Department for
Business, Energy
& Industrial Strategy

# Consultation on the Energy Technology List Scheme

## Part 2 – Technical changes to the Energy Technology Criteria List 2020

Closing date: 7 August 2020

June 2020




Any enquiries regarding this publication should be sent to us at: ETLMailbox@beis.gov.uk

# Contents

# General information

## Why we are consulting

In this two-part consultation on the Energy Technology List Scheme, BEIS is seeking views from all interested stakeholders on: -

Part 1 – the future direction of the Energy Technology List (ETL) Scheme; and

Part 2 – proposed technical changes for the 2020 update of the Energy Technology Criteria List (ETCL)

This document is Part 2 and seeks views on proposed technical changes to the Criteria from all interested parties: including product manufacturers and suppliers; trade bodies; wider industry players; product users and consumer groups; and academics and consultancies that have conducted similar research.

Stakeholders are not required to respond to both documents.

## Consultation details

**Issued:** 12 June 2020

**Respond by:** 7 August 2020 (midnight)

**Enquiries to:**

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**Consultation reference:** Consultation on technical changes to the Energy Technology Criteria List 2020

**Audiences:**

Product manufacturers and suppliers, trade bodies, wider industry players, product users and consumer groups, academics and consultancies

**Territorial extent:**

United Kingdom

# How to respond

The use of Citizen Space would be the preferred response method.

**Respond online at:** https://beisgovuk.citizenspace.com/energy-efficiency/1c380707

or

**Email to:** ETLMailbox@beis.gov.uk

When responding, please state whether you are responding as an individual or representing the views of an organisation.

Your response will be most useful if it is framed in direct response to the questions posed, though further comments and evidence are also welcome.

# Confidentiality and data protection

Information you provide in response to this consultation, including personal information, may be disclosed in accordance with UK legislation (the Freedom of Information Act 2000, the Data Protection Act 2018 and the Environmental Information Regulations 2004).

If you want the information that you provide to be treated as confidential please tell us, but be aware that we cannot guarantee confidentiality in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not be regarded by us as a confidentiality request.

We will process your personal data in accordance with all applicable data protection laws. See our privacy policy.

We will summarise all responses and publish this summary on GOV.UK. The summary will include a list of names or organisations that responded, but not people's personal names, addresses or other contact details.

# Quality assurance

This consultation has been carried out in accordance with the government's consultation principles.

If you have any complaints about the way this consultation has been conducted, please email: beis.bru@beis.gov.uk.

# 1. Introduction

The Energy Technology List (ETL) is a Government backed energy-efficiency scheme that encourages private and public sector organisations to procure market leading energy saving or energy-efficient plant and machinery.

The ETL has been in operation since 2001 and has grown to include around 14,000 products across 16 technology groups. It has developed into a significant information source and commercial procurement tool that has been incorporated into Government Buying Standards and embedded into the procurement strategies of major UK companies. The ETL aims to simplify investment decisions and help overcome information barriers, as well as reduce transaction costs for buyers, sellers and the public sector.

The ETL is in two-parts; the Energy Technology Criteria List (ETCL) and the Energy Technology Product List (ETPL). The ETCL defines the specific high-performance criteria that a product must meet in order to be listed on the ETPL. Those criteria include functional specification, energy-efficiency and other performance measures. It aims to identify and promote the top 10-25% performing products in each of its product types. The ETPL is the list of products that have been assessed as being compliant with the ETCL criteria.

Both lists are reviewed annually by BEIS to ensure that the criteria and listed products fully reflect technological advancements in the marketplace, changing market trends/dynamics, and the development of products legislation and other regulations. To support this, BEIS' delivery partner (ICF Consulting Ltd) conducts a rolling programme of research that assesses each technology type on a three-four year cycle. The programme aims to identify technologies with good carbon emissions reduction potential and provide the evidence base to develop appropriate interventions for BEIS. The research programme provides BEIS with an annual recommendation for changes to the Criteria.

BEIS is aware that, as part of the research process, many interested parties have already been consulted by ICF Consulting and have been given an opportunity to share their views. However, feedback received during ETL stakeholder engagement workshops held in May 2019 suggested that the criteria change process is insufficiently transparent and that some stakeholders would prefer to make their representations direct to government. In response to this, BEIS has decided to open-up the research recommendations to public consultation.

This consultation is in two parts. Part one sets out the future policy direction for the Energy Technology List that BEIS intends to follow and seeks stakeholder views on the approach it describes. This document, Part 2, is a technical consultation on the proposed changes to the Energy Technology Criteria List for 2020.

This consultation document therefore seeks stakeholder views on the proposed changes to the ETCL recommended by the research programme. During this consultation, BEIS will ask ICF Consulting to develop detailed implementing criteria changes in conjunction with stakeholders. However, BEIS will ensure that views expressed by stakeholders in response to this consultation exercise are taken fully into consideration before we look to introduce finalised revised criteria in September 2020.

# 2. The proposals

## Summary

The research programme has made recommendations for criteria changes to 13 technology types and the inclusion of a new technology ‘Wastewater Heat Recovery Systems’. The programme has also recommended the creation of a new technology category ‘Boiler Retrofit Equipment’ in addition to the existing technology category of ‘Boiler Equipment’. Technology categories serve to group and categorise sub-technologies on the ETL. This new technology category would simplify and reduce the currently oversized category of ‘Boiler Equipment’ which currently contains 10 sub-technologies. The new categorisation would present sub-technologies to ETL users according to whether the technologies are designed for retrofitting equipment onto existing boilers or whether they represent new boilers.

