

## Triple E Eligibility Criteria

### **Category: Heating and Electricity Provision**

### **Technology: Co-generation**

*Co-generation is defined as highly energy efficient equipment which can simultaneously generate a combination of heat, cooling energy and usable electrical power in a single thermodynamic process and which is intended primarily for on-site use.*

#### **Co-generation equipment is considered to include the following:**

##### Combined Heat and Power

Combined Heat and Power (CHP) is the simultaneous generation of heat and power in a single process.

##### Tri-generation

Tri-generation is the simultaneous generation of heat, cooling and power in a single process whereby the cooling effect is obtained through the CHP generated heat by means of an absorption chiller.

#### **Eligibility Criteria Overview:**

In order to be included on the Triple E Product Register\* the specific Co-generation equipment must meet *all* of the relevant requirements set out below.

**Note:** *Supporting documentation that clearly demonstrates Triple E compliance according to the conditions below will be required as part of the Triple E checking process. Detailed information on the types of documents accepted can be found in the separate Supporting Documentation guidelines.*

\* Also known as the specified list as per the Finance Act

#### **General Co-generation Eligibility Criteria**

(Applicable to all Co-generation equipment)

<b>No.</b>	<b>Condition</b>
1.	All equipment and/or components must be CE marked as required by the specific EU directive(s).
2.	Appropriate operating and maintenance manuals must be available for the end-user as part of the main contract of sale in order to optimise the achievement of any potential efficiency improvements.

#### **CHP specific Eligibility Criteria:**

(To be met in addition to the general eligibility criteria)

<b>No.</b>	<b>Condition</b>
3.	The CHP unit must be a packaged unit with the power generation section and heat recovery section contained within a single enclosure, and should consist of a single prime mover.

4.	Units must have a minimum overall efficiency (thermal + electricity) greater than or equal to <b>81%</b> , calculated on a gross calorific value basis
5.	The unit must have installed software to record levels of electricity and heat generated over a running period.
6.	The CHP Unit must include one main heat output system i.e. a system recovering heat from the prime mover and the exhaust gasses, and must have no inbuilt facility to dump heat.

**Tri-generation specific Eligibility Criteria:**

(To be met in addition to the general eligibility criteria)

No.	Condition
7.	The heat & power element of the Tri-generation system must comply with the eligibility criteria for CHP units.
8.	The Absorption chiller must use the CHP heat source as its primary energy input. (The chiller should be an "indirect fired" Absorption chiller).
9.	The Absorption chiller must have a minimum COP of 0.7
10.	The units must have installed software to record levels of cooling achieved.

----- End of Triple E eligibility criteria -----

Please see next section for technical detail submission and supporting documentation guidance

***The following information is not part of the official criteria document published within the relevant statutory Instrument; it has been added here for guidance purposes only in order to provide assistance with the submission of product details and the provision of the required supporting documentation.***

**Note:** All information contained within this guidance document is subject to change without notice

## Technical information required in product submission

The following are the specific technical values required as part of the product submission for this technology:

### Co-generation product type

As part of the product submission you must select which type of co-generation your product is. Only one type can be chosen per product.

### Power output

The rated electrical power output in kW of the product must be required as a value for the product submission. It must be entered as whole number only (do not include kW symbol). There should also be no spaces or full stops after the number submitted.

### Efficiency

The gross calorific efficiency (%) of the product, both thermal and electrical, is required as values for the product submission. They must be entered as numbers only without units or % sign. There should also be no spaces or full stops after the number submitted. The total unit efficiency (sum of thermal and electrical efficiencies) is automatically calculated and must comply with the criteria requirements for minimum efficiency values.

Where test data is given on an NCV basis, the efficiency should be multiplied by the factors as follows:

Fuel	Net-to-gross conversion factor
Natural gas	0.901
LPG (propane or butane)	0.921
Oil (kerosene or gas oil)	0.937
Wood fuels	0.91
Solid multi-fuel	0.94

### COP

The COP for the Tri-gen product is required as a value for the product submission. It must be entered as number only without units. There should also be no spaces or full stops after the number submitted. The figure must comply with the criteria requirements for minimum COP values.

## Supporting documentation required

Described below is the list of documents that are accepted as proof of compliance for the specific Co-Generation conditions.

**Note: This information will only be requested AFTER you submit your product's basic details online**

**Important Notes to Product Providers**

**Please ensure that you read the "Important Notes to Product Providers" section at the end of this document prior to submitting documentation.**

**General Co-generation Eligibility Criteria**  
(Applicable to all Co-generation equipment)

No.	Condition	Supporting Documentation Requirement
1.	All equipment and/or components must be CE marked as required by the specific EU directive(s).	<p>Official and published manufacturer's technical data sheet or brochure that demonstrates CE marking compliance.</p> <p><b>OR</b></p> <p>A copy of an official signed declaration on headed paper which confirms CE marking compliance.</p> <p>Official declarations should explicitly state the product for which CE marking is being confirmed (i.e. do not provide a letter simply stating general compliance with the relevant Triple E condition).</p> <p>Where a document is used to demonstrate conformance for a number of products or range of products it should clearly specify each individual product covered by that document.</p>
2.	Appropriate operating and maintenance manuals must be available for the end-user as part of the main contract of sale in order to optimise the achievement of any potential efficiency improvements.	<p>A copy of an official signed declaration on headed paper which confirms that the appropriate O&amp;M operating and maintenance manuals are provided. Where applicable, information on the availability of technical documentation to download online should be given.</p> <p><b>NB:</b> A signed declaration is required to comply with this condition in all cases. Submitting copies of user manuals is not sufficient and not required by this condition.</p>

