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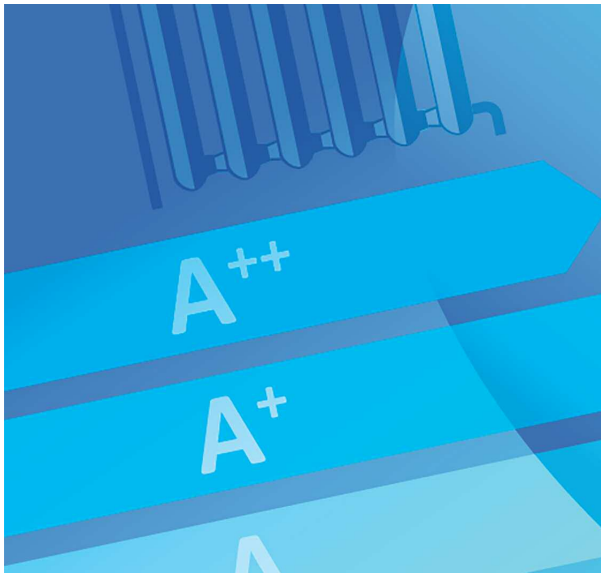
Mitsubishi Electric Guide to the Energy Related Products Directive (ErP)

Relating to heating equipment



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MITSUBISHI ELECTRIC

Air Conditioning | Heating
Ventilation | Controls

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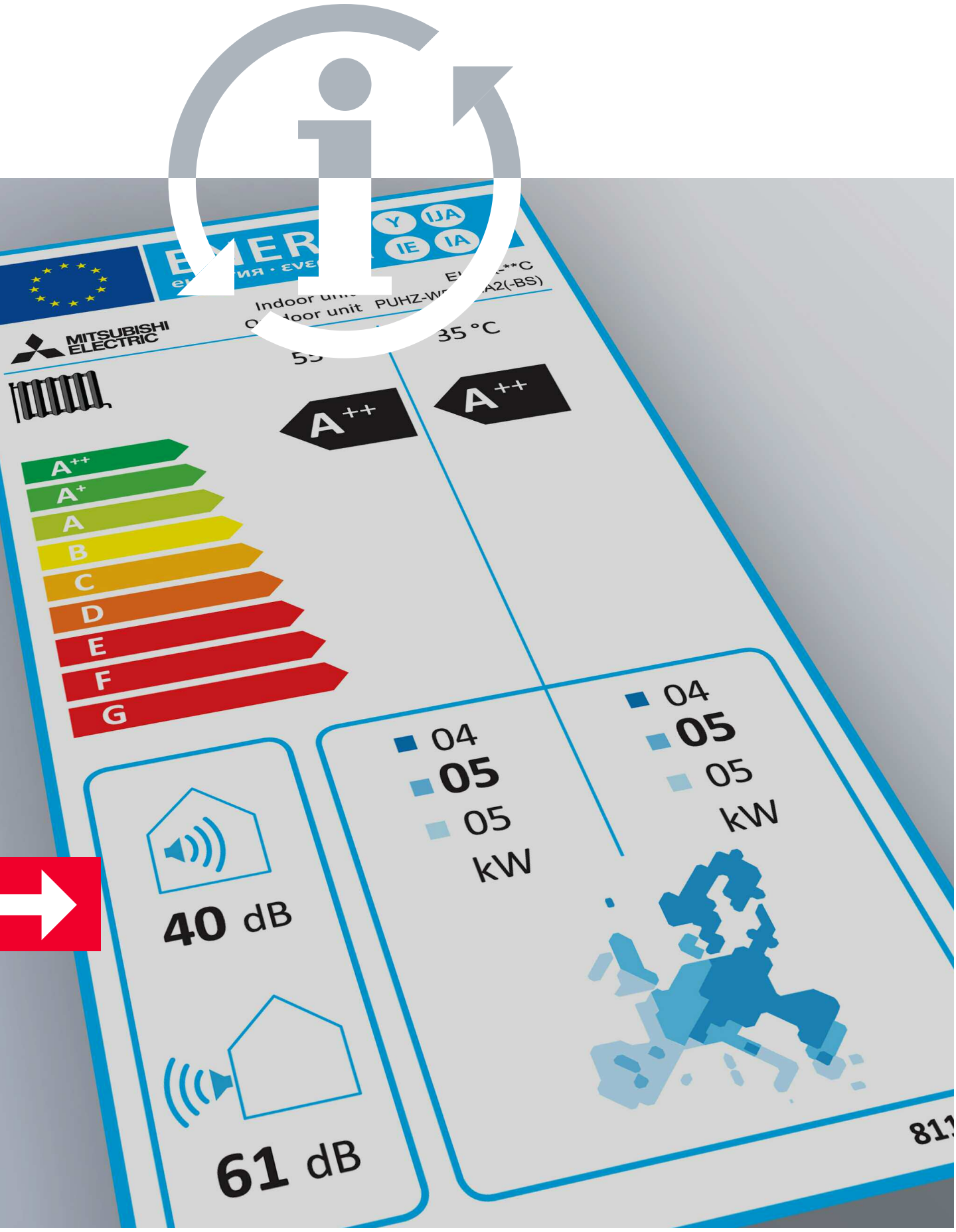
MITSUBISHI ELECTRIC
35 °C
A++
A++
A++
A+
A
B
C
D
E
F
G
04
05
05
kW
04
05
05
kW
40 dB
61 dB