The programme also recommends changes to the ‘Pipework Insulation’ sub-technology. These products are currently ‘unlisted’, and manufacturers and suppliers are able to self-certify that products meet ETL criteria requirements in response to manufacturer feedback. It is proposed that the ‘Pipework Insulation’ sub-technology would be changed to become a listed product group. This means that eligible products would be required to be listed on the ETL website after having gone through a product application process.

## Sub-Technology Changes

Changes are proposed to the following sub-technology categories: -

1. Retrofit Burner Control Systems (Boiler Retrofit Equipment);
2. Condensing Economisers (Boiler Retrofit Equipment);
3. Non-condensing Economisers (Boiler Retrofit Equipment);
4. Heat Recovery from Flash Steam and Boiler Blowdown Condensate (Boiler Retrofit Equipment);
5. Heating Management Controllers for Wet Heating Systems (Boiler Equipment);
6. HVAC Building Controls (HVAC Equipment);
7. Solar Thermal Collectors;
8. Heat Recovery Ventilation Units;
9. Cellar Cooling Equipment (Refrigeration);
10. Converter-fed Motors;
11. Line operated AC Motors;
12. Portable Energy Monitoring Equipment; and
13. Pipework Insulation.

The following new sub-technology is proposed for inclusion: -

14. Wastewater Heat Recovery Systems.

# Retrofit Burner Control Systems (Boiler Retrofit Equipment)

## Technology description

Retrofit burner control systems are products that are specifically designed to automatically control in an energy-efficient manner, the operation of industrial and commercial burners, and the matching of burner heat production with heat demand.

Eligible products incorporate a microprocessor-based control system and are designed to control at least one burner (forced draught gas-fired and/or oil-fired) and precision servomotors to adjust any mechanical airflow dampers and/or modulating gas valves that control the air-fuel ratio of the burners controlled. Eligible systems may incorporate, apart from the controller itself, sensors and any other instrumentation needed, but not the burners. Systems automatically respond to changes in heat demand by modulating burner output in a continuous, efficient, manner.

The current technology group of boiler equipment on the ETL incorporates boilers (e.g. steam boilers) and retrofit equipment for boilers (e.g. condensers). To better distinguish this equipment to the purchaser, it is recommended that the existing technology category of ‘boiler equipment’ is divided into ‘boiler equipment’ and ‘boiler retrofit equipment’. This sub-technology would fall in the latter group.

## Proposals

- To move Retrofit Burner Control Systems into a new technology category on the ETL, namely Boiler Retrofit Equipment in order to distinguish this technology from the current oversized group of boiler equipment.
- To update references to the following test and measurement standards: BS EN 676 (incorporating the 2008 amendment (A2)) and BS EN 267 (incorporating the 2011 amendment (A1)).
- To remove the contradiction within the functionality requirements on the use of variable speed drives and allowing their use.
- To maintain current performance thresholds, namely CO and O2 emission levels, at varying test points in the exhaust gas.
- To consider re-introducing exhaust gas analysers at the time of the next criteria review in four years’ time.

## Defining eligibility and test standards

Products would be tested, and their performance measured according to the following revised list of standards:

- BS EN 676:2003+A2:2008 Automatic forced draught burners for gaseous fuels; and
- BS EN 267:2009+A1:2011 Automatic forced draught burners for liquid fuels

## Impact on ETPL

There are currently 5 products listed on the ETL (as of February 2020). Listed between 2001 and 2019. The proposed changes would not be expected to lead to the removal of any products.

| **Question 1** |
| --- |
| Do you agree with the proposal to amend the ETCL requirements for Retrofit Burner Control Systems? If not, please provide evidence explaining why the proposal should not be adopted. |
| **Question 2** |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |

# Condensing Economisers (Boiler Retrofit Equipment)

## Technology description

Condensing economisers are products specifically designed to improve boiler net thermal efficiency. Condensing economisers are a type of heat exchanger that enables some of the sensible heat and latent heat from boiler flue gases to be recovered. This heat is normally used to preheat the boiler's feedwater and to supply low grade heating requirements.

The current technology group of boiler equipment on the ETL incorporates boilers (e.g. steam boilers) and retrofit equipment for boilers (e.g. condensers). To better distinguish this equipment to the purchaser, it is recommended that the existing technology category of 'boiler equipment' is divided into 'boiler equipment' and 'boiler retrofit equipment'. This sub-technology would fall in the latter group.

## Proposals

- To move Condensing Economisers into a new technology category on the ETL, namely Boiler Retrofit Equipment in order to distinguish this technology from the current oversized group of boiler equipment.
- To update references to the following test and measurement standards: BS EN 304 (incorporating the latest versions from 2017).
- To maintain current performance thresholds, namely, to achieve a 9 percentage point (pp) improvement in overall net boiler efficiency.

## Defining eligibility and test standards

Products should be tested, and their performance measured according to the following – revised – list of standards:

- BS 845-1:1987 Methods for assessing thermal performance of boilers for steam, hot water and high temperature heat transfer fluids. Concise procedure.
- BS EN 303-3:1999 Heating boilers. Gas-fired central heating boilers. Assembly comprising a boiler body and a forced draught burner.
- BS EN 304:2017 Heating boilers. Test code for heating boilers for atomising oil burners
- BS EN 305:1997 Heat exchangers. Definitions of performance of heat exchangers and the general test procedure for establishing performance of all heat exchangers.
- BS EN 306:1997 Heat exchangers. Methods of measuring the parameters necessary for establishing the performance.
- BS EN 308:1997 Heat exchangers. Test procedures for establishing the performance of air to air and flue gases heat recovery devices.

