Guide to energy labelling requirements of packages of space heaters/combination heaters, temperature controls and solar devices

Preface

The European Commission has published in the Official Journal 6th of September 2013 four regulations concerning ecodesign and energy labelling requirements of appliances for space heating and water heating (Regulations: 811/2013, 812/2013, 813/2013 and 814/2013). The first requirements will apply from 26th September 2015.

In order to prepare manufacturer and importers of appliances for the new requirements a number of guides are developed. Four guides are developed in the frame of the Nordic surveillance cooperation for green products (Nordsyn):

- 'Guide to ecodesign and energy labelling requirements for electric heat pumps and electric boilers'
- 'Guide to ecodesign and energy labelling requirements for electric heat pump water heaters and electric conventional water heaters'
- 'Guide to ecodesign and energy labelling requirements of hot water storage tanks'
- 'Guide to energy labelling requirements for packages of water heater and solar device'

In addition, two guides are provided by the Norwegian Water Resources and Energy Directorate (NVE):

- 'Guide to ecodesign and energy labelling requirements of oil- and gas-fired boilers'
- 'Guide to energy labelling requirements of packages of space heaters/combination heaters, temperature controls and solar devices'

Together, these guides cover the most common space and water heating appliances on the market in the Nordic countries. However, they do not cover all appliances comprised by the above mentioned regulations as for instance micro CHP appliances and gas-fired water heaters are not covered.

The individual guides use cross-referencing to the other guides when relevant. Therefore, it is recommended to have all guides available for the full benefits.

The guides present the contents of the Regulations and are addressed to manufacturers, importers and others interested. The guides are not a substitution for the Regulations, in any case of doubt, the Regulations are applicable. The guides are not legally binding as a binding interpretation can only be made by the EU court.

The guides are developed by Danish Technological Institute and Viegand Maagøe consultants, Denmark.

March 2014

Guide to energy labelling requirements of packages of space heaters/combination heaters, temperature controls and solar devices

Contents

Are you a manufacturer or importer of space heaters, combination heaters, temperature controls or solar devices or packages of these products?

Please be aware. There are product information requirements of temperature controls and solar devices and energy labelling requirements of packages consisting of space heaters/combination heaters, temperature controls and solar devices.

Packages of space heaters for water-based central heating systems, temperature controls and solar devices must meet the energy labelling requirements. Space heating systems cover boiler space heaters, heat pump space heaters and combination heaters, which produce heat by means of electricity, gaseous or liquid fuels.

Which products?

The energy labelling requirements apply to:

- Packages of space heaters with a rated output (heating capacity) up to and including 70 kW, temperature controls and solar devices
- Packages of combination heaters with a rated output (heating capacity) up to and including 70 kW, temperature controls and solar devices

Even if a space heater/combination heater is included in a package and it is labelled as a package, the space heater/combination heater must also be provided with an energy label as an individual product.

When?

The energy labelling requirements for packages of space heaters/combination heaters, temperature controls and solar devices include:

- From 26th September 2015 provision of printed EU energy label and product fiche
- From 26th September 2015 information on the energy class in advertisements and in technical promotion material
- From 26th September 2015 making electronic versions of the EU energy label and product fiche available to dealers for new products placed on the market
- Display of the energy label and product fiche when the products are offered for sale through the internet

Further, requirements for temperature controls and solar devices include:

- From 26th September 2015 provision of product fiche

What?

Energy labelling requirements for packages of space heaters/combination heaters, temperature controls and solar devices include:

- Use of a new energy label with three new energy classes (A^{+}, A^{++} and A^{+++}) for packages of products is required
- Information about the energy class in printed advertisements and printed technical promotion material is required
- Requirements for internet advertising

Who?

You have the responsibility of ensuring and documenting compliance with the requirements, if you are:

- a manufacturer in the EEA that produces oil- or gas-fired boilers to be placed on the market in the EEA
- an importer of oil- or gas-fired boilers from a country outside of EEA to be placed on the market in the EEA
- an authorised representative in the EEA for a manufacturer that is situated in a country outside of EEA

The above mentioned responsible parties are hereafter referred to as suppliers.

The EEA (European Economic Area) includes the EU member states and the EFTA counties.

Why?

Space heaters and combination heaters account for a large share of the energy consumption in the European households. The scope for reducing their energy consumption is significant and includes combining them with appropriate temperature controls and solar devices. Moreover, the end user must have easy access to information about the energy efficiency of packages consisting of space heaters/combination heaters combined with solar devices and temperature controls. Consequently, EU has decided to introduce energy labelling of such packages following the same energy labelling scale as the scale for the individual space heaters/combination heaters.

Where can I find more information?
Find relevant regulations on the last page of this guide, or read more about ecodesign and energy labelling on www.ens.dk/energikrav

Disclaimer
This guide presents the contents of the Regulation and is addressed to manufacturers, importers and others interested. The guide is not a substitution for the Regulation, in any case of doubt, the Regulation is applicable. This guide is not legally binding as a binding interpretation can only be made by the EU court.

