

Product application checklist

Please complete in BLOCK CAPITALS

Saturated Steam to Electricity Conversion Equipment

Manufacturer/supplier name:

Applicant's name:

Telephone number:

Product information

Product name:

Model number:

Please complete each section of this form based on your product's characteristics. Incomplete or incorrect data could affect the processing of your product application.

Each product application should be made on a separate form unless a product's design characteristics are common to all the products. In this instance a single application can be made for multiple products.

1. Product testing and certification

No Yes

Where type testing has been applied to demonstrate product performance (i.e. for Method B below) ensure that the information supplied is sufficient to demonstrate the performance of all the products for which applications are being made.

1.1 Is the product CE Marked?

1.2 Which test method was used?

Method A) Direct measurement

Method B) Validated design calculations

1.3 Has the product been tested in accordance with the test procedures and standard rating conditions in the following standards? (Please select relevant standards)

BS EN 306:1997

BS EN 60953-2:1996

BS ISO 8528-6:2005

1.4 How was the product(s) performance tested? (Please select one)

a) Tested in the manufacturer's in-house laboratory, in accordance with a registered Quality Management System and a representative sample of the test data has been cross-checked and verified by an independent body (i.e. 'self-tested').

b) Tested by an independent accredited laboratory (i.e. 'independent testing')

c) Tested as part of on-site acceptance tests or field trials witnessed by an independent accredited laboratory

The product's overall efficiency must be calculated by an independent body that is competent to verify the measurement data.

Please refer to Section 2 of ECA Guidance Note 5 "ECA Testing Programme: Energy Technology List (ETL) Product Testing Framework" for details of the requirements that must be satisfied for each of these product testing options.

1. Product testing and certification (continued)		No	Yes
1.5	Where product testing has been done in accordance with a registered Quality Management System, what is its registration number? 		
1.6	Where product testing has been tested in the manufacturer's in-house laboratory and a representative sample of the test data has been cross checked and verified by an independent body, what was the name of the independent body? (Please include contact details). 		
1.7	Where product testing has been carried out by an independent accredited laboratory: a) What is the name of the independent accredited laboratory? b) What is the laboratory's registration number? 		
1.8	Where product testing was done as part of on-site acceptance tests of field trials, please provide details of the independent body that calculated the overall efficiency. (Please include contact details). 		
1.9	Where validated design calculations have been used : a) What is the name of the independent accredited laboratory that verified the accuracy of the calculations? b) What is the laboratory's registration number? 		
1.10	Where validated design calculations have been used, are they accompanied by the original manufacturers' design data, details of the methodology employed and calculations verified and a copy of the published performance data for the product?		
2. Product type		No	Yes
2.1	What is the category of the product you are applying for? (tick one) a) Screw Expanders b) Non-condensing or back pressure turbines		
2.2	Does the product: a) Utilise waste or excess steam source from a process (i.e. steam is not produced for the primary purpose of power generation)? b) Use wet or saturated steam at the inlet (i.e. not superheated steam)?		
2.3	Is the product: a) Designed to use water or steam as the thermal working fluid (i.e. product shall not use any thermal working fluid applicable to Organic Rankine Cycle)? b) Designed to provide three-phase electricity output? c) Designed and include fittings for permanent installation?		
2.4	Please confirm that the product does not: a) Incorporate any form of combustion equipment, including boost burners? b) Exceed 700 kWe power output at standard conditions? c) Make up part of a Good Quality CHP scheme, under CHPQA?		

3. Product performance**No****Yes****3.1 Does the performance of the product meet the relevant performance set out in Table 1 Below?**

The ECA Scheme only covers products that fit into one of the specific categories listed in the table below, as defined by the product category and Inlet pressure test point (BarA).

Table 1 Overall efficiency threshold for saturated steam to electricity conversion equipment

Standard conditions for the measurement of overall efficiencies			Inlet Pressure Test Point (barA)		
			8	11	15
No.	Product Category	Outlet Pressure Test Point (barA)	Minimum Overall Efficiency %		
1	Screw Expanders	2	>= 84.0	>=88.0	>=90.0
		5	N/A	>=80.0	>=87.0
2	Non-condensing or back pressure turbines	2	>=72.0	>=76.0	>=78.0
		5	N/A	>=68.0	>=70.0

">=" means "greater than or equal to"

Where

$$\text{Overall Efficiency (\%)} = \frac{\text{Net Electrical Output (kWe)}}{\text{Actual Enthalpy Drop (kJ/kg)} * \text{Inlet Mass Flow Rate (kg/s)}}$$

Net electrical output is defined as the electrical output minus any electrical input into the product. Actual enthalpy drop is defined as the change in the inlet enthalpy of the steam entering the product minus the outlet enthalpy of the steam. The inlet mass flow rate is the flowrate of the steam as it enters the product.

