

Application Form: APPF:02

APPLICATION GUIDE FOR GAS AND OIL BOILERS IN SAP PCDB

Issue 1.2

DOCUMENT REVISIONS

Documents will be revised by issue of updated editions or amendments. Revised documents will be posted on the website at www.ncm-pcdb.org.uk/sap.

Technical or other changes which affect product recognition requirements (for example) 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 document should ensure that they possess the latest issue.

DOCUMENT REVISION LOG

DATE	VERSION NO.	AMENDMENT DETAILS	APPROVED BY
29/02/16	1.1	First issue	WG
21/07/16	1.2	Clarified EN13203 test data requirements	WG

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1. INTRODUCTION

The National Calculation Methodologies for energy rating of dwellings (SAP and RdSAP) are used to support multiple Government policy initiatives. These range from Building Regulation compliance checks and the production of Energy Performance Certificates, to supporting the Green Deal and Energy Companies Obligation (ECO) schemes by enabling the differentiation of improvements measures.

In order to assess a building's energy performance, information is needed that describes the energy performance of the building fabric and building services. Such product performance data is either generic, determined by the materials and type of product used ('type data') or specific, where validated individual branded product performance test results have been made available ('product data'). Product performance data is normally held in the Product Characteristics Database (PCDB) or in some cases the Appendix Q database. Both of these can be accessed at the website: www.ncm-pcdb.org.uk/sap and are managed by the NCM (SAP) Contractor (Building Research Establishment Ltd).

The entry of product performance data in the Databases does not denote any form of approval or endorsement of that product, nor does it imply that use of the product will provide a better building energy performance rating than could have been obtained using alternative products.

Product performance data held in the Databases is provided solely to support building energy performance assessments. It is not provided to assist the marketing efforts of manufacturers. To this end, the Terms and Conditions applicable to the entry of individual branded product performance information restrict how product data entered in the Databases can be referenced in marketing and promotional material – see here: <http://www.ncm-pcdb.org.uk/sap/page.jsp?id=10>.

All manufacturers and suppliers who apply for their products to be entered in the Databases must submit evidence of performance (UKAS or equivalent), produced by testing against an agreed test specification, and agree to be bound by the *'Terms and*

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Conditions applicable to the entry of individual branded product performance information into the Databases’.

By accepting an Application for Database entry, the NCM (SAP) Contractor and the Department of Energy and Climate Change (DECC) do not warrant the accuracy of the data supplied by Manufacturers or test laboratories. Nor do they accept responsibility for fitness for purpose, safety, or compliance with any regulatory requirements applicable to the product concerned.

This document specifies PCDB entry requirements relating specifically to submissions for gas and oil boilers, where gas and oil means mains natural gas, LPG or Kerosene/heating oil.

2. SCOPE

The PCDB listing process confirms that:

- The efficiency and other test data submitted have been produced or accepted by an appropriately qualified Notified Body (an accredited test house subject to European standards for quality control and operations) under the Boiler Efficiency Directive.
- Test data and any other relevant information submitted relate to the product submitted for listing
- The product identification marks will be easily accessible to SAP assessors after appliance installation.

The maximum appliance rating for products entered in the database is 70kW which is implemented as follows:

- No modulating (output adjusted during operation) or “on/off” boilers with a rated output >70kW will be accepted.
- Range rated boilers (output is adjusted prior to/at installation) whose lower limit for rated output <70kW.

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To ensure that the status of each product is correctly recorded, obsolescence of any boiler must be flagged in its entry within 6 months of the termination of production of any boiler listed in the PCDB. In such cases boilers are not removed from the PCDB, but continue to be listed so that the data is available for SAP assessors.

Boilers must be identified with an “NCM (SAP) Identifier”, which is a unique name for a particular product and serves to identify and distinguish from others. It is comprised of:

- Brand Name
- Model Name
- Model Qualifier (if applicable)
- Fuel type

3. REQUIREMENTS FOR PCDB ENTRY

3.1 Summary

The requirements comprise:

- Completed application form
- Satisfactory means for identification, with evidence provided
- Test data arising from compliance with Commission Delegated Regulation (EU) No 811/2013. This means that the product fiche and supporting complete test reports must be provided.
 - In the case of hot water performance test data for combination boilers. If a single tapping cycle has been undertaken this must be Tapping Profile M, with complete test report provided. If not provided, the “Combi Loss” will be a default value.
 - If two Tapping Profiles have been undertaken, these must be Tapping Profile M and S or L, with complete test report provided. If not provided, the hot water heating efficiency (SAP Summer Efficiency) and “Combi Loss” will be determined on a conservative basis.