Acknowledgement
This guide is financed by the Norwegian Water Resource and Energy Directorate.

Which products must comply with the requirements?

Packages with space heaters/combination heaters, temperature controls and solar devices

From 26 September 2015, there will be ecodesign requirements for individual space heaters/combination heaters with a rated output (heat capacity) ≤ 400 kW and energy labelling requirements for individual space heaters/combination heaters with a rated output (heat capacity) ≤ 70 kW. A distinction is made between space heaters and combination heaters. Besides the supply of space heating, the latter must also be designed to supply domestic hot water and to be able to connect to an external water supply. Additional requirements concerning ecodesign and energy labelling apply for combination heaters. The requirements for space heater and combination heater products are described in the guidelines 'Guide to ecodesign and energy labelling requirements for electric heat pump water heaters and electric conventional water heaters' and 'Guide to ecodesign and energy labelling requirements of oil- and gas-fired boilers'

Besides the energy labelling requirements of the space heater/combination heater products, packages consisting of space heaters/combination heaters with a rated output (heating capacity) ≤ 70 kW, temperature controls and solar devices are also subject to energy labelling requirements concerning the entire package.

Temperature controls

The most basic package consists of a space heater/combination heater and a temperature control. The temperature control communicates with the space heater/combination heater and helps to regulate the indoor temperature based on outdoor temperature measurements, room temperature measurements or a combination of the two. Typically, heat pumps and boilers come with a temperature control from the manufacturer. However, the temperature control and the space heater/combination heater can also be supplied separately from different suppliers. A distinction is made between eight different classes of temperature controls, which are added different degrees of efficiency improvements (see table 1):

Class I - On/off Room Thermostat

Class II - Weather compensator control for use with modulating heaters

Class III - Weather compensator control for use with on/off output heaters

Class IV - TPI room thermostat for use with on/off output heaters

Class V - Modulating room thermostat for use with modulating heaters

Class VI - Weather compensator and room sensor for use with modulating heaters

Class VII - Weather compensator and room sensor for use with on/off output heaters

Class VIII - Multi-sensor room temperature control for use with modulating heaters

Class no.	**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**
Value (%)	1	2	1,5	2	3	4	3,5	5

Table 1 Efficiency improvements of different classes of temperature controls

Solar devices

Solar devices cover both entire solar heating systems, sold as a combined entity, and solar collectors, solar hot water storage tanks and pumps in the solar collector loop, sold as individual entities.

A hot water storage tank is defined as a vessel, for storing of hot water, for water and/or space heating purposes, including potential additives. Thus, the definition of a hot water storage tank is broader than the common Northern European perception of a hot water storage tank; i.e. a vessel used only for domestic hot water. Hot water storage tanks are covered by the requirements of energy labelling ecodesign, which is described in the guidelines, 'Guide to ecodesign and energy labelling requirements of hot water storage tanks'.

Solar collectors are defined as a device designed to absorb global solar irradiance and transfer the heat energy so produced to a liquid, which passes through it.

Pumps in the solar collector loop are covered by the requirements of ecodesign (from 1 August 2015), cf. COMMISSION REGULATION (EC) No 641/2009 of 22 July 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for glandless standalone circulators and glandless circulators integrated in products.

Packages containing space heaters

Figure 1 shows some examples of packages containing space heaters. The examples are:

a) Basic package consisting of a boiler/heat pump space heater and a temperature control

b) Package consisting of space heater, temperature control and supplementary heater, e.g. a hybrid space heater with a gas-fired boiler and a heat pump. The hot water storage tank is not a part of the package in that the package is only for space heating systems

c) Package consisting of temperature control and solar devices (storage tank, solar collectors, pumps etc.) used only for space heating