### Impact on the ETPL

There are currently 10 products listed on the ETL (as of February 2020). Listed between 2002 and 2005. The changes recommended would not be expected to lead to the removal of any products. It is more likely that the latest products available are not currently listed on the ETL.

| **Question 3** |
|---|
| Do you agree with the proposal to amend the ETCL requirements for Condensing Economisers? If not, please provide evidence explaining why the proposal should not be adopted. |
| **Question 4** |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |

## Non-condensing Economisers (Boiler Retrofit Equipment)

**(Note – currently known as Flue Gas Economisers)**

### Technology description

Non-condensing economisers are products that are specifically designed to improve boiler net thermal efficiency. Non-condensing economisers are a type of heat exchanger that enables some of the sensible heat in boiler flue gases to be recovered. This heat is normally used to preheat the boiler's feedwater.

It is not always possible to retrofit a condensing economiser onto a boiler. Condensing economisers are significantly more expensive compared with non-condensing economisers. In part due to the greater amount of stainless steel used in its construction and because certain auxiliary equipment such as a chimney will need to be installed. Furthermore, condensing economisers require additional space which might not always be available to the end-user.

The current technology group of boiler equipment on the ETL incorporates boilers (e.g. steam boilers) and retrofit equipment for boilers (e.g. condensers). To better distinguish this equipment to the purchaser, it is recommended that the existing technology category of 'boiler equipment' be divided into 'boiler equipment' and 'boiler retrofit equipment'. This sub-technology would fall in the latter group.

## Proposals

- To rename the sub-technology category from Flue Gas Economisers to the more commonly referred to term recognised by industry of Non-condensing economisers.
- To move Non-condensing Economisers into a new technology category on the ETL, namely Boiler Retrofit Equipment in order to distinguish this technology from the current oversized group of boiler equipment.
- To uplift performance thresholds from an overall net boiler efficiency improvement of 3pp to a 4.5pp improvement.
- To update references to the following test and measurement standards: BS EN 304 (incorporating the latest versions from 2017).

## Defining eligibility and test standards

Products would be tested, and their performance measured according to the following – revised – list of standards:

- BS 845-1:1987 Methods for assessing thermal performance of boilers for steam, hot water and high temperature heat transfer fluids. Concise procedure.
- BS EN 303-3:1999 Heating boilers. Gas-fired central heating boilers. Assembly comprising a boiler body and a forced draught burner.
- BS EN 304:2017 Heating boilers. Test code for heating boilers for atomising oil burners
- BS EN 305:1997 Heat exchangers. Definitions of performance of heat exchangers and the general test procedure for establishing performance of all heat exchangers.
- BS EN 306:1997 Heat exchangers. Methods of measuring the parameters necessary for establishing the performance.
- BS EN 308:1997 Heat exchangers. Test procedures for establishing the performance of air to air and flue gases heat recovery devices.

## Impact on the ETPL

There are currently 5 products listed on the ETL (as of February 2020). Listed in 2007 (and still supplied). The changes recommended would not be expected to lead to the removal of any products.

| **Question 5** |
| --- |
| Do you agree with the proposal to amend the ETCL requirements for Non-condensing Economisers? If not, please provide evidence explaining why the proposal should not be adopted. |

| **Question 6** |
| --- |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |

# Heat Recovery from Flash Steam and Boiler Blowdown Condensate (Boiler Retrofit Equipment)

## Note – currently known as Heat Recovery from Condensate and Boiler Blowdown)

## Technology description

Heat recovery from flash steam and boiler blowdown condensate covers products that are specifically designed to recover heat from steam condensate and / or water from boiler blowdown, by means of heat exchangers and/or flash steam recovery vessels. The criteria cover three categories of product:

- Flash steam recovery vessels or packages with associated control and safety devices,
- Heat exchanger units or packages with associated control and safety devices and
- Flash steam recovery vessels with heat exchanger packages with associated control and safety devices

The current technology group of boiler equipment on the ETL incorporates boilers (e.g. steam boilers) and retrofit equipment for boilers (e.g. condensers). To better distinguish this equipment to the purchaser, it is recommended that the existing technology category of ‘boiler equipment’ be divided into ‘boiler equipment’ and ‘boiler retrofit equipment’. This sub-technology would fall in the latter group.

## Proposals

- To rename the sub-technology category from Heat Recovery from Condensate and Boiler Blowdown to the more specific Heat Recovery from Flash Steam and Boiler Blowdown Condensate.
- To move Heat Recovery from Flash Steam and Boiler Blowdown Condensate into a new technology category on the ETL, namely Boiler Retrofit Equipment in order to distinguish this technology from the current oversized group of boiler equipment.
- To clarify the scope of the criteria to add clarity to what types of products are included.
- Within the eligibility criteria, to update the reference to the EU Pressure Equipment Directive to 2014/68/EU.

## Defining eligibility and test standards

The sub-technology is classified under the ETL as an energy saving add-on. There are no test and measurement standards included within the criteria. Eligible products shall conform to the EU Pressure Equipment Directive 2014/68/EU.

## Impact on ETPL

There are currently 23 products listed on the ETL (as of February 2020). Listed between 2004 and 2006.

The proposed changes are not be expected to lead to the removal of any products.

| **Question 7** |
| --- |
| Do you agree with the proposal to amend the ETCL requirements for Heat Recovery from Condensate and Boiler Blowdown? If not, please provide evidence explaining why the proposal should not be adopted. |
| **Question 8** |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |

# Heating Management Controllers for Wet Heating Systems (Boiler Equipment)

## Proposals

- To amalgamate the sub-technology for Heating Management Controls within the category formerly known as Building Environment Zone Controls, but now renamed HVAC Building Controls. Heating Management Controllers realise fuel savings by adapting boiler firing and heat distribution patterns to match variations in heat demand and user requirements. This category of product overlaps with the scope of HVAC building controls and will be amalgamated.