Mitsubishi Electric Guide to the Energy Related Products Directive (ErP)

Relating to heating equipment

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This is an independent guide produced by Mitsubishi Electric to enhance the knowledge of its customers and provide a view of the key issues facing our industry today.

This guide accompanies a series of seminars, all of which are CPD certified.

Contents

Introduction

The Energy Related Products Directive or ErP (2009/125/EC) is a key part of the European Union's drive to encourage consumers to use more energy efficient products.

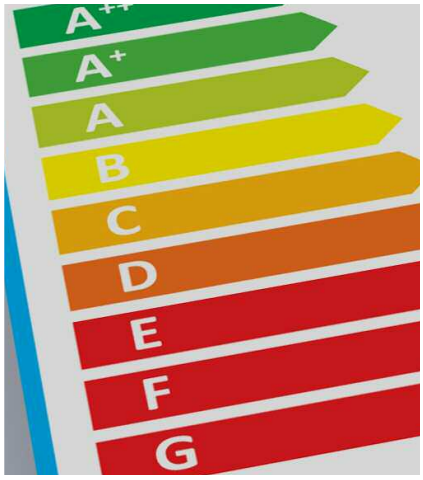
This is a two-part strategy. Firstly, the ErP requires manufacturers to produce energy-using products that meet stringent minimum performance standards. And secondly, these products are clearly labelled using a standard methodology so that consumers can quickly understand the energy efficiency of the products they purchase.

The ErP therefore has two main parts: the EcoDesign regulations and the Energy Labelling regulations. This market transformation strategy has proved highly successful with consumer goods such as fridges and freezers, where it is very rare to find anything below an A rated product available on the high street.

The ErP Directive relating to heating (space and hot water) equipment comes into force from 26th September 2015. From this point it will be illegal to manufacture or import into the EU products which do not meet the new criteria. It should be noted that products which do not meet these standards can still be sold from stock - so distributors and merchants holding products will still be able to legally sell products manufactured before the new regulations come into force.

The ErP is a comprehensive legislation that will eventually cover 'any product that uses, generates, transfers or measures energy, whether electricity, gas or fossil fuel'. The ultimate aim is to cut the EU's use of primary energy and this is at the heart of calculations on energy use applied in the ErP.

The clear goals of the ErP disguise what is in fact a highly complex exercise - to make it possible for buyers to compare directly technologies that are actually quite different in how they operate. This is particular true when we look at space and water heating technologies.



Heaters and water heaters

Equipment falling into these categories will have to comply with the EcoDesign and Energy Labelling Directives from September 2015.