**CHP specific Eligibility Criteria:**

(To be met in addition to the general eligibility criteria)

<b>No.</b>	<b>Condition</b>	<b>Supporting Documentation Requirement</b>
3.	The CHP unit must be a packaged unit with the power generation section and heat recovery section contained within a single enclosure, and should consist of a single prime mover.	Official and published manufacturer's technical data sheet or brochure that demonstrates the requirements of the condition.
4.	Units must have a minimum overall efficiency (thermal + electricity) greater than or equal to <b>81%</b> , calculated on a gross calorific value basis.	Evidence of official testing by manufacturer an accredited body to <ol style="list-style-type: none"> <li>1. Standard EU directive 2004/8/EC or equivalent, OR</li> <li>2. Standard EN 15316 4.4</li> <li>3. or equivalent</li> </ol> verifying that the unit achieves the stated thermal, electrical and overall efficiencies.  Test reports should be of the format described in the 'Important Notes to Product Providers' section of this document.
5.	The unit must have installed software to record levels of electricity and heat generated over a running period.	Official and published manufacturer's technical data sheet or brochure that demonstrates the requirements of the condition.
6.	The CHP Unit must include one main heat output system i.e. a system recovering heat from the prime mover and the exhaust gasses, and must have no inbuilt facility to dump heat.	Official and published manufacturer's technical data sheet or brochure that demonstrates the requirements of the condition.

**Tri-generation specific Eligibility Criteria:**

(To be met in addition to the general eligibility criteria)

No.	Condition	Supporting Documentation Requirement
7.	The heat & power element of the Trigeneration system must comply with the eligibility criteria for CHP units.	See conditions 3 - 6 in the CHP specific Eligibility Criteria.
8.	The Absorption chiller must use the CHP heat source as its primary energy input. (The chiller should be an "indirect fired" Absorption chiller).	Official and published manufacturer's technical data sheet or brochure that demonstrates the requirements of the condition.
9.	The Absorption chiller must have a minimum COP of 0.7	Evidence of official testing by manufacturer or independent test lab carried out according to a relevant standard or a stated methodology verifying that the unit achieves the stated efficiency.  Test reports should be of the format described in the 'Important Notes to Product Providers' section of this document.
10.	The units must have installed software to record levels of cooling achieved.	Official and published manufacturer's technical data sheet or brochure that demonstrates the requirements of the condition.

## Important Notes to Product Providers

### General

There should be a clear link between all supporting documentation supplied and the product being submitted. This will typically take the form of a product code or product name that can be cross referenced between the submitted product and relevant supporting documentation. If product codes / names have been changed since publication of the supporting documentation, then official evidence of this must be provided with the supporting documentation supplied.

Any deviation from these requirements will result in the supporting documentation not being considered adequate for the purposes of demonstrating compliance with the criteria conditions. This will in turn delay the submission and/or result in the product not being considered eligible.

Where the Triple E criteria or help documentation reference compliance to appropriate rather than specific standards, the onus is on the product provider to ensure that supporting documentation supplied references recognised standards that apply to the submitted product, i.e. the product must be covered under the scope of a recognised standard.

If any product submitted is later found not to meet the performance or specification criteria, then this product will cease to be considered eligible for the Triple E.

**Note:** When supplying the supporting documentation through the online process you must ensure that the correct page number(s) of the document is referenced when compliance with the relevant condition is being demonstrated. An explanatory note should also be given where more than one page number is referenced.

### Test Report

A test report must comprise of the following elements:

An outline of the complete test including introduction, details on test conditions, the specific model details of the product tested, the steps taken in the test, the results, graphical representations, and a conclusion. All documents should be on headed paper and the document should be officially signed off. **All documentation must be in English**, or include adequate translation.

### Certification

Where certificates are provided, all tests must be carried out by an organisation that is accredited by a national accreditation body recognised via the European Cooperation for Accreditation (preferred) or the International Accreditation Forum. **All documentation must be in English**, or include adequate translation.

### Scientific Equivalence

Some Triple E criteria conditions allow for scientifically equivalent tests and/or standards to be used. In the event that a product has not been designed, manufactured or tested to the specific standard named, then documentation relating to an equivalent internationally recognised standard may be used (where the phrase 'Or scientific equivalent' is included in the Triple E condition or help documentation). In such applications, the onus will be on the product submitter to demonstrate satisfactory equivalence of the standards. However, submissions which reference such supporting documentation may take longer to process, and if the product provider does not provide satisfactory evidence of equivalence, then the product will not be considered eligible for the Triple E. **All documentation must be in English**, or include adequate translation.

**Note:** Where specific standards are cited in a condition or in the Triple E help documentation, then documentation demonstrating that the relevant products have been designed, manufactured or tested to these specific standards is preferred. Scientific equivalence is considered the exception rather than the norm.

### **Representative testing**

Where test information is required for a range of technically similar products (e.g. configurations of one base product), then – in exceptional instances – a form of representative testing may be used provided an accredited laboratory endorses the testing for all products to be included.

Such testing is where only representative products are tested from a technically similar group or range of products. Representative testing may form an acceptable basis for supporting documentation if:

- A clear correlation can be demonstrated between the tested product and a technically similar non-tested product
- and*
- Such a correlation clearly demonstrates the compliance of the non-tested product

**Note:** Where representative testing is used for a group or range of products, if the tested or representative product is removed from the specified list of eligible products then all related products are also removed.