## Impact on ETPL

There are currently 3 products listed on the ETL (as of February 2020). Listed in 2009.

The proposed changes would be expected to transition all 3 products to the HVAC Building Controls sub-technology.

| **Question 9** |
| --- |
| Do you agree with the proposal to amend the ETCL requirements for Heating Management Controllers for Wet Heating Systems? If not, please provide evidence explaining why the proposal should not be adopted. |

| **Question 10** |
| --- |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |

# HVAC Building Controls (HVAC Equipment)

**Note – formerly known as Building Environment Zone Controls**

## Technology description

HVAC building controls are used automatically to control, in an energy-efficient manner, the environmental conditions within individual zones of a building (e.g. rooms or areas). These environmental conditions include Heating, Ventilation rate and/or Air Conditioning (i.e. HVAC).

HVAC building controls can be programmed to maintain these environmental conditions in a manner that reflects occupation schedules, occupation status and/or level of activity in the zone, whilst also taking account of environmental conditions, and the specific operating requirements of the zone.

Some products are also able to control lighting, domestic water heaters and electrical appliances in a zone in line with its occupation schedule or occupation status, and some can control the operation of window shading equipment in a manner that minimises the amount of cooling needed to maintain zone environmental conditions without excessively reducing the amount of natural light that can be used.

## Proposal

- To rename the sub-technology category from Building Environment Zone Controls to HVAC Building Controls.
- To incorporate fully the scope of the former ETL sub-technology of Heating Management Controllers for Wet Heating Systems
- To modify the definitions of HVAC Building Controls in line with industry norms and BS EN 15232: 2017.
- To update the eligibility requirements within the criteria for HVAC controls as per the requirements in BS EN 15500-1: 2017
- To update eligibility requirements to ensure controllers unable to fit into a “Class A” system, under BS EN 15232:2017, are ineligible on the ETL
- To introduce a new category for *localised ventilation controls* (e.g. for fume hoods, commercial cooking range hoods) to more effectively categorise controls.

## Defining eligibility and test standards

In line with the recently updated Energy Performance of Buildings Directive 2018/844, a suite of new Energy Performance of Buildings (EPB) standards have been published. The criteria for HVAC Building Controls have been revised to reflect this suite of new EPB standards.

The revised criteria have been designed to reflect “Class A”, identified within BS EN 15232, and the eligibility requirements for HVAC controls, as specified in BS EN 15500-1:

- BS EN 15232:2017 Energy Performance of Buildings. Impact of Building Automation, Controls and Building Management. Modules M10-4,5,6,7,8,9,10.
- BS EN 15500-1:2017 Energy Performance of Buildings. Control for heating, ventilating and air conditioning applications. Electronic individual zone control equipment. Modules M3-5, M4-5, M5-5.

### Impact on ETPL

There are currently 102 products listed on the ETL (as of February2020). Listed between 2008 and 2019.

The proposed changes would be expected to lead to the removal of approximately 6 products from the ETL that would not meet the revised criteria.

| **Question 11** |
|---|
| Do you agree with the proposal to amend the ETCL requirements for HVAC Building Controls? If not, please provide evidence explaining why the proposal should not be adopted. |
| **Question 12** |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |

## Solar Thermal Collectors

**Note – formerly known as Solar Thermal Systems & Collectors**

### Technology description

Solar thermal collectors are energy-saving products that reduce the amount of energy consumed by conventional water or space heating equipment by capturing and converting solar energy. They are built around solar absorbers that use radiation to increase the temperature of heating fluid flowing through the collector. This heat is then transferred to a storage vessel by means of a circulating fluid, or in some instances, the solar collector could be directly connected into the heating circuit.

Solar thermal systems have been an underutilised category within this sub-technology. There are no current solar thermal systems listed on the ETL. Stakeholders felt uniform, standardised systems may restrict good design of solar thermal systems as they depend not only on the infrastructure but the specific application. Hence their recommendation for removal.

### Proposal

- To remove solar thermal systems from the scope of the sub-technology.

- To rename the sub-technology from Solar Thermal Systems and Collectors to Solar Thermal Collectors.
- To update the test and measurement standard to ISO 9806: 2017 (from the former EN 12975).

### Defining eligibility and test standards

Solar thermal collectors are classified on the ETL as an alternative technology and as a result there are no performance thresholds.

Products should be tested, and their performance measured according to the following – revised – standard:

- BS EN ISO 9806:2017 *Solar energy. Solar thermal collectors*. Test methods.
- Specification of this test standard reflects the Solar Keymark Scheme, a voluntary third-party certification mark for solar thermal products.

### Impact on ETPL

There are currently 61 products listed on the ETL (as of February 2020). Listed between 2005 and 2018.

The proposed changes would not be expected to lead to the removal of any products. Currently there are no solar thermal systems listed on the ETL.

| **Question 13** |
| --- |
| Do you agree with the proposal to amend the ETCL requirements for Solar Thermal Systems? If not, please provide evidence explaining why the proposal should not be adopted. |
| **Question 14** |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |

## Heat Recovery Ventilation Units

**Note – formerly known as Air-to-Air Energy Recovery Devices**

### Technology description

Heat Recovery Ventilation Units are heat exchanger products that are specifically designed to recover (or salvage) waste heat from the exhaust air stream from a building ventilation system and use it to heat the incoming air stream to the same building ventilation system. The heat exchangers are incorporated into the supply air and extract air ventilation ducts.

The technology covers two categories of product: plate heat exchangers and rotating heat exchangers.