They are viewed by the EU as an important part of reducing energy use in households and businesses. EU figures show that energy efficient heaters and water heaters could save European consumers 30 billion Euros by 2020. Overall it is estimated that energy efficient heaters could save 528 TWh of electricity per year across the EU, avoiding the emissions of 110 million tonnes of CO_2.

There are four main regulations pertaining to this sector which specifiers, installers and end-users need to be aware of:

Regulations (EU) No 811 and 812/2013 with regard to energy labelling of:

- *Space heaters*
- *Combination heaters*
- *Packages of space heater, temperature control and solar device*
- *Packages of combination heater, temperature control and solar device*

Regulations (EU) No 813 and 814/2013 with regard to ecodesign requirements for:

- *Space heaters*
- *Combination heaters*
- *Water heaters*
- *Hot water storage tanks*

The labelling of 'packages' is a development that installers should note, and will be addressed later in this Guide.

The Ecodesign and Energy Labelling regulations on space and combination heaters are slightly different. Ecodesign covers products with a rated output up to 400kW. Energy Labelling covers products with a rated output up to 70kW.

The technologies covered by both regulations are:

- *Fuel boiler space heaters*
- *Fuel boiler combination heaters*
- *Electric boiler space heaters*
- *Electric boiler combination heaters*
- *Cogeneration space heaters*
- *Heat pump space heaters*
- *Heat pump space heaters with a fuel driven combustion unit*
- *Heat pump combination heaters*
- *Heat pump combination heaters with a fuel driven combustion unit*

Ecodesign Regulations for heating products

When considering how to regulate the design of products, the EU has focused on the area of product manufacture and performance which would have the most impact on the environment and energy use.

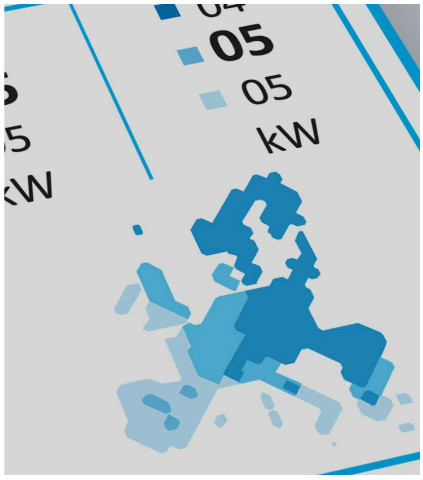
For some products, this can include transport costs, for example. However when considering the energy impact of heating products, the focus is very much on the 'use phase' as having the most environmental impact - and the greatest potential for improvement.

Some types of heating product may also have to adhere to standards on emissions from fuel combustion, such as NOx and SO_2. Heat pumps must meet minimum noise standards. These slight differences are reflected on the energy labels for each type of product.

However, the most important aspect of Ecodesign regulations for heating equipment is the emphasis on seasonal energy efficiency.

Seasonal space heating energy efficiency (SSHEE) is defined in the ErP legislation as: "The ratio between the space heating demand for a designated heating season, supplied by a heater and the annual energy consumption required to meet this demand, expressed in %."

The move to SSHEE as the main indicator of energy efficiency of a product is significant because until the ErP it was possible for manufacturers to offer an indication of efficiency at a single point in time. This could result in exaggerations of efficiency, and is certainly not a clear guide to how a product performs once it is installed.



EcoDesign requirements from 26th September 2015 - SSHEE minimum standards

Space heating technology	Minimum SSHEE
Fuel boiler space heaters with rated output<70kW and fuel boiler combi heaters with rated heat output <70kW	86%
Type B1 boilers with rated heat output <10kW and Type B1 combi boilers with rated heat output <10kW	75%
Electric boiler space heaters and electric boiler combi heaters	30%
Cogeneration space heaters	86%
Heat pump space heaters and heat pump combi heaters (not low temperature heat pumps)	100%
Low temperature heat pumps	115%

The added benefit of requiring products to meet minimum seasonal space heating energy efficiency standards is that it is possible for specifiers and users to clearly compare different technologies such as gas or electric heating. The SSHEE which is reflected on the new product labels makes it easy to see what heating products are truly energy efficient.

