



Saving Energy with Heating Controls

A Householder Guide



Lowering the cost of comfort

Better heating controls = better energy efficiency

Your home's energy use is mainly for heating

If you have a gas or oil boiler for heating and hot water it will use far more energy than anything else in your home - on average, 80% of the total¹. Adding modern controls to your heating system will make sure your home is comfortable and efficient; reducing both your fuel bills and your carbon footprint.

Upgrading your heating controls

You don't need to wait until your boiler is replaced - modern heating controls are proven technologies compatible with all types of boilers. They are also a great addition to insulation improvements; optimising savings by preventing temperatures rising unnecessarily. There are two areas to focus on:

- Replace your thermostat with an **Advanced Room Thermostat**. This will increase boiler efficiency and can include **Smart Control** functions.
- Add **Thermostatic Radiator Valves** to your radiators. These will reduce the amount of heat needed to keep everyone warm in each room.



Reducing your carbon footprint will help the UK meet its net zero targets

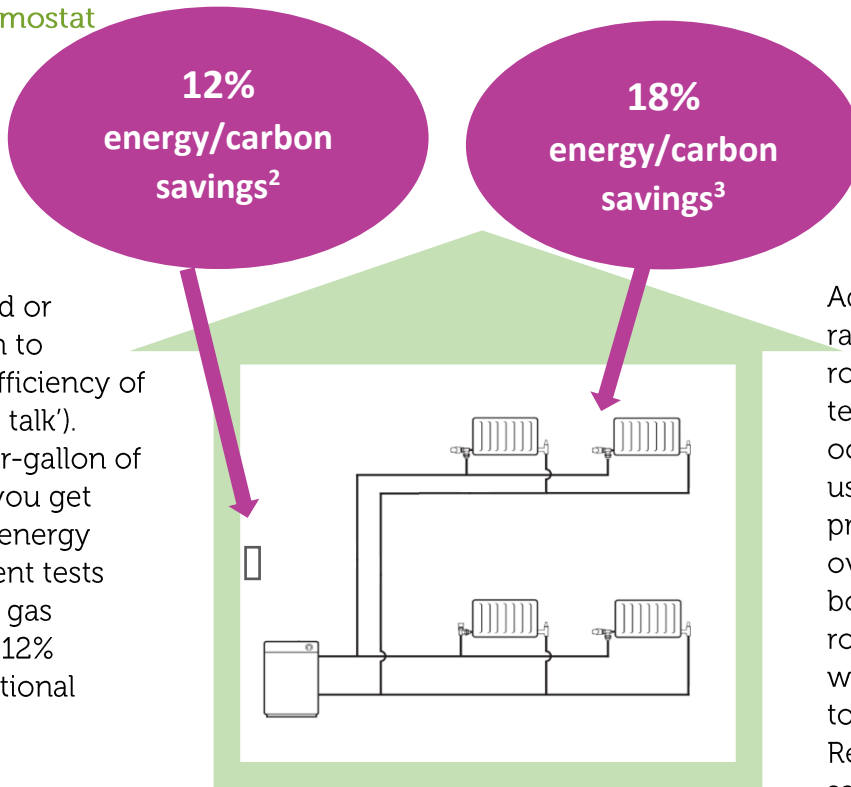
These upgrades could reduce your total heating bills by 32%, making your home more comfortable, and giving you the flexibility to reduce your heating bills even further where it suits your lifestyle and needs.



Advanced Room Thermostat



These controls use load or weather compensation to improve the running efficiency of your boiler (see 'techie talk'). Much like the miles-per-gallon of a car, this means that you get more heat per kWh of energy you pay for. Independent tests show that this reduces gas consumption by up to 12% compared to a conventional room thermostat



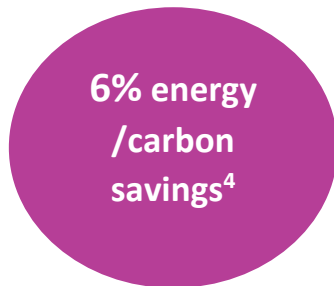
Thermostatic Radiator Valves (TRVs)¹



Adding TRVs to your radiators allows each room to be set at a temperature to suit the occupants, or lower if not used regularly. They prevent the room from overheating and stop the boiler from heating a room that is already warm (even responding to winter sunshine). Research shows 18% savings by reducing overheating.



Smart Control



Many Advanced Room Thermostats are also 'smart', allowing you to adjust settings remotely (usually through an app on your mobile phone) so you can easily adjust your heating to suit your lifestyle. They may also sense whether you are in or out and adjust the heating settings automatically. The overall impact is to make sure that your heating isn't on when it doesn't need to be. Field trials show 6% less gas used in homes with a smart thermostat



TECHIE TALK

Conventional room thermostats send a simple on/off signal to the boiler. They turn the boiler on when the temperature falls below the setpoint, and off again when it rises above setpoint. With **load compensation** the thermostat adjusts the output of the boiler in relation to the predicted heating needs. **Weather compensation** is similar but also includes outside temperature data in the calculation. Both result in closer control of temperature and more efficient boiler



Buyer's guide for Heating Controls

It is generally recognised that insulating your home is the first step to improve the energy efficiency of your home – but it's not the full answer. Ideally you should look to upgrade your heating controls at the same time, or shortly after, insulation is installed. This will make sure that you have an efficient heating system working inside your efficient home.

The following guide will help you select the right controls for you. While these are not generally DIY measures, and most heating installers will be able to help you decide what's right your system, it's still worth being aware of what's available.

Advanced Room Thermostat

Control manufacturers have to indicate a Temperature Control Class number on their packaging so this will help your installer identify a suitable device. Your current thermostat is likely to be a basic Class I, but if installed within the last two years may already be a higher class so do ask your installer to check.

Ideally you want a control that communicates directly with the boiler; either a Class V (load compensation) or Class VI (weather compensation) would be suitable. If your existing boiler cannot be set up to communicate with a control, or is just of an older type, then a Class IV control (on/off load compensation) can offer a similar benefit.



Suitable products can be found at: beama.org.uk/portfolios/heating-controls/buyers-guides.html

Advanced Room Thermostat with Smart Control

If you want the benefits of smart control (that it can be controlled through a phone app and/or automatically match heating operation to occupancy) we recommend that you choose a smart thermostat that is also an Advanced Room Thermostat. This will make sure you get the benefits of both in one package.



Suitable products can be found at: beama.org.uk/portfolios/heating-controls/buyers-guides.html

Thermostatic Radiator Valves (TRVs)

These can be fitted to all radiators, except in the room where the room thermostat is located. You should ask your installer to select TRVs with the 'Keymark', which shows that they are good quality controls that have been subjected to a number of tests for performance and reliability.

Systems of smart or communicating TRVs are also available.



Suitable products can be found at: beama.org.uk/portfolios/heating-controls/buyers-guides.html





Get the balance right

If you have TRVs installed, make sure that your installer 'balances' the system afterwards. This is a process of making sure that you have the correct amount of hot water through each radiator so that every room can warm up quickly enough, allowing the TRVs to do their job.

Keep cool about radiator temperatures

With an advanced room thermostat your radiators will often be warm rather than roasting hot. This is perfectly normal as the thermostat will work with the boiler to find the perfect temperature to circulate water around your heating system to maintain a comfortable air temperature.

Don't forget your hot water

If you have an airing cupboard with hot water storage, make sure the cylinder is fitted with its own thermostat. This will make sure the boiler doesn't continue to use energy heating up the water when it is already hot enough.

Save energy with your existing controls

Even if you don't upgrade right now, it is sensible to make sure that you are using your current controls to their best advantage. Small changes can reduce your energy bills straightaway. See the [BEAMA Heating Controls User Guide](#) for more information.

REFERENCES

¹ Department of Energy and Climate Change, United Kingdom housing energy fact file 2013

²Savings figures from tests by Salford University, on behalf of BEAMA and OpenTherm, on the savings effect of compensating controls, 2020.

³Savings figures from tests by Salford University, on behalf of BEAMA and BRE, at on the overheating savings from Thermostatic Radiator Valves, 2018

⁴Study by the Behavioural Insights Team on the savings from smart thermostats, 2017:
<https://www.bi.team/publications/evaluating-the-nest-learning-thermostat/2>

The total saving of 32% is calculated by assuming the order of controls measures installed is TRVs first, Advanced Room Thermostat second and Smart Control third, using the individual savings figures for each measure referenced in this paper.