



# Energy Technology List

## Product application checklist

Please complete in BLOCK CAPITALS

### Screw Expanders

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
<b>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.</b>			
1.1	Does the product have an appropriate Conformity Assessment mark?		
1.2	Has the product's performance been demonstrated by calculating the net electrical efficiency from measurements of net electrical output, inlet enthalpy drop and inlet mass flow rate?		
1.3	For the purposes of compliance and verification of compliance with the ETL requirements, has measurements and calculations been made using harmonised standards or other reliable, accurate and reproducible method, which takes into account the generally recognised state-of-the-art methods?		
1.4	Does the test report include: <i>(Tick all that apply)</i>		
	a) Manufacturer's design data for the product		
	b) Details of the testing methodology (including any standards used) used to determine product performance		
	c) A copy of the published performance data for the product		

1. Product testing and certification (continued)		No	Yes
1.5	<p><b>How was the product(s) performance tested?</b> <i>(Please select one)</i></p> <p>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').</p> <p>b) Tested in a laboratory either in house or on-site, witnessed by an independent accredited laboratory. (i.e. 'witnessed testing')</p> <p>c) Tested by an independent accredited laboratory (i.e. 'independent testing')</p> <p>d) Tested as part of on-site acceptance tests or field trials</p> <p><i>The product's overall efficiency must be calculated by an independent body that is competent to verify the measurement data.</i></p> <p><i>Please refer to Section 2 of ETL Guidance Note 5 "ETL 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.</i></p>		
1.6	<p><b>Where product testing has been done in accordance with a registered Quality Management System, what is its registration number?</b></p> <p>.....</p>		
1.7	<p><b>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?</b> <i>(Please include contact details).</i></p> <p>.....</p>		
1.8	<p><b>Where product testing has been witnessed by an independent accredited laboratory, what was the name of the witness?</b> <i>(Please include contact details).</i></p> <p>.....</p>		
1.9	<p><b>Where product testing has been carried out by an independent accredited laboratory:</b></p> <p>a) What is the name of the independent accredited laboratory?</p> <p>.....</p> <p>b) What is the laboratory's registration number?</p> <p>.....</p>		
1.10	<p><b>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.</b> <i>(Please include contact details).</i></p> <p>.....</p>		

2. Product type		No	Yes
2.1	<p><b>Does the product:</b></p> <p>a) Utilise waste or excess steam source from a process (i.e. steam is not produced for the primary purpose of power generation)?</p> <p>b) Use wet or saturated steam at the inlet (i.e. not superheated steam)?</p>		

2. Product type (continued)		No	Yes
2.2	<p><b>Is the product:</b></p> <p>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)?</p> <p>b) Designed to provide three-phase electricity output?</p> <p>c) Designed and include fittings for permanent installation?</p>		
2.3	<p><b>Please confirm that the product does not:</b></p> <p>a) Incorporate any form of combustion equipment, including boost burners?</p> <p>b) Exceed 700 kWe power output at standard conditions?</p>		

3. Product performance		No	Yes																									
3.1	<p><b>Does the performance of the product meet the relevant performance set out in Table 1 Below?</b></p> <p><i>The ETL 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).</i></p> <p><b>Table 1</b> Net electrical efficiency thresholds for Screw Expanders</p> <table border="1"> <thead> <tr> <th colspan="3" rowspan="2">Standard conditions for the measurement of net electrical efficiencies</th> <th colspan="3">Inlet Pressure Test Point (barA)</th> </tr> <tr> <th>8</th> <th>11</th> <th>15</th> </tr> <tr> <th>No.</th> <th>Product</th> <th>Outlet Pressure Test Point (barA)</th> <th colspan="3">Minimum Net Electrical Efficiency %</th> </tr> </thead> <tbody> <tr> <td rowspan="2">1</td> <td rowspan="2">Screw Expanders</td> <td>2</td> <td>≥ 3.5</td> <td>≥ 4.4</td> <td>≥ 5.3</td> </tr> <tr> <td>5</td> <td>N/A</td> <td>≥ 2.5</td> <td>≥ 3.5</td> </tr> </tbody> </table> <p>'≥' means 'greater than or equal to'</p> <p>Where:</p> $\text{The Net Electrical Efficiency (\%)} = \frac{\text{Net Electrical Output (kWe)}}{\text{Inlet Enthalpy (kJ/kg)} * \text{Inlet Mass Flow Rate (kg/s)}}$ <p><i>Net electrical output is defined as the electrical output minus any electrical input into the product. Inlet enthalpy is defined as the enthalpy of the steam entering the product. The inlet mass flow rate is the flowrate of the steam as it enters the product.</i></p>	Standard conditions for the measurement of net electrical efficiencies			Inlet Pressure Test Point (barA)			8	11	15	No.	Product	Outlet Pressure Test Point (barA)	Minimum Net Electrical Efficiency %			1	Screw Expanders	2	≥ 3.5	≥ 4.4	≥ 5.3	5	N/A	≥ 2.5	≥ 3.5		
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		5	N/A	≥ 2.5	≥ 3.5																							

#### 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://etl.beis.gov.uk/engetl/fox/live/ETL\\_LOGIN/login](https://etl.beis.gov.uk/engetl/fox/live/ETL_LOGIN/login)

- 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 ETL Scheme). If the model names contain any 'wildcards' in respect of cosmetic variations please check with ETL 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 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.*

- c) Evidence that the products the performance criteria, including:
- 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:
    - 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:
    - 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.

*Please refer to "ETL Guidance Note 5: Energy Technology List (ETL) Product Testing Framework" for further guidance on the submission of test results, and minimum information requirements.*

- d) A Declaration of Conformity with UK/EU Directives on product safety, including:
- i) An appropriate Conformity Assessment mark
- e) Evidence that a quality assurance system/procedures is/are in place to:
- i) Control the specification, design, manufacturing and testing of the products.
- f) Signed application checklist

*Please note that all product documentation provided must be written in, or translated into, English.*

## 6. 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 Energy Technology List.  
A copy of the terms and conditions can be found at [www.gov.uk/guidance/energy-technology-list](http://www.gov.uk/guidance/energy-technology-list).

Signature: ..... Date: .....

### For more information:

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