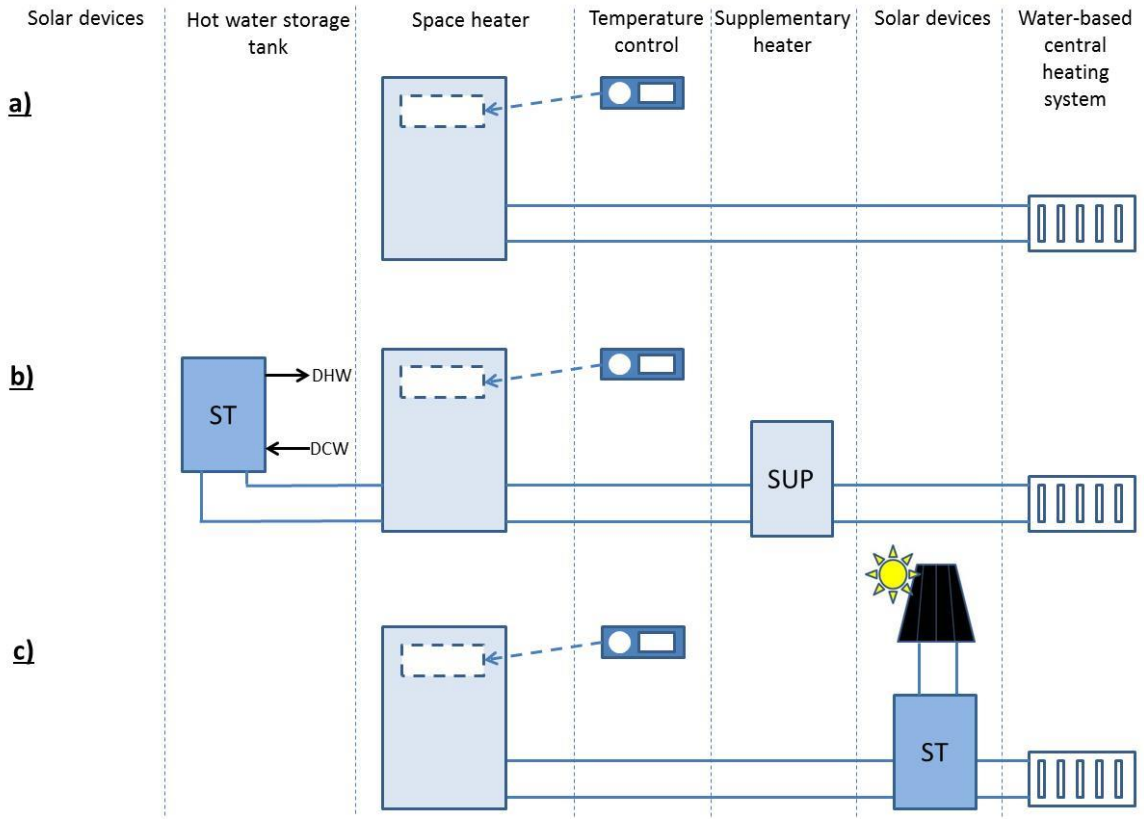


Figure 1 Examples of packages containing space heaters

Packages containing combination heaters

Figure 2 shows some examples of packages containing combination heaters. The examples are:

d) Package consisting of boiler/heat pump combination heater, temperature control and solar devices used only for water heating

e) Package consisting of boiler/heat pump combination heater with control, solar devices (storage tank, solar collectors, pumps etc.) used for hot water, supplementary heater and solar devices (storage tank, solar collectors, pumps etc.) used for space heating

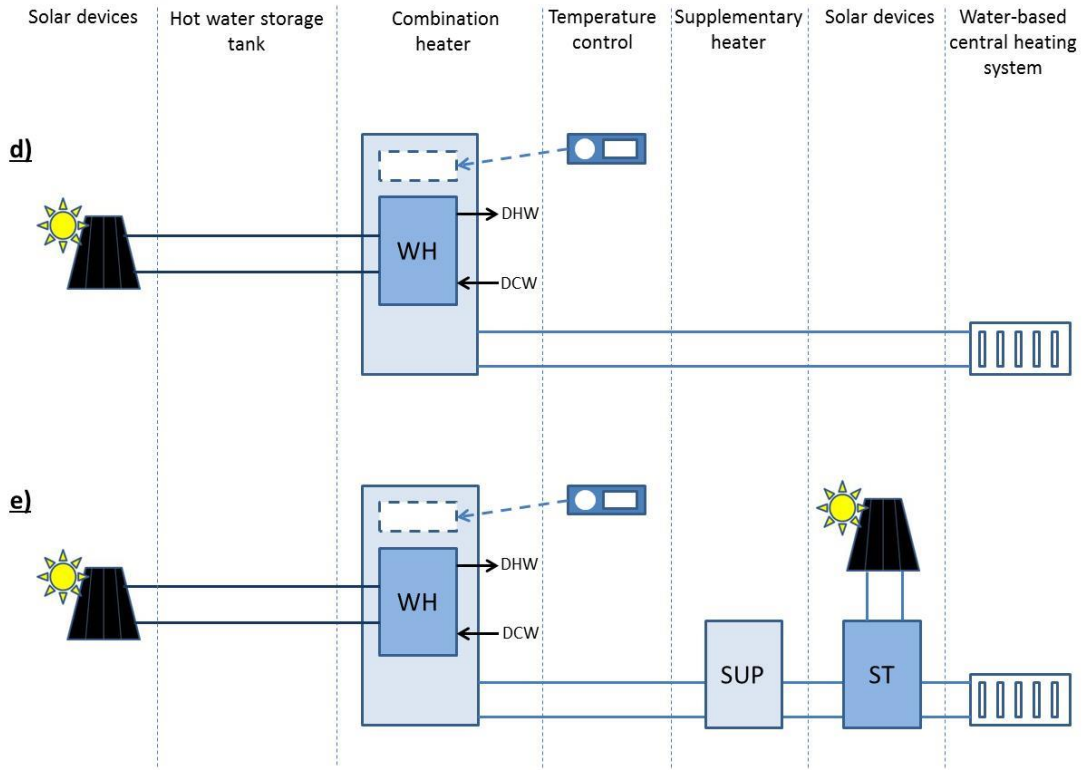


Figure 2 Examples of packages containing combination heaters

Space heaters with solar devices which are not part of the package

Figure 3 shows an example of a package containing a space heater with a solar heating system which is not a part of the package:

f) In this package containing a space heater, neither a hot water storage tank nor solar devices (storage tank, solar collectors, pumps etc.) used for domestic hot water can be included in the package. Therefore, the label of the package only deals with the space heater with temperature control, see also example b) in figure 1.