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3.2 Application form

Relevant application forms are available here:

<http://www.ncm-pcdb.org.uk/sap/page.jsp?id=48>

3.3 Product identification

The NCM (SAP) Identifier must enable a SAP assessor to identify a boiler easily, accurately and unambiguously. The information on boilers must be readily visible without dismantling. The key requirements are:

1. The product must have a unique identity, as described in Section 2, i.e. distinct from any other product entered, or about to be entered, in the PCDB.
2. The product's unique identity must be readily visible to a SAP assessor as markings/labels:
 - a. EITHER: On the outer case in areas that are visible after product installation in accordance with the manufacturer's instructions.
 - b. OR/AND: That are visible after the opening or removal, without the use of any tools, of a moveable panel (including flaps, doors and removable panels).

Combinations of information that are acceptable for product identification are summarised in the table below.

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Product information shown on the boiler case	A. Brand and model name and qualifier, giving unique description of this product	B. Partial brand and name information	C. No brand and name information
Product information that is visible after opening or removing panel			
I. Brand and model name and qualifier, giving unique description of the product	✓	✓	✓
II. Partial brand and name information which together with B gives unique description of the product	✓	✓	✗
III. No brand and name information, or insufficient to provide a unique description	✓	✗	✗

The applicant **MUST** demonstrate that the product's unique identity:

1. Is marked on the product - usually by means of photographs submitted with the application
2. Is visible - by means of photographs submitted with the application.
3. Where visibility is dependent on installation with suitable clearances that the installation instructions clearly state these requirements.

Applications submitted without acceptable means of product identification as outlined above will not be processed.

The only exception to these requirements is with respect to labelling for 'fuel type', since certain gas boilers may be converted from one gas type to another in-situ (e.g. Natural Gas (NG) to Liquefied Petroleum Gas (LPG)).

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3.4 Test data

The test data requirements for gas and oil-fuelled boilers applying for entry in the PCDB match Ecodesign regulations, specifically Commission Delegated Regulation (EU) No 811/2013. This means that the product fiche and supporting complete test reports must be provided. Current acceptable standards are EN 15502-1 for condensing gas boilers, EN 304 for non-condensing oil boilers, and EN 15034 for condensing oil boilers. For combination boilers, EN13203-2 is used for hot water performance of NG & LPG boilers and OPS 26 for oil boilers. Provision of EN13203-2 and OPS 26 test data is not mandatory, since applicants may have used alternate tapping profile test schedules, such as XL, which are not recognised by SAP – see Section 3.1.

Electrical power measurements, arising from Ecodesign tests, will now be recorded in the PCDB (from SAP 2016 onwards).

For the avoidance of doubt, all boiler test data must be provided on a gross calorific value (gross CV).

To ensure that gas and oil fired boiler test data recorded in the PCDB is robust, and in order to comply with the Boiler Efficiency Directive (92/42/EEC) (BED)¹, these must be validated by a Notified Body accredited for the testing of boilers by an EU National Accreditation Service. The Notified Body is required to determine whether “the full load and part load efficiency test results detailed in the report of the efficiency tests have been obtained by methods deemed to satisfy the boiler efficiency directive” and if so to issue a certificate to this effect.

It should be noted that in certain cases it is required that submitted results (e.g. where very high boiler efficiency results have been reported by the Notified Body) be checked via an Energy Balance Validation (EBV) calculation². This will be undertaken as part of

¹ Commission Delegated Regulation (EU) No 811/2013, clause 22, retains key elements of Directive 92/42/EEC (BED). Examination of the efficiency of a boiler type is still required and must still be undertaken as defined in the Annex III of the BED.

² see http://www.bre.co.uk/filelibrary/SAP/2012/STP09-B02_Energy_balance_validation.pdf

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the application review process by the NCM (SAP) Contractor and will incur an additional fee and processing time. In such cases, explanation of the methods used to produce the test data will be required, including confirmation that the test laboratory has undertaken sufficient checking of measurements and calculations to ensure consistency of results. Failure to provide satisfactory evidence will prevent PCDB entry

3.4.1 Domestic Hot Water (DHW) efficiency data

Test data must be validated by EITHER a suitably qualified Notified Body OR an independent test laboratory accredited under ISO 17025 for the relevant test standard(s).

For further details see Section 3.1.

3.4.2 LPG fired appliances

It is recognised that some boilers can, with minor adjustment, operate with either NG or LPG. Efficiency test data for these boilers is typically only collected for NG firing. Such data may be acceptable in support of separate PCDB applications for LPG fired operation provided that the following conditions are met.

- The required boiler modification is minor (e.g. different injector, adjustment by a single screw on the gas valve)
- The nominal (full load) net heat input during LPG firing is $\pm 5\%$ the NG net heat input at nominal load. Refer to SAP 2012 Appendix D4, point 3 (revised 2014)
- The measured concentration of CO₂ in the flue gas (%vol. dry) firing LPG at nominal heat input must exceed the threshold calculated, as described in SAP 2012 Appendix D4, point 4 (revised 2014). This threshold is determined using the measured concentration of CO₂ in the flue gas (%vol. dry) when firing NG at the nominal heat input.