- Plate heat exchangers consist of a heat exchanger with alternate channels for the supply and exhaust airflows that are separated by plates through which heat is conducted. They do not contain any moving parts.
- Rotating heat exchangers consist of a circular heat transfer medium (or 'wheel') that is designed to slowly rotate within an airtight container, and to pass the exhaust air stream over one section of the wheel, and the supply air stream over the other section of the wheel in the counter flow direction.

## Proposal

- To rename the sub-technology from Air-to-Air Energy Recovery Devices to Heat Recovery Ventilation Units.
- To uplift performance thresholds to 78% efficiency for both plate-type heat exchangers and rotary-type heat exchangers.
- To introduce eligibility requirements to require fans and filters for air supply and extract, and sensors for control.
- To clarify the scope by referring to products known as ventilation units as opposed to heat exchangers.
- To refine the eligibility requirements by referring to 100% nominal air flow instead of maximum rated air flow.
- To update references to the following test and measurement standards: AHRI 1060 and 1061 (incorporating the latest versions from 2018) and JIS B 8628 (incorporating the latest version from 2017).

## Defining eligibility and test standards

The proposed criteria have been designed to reflect Eco-design Regulation 1253/2014 for Ventilation Units. The recommended new performance thresholds have been set so that they significantly exceed the current MEPS (which is currently 73% efficiency (Tier 2) for both technologies) and cover the top end of the market.

Products would be tested, and their performance measured using any of the following – revised – list of standards:

- BS EN 308:1997. Heat exchangers. Test procedures for establishing the performance of air to air and flue gases heat recovery devices.
- AHRI 1060/1061:2018. Performance rating of air-to-air heat exchangers for energy recovery ventilation. (ANSI / AHRI 1060 /1061:2014 and 2005 will be accepted until further notice).
- JIS B 8628:2017 Air to air heat and energy exchanger and ventilators (JIS B 8628:2003 will be accepted until further notice).
- In particular, submitting results of tests performed to obtain Heat Recovery System's thermal efficiency for a Non-Residential Ventilation Unit as defined by Commission Regulation (EU) No 1253/2014, is encouraged.

## Impact on ETPL

There are currently 76 products listed on the ETL (as of February 2020). Listed between 2010 and 2018.

The changes recommended would be expected to lead to the removal of approximately 32 products from the ETL that would not meet the revised criteria.

| **Question 15** |
|---|
| Do you agree with the proposal to amend the ETCL requirements for Heat Recovery Ventilation Units? If not, please provide evidence explaining why the proposal should not be adopted. |
| **Question 16** |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |

# Cellar Cooling Equipment (Refrigeration)

## Technology description

Cellar cooling refrigeration equipment is permanently installed and uses the standard refrigeration cycle of evaporation, compression and condensation to cool a cellar or other storage space. This type of equipment is specifically designed to maintain an indoor environment at a condition suitable for the storage of chilled beverages below 12°C. The equipment can use "free cooling" units that ensure free cooling is utilised when the outside ambient temperature is sufficiently low. The ETL Scheme covers three categories of cellar cooling equipment:

- Single split systems with the equipment supplied in two parts (evaporator and condensing unit) to be connected on installation.
- Dual split systems with the equipment supplied in three parts (two evaporators and one condensing unit) to be connected on installation.
- Free cooling units for cellar cooling.

## Proposal

- To include an addendum to PAS 57, within the ETL criteria, which incorporates the *Seasonal Energy Efficiency Ratio* (SEER) calculation from BS EN 14825: 2018 and specifies the use of balanced load test points for the efficiency calculations.
- To declare the refrigerants used when testing/declaring the Coefficient of Performance (CoP)/SEER of the equipment.
- To maintain the current Coefficient of Performance (CoP) thresholds at their current level but include a transition period to support the change from CoP to SEER criteria.

## Defining eligibility and test standards

The measurement and test standards for cellar cooling equipment are in a period of transition. There is no accompanying Eco-design regulation for this equipment and the only existing specific test method, PAS 57, is no longer being maintained by BSI. As a result, the ETL criteria are being revised to include a set of amendments to PAS 57, which changes the testing from the use of a thermal mass to a series of balanced load test points. Furthermore, an appropriate Seasonal Energy Efficiency Ratio (SEER) calculation is being sourced from BS EN 14825: 2018 and applied to Cellar Cooling Equipment. This will be documented in the ETL criteria as one of the amendments to PAS 57. During a transition period until the next criteria review, products will be eligible for the ETL with either a CoP or a SEER.

- PAS 57:2003. *Cellar cooling equipment. Procedure for determining performance and calculating energy efficiency*.
- BS EN 14825:2018. *Air conditioners, liquid chilling packages and heat pumps, with electrically driven compressors, for space heating and cooling. Testing and rating at part load conditions and calculation of seasonal performance.*

## Impact on ETPL

There are currently 43 products listed on the ETL (as of February 2020). Listed between 2005 and 2017.

The proposed changes would not be expected to lead to the removal of any products.

| **Question 17** |
| --- |
| Do you agree with the proposal to amend the ETCL requirements for Cellar Cooling Equipment? If not, please provide evidence explaining why the proposal should not be adopted. |
| **Question 18** |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |

# Converter-fed Motors

## Technology description

Converter-fed motors are products that are specifically designed to convert electrical power into mechanical power, and to rotate a drive shaft at a speed that is directly related to the non-sinusoidal multi-phase electrical power supplied to the motor.

Converter-fed ac motor drives consist of a motor, and a matched, electronic, variable speed drive (VSD) that is specifically designed to provide the multi-phase electrical power input needed to operate the motor, and to vary its speed in a controlled manner in response to an external signal.

