooking performance in use is dependent on the heating demand on the boiler in the building where it is installed.

2.3.2 Safety in use

If a product does not meet the requirements for unguarded use set out in B2 the installation and operating instructions must state explicitly that this is the case and that suitable protective guards conforming to the requirements of BS 8423:2010, must be used to prevent accidental contact with the surfaces of the product whilst in operation.

Note: Such products should in any case be installed in accordance with the requirements of the pertinent building regulations.

Building Regulations for England and for Wales, Part J clause J4, requires that "Combustion appliances and fluepipes shall be so installed, and fireplaces and chimneys shall be so constructed

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and installed, as to reduce to a reasonable level of risk of people suffering burns or the building catching fire in consequence of their use.”

Similarly Building Regulations (Northern Ireland) 2012 Part L clause 73:–(1), requires that “A combustion appliance shall be so installed and any connected flue-pipe, flue or chimney shall be so constructed and installed as to ensure that their use shall not cause–

- (a) burns to any person; or*
- (b) damage to a building by heat or fire.”*

Building (Scotland) Amendment Regulations 2006, Schedule 5, 3.20, requires every building must be designed and constructed in such a way that the products of combustion are carried safely to the external air without harm to the health of any person through leakage, spillage, or exhaust nor permit the re-entry of dangerous gases from the combustion process of fuels into the building.

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AMENDMENTS ISSUED SINCE PUBLICATION

Document no.	Amendment details	Date
1.1	Gemserv details added as Licensee. Document reformatted to reflect brand update. References to BERR updated to DECC, MCS logo updated accordingly. Website and email addresses updated to reflect new name.	01/12/2008
1.2	Quality review	10/01/2009
1.3	MCS Marks Updated	25/02/2009
2.0	References to product classifications and emissions updated	01/08/2012
2.1	Condensing Biomass Boilers Scope and Annex added	10/09/2013
2.2	Reference to EN 303-5:1999 replaced with EN 303-5:2012. Relevant updates made accordingly throughout.	16/12/2013
3.0	Scope expanded to cover Biomass Cookers and Biomass Cookers Annex added	01/11/2016
3.1	MCS Mark Updated. Rebranding of document, update of email and website addresses and cosmetic changes.	01/12/2019