

# Simple way to address high energy costs

As the UK faces an energy bill crisis, Danfoss's Gareth Ash looks at how installing modern heating controls could significantly improve domestic heating efficiency for millions of households.

**T**hese days, keeping a home comfortably and – most importantly – affordably warm is a major challenge for many people. According to a study into energy use and heating costs by the European Building Automation and Controls Association (EUBAC), around 26 million houses in the UK have a 'wet' central heating system consisting of a boiler, most likely a gas-fired combi, and radiators. If they are not already fitted, high-efficiency heating controls, such as TRVs and electronic room controllers, can improve the efficiency of these wet systems and so reduce energy consumption.



**Gareth Ash**  
Marketing communications manager at Danfoss

## Compelling evidence

A series of tests conducted independently at Salford University Energy on behalf of BEAMA indicate the potential energy savings that can be achieved with better system control. The first test was based around a typical installation of a 30kW combi boiler and the impact of different controls, from a standard on/off model through to more advanced products. The second repeated these tests but with a less oversized boiler (24kW) that was adjusted (range-rated) to suit the system, carefully balanced radiators to DT20 and lower flow temperature – as will be required in the Part L 2022 regulations for England – to optimise condensing efficiency.

The results showed that replacing a standard room thermostat with one that controls the boiler using proportional on/off load compensation can reduce the gas used by 10% over the heating season. The tests also estimated that where the boiler and control were able to talk to each other through a suitable communication protocol, installing a directly modulating load or weather compensating room thermostat delivered energy savings of 12%.

We know that Boiler Plus standards recognise the



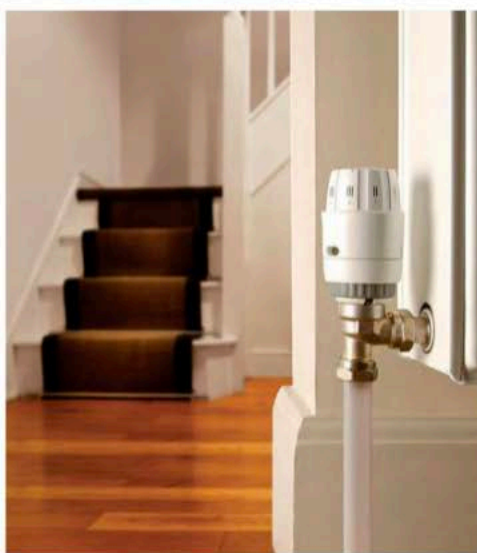
**As energy costs continue to soar, research is illustrating how controls can improve system efficiency and reduce energy bills**

### CUT TO THE CHASE

- Studies prove that with better system control, systems operate more energy-efficiently
- Replacing a standard room thermostat with one that uses proportional on/off load compensation can reduce gas usage by over 10%
- Weather compensation increases efficiency by adjusting the temperature of the boiler to account for weather changes
- All Danfoss room thermostats, even the basic models, offer load compensation



▲ The Danfoss TPI-S offers a range of energy-saving features



▲ TRVs help the boiler operate in condensing mode

benefits of load and weather compensation. Whilst this can be a feature in some modern boilers, you don't have to fork out for a brand new appliance to access this energy saving function, as it can be available within some heating controls – and not just smart devices.

## Compensation

At Danfoss we appreciate that internet connected products may not be suitable for some users, which is why all our room thermostats, even basic models, now offer load compensation. This facility measures the gap between the temperature of the home and what the occupant wants it to be, and then will either fire the boiler for shorter periods as it gets closer to the desired temperature or modulate the output of the boiler so that it is just hot enough to provide the extra heat needed for optimum comfort and efficiency. This allows the

boiler to operate in condensing mode for more of the time, thus saving more fuel, than purely standard time and temperature control.

Most heating professionals will be familiar with weather compensation, which interacts intelligently with the boiler to provide just enough heat to keep the home warm and adjusts the temperature of the boiler output to account for changes in the weather.

If the weather is cold the boiler will send warmer water to the radiators. In warmer weather, less heat is needed to keep rooms warm enough, so the boiler temperature turns down. Operating at a lower temperature makes the boiler more efficient, which saves fuel without compromising user comfort. Weather compensators can be installed as an external sensor feeding weather data back to the boiler or a digital product that uses weather data from the internet alongside other functions.

The EUBAC study mentioned

earlier also found that when wet systems are configured correctly with self-regulating devices, such as TRVs that control the temperature in each room, occupants can reduce their fuel consumption and heating costs. As we know, to maximise the efficiency of a condensing boiler it is critical that the boiler operates in condensing mode