Measured flue gas CO₂ concentration data, within a test report, must be validated by a suitably qualified Notified Body (typically with regards to the Directive 2009/142/EC relating to appliances burning gaseous fuels and commonly referred to as the Gas Appliance Directive (GAD)) and submitted with the application.

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Note: There is no mechanism for accepting DHW test data that is measured using NG for demonstration of LPG firing operation.

4. MAKING AN APPLICATION

The latest version of the application workbook "Application-workbook-for-entry-of-gas-or-oil-boilers-in-SAP-PCDB" and application form "*Application for recognition of product data within an existing SAP technology category*" should be downloaded from the webpage: <http://www.ncm-pcdb.org.uk/sap/page.jsp?id=48>. These should be completed and submitted with supporting evidence to: pcdb@kiwa.co.uk

All supporting evidence, including complete test reports and declarations from Notified Bodies, must be supplied in English or accompanied by an English translation.

Please note that test laboratory accreditation information must be substantiated with appropriate copies of accreditation certificates.

Alternatively, a Notified Body may validate complete test reports with a formal signed letter or Declaration as detailed in APPENDIX 1 - NOTIFIED BODY EFFICIENCY DECLARATION FORM or APPENDIX 2: NOTIFIED BODY EFFICIENCY DECLARATION FORM - FOR LPG CONDENSING BOILERS ONLY. Failure to provide this evidence will prevent PCDB entry.

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APPENDIX 1 - NOTIFIED BODY EFFICIENCY DECLARATION FORM

Where appropriate, this form may be completed by Notified Bodies in order to validate complete test reports and should be submitted with the report. Alternative means of validation, such as a signed declaration letter, will be accepted.

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NOTIFIED BODY - DECLARATION FORM				
Declaration made by	(Notified Body)			
On behalf of	(Manufacturer)			
Tests performed on LPG/NG see note below	Original Boiler Name	UK Market Name	Full Load Efficiency (% net)	Part Load Efficiency (% net)
Note: Boilers marked with an asterisk[*] are LPG models where test was undertaken using Natural Gas [G20].				
<p>We declare that the full and part load efficiency test results detailed above have been obtained by means deemed to satisfy the Boiler Efficiency Directive (92/42/EEC). The water temperature criteria defined in the Boiler Efficiency Directive [see below] have been satisfied in obtaining these results.</p>				
Type of Boiler	Range of Power	Efficiency at rated output	Efficiency at part load	
	kW	Average boiler-water temperature	Average boiler-water temperature	
Standard boilers	4 to 400	70°C	≥ 50°C	
Low temperature boilers ¹	4 to 400	70°C	40°C	
Gas condensing boilers	4 to 400	70°C	30°C ²	
¹ Including condensing boilers using liquid fuels				
² Temperature of boiler water supply				
Signed on behalf of [Insert name of Notified Body]:				
Print Name:				
Date:				
Insert Notified Body Official Stamp if available and/or print on official headed paper				

APPENDIX 2: NOTIFIED BODY EFFICIENCY DECLARATION FORM - FOR LPG CONDENSING BOILERS ONLY

Where appropriate, this form may be completed by Notified Bodies in order to validate complete test reports and should be submitted with the report. Alternative means of validation, such as a signed declaration letter, will be accepted.

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NOTIFIED BODY - DECLARATION FORM FOR CONDENSING LPG BOILERS ONLY

Declaration made by	(Notified Body)	
On behalf of	(Manufacturer)	

Original Boiler Name	UK Market Name	Full Load Efficiency		Part Load Efficiency	
		(% , net)	Tick if value includes 2.4% uplift	(% , net)	Tick if value includes 2.4% uplift

Note: Boilers marked with an asterisk[*] are LPG models where test was undertaken using Natural Gas [G20].

We declare that the full and part load efficiency test results detailed above have been obtained by means deemed to satisfy the Boiler Efficiency Directive (92/42/EEC). The water temperature criteria defined in the Boiler Efficiency Directive [see below] have been satisfied in obtaining these results.

Type of Boiler	Range of Power	Efficiency at rated output	Efficiency at part load
	kW	Average boiler-water temperature	Average boiler-water temperature
Standard boilers	4 to 400	70°C	≥ 50°C
Low temperature boilers ¹	4 to 400	70°C	40°C
Gas condensing boilers	4 to 400	70°C	30°C ²

¹ Including condensing boilers using liquid fuels
² Temperature of boiler water supply

Signed on behalf of [Insert name of Notified Body]:	
Print Name:	
Date:	
Insert Notified Body Official Stamp if available and/or print on official headed paper	