While energy efficiency is the main minimum performance standard that must be achieved, there are other minimum criteria for certain types of heating product:

- *Sound levels for heat pumps*
- *NOx for fuel-based space heaters and combi-heaters; as well as heat pumps with supplementary fuel based heaters*
- *Storage volume for storage water heaters*
- *Standing losses for hot water tanks*

Sound levels for heat pumps are dependent on size and the heat pumps are classified according to power outputs.

Energy Labelling regulations for heating products and packages

Alongside the new minimum standards that manufacturers must meet is the energy labelling scheme.

This is a very important aspect of the ErP as labels are intended to provide consumers with clear information on product performance, and to allow them to make easy comparisons between different types of product.

For space heaters, the energy efficiency labels coming into force in 2015 will run from G (the lowest) to A++.

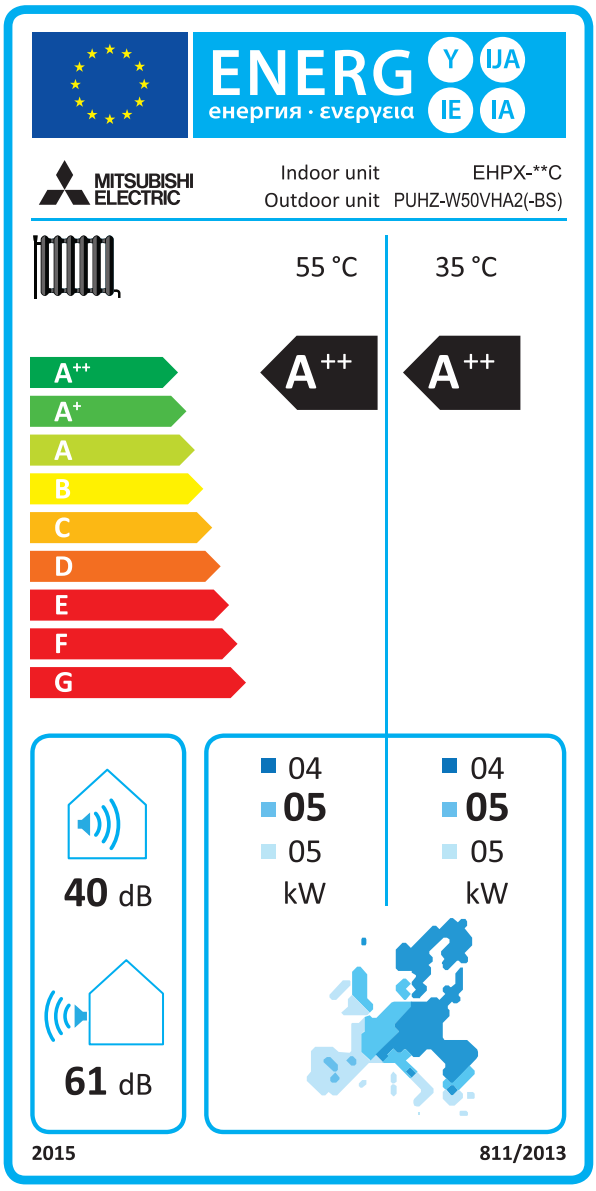
New classes will be added in the future (see later in this Guide for information). The ultimate aim of energy labelling is that the lowest scoring products will eventually become obsolete.

Space heaters must carry an energy label appropriate to their product. For example, in the case of heat pumps, the label must also show noise emissions.

Heat pump labels will also show a European temperature map displaying three indicative temperature zones. This is considered important for heat pumps as performance can be affected by climate.

As well as a label, each product must also have a 'fiche'. This contains more detailed information on how the classifications of the label have been achieved, and it must be provided in the product manual or other literature.

Wholesalers and dealers should also note that they carry some responsibility for Energy Labels. Heaters on display should carry the correct Energy Label, and advertisements should reference the SSHEE class (A++ to G).