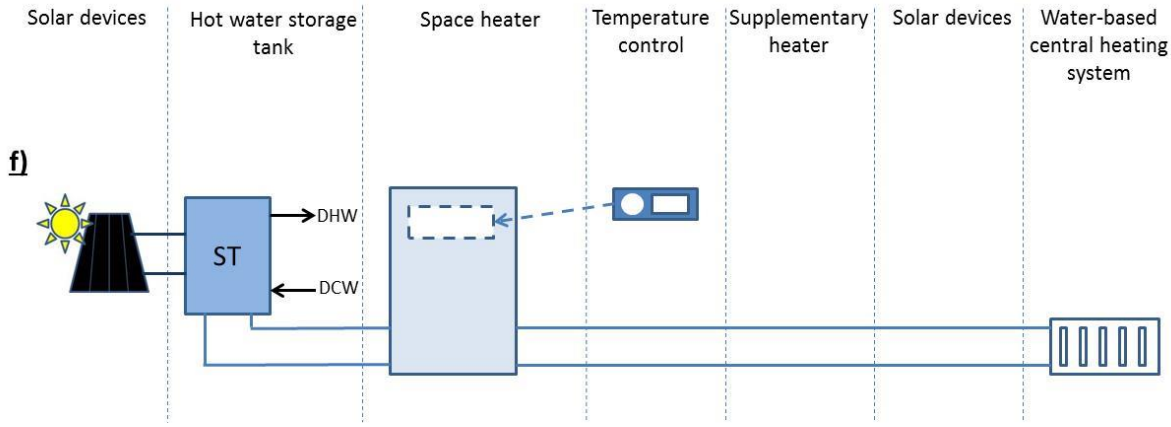


Figure 3 Example of package containing space heaters, where the solar devices are not part of the package

What are the requirements for energy labelling?

Packages of space heaters/combination heaters, temperature controls and solar devices are covered by the new EU energy labelling regulations. The energy label is identical in all the EU countries and it includes pictograms instead for text so that the label is easy to understand in all the countries.

The label has the recognisable red and green arrows and the A-G scale is expanded with the new energy classes A^{+}, A^{++} and A^{+++}.

It is the responsibility of the supplier of the entire package to provide the energy label together with the package.

Energy efficiency classes on the label

The label for packages containing space heaters includes one single scale and energy classes will be introduced in one step. From 26 September 2015, an energy label with the energy classes A^{+++} to G is required - the energy classes E, F and G can be left out of the scale.

The label for packages containing combination heaters includes two scales. One of the scales is identical to the scale for packages containing space heaters and the other scale covering water heating. From 26 September 2015, the energy classes A^{+++} to G must be applied for water heating – the energy classes E, F and G can be left out of the scale.