The VSD can either be physically mounted on the motor to form a single factory assembled, integrated unit, or the VSD and motor can be supplied as a package of two units that are designed to be connected together during installation. The ETL Scheme covers three categories of product:

- Converter-fed AC motors (sold without VSD)
- Integrated converter-fed motor drive units
- Matched converter-fed motor drive packages

Integrated converter-fed motor drive units include electrically commutated motors which comprise a brushless DC multi-phase motor and an integral electronic control device. The ac power supply is commutated to dc by the control device and the power output is used to rotate the motor.

## Proposal

- To expand the scope of the criteria by introducing two new size ranges: 0.12 to 0.75kW and 375 to 1,000kW.
- To set the performance threshold of IE3 for the new 0.12 to 0.75kW size range
- To set the performance threshold of IE4 for the new 375 to 1,000kW size range (with an allowance for converter losses)
- To maintain performance thresholds at IE3 for the 0.75 to 7.5kW size range
- To maintain performance thresholds at IE4 for the 7.5 to 375kW size range (with an allowance for converter losses)
- To introduce two new test and measurement standards: BS EN 61800-9-2:2017 and BS EN 50598-2:2014+A1:2016

## Defining eligibility and test standards

Stakeholders support the ETL staying one step ahead of the market average performance of Converter-fed motors. As the ETL would utilise a model which follows the “Ecodesign MEPS + 1” approach, as it is applied to the internationally recognised motor classification of “IE”. For example, if the Ecodesign MEPS currently state IE3, then the ETL would adopt a level of IE4.

Products should be tested, and their performance measured according to the following – revised – list of standards:

- BS EN 60034-2-1:2014 Rotating electrical machines – Part 2-1: Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles)
- BS EN 61800-9-2:2017 Adjustable speed electrical power drive systems. Ecodesign for power drive systems, motor starters, power electronics and their driven applications. Energy efficiency indicators for power drive systems and motor starters.
- BS EN 50598-2:2014+A1:2016 Ecodesign for power drive systems, motor starters, power electronics & their driven applications. Energy-efficiency indicators for power drive systems and motor starters.

Until further notice, products listed before September 2020 will be accepted with testing performed according to BS EN 60034-2-1:2007.

### Impact on ETPL

There are currently 122 products listed on the ETL (as of February 2020). Listed between 2015 and 2019.

The changes recommended would be expected to lead to the removal of approximately 16 products from the ETL, mostly those registered in 2016, that would not meet the revised criteria.

| **Question 19** |
| --- |
| Do you agree with the proposal to amend the ETCL requirements for Converter-fed Motors? If not, please provide evidence explaining why the proposal should not be adopted. |
| **Question 20** |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |

## Line operated AC Motors

### Technology description

Line operated AC motors are products that are specifically designed to convert standard three phase electrical power into mechanical power, and to rotate a drive shaft at a fixed speed that is directly related to the frequency of the electrical power supply.

### Proposal

- To expand the scope of the criteria by introducing two new size ranges: 0.12 to 0.75kW and 375 to 1,000kW.
- To set the performance threshold of IE3 for the new 0.12 to 0.75kW size range
- To set the performance threshold of IE4 for the new 375 to 1,000kW size range
- To raise performance thresholds to IE4 for the 0.75 to 7.5kW size range
- To maintain performance thresholds at IE4 for the 7.5 to 375kW size range
- To expand the scope of the criteria by including ex eb increased safety motors (ATEX), at the performance threshold of IE2.
- To introduce a set of “Tier 2” ETL requirements to automatically take effect in April 2023.

- To include single phase systems ≥0.12kW at the performance threshold of IE3
- To raise the performance thresholds for ex eb increased safety motors to IE3
- To raise the performance thresholds for the 75 to 200kW size range to IE5

## Defining eligibility and test standards

Stakeholders support the ETL staying one step ahead of the market average performance of Line operated AC motors. The ETL would utilise a model that follows an "Ecodesign MEPS + 1" approach, as it is applied to the internationally recognised motor classification of "IE". For example, if the Ecodesign MEPS currently state IE3, then the ETL would adopt a level of IE4.

Products should be tested, and their performance measured according to the following standard:

- BS EN 60034-2-1:2014 Rotating electrical machines – Part 2-1: Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles)

Until further notice, products listed before September 2020 will be accepted with testing performed according to BS EN 60034-2-1:2007.

## Impact on ETPL

There are currently 375 products listed on the ETL (as of February 2020). Listed between 2009 and 2017.

The proposed changes would be expected to lead to the removal of approximately 201 products from the ETL, mostly those registered between 2009 and 2012, that would not meet the revised criteria.

| **Question 21** |
| --- |
| Do you agree with the proposal to amend the ETCL requirements for Line operated AC Motors? If not, please provide evidence explaining why the proposal should not be adopted. |
| **Question 22** |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |

# Portable Energy Monitoring Equipment

## Technology description

Portable energy monitoring equipment covers products that are specifically designed to temporarily measure energy use in different locations, and to record, analyse and report on energy consumption.

The criteria cover portable energy monitoring equipment that measures the following:

- Electricity use
- Industrial gases (natural gas, compressed air and process gas); and
- Heat flow

The portable energy monitoring equipment is clamped onto either a pipe or (a) cable(s) to measure consumption using transducers.

## Proposal

- To introduce a new categorisation for portable electric monitoring equipment – energy monitors & loggers and power quality analysers.
- To introduce new criteria for power quality analysers for “Class A and S” as defined in IEC or BS EN 61000-4-30:2015 for new product applications. Class B products to remain listed.
- To amend the functionality requirements for all portable monitors to remove the option of “hardware” based means of analysing data.
- To introduce requirements for electric energy monitors and loggers, to specifically measuring voltage, current and power factor, all within a 3% measurement accuracy.
- To provide greater clarity within the criteria on the definition of “portable”.
- To clarify the definition of gas within the criteria and utilise the term “industrial gases” meaning natural gas, compressed air and process gasses (e.g. nitrogen, helium).
- To introduce a requirement for the supplier to provide a support function to users to allow full use and operation of the equipment, to be verified upon application.
- To specify the requirements for directives and regulations included within CE marking e.g. EMC, LVD and RED (as appropriate).

## Defining eligibility and test standards

Portable energy monitoring equipment is classified as an energy-saving add-on under the ETL.

Eligible products shall comply with EMC, LVD and RED requirements (as appropriate).

Power quality analysers should be tested, and their performance measured according to the following standard:

- BS EN 61000-4-30:2015. Electromagnetic compatibility (EMC). Testing and measurement techniques. Power quality measurement methods.

### Impact on ETPL

There are currently 26 products listed on the ETL (as of February 2020). Listed between 2005 and 2019.

| **Question 23** |
| --- |
| Do you agree with the proposal to amend the ETCL requirements for Portable Energy Monitoring Equipment? If not, please provide evidence explaining why the proposal should not be adopted. |
| **Question 24** |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |

## Pipework Insulation

### Technology description

Pipework insulation covers products that are specifically designed to be applied to the outer circumference of a pipe with the primary objective of reducing thermal flow into or out of the pipe.

The criteria cover the following types of pipework insulation:

- Refrigeration pipework
- Chilled water pipework
- Process pipework
- ‘Domestic’ space heating & hot water services (excluding insulation within individual dwellings)
- Non-domestic hot water services
- Non-domestic space heating services
- Pipework fittings

### Proposal

- To change the sub-technology from an “unlisted” to a listed product group, meaning eligible products will be listed on the ETL website having gone through a product application process. Associated testing requirements will be specified.

- To expand the scope of the criteria to include pipework fittings insulation
- To specify requirements for pipework fittings insulation in line with BS 5970:2012.
- To maintain performance thresholds for pipework insulation.
- To introduce a new performance standard BS EN ISO 12241:2008 for the specification of pipework insulation thicknesses.

## Defining eligibility and test standards

Pipework insulation is classified as an energy saving add-on under the ETL.

To be eligible, products should comply with the relevant clauses of the following – revised – list of standards:

- BS 5422:2009 Method for specifying thermal insulating materials for pipes, tanks, vessels, ductwork and equipment operating within the temperature range -40C to +700C.
- NES Y-50 (2011)
- BS 5970:2012. Thermal insulation of pipework, ductwork, associated equipment and other industrial installations in the temperature range of -100C to +870C. Code of practice.
- BS EN ISO 12241:2008. Thermal insulation for building equipment and industrial Installations. Calculation rules.

## Impact on ETPL

This sub-technology is “unlisted” on the ETL; therefore, it is not known how many products are self-certified by manufacturers and suppliers as conforming with the ETL requirements.

| **Question 25** |
| --- |
| Do you agree with the proposal to amend the ETCL requirements for Pipework Insulation? If not, please provide evidence explaining why the proposal should not be adopted. |
| **Question 26** |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |
| **Question 27** |
| BEIS would like to check the awareness of cost of ‘listing’ amongst pipework insulation sector? If possible, please can you state or describe what the impact(s) would be? |

# Wastewater Heat Recovery Systems

## Technology description

Wastewater heat recovery systems cover heat recovery technology that is specifically designed to use residual heat from drained wastewater via an instantaneous heat exchange to pre-heat incoming mains water.

Wastewater heat recovery systems normally consist of a long copper pipe, where the warm water runs alongside the colder mains water to allow the heat exchange to occur. These devices typically have no electrical components, pumps or controllers, requiring very little maintenance.

Wastewater heat recovery systems are available in a range of different designs and efficiencies, where product suitability is determined by the specific requirements of the application.

The ETL Scheme would cover three categories of wastewater heat recovery systems: 1) standalone horizontal systems: consisting of a single instantaneous heat exchanger installed horizontally underneath the wastewater stream; 2) standalone vertical systems: consisting of a single instantaneous heat exchanger installed vertically, connected to one or more wastewater streams and 3) Plant room systems: consisting of a single instantaneous heat exchanger, normally located in a plant room connected to multiple wastewater streams.

## Proposal

- To introduce a new sub-technology for wastewater heat recovery systems to the ETL.
- Scope to include instantaneous wastewater heat recovery systems that fall under the following categories:
    - Standalone horizontal systems
    - Standalone vertical systems
    - Plant room systems
- To classify the sub-technology as an energy-saving add on to commercial drained wastewater (e.g. from showers, dishwashers) with a minimum performance that captures 50 percent of products available on the UK market.
- Listed products to meet eligibility and performance requirements and presented in detail in the ETL Technology Specification.
- Testing to be carried out via any of the following routes:
    - In-house testing – Self-tested and verified or cross-checked by an independent body
    - Witnessed testing
    - Independent testing

## Defining eligibility and test standards

Eligible wastewater heat recovery systems should be designed to comply with the following standards and codes of practice:

- ACOP L8: 2013 “Approved Code of Practice and guidance – Legionnaire’s disease. The control of legionella bacteria in water systems”.
- Water Supply (Water Fittings) Regulations 1999, the Water Byelaws 2000 Scotland and the Water Regulations in Northern Ireland.
- BS EN 1717:2000 “Protection against pollution of potable water in water installations and general requirements of devices to prevent pollution by backflow” or other equivalent international standards.
- For copper wastewater heat recovery systems one of the following or other equivalent international standards:
    - BS EN 1057:2006+A1:2010 “Copper and copper alloys. Seamless, round copper tubes for water and gas in sanitary and heating applications (for copper tubes and fittings)”;
    - ASTM B88 - 16 “Standard Specification for Seamless Copper Water Tube” and ASTM B306 - 13 “Standard Specification for Copper Drainage Tube (DWV)”.

The performance of wastewater heat recovery systems would be determined by the Heat Recovery Score, which is the product of the system’s heat recovery efficiency and its utilisation factor. Together these parameters account for the heat recovery potential of the product, as well as heat losses.

The use of wastewater heat recovery systems for commercial building applications is currently very low. However, supplier feedback suggests this is set to rise with the recent introduction of these systems to the UK non-domestic Building Regulations Part L and SBEM, the National Calculation Methodology software for commercial buildings energy consumption and CO2 emissions.

The proposed performance thresholds are expected to capture the top 50% of products available on the market. Product performance will be tested and measured in accordance with either of the following test standards / calculation methodologies:

- NTA 8800:2019-06 nl “Energieprestatie van gebouwen – Bepalingsmethode” (Energy performance of buildings - Determination method)
    - Tests and performance measurements carried out in accordance with NEN 7120:2011/C2:2011 nl “Energieprestatie van gebouwen – Bepalingsmethode” (Energy performance of buildings - Determination method) will be accepted in place of NTA 880:2019-06 nl.
- CSTB Protocole RECADO 2015
    - Tests and performance measurements carried out in accordance with CSTB Protocole RECADO 2012 will be accepted in place of RECADO 2015.
- CSA B55. 1-15 “Test method for measuring efficiency and pressure loss of drain water heat recovery units.”

    - for standalone vertical and plant room systems only

- IAPMO IGC 347-2017 “Test method for measuring the performance of drain water heat recovery units.”
    - for standalone vertical and plant room systems only
- The Government’s Standard Assessment Procedure for Energy Rating of Dwellings, 2012 edition (SAP 2012)

## Impact on ETPL

This is a new sub-technology on the ETL, so there are no previously listed products.

| **Question 28** |
| --- |
| Do you agree that Wastewater Heat Recovery Systems are a suitable technology for inclusion on the ETL? |
| **Question 29** |
| Do you agree with the proposal to develop ETCL requirements for Wastewater Heat Recovery Systems? If not, please provide evidence explaining why the proposal should not be adopted. |
| **Question 30** |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |

# 3. Consultation questions table

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| **Question 1** |
| Do you agree with the proposal to amend the ETCL requirements for Retrofit Burner Control Systems? If not, please provide evidence explaining why the proposal should not be adopted. |
| **Question 2** |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |
| **Question 3** |
| Do you agree with the proposal to amend the ETCL requirements for Condensing Economisers? If not, please provide evidence explaining why the proposal should not be adopted. |
| **Question 4** |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |
| **Question 5** |
| Do you agree with the proposal to amend the ETCL requirements for Non-condensing Economisers? If not, please provide evidence explaining why the proposal should not be adopted. |
| **Question 6** |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |
| **Question 7** |
| Do you agree with the proposal to amend the ETCL requirements for Heat Recovery from Condensate and Boiler Blowdown? If not, please provide evidence explaining why the proposal should not be adopted. |
| **Question 8** |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |
| **Question 9** |
| Do you agree with the proposal to amend the ETCL requirements for Heating Management Controllers for Wet Heating Systems? If not, please provide evidence explaining why the proposal should not be adopted. |

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| **Question 10** |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |
| **Question 11** |
| Do you agree with the proposal to amend the ETCL requirements for HVAC Building Controls? If not, please provide evidence explaining why the proposal should not be adopted. |
| **Question 12** |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |
| **Question 13** |
| Do you agree with the proposal to amend the ETCL requirements for Solar Collector Systems? If not, please provide evidence explaining why the proposal should not be adopted. |
| **Question 14** |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |
| **Question 15** |
| Do you agree with the proposal to amend the ETCL requirements for Heat Recovery Ventilation Units? If not, please provide evidence explaining why the proposal should not be adopted. |
| **Question 16** |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |
| **Question 17** |
| Do you agree with the proposal to amend the ETCL requirements for Cellar Cooling Equipment? If not, please provide evidence explaining why the proposal should not be adopted. |
| **Question 18** |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |

| |
|---|
| **Question 19** |
| Do you agree with the proposal to amend the ETCL requirements for Converter-fed Motors? If not, please provide evidence explaining why the proposal should not be adopted. |
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| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |
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| **Question 22** |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |
| **Question 23** |
| Do you agree with the proposal to amend the ETCL requirements for Portable Energy Monitoring Equipment? If not, please provide evidence explaining why the proposal should not be adopted. |
| **Question 24** |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |
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| **Question 30** |
| If adopted, would this proposal have a positive or negative impact on your business? If possible, please can you state or describe what the impact(s) would be? |

# 4. Next steps

BEIS will consider the recommendations of the ETL Annual Research Programme in the light of responses provided to this consultation and will publish its decision. BEIS will then ask ICF Consulting Ltd to produce a revised ETCL to reflect the changes that it has agreed to make.

BEIS proposes that the new criteria will become effective during September 2020.

If you wish to be added to stakeholder lists to take part in future ETL research, please contact BEIS at ETLMailbox@beis.gov.uk.

This consultation is available from: www.gov.uk/government/consultations/energy-technology-list-scheme-its-future-direction-and-technical-changes-to-the-2020-update.

If you need a version of this document in a more accessible format, please email enquiries@beis.gov.uk. Please tell us what format you need. It will help us if you say what assistive technology you use.