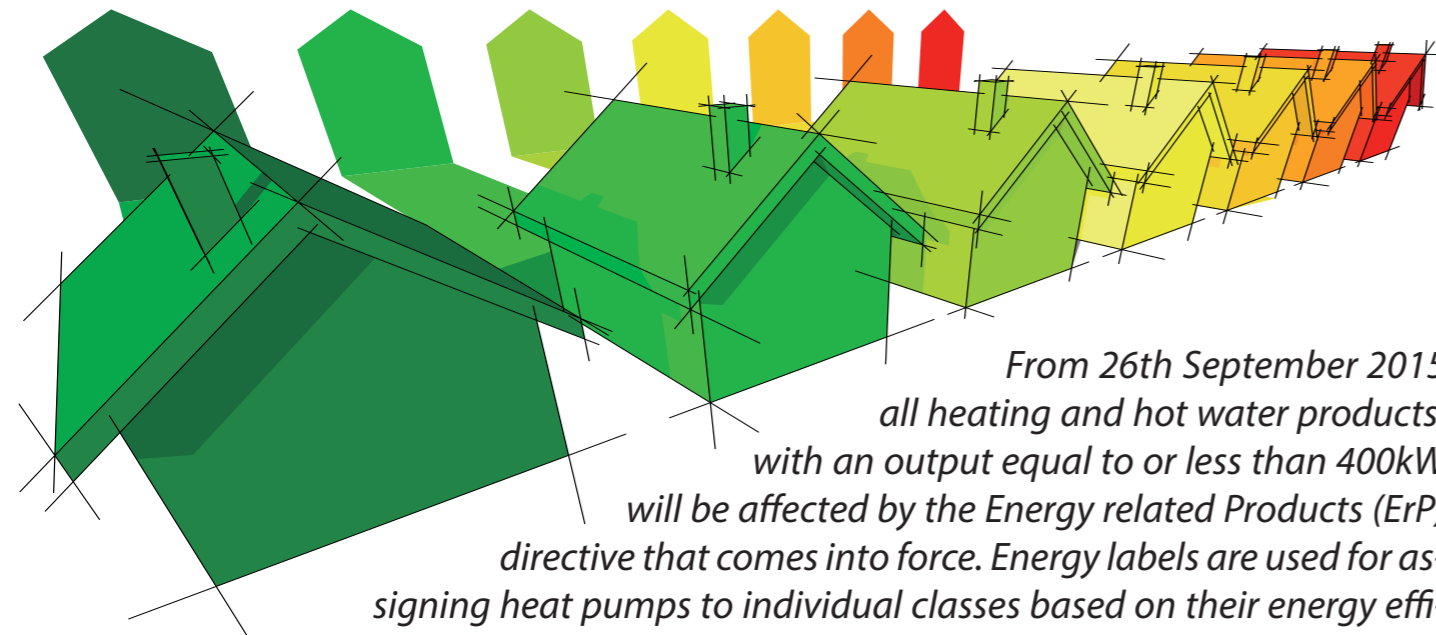


Energy Related Products (ErP) Directive – Heat Pump Efficiency



From 26th September 2015 all heating and hot water products, with an output equal to or less than 400kW will be affected by the Energy related Products (ErP) directive that comes into force. Energy labels are used for assigning heat pumps to individual classes based on their energy efficiency (heating efficiency). The best class is marked A++, the worst G. The deciding factor for determining energy efficiency is the seasonal SCOP heating factor. Methodology for determining energy efficiency is defined in BS EN 14 825.

What is the heat pump seasonal energy efficiency?

Seasonal energy efficiency η_s represents a degree of utilisation efficiency of unrenovable primary energy by a particular heat pump. It is calculated as a ratio between the given heat pump seasonal heating factor and the electricity production and distribution coefficient, stated in %. For example, shall the seasonal energy efficiency amount to 150%, the heat pump will, during the entire heating season, supply energy that is by 50% greater than its primary energy consumption (i.e. the consumption of unrenovable energy necessary for the production of electricity for driving the heat pump).

For assessment purposes, 2 types of applications are recognised: medium-temperature applications, when the

heat pump provides an output temperature of 55 °C, and low-temperature applications with an output temperature of 35 °C.

What is SCOP?

The seasonal heating factor represents the ratio between the total produced heat and the total electricity consumption. In contrast to the COP heating factor, which is specified for particular temperature conditions (for example, COP=3.2 at A2W35 – air temperature of 2 °C and heating water temperature of 35 °C), SCOP is calculated for the entire heating season. The SCOP factor thus characterises the real efficiency of heat pumps much more accurately conditions than the COP factor.

Seasonal heating energy efficiency class	Seasonal heating energy efficiency η_s v %	
	Low-temperature application 35°C	Medium-temperature application 55°C
A++	$\eta_s > 150$	$\eta_s > 125$
A+	$\eta_s = 123-150$	$\eta_s = 98-125$
A	$\eta_s = 115-123$	$\eta_s = 90-98$
B	$\eta_s = 107-115$	$\eta_s = 82-90$
C	$\eta_s = 100-107$	$\eta_s = 75-82$
D	$\eta_s = 61-100$	$\eta_s = 36-75$

How efficient are Master Therm heat pumps?

As a result of the advanced technology and inverter drive, the MasterTherm heat pumps are positioned among the most efficient and effective heat pumps on European and International markets. This is reflected in their classification and achieved heating efficiency (η_s). The majority of Inverter driven MasterTherm heat pumps already comply with the future highest class of A+++ (coming into effect in 2019).



Air-water	Low-temperature operation 35°C				Medium-temperature operation 55°C			
BoxAir Inverter	Power*	SCOP	η_s %	Class	Power*	SCOP	η_s %	Class
BA 22I	5 kW	4,18	164	A++	4 kW	3,22	126	A++
BA 26I	7,5 kW	4,40	173	A++	7 kW	3,36	132	A++
BA 30I	8,5 kW	4,49	177	A++(+)	8 kW	3,45	135	A++
BA 45I	14 kW	4,30	169	A++	13 kW	3,32	130	A++

*Power output – for the proposal outdoor temperature of -10 °C | A++(+)- complies with class A+++ in effect from 2019

Ground-water	Low-temperature operation 35°C				Medium-temperature operation 55°C			
AquaMaster Inverter	Power*	SCOP	η_s %	Class	Power*	SCOP	η_s %	Class
AQ 22I	7 kW	4,61	177	A++(+)	6 kW	3,53	133	A++(+)
AQ 30I	11 kW	4,85	186	A++(+)	11 kW	3,78	143	A++(+)
AQ 45I	21 kW	4,80	184	A++(+)	19 kW	3,70	140	A++(+)

*Power output – for the proposal outdoor temperature of -10 °C | A++(+)- complies with class A+++ in effect from 2019

Air-water	Low-temperature operation 35°C				Medium-temperature operation 55°C			
BoxAir	Power*	SCOP	η_s %	Class	Power*	SCOP	η_s %	Class
BA 22Z	8 kW	3,66	144	A+	8 kW	3,00	117	A+
BA 26Z	11 kW	3,63	142	A+	10 kW	2,84	111	A+
BA 30Z	12 kW	3,64	143	A+	12 kW	2,86	111	A+
BA 37Z	16 kW	3,71	145	A+	15 kW	2,97	116	A+
BA 45Z	19 kW	3,89	153	A++	18 kW	3,08	120	A+

*Power output – for the proposal outdoor temperature of -10 °C

Air-water	Low-temperature operation 35°C				Medium-temperature operation 55°C			
AirMaster	Power*	SCOP	η_s %	Class	Power*	SCOP	η_s %	Class
AM3015Z	6 kW	3,60	141	A+	6 kW	2,90	113	A+
AM3021Z	8 kW	3,73	146	A+	8 kW	3,00	117	A+
AM3030Z	12 kW	3,87	152	A++	12 kW	3,08	120	A+
AM3038Z	15 kW	3,90	153	A++	15 kW	3,10	121	A+
AM3045Z	18 kW	3,93	154	A++	17 kW	3,13	122	A+

*Power output – for the proposal outdoor temperature of -10 °C

Air-water	Low-temperature operation 35°C				Medium-temperature operation 55°C			
EasyMaster	Power*	SCOP	η_s %	Class	Power*	SCOP	η_s %	Class
EM60Z	25 kW	3,56	140	A+	24 kW	2,86	111	A+
EM75Z	31 kW	3,61	141	A+	30 kW	2,92	114	A+

*Power output – for the proposal outdoor temperature of -10 °C