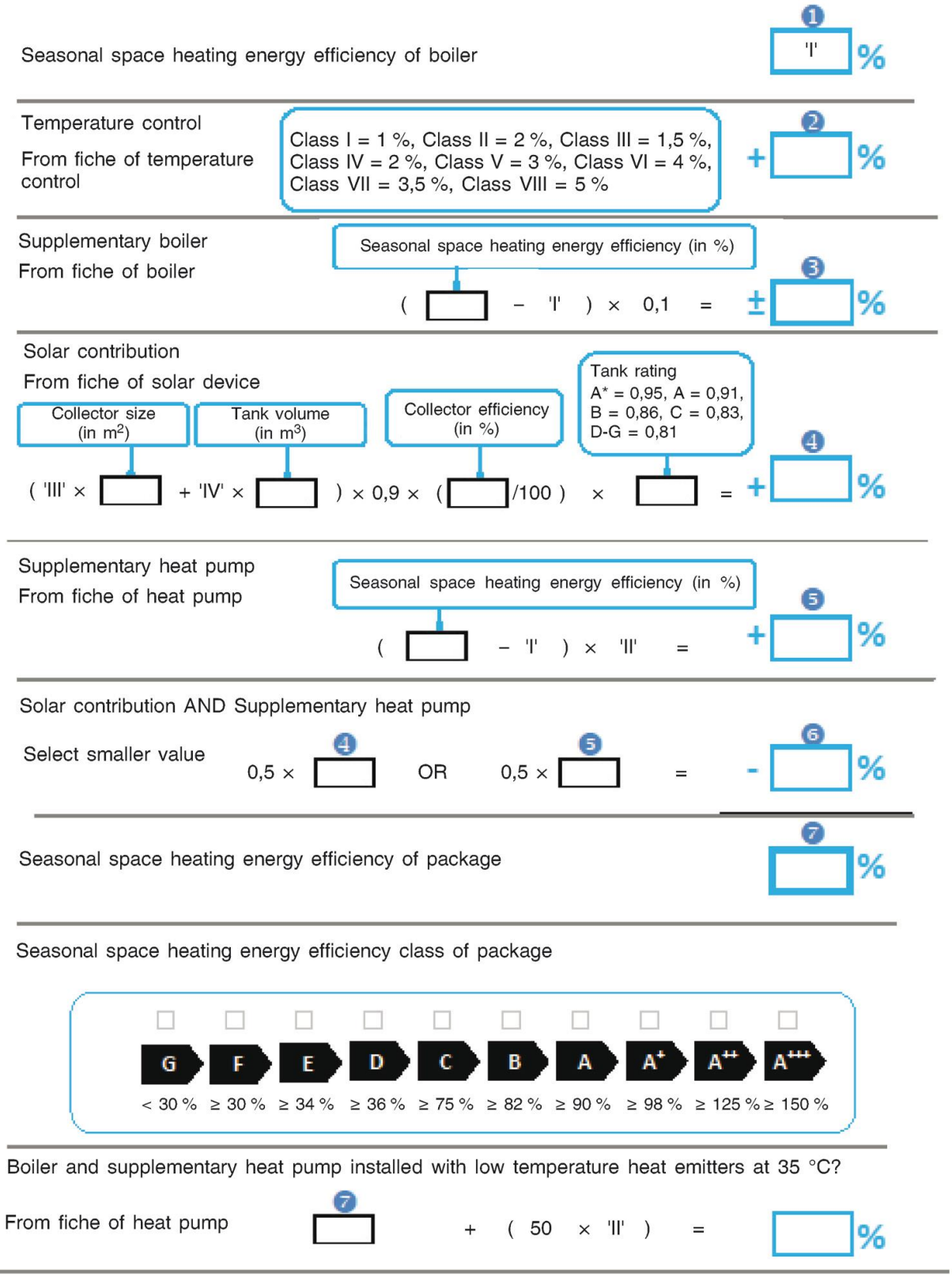
Determination of the energy classes

The determination of the energy label for a package is based on the seasonal space heating energy efficiency (η_s) of the primary space heater. When calculating the label of the package, the efficiency improvements produced by the temperature control, solar devices and potential supplementary heaters are added to the seasonal space heating energy efficiency of the primary space heater. The resulting (improved) seasonal space heating energy efficiency of the package is assessed according to the same scale as the one for the individual heaters.

The efficiency improvements of temperature controls are shown in Table 1. The efficiency improvements of solar devices are calculated on the basis of the information in the product sheets.

For packages, where the primary heater is a combination heater and where the heater is combined with a solar heating system for domestic hot water, the energy label for water heating is based on the water heating energy efficiency (η_{WH}) of the primary combination heater. The efficiency improvements produced by the solar heating system are added and the resulting (improved) water heating energy efficiency of the package is assessed according to the same scale as the one for the individual combination heaters.

The calculation method of the labelling of packages is described in the Regulation. Figure 4 and 5 show the information and the method which are to be used when labelling a package. Figure 4 concerns the energy label for space heating with a boiler. There are similar figures for heat pumps and boiler combination heaters in the Regulation. Figure 5 concerns a combination heater. The figure covers water heating energy efficiency and it is of general application for all types of combination heaters.



The energy efficiency of the package of products provided for in this fiche may not correspond to its actual energy efficiency once installed in a building, as the efficiency is influenced by further factors such as heat loss in the distribution system and the dimensioning of the products in relation to building size and characteristics.

Figure 4 Information and calculation sheet for seasonal energy efficiency for a package with a boiler.

