

# Pick the most efficient boiler and control set up

All new condensing boilers must be A-rated, which is equivalent to 92% efficiency. Actual efficiencies achieved in the home are closer to 80% which puts the boilers in the C – B category. In this document we help to get you closer to A-rated.

## 1. Your property's heat requirements:

The average UK home needs just 6kW of heat on a very cold day. Only around 0.5kW – 5kW is needed most of the year.



The most efficient boilers are those that can meet the lower heat requirements of the property, e.g. 0.5kW – 5kW.



## 2. How boilers work

All boilers can operate within a range. Some common examples are:

- MIN - MAX**
- 1.9kW – 17kW
  - 3.9kW – 21kW
  - 5.3kW – 19kW
  - 8.4kW – 30kW



Boilers have different kW outputs for different functions:

**Hot water** is produced at whatever the boiler's maximum output is.

**Heating** is produced between the minimum output, e.g. 3.9kW, and the highest output needed to heat the property, e.g. 6kW.

Condensing boilers must work at lower temperatures to achieve **90% efficiency**.

## 3. The best set up for heating

### Boiler selection

Pick a boiler with a low minimum output. The lower the minimum output, the more efficiently the boiler can operate all year around when you need less than 5kW.



### Heat loss

The attending engineer will work out the maximum heat requirement using a heat loss calculation, for example 6kW.



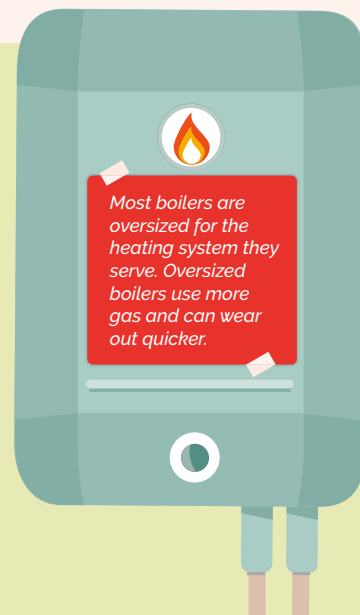
### Boiler set up

Your installer will reduce the maximum output of the boiler down on the heating side to match the maximum heat requirement of your property, e.g. 6kW. This will not affect the hot water.



### This is called range rating

This is very important for efficiencies. It must be done for combi, system and heat-only boilers.



## Close The Gap

The campaign to stay warm for less and meet our 2050 net zero target

We are a group of industry professionals guiding consumers, installers, manufacturers, government and industry bodies on how to get more efficiency from our heating systems. With a low output boiler, compensation controls, flow-setting or flow-varying TRVs and correct range-rating we can get much closer to A-rated efficiencies, reduce our fuel bills and get on target for 2050 net zero.

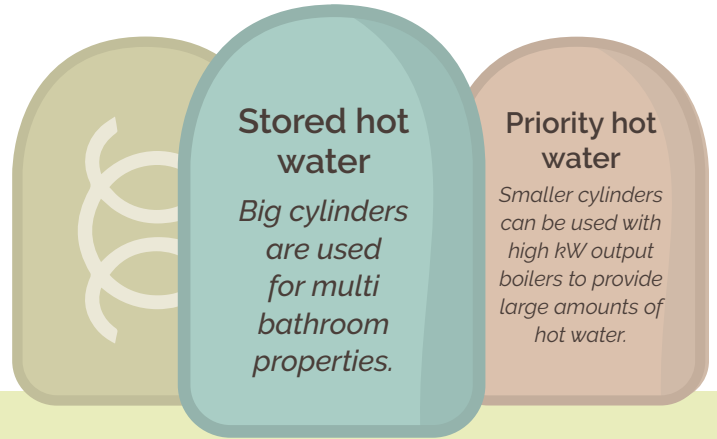


## 4. Setting up for hot water

### Hot water cylinder

Most boilers will heat the home at the same time as heating a hot water cylinder. The size of the boiler in kW will be the heat requirement + hot water requirement for the cylinder.

An alternative set up is Priority Domestic Hot Water, whereby the boiler will prioritise hot water when there is demand and then go back to heating the home. This has efficiency benefits.



## 5. Combi boilers

### Hot water

Combi boilers produce water instantaneously.

The amount of hot water produced is measured in litres per minute (LPM). Outputs are commonly between 10 LPM – 16LPM.

Single bathroom properties are fine with 10 LPM. Two bathrooms in use at the same time may use 16LPM.

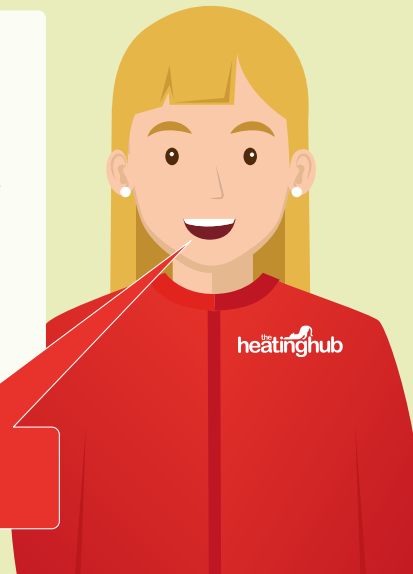


### Careful combi selection

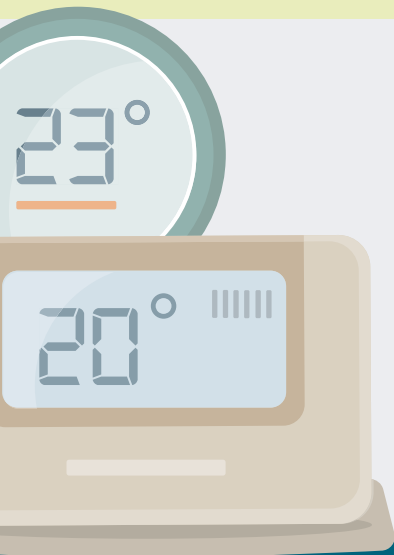
It is often the case that the bigger the LPM, the higher the lowest minimum output of the boiler range.

For example, a modern 2 bedroom, 2 bathroom house might need 16 litres of hot water but only 5kW of heat at peak times.

A big hot water combi will give 16 LPM BUT will often only go down to 8-12kW on the heating, which is inefficient when less than 6kW is ever needed.



*If you need lots of hot water pick a combi with a low minimum output and high hot water performance – they do exist! See our online guides.*



## 6. The right heating control is a must!

### Heating controls

A boiler needs to be paired with a 'compensation' control in order to maximise efficiencies. Weather and load compensation controls add 3-5% efficiency to your heating system, but they must speak the same language as the boiler.



### 'Smart' control confusion

Not all smart controls are compensation controls and as such they are less efficient. Our best advice is to pick the boiler manufacturer's own compensation control or pick a boiler and control that both use the OpenTherm language.

## 7. Balance your system

Balancing does not just mean making sure every radiator gets hot. It is about making sure that enough heat is given off by the radiators to keep the temperature of the water (as it returns to the boiler) low enough for the boiler to condense.



Fit 'flow setting' or 'variable flow' TRVs. These help the boiler reduce its output quicker as individual room temperatures are met and ensure temperatures stay low enough for the boiler to condense.