3.2 Does the net electrical efficiency meet or exceed 4.5%?

$$\text{Net Electrical Efficiency (\%)} = \frac{\text{Net Electrical Output (kWe)}}{\text{Inlet Enthalpy (kJ/kg)} * \text{Inlet Mass Flow Rate (kg/s)}}$$

4. Summary of documents to be included**No****Yes**

Please send ONE copy of each of the following documents:

If the relevant information in support of the questions above is contained within a larger document, please indicate the location of the relevant information. Note that all documentation submitted must directly refer to the model numbers for which you are making this application. Documentation should be added to your online application at <https://www.gov.uk/energy-technology-list>

- a. A technical sales brochure or leaflet for the product clearly summarising:
 - i) The key features of the product (ideally including photographs of the product's exterior).
 - ii) The product's operation (i.e. in-built functionality) and intended applications (i.e. usage).
 - iii) Any product selection options (including optional extras, alternative configurations etc.).

This documentation should contain sufficient detail to enable the assessor to confirm that the proposed entry on the Energy Technology Product List (ETPL) is correct, and uniquely represents a single product of fixed design (as defined by the rules of the ECA Scheme). If the model names contain any 'wildcards' in respect of cosmetic variations please check with ECA Questions that this is permitted before submitting your application.

- b. A technical specification for the product, including:
 - i) Details of the model numbers covered (including individual features of each model).
 - ii) The product's design ratings (electrical, mechanical, thermal, flow rates, energy use etc.).
 - iii) A description of how to install the product including connection/wiring diagrams. Where the product must be assembled, configured and/or commissioned on site before use, please include instructions.

This documentation should contain sufficient detail to enable the assessor to confirm that each product entry on the Energy Technology Product List (ETPL) has the design features specified in the eligibility criteria for that category of product. Please indicate on the checklist where information on specific design feature information is located in the documentation.

4. Summary of documents to be included	No	Yes
<p>c) Evidence that the products the performance criteria, including:</p> <ul style="list-style-type: none"> i) Test reports showing product performance at the standard rating/test conditions. ii) Details of the test procedures/standards used to determine product performance. iii) A declaration certifying the accuracy of the test reports and confirming that: <ul style="list-style-type: none"> • The test facilities complied with the minimum specifications outlined in the test standard, and the required test conditions where applied during testing. • All measurement equipment used in testing was calibrated by an accredited laboratory, or its calibration is otherwise traceable back to national standards. • Appropriate quality assurance procedures have been used to verify or cross-check the accuracy and repeatability of the test procedures and test results. iv) Where the validated design calculations test method (i.e. Method B) has been used, please ensure that this documentation contains the additional information as stated in the ETL criteria, including: <ul style="list-style-type: none"> • Manufacturer’s design data for the product. • Details of the methodology (including any standards used) and calculations verified by the independent accredited laboratory, used to determine product performance. • A copy of the published performance data for the product. v) Where the test reports have not been prepared by an independent body, evidence that the accuracy of product performance data has been independently verified or cross-checked by an independent body. <p><i>Please refer to “ECA Guidance Note 5: Energy Technology List (ETL) Product Testing Framework” for further guidance on the submission of test results, and minimum information requirements.</i></p> <p>d) A Declaration of Conformity with EU Directives on product safety, including:</p> <ul style="list-style-type: none"> i) CE Marking Directives <p>e) Evidence that a quality assurance system/procedures is/are in place to:</p> <ul style="list-style-type: none"> i) Control the specification, design, manufacturing and testing of the products. <p>f) Signed application checklist</p> <p><i>Please note that all product documentation provided must be written in, or translated into, English.</i></p>		

5. Declaration

I confirm that the information given above is correct to the best of my knowledge and that I have read and agree to the terms and conditions governing the management of the Enhanced Capital Allowance Energy Technology List (ETL).

A copy of the terms and conditions can be found at <https://www.gov.uk/energy-technology-list>

Signature: _____ Date: _____

For more information:

Web:
<https://www.gov.uk/energy-technology-list>

Phone:
0300 3300657

Email:
ECAQuestions@carbontrust.co.uk

Post:
Energy Technology List Coordinator,
ICF,
6th floor,
Watling House,
33 Cannon Street,
London, EC4M 5SB

Whilst reasonable steps have been taken to ensure that the information contained within this publication is correct, the Carbon Trust, its agents, contractors and sub-contractors, and the Government give no warranty and make no representation as to its accuracy and accept no liability for any errors or omissions.

Any trademarks, service marks or logos used in this publication are the property of the Carbon Trust or Government. Nothing in this publication shall be construed as granting any licence or right to use or reproduce any of the trademarks, service marks, logos, copyright or any proprietary information in any way without the Carbon Trust's prior written permission. The Carbon Trust enforces infringements of its intellectual property rights to the full extent permitted by law.

The Carbon Trust is a company limited by guarantee and registered in England and Wales under Company Number 04190230 with its Registered Office at: 4th Floor, Dorset House, 27-45 Stamford Street, London SE1 9NT. The Enhanced Capital Allowance Scheme for energy saving equipment is run by the Carbon Trust on behalf of Government.

Published in the UK: March 2018.

ECA791 v.1