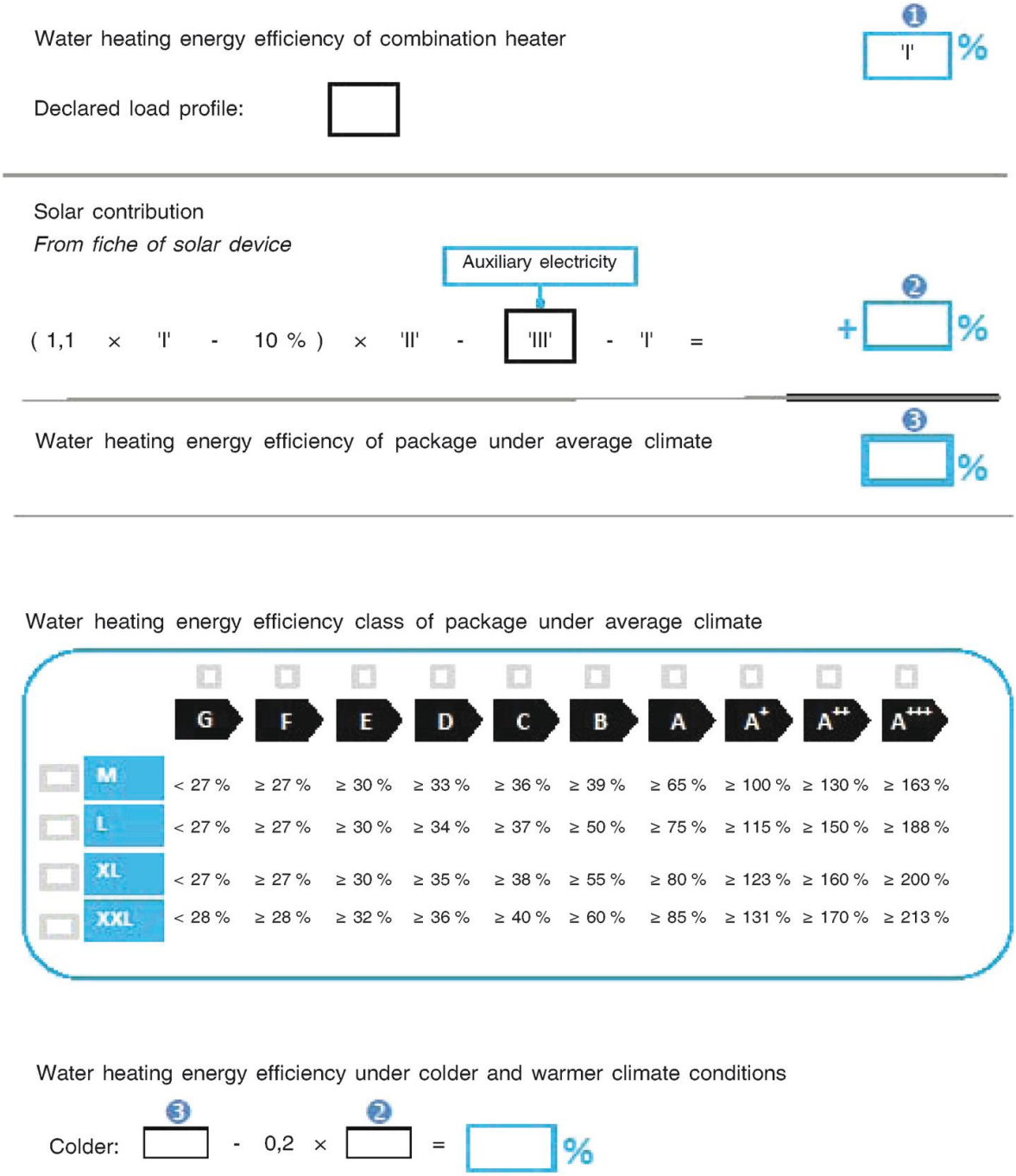


Figure 5 Information and calculation sheet for water efficiency for a combination heater

Be aware:
It is the actual measurement results without addition of tolerances that must be used for declaration of the energy efficiency class and other required declarable values.

Information on the energy label

Labels for packages must include the energy class of the primary space heater and information on whether solar devices, temperature control and/or supplementary heater can be included in the package as well as information on the space heating energy class of the entire package. Moreover, packages with combination heaters must specify the water heating energy class and load profile.

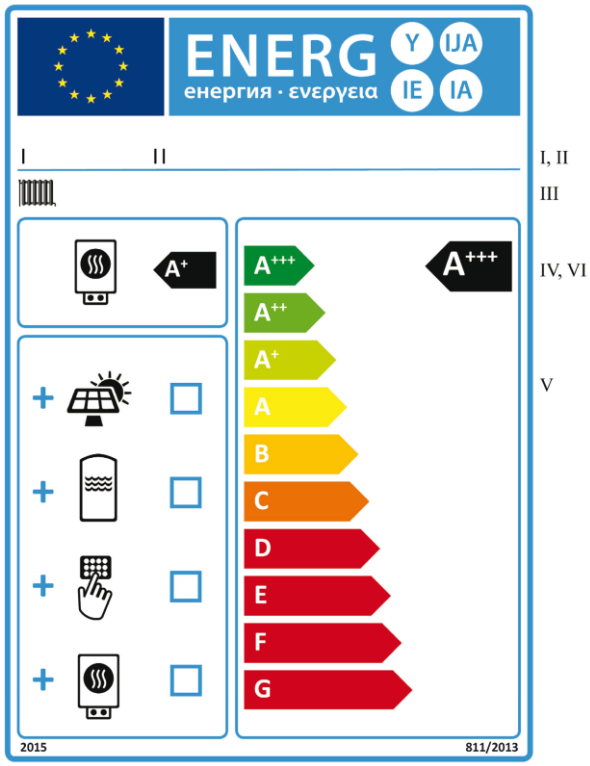


Figure 6 Space heater package label

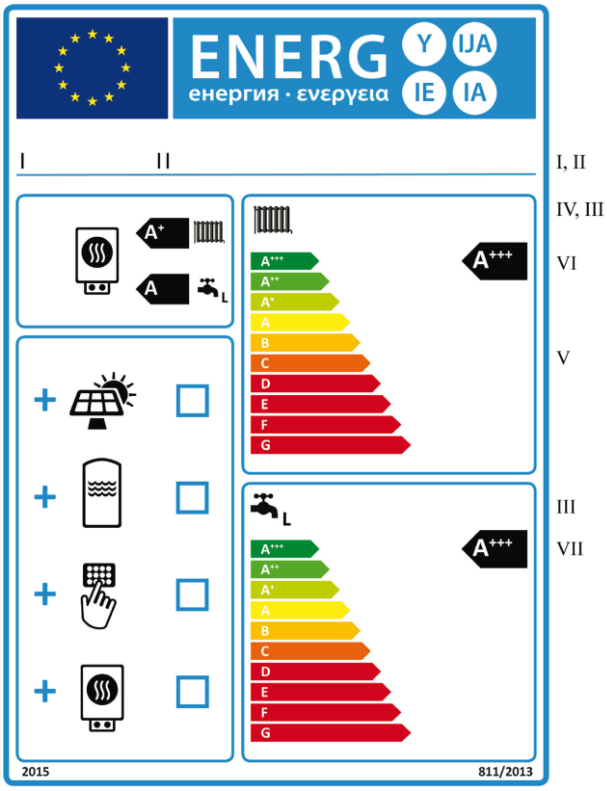


Figure 7 Combination heater package label

Energy classes

For space heating, the connection between energy classes and seasonal space heating energy efficiency is shown in Table 2 and 3. The latter covers low temperature heat pumps.

Klasse for årsvirkningsgrad ved rumopvarmning	Årsvirkningsgrad ved rumopvarmning η_s i %
A^{+++}	$\eta_s \geq 150$
A^{++}	$125 \leq \eta_s < 150$
A^{+}	$98 \leq \eta_s < 125$
A	$90 \leq \eta_s < 98$
B	$82 \leq \eta_s < 90$
C	$75 \leq \eta_s < 82$
D	$36 \leq \eta_s < 75$
E	$34 \leq \eta_s < 36$
F	$30 \leq \eta_s < 34$
G	$\eta_s < 30$

Table 2 Energy classes for space heating

Klasse for årsvirkningsgrad ved rumopvarmning	Årsvirkningsgrad ved rumopvarmning η_s i %
A^{+++}	$\eta_s \geq 175$
A^{++}	$150 \leq \eta_s < 175$
A^{+}	$123 \leq \eta_s < 150$
A	$115 \leq \eta_s < 123$
B	$107 \leq \eta_s < 115$
C	$100 \leq \eta_s < 107$
D	$61 \leq \eta_s < 100$
E	$59 \leq \eta_s < 61$
F	$55 \leq \eta_s < 59$
G	$\eta_s < 55$

Table 3 Energy classes for space heating with low temperature heat pumps

For water heating, the connection between energy classes for a given load profile and energy efficiency is shown in Table 4.

	3XS	XXS	XS	S	M	L	XL	XXL
A^{+++}	$\eta_{wh} \geq 62$	$\eta_{wh} \geq 62$	$\eta_{wh} \geq 69$	$\eta_{wh} \geq 90$	$\eta_{wh} \geq 163$	$\eta_{wh} \geq 188$	$\eta_{wh} \geq 200$	$\eta_{wh} \geq 213$
A^{++}	$53 \leq \eta_{wh} < 62$	$53 \leq \eta_{wh} < 62$	$61 \leq \eta_{wh} < 69$	$72 \leq \eta_{wh} < 90$	$130 \leq \eta_{wh} < 163$	$150 \leq \eta_{wh} < 188$	$160 \leq \eta_{wh} < 200$	$170 \leq \eta_{wh} < 213$
A^{+}	$44 \leq \eta_{wh} < 53$	$44 \leq \eta_{wh} < 53$	$53 \leq \eta_{wh} < 61$	$55 \leq \eta_{wh} < 72$	$100 \leq \eta_{wh} < 130$	$115 \leq \eta_{wh} < 150$	$123 \leq \eta_{wh} < 160$	$131 \leq \eta_{wh} < 170$
A	$35 \leq \eta_{wh} < 44$	$35 \leq \eta_{wh} < 44$	$38 \leq \eta_{wh} < 53$	$38 \leq \eta_{wh} < 55$	$65 \leq \eta_{wh} < 100$	$75 \leq \eta_{wh} < 115$	$80 \leq \eta_{wh} < 123$	$85 \leq \eta_{wh} < 131$
B	$32 \leq \eta_{wh} < 35$	$32 \leq \eta_{wh} < 35$	$35 \leq \eta_{wh} < 38$	$35 \leq \eta_{wh} < 38$	$39 \leq \eta_{wh} < 65$	$50 \leq \eta_{wh} < 75$	$55 \leq \eta_{wh} < 80$	$60 \leq \eta_{wh} < 85$
C	$29 \leq \eta_{wh} < 32$	$29 \leq \eta_{wh} < 32$	$32 \leq \eta_{wh} < 35$	$32 \leq \eta_{wh} < 35$	$36 \leq \eta_{wh} < 39$	$37 \leq \eta_{wh} < 50$	$38 \leq \eta_{wh} < 55$	$40 \leq \eta_{wh} < 60$
D	$26 \leq \eta_{wh} < 29$	$26 \leq \eta_{wh} < 29$	$29 \leq \eta_{wh} < 32$	$29 \leq \eta_{wh} < 32$	$33 \leq \eta_{wh} < 36$	$34 \leq \eta_{wh} < 37$	$35 \leq \eta_{wh} < 38$	$36 \leq \eta_{wh} < 40$
E	$22 \leq \eta_{wh} < 26$	$23 \leq \eta_{wh} < 26$	$26 \leq \eta_{wh} < 29$	$26 \leq \eta_{wh} < 29$	$30 \leq \eta_{wh} < 33$	$30 \leq \eta_{wh} < 34$	$30 \leq \eta_{wh} < 35$	$32 \leq \eta_{wh} < 36$
F	$19 \leq \eta_{wh} < 22$	$20 \leq \eta_{wh} < 23$	$23 \leq \eta_{wh} < 26$	$23 \leq \eta_{wh} < 26$	$27 \leq \eta_{wh} < 30$	$27 \leq \eta_{wh} < 30$	$27 \leq \eta_{wh} < 30$	$28 \leq \eta_{wh} < 32$
G	$\eta_{wh} < 19$	$\eta_{wh} < 20$	$\eta_{wh} < 23$	$\eta_{wh} < 23$	$\eta_{wh} < 27$	$\eta_{wh} < 27$	$\eta_{wh} < 27$	$\eta_{wh} < 28$

Table 4 Energy classes for water heating

What are the requirements for information and documentation?

Energy label and product fiche

Product fiche of temperature controls and solar devices
All temperature controls and solar devices (in any case entire solar heating systems) placed on the market from 26 September 2015 must be provided with a printed product fiche. A product fiche can include several models of space heating systems from the same supplier. See the guidelines for product fiches in the Regulation of energy labelling, Annex IV.

Energy label and product fiche for packages containing space heaters/combination heaters, temperature controls and solar devices
All packages for space heating or combined space heating and heating of domestic hot water placed on the market from 26 September 2015 must be provided with a printed energy label and product fiche. A product fiche can include several models of space heating systems from the same supplier. See the guidelines for product fiches in the Regulation of energy labelling, Annex IV.

The energy label and product fiche for packages must also be presented if the unit is sold via the internet. Therefore, the manufacturer must provide the label and product fiche electronically to retailers, etc. who sell online.

The layout of the electronic energy label must be identical with the printed label and it must include the same information as the printed label. The electronic product fiche must also include information identical with the printed version.

Information in technical promotional material and in advertisements
Relevant promotion material and advertisements for packages shall include information of the energy class of the package. Further information is available in the Regulation of energy labelling, Article 3 and 4.

Labelling on the internet
The electronic energy label and product fiche must be shown on the display in proximity to the price when heat pumps and electric boilers are offered for sale or hire through the internet. The label and the product fiche may be shown using a “nested display”.

Technical documentation

The supplier is responsible for making sure that the temperature controls and solar devices as well as packages of space heaters/combination heaters, have a technical documentation when placing it on the EEA market. The technical documentation must show that the energy labelling of the temperature controls and solar devices as well as packages of space heaters/combination heaters is correct. The technical documentation must be compiled by the manufacturer.

For temperature controls and solar devices as well as packages of space heaters/combination heaters, temperature controls and solar devices, you can see the requirements for the content of the technical documentation in the Regulation of energy labelling, Annex V.

The market surveillance authorities of EEA countries may request the technical documentation, and you must provide it within a maximum of ten days after receiving the request.

The documentation must be stored for a period of five years after the last model of that product has been manufactured.

Measurement and calculation methods

Reliable, accurate and reproducible measurement methods based on generally accepted measurement techniques must be used. A reproducible measurement method means that the measurements can be repeated with the same result.

Measurements must always be carried out in accordance with guidelines of the Regulations.

Where can I find information?

Danish Energy Agency's homepage www.ens.dk/energikrav contains more information about policies, new requirements in regulations, guidance, contact information and links to relevant legislation.

Legislations

COMMISSION REGULATION (EU) No 811/2013 of 18 February 2013 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to the energy labelling of space heaters, combination heaters, packages of space heater, temperature control and solar device and packages of combination heater, temperature control and solar device.

DIRECTIVE 2010/30/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 19 May 2010 on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products (recast).

COMISSION REGULATION (EU) No 518/2014 with regard to labelling of energy-related products on the internet.

Danish legislations with regard to energy labelling

The energy labelling directive is implemented by the following Danish legislations:

- Lov om energimærkning af energirelaterede produkter, nr. 455 af 18. maj 2011
- Bekendtgørelse om energimærkning af energirelaterede produkter, nr. 1026 af 18. maj 2011 (only available in Danish)

Where can I find help and guidance?

You can have your questions answered and help to comply with the requirements by contacting the Secretariat for Ecodesign and Energy Labelling of Products.

Telephone: +45 43 30 50 20
Monday to Thursday 9:00 - 16:00
Friday 9:00 - 15:30
E-mail: sekretariat@eco-energimaerke.dk

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