Energy Labelling - a clear comparison of technologies

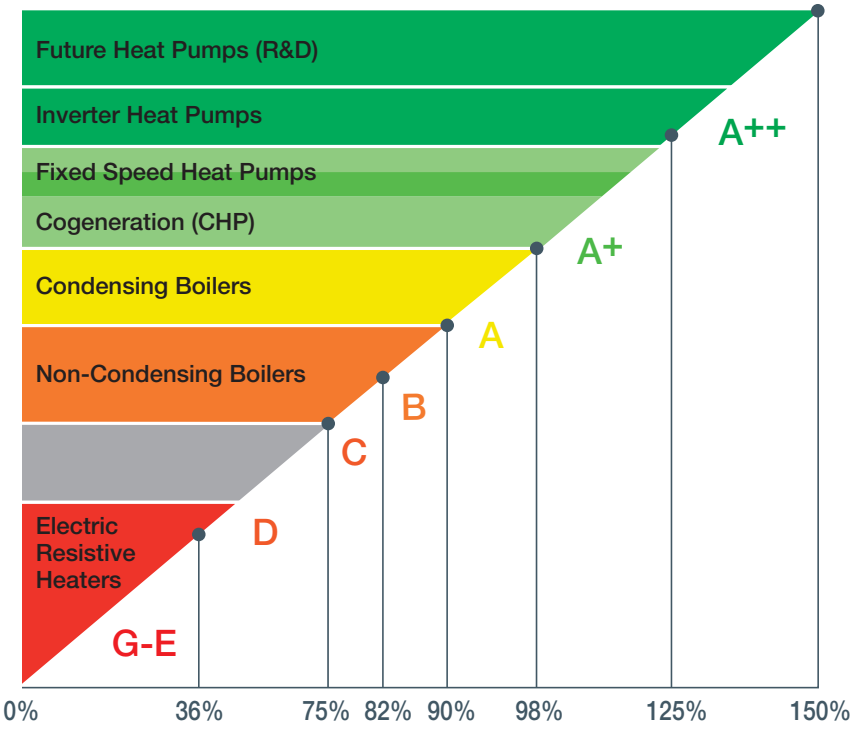
The main objective of Energy Labels is to encourage consumers to select the highest rated products on the market.

The huge success of energy labelling for consumer electronics points to the power of this method of transforming markets - people simply do not want to purchase low-rated technology.

The benefit of finding a way to measure the energy efficiency of disparate technologies, through the EcoDesign regulation, is that now different technologies can be directly compared.

The table below shows how heating technologies compare based on the minimum SSHEE standards required under ErP.

SSHEE - comparing technologies now and in the future



Package Labels - providing a label for the system

Heating systems often comprise more than a single product. For example a project might include a combination heater with temperature control and / or solar devices.

In the case of heating, providing a package of a heater plus controls will provide the end user with better long-term energy efficiency. Again, the aim of providing a label is to make this clear to end users.

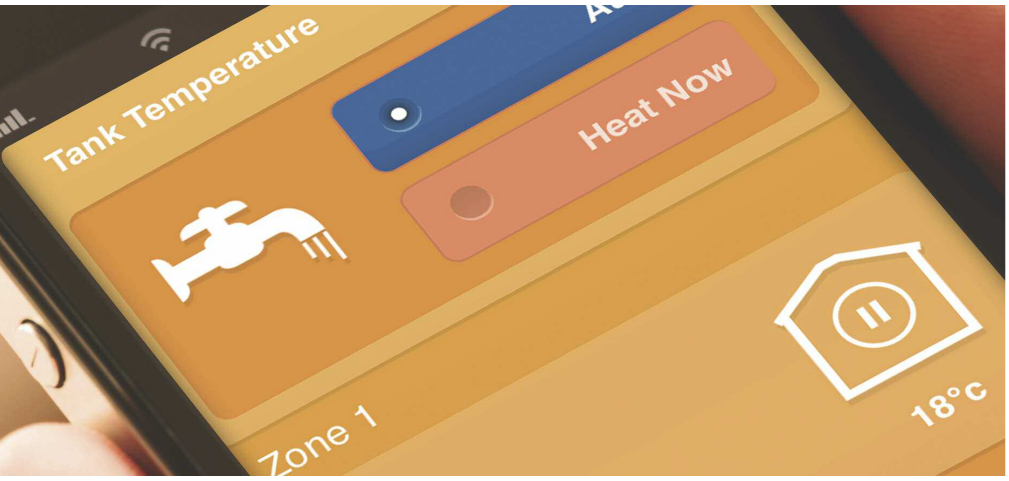
With this in mind, the ErP recognises the importance of providing end users with as much information as possible, so from September 26th it will be necessary to provide a Package Label for certain combinations of products. These Packages are defined in the Energy Labelling regulations:

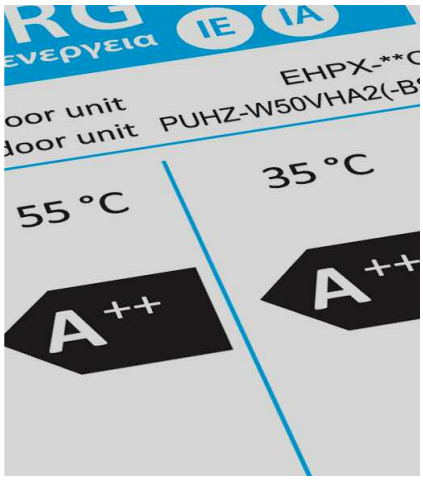
- *for Regulation 811/2013 packages always contain a space heater or a combination heater, and a temperature control and/or a solar device.*
- *for Regulation 812/2013 packages always contain a water heater and a solar device.*

This means that where a space heater combined controls is sold, a Package Label must be supplied. The heater and controls do not have to come from the same manufacturer.

Sometimes the installer may be providing additional equipment to make up a system, for example adding better controls to a heating system. In this case there is no need to provide a Package Label as the installer is not providing the 'complete package' as defined under the ErP.

Methods for calculating the space energy efficiency of packages are provided in the ErP legislation documentation. However, leading manufacturers are developing easy-to-use tools for generating Package Labels. It is also possible to find a tool for calculating the energy efficiency of packages of heaters, water and combination heaters on the EU Label Generator website: **http://eepf-energylabelgenerator.eu**





ErP and UK regulations and schemes

The ErP is a significant piece of legislation that will have an impact on the sale and use of heating systems in the UK. As such, the requirements of the ErP will be embedded into our existing and forthcoming legislation on the energy efficiency of buildings, as well as incentive schemes for renewable technologies.

It has been pointed out that in some cases, the minimum SSHEE standards required by ErP exceed those set out in Part L of the Building Regulations. It has been made clear that the highest standards will always take precedence. The Enhanced Capital Allowances scheme (ECA) is working to align its Energy Technology List with the ErP.

The Renewable Heat Incentive (RHI) scheme has already begun to embrace the new approach of the ErP. The Microgeneration Certification Scheme (MCS) sets industry standards for products used to produce heat and electricity from renewable sources. MCS certification is required for accreditation under the RHI.

In May 2015, the MCS published a new seasonal coefficient of performance (SCOP) calculator. It also updated its installation standard for heat pumps. This was a direct result of the introduction of ErP. The introduction of the SCOP calculator will enable certification bodies to use a standard methodology based on ErP to establish whether a heat pump is ErP compliant. It will also be used to determine the Seasonal Performance Factor (SPF) that will be used for the purposes of RHI.

The updates to the RHI regulations come into force on the 26th September. It is important to note that for the following 6 months installers will be able to install heat pumps which entered the market prior to 26th September 2015 using either the new or the old MCS installation standard for the RHI.

However, this period ends on 25th March 2016. After this, all MCS certified heat pumps must be installed using the latest RHI standards which are in line with the ErP. From 26th March 2016, consumers installing a heat pump who wish to claim RHI will need to ensure their chosen heat pump is ErP compliant.

