Thermostatic Radiator Valves (TRVs) – Householder Factsheet

Why do TRVs need to be added to radiators when a boiler is replaced?

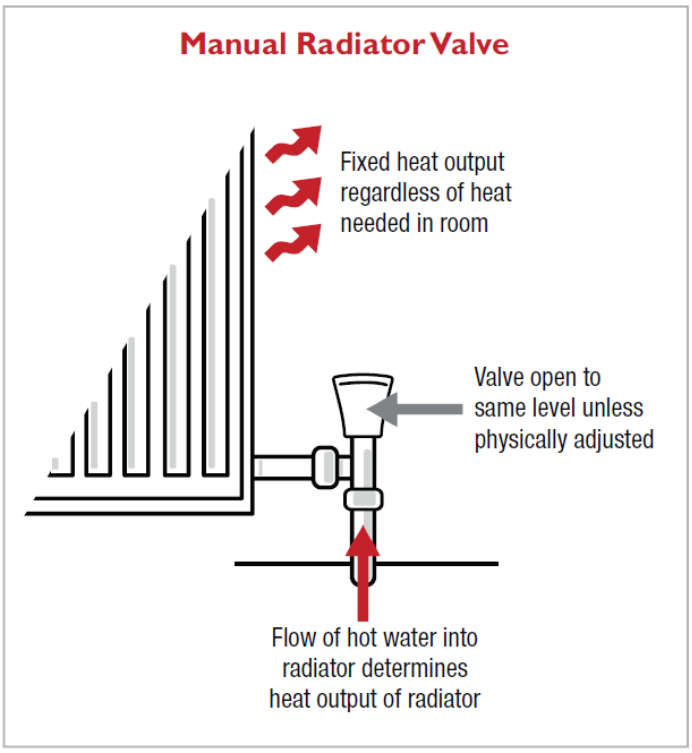
Changes to the Building Regulations now make it a requirement that each room should be provided with thermostatic room controls when a boiler is replaced in an existing dwelling[1]. Adding a TRV to radiators in each room is usually the easiest way to do this, although alternative control solutions may be offered by your installer.

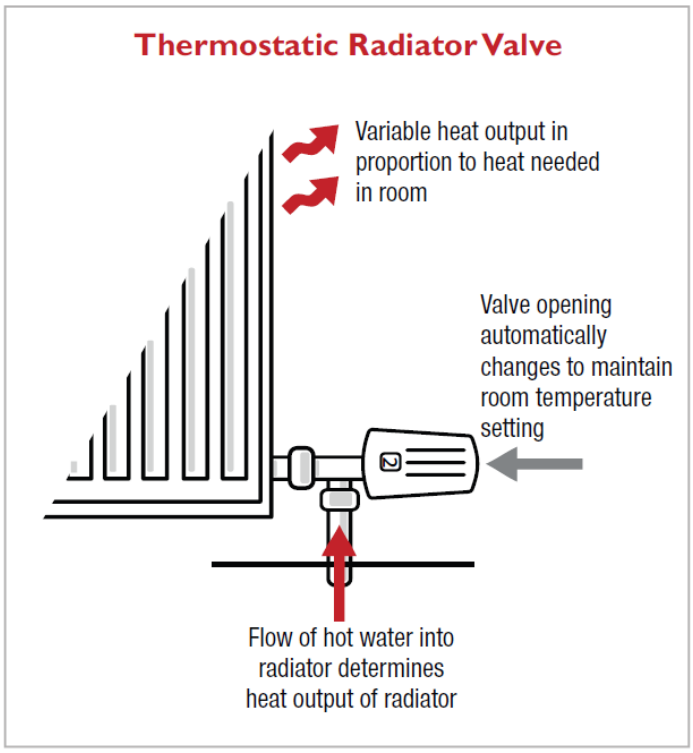
This applies in England from June 2022. Similar regulations for Wales and Scotland are expected to be follow.

This change is part of the UK Government's attempts to make sure that heating systems are installed in a way that they use as little fuel as possible, which means lower bills for householders. Adding TRVs while the boiler is being replaced is the most convenient and economical time to do it. The savings on fuel bills will far outweigh the extra installation cost.

How do they save energy?

TRVs are fitted to a radiator where it connects to the pipework, replacing the manual valve that would be used to set up the system. They independently monitor the temperature of the room they are in and automatically adjust the heat output of the radiator in response to this so that a comfortable temperature is maintained (see diagrams below).





[1] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1057372/ADL1.pdf

By ensuring that each room is maintained at a comfortable temperature, they avoid any overheating in those rooms that will be a waste of energy. This will include reducing the heat output of a radiator when the outside temperature increases, at times when that room is getting a lot of sunshine, or when additional heat is generated by people or electrical appliances in the room. The boiler will sense when the TRVs are closing and either turn off or reduce the amount of heat it produces in response to this.

If the TRV temperature setting is reduced (for example in an unoccupied room) then the heat output will be further reduced to only maintain this lower temperature.

What is the evidence of energy savings?

TRVs have long been recognised as an energy saving measure. Recent research at the University of Salford[2] showed that, under standard operating conditions, a typical gas boiler will use around 18% less energy over an average UK heating season.

How much will this save on fuel bills?

The average annual gas consumption in UK homes is 13,600 kWh[3], of which 77% is for heating[4] (other uses being hot water and cooking). At a gas cost of 4p per kWh[5], reducing heating costs by 18% is calculated to save £69 per year which, over the 15-year expected lifetime of a new boiler, will lead to a total saving of £1,034.

Since these calculations were made gas bills have risen significantly, and it is predicted that these will rise again in October 2022[6]. If these expected higher prices remain then the annual savings would rise to £202, with a saving of £3,037 over the lifetime of the boiler.

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[2] https://www.beama.org.uk/resourceLibrary/salford-university-tests-to-establish-the-energy-savings-from-trvs---2018-pdf.html

[3] https://www.gov.uk/government/statistical-data-sets/annual-domestic-energy-price-statistics

[4] https://www.gov.uk/government/statistics/united-kingdom-housing-energy-fact-file-2013

[5] British Gas standard tariff 4.053p per kWh - 8 Feb 2022

[6] https://www.bbc.co.uk/news/business-60506940