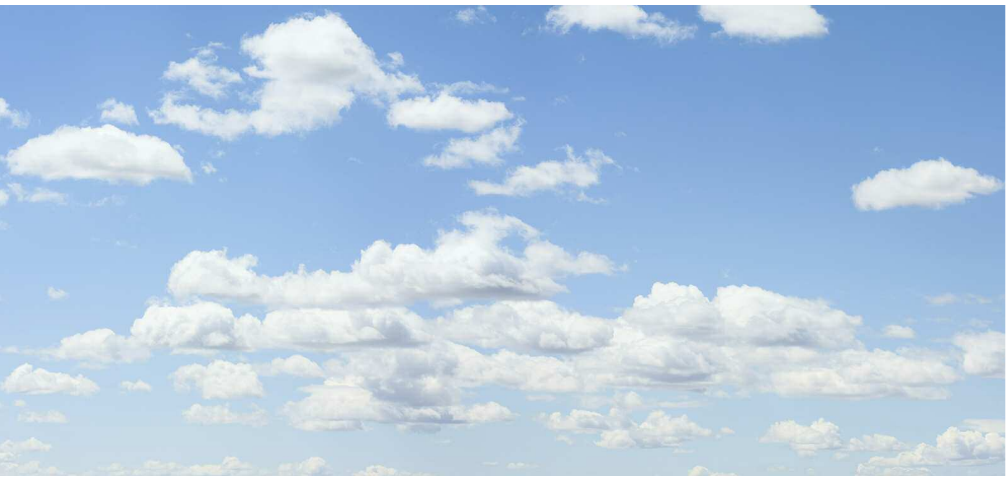
Future developments - raising standards

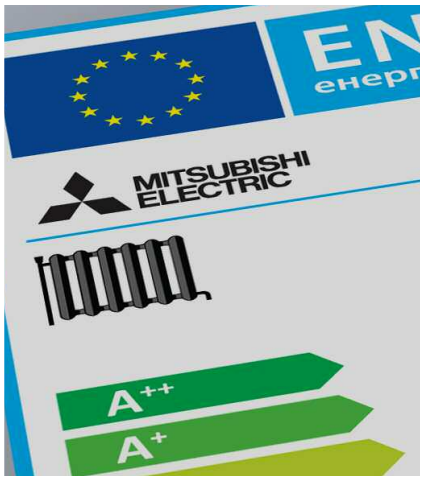
The ErP Directive will continue to develop and to recognise improvements in technology, the minimum standards of performance will be continuously raised.

At each improvement, the lowest performing products will effectively be dropped from the market, whilst driving investment into R&D for highly energy efficient heating products.

A timetable for the legislation has already been published and is shown here:

Date	Action
26 September 2015	Tier 1 requirements regarding energy efficiency come into force for space and water heaters. Energy Labelling comes into force with a scale of A++ to G for space heaters; A to G for water heaters
26 September 2017	Tier 2 requirements for energy efficiency come into force. Energy labelling for water heaters is updated to A+ to F
26 September 2018	Tier 3 requirements regarding energy efficiency of water heaters start to apply; a review of the Regulations to be presented
26 September 2019	Energy Labelling scale for space heaters updated to A+++ to D





From 26th September 2017, Tier 2 requirements will raise the bar again for the performance of space heating in terms of seasonal space heating energy efficiency, as shown in the table below:

EcoDesign requirements from 26th September 2017 - SSHEE minimum standards

Space heating technology	Minimum SSHEE
Electric boiler space heaters and electric boiler combi heaters	36%
Cogeneration space heaters	100%
Heat pump space heaters and heat pump combi heaters	110%
Low temperature heat pumps	125%

To receive a CPD seminar on the 'Energy Related Products Directive (ErP)', you can call your Mitsubishi Electric Regional sales office to arrange an in-house presentation of this information.

If you would like to receive invitations to future CPD events, please email **livingenvironmentalsystems@meuk.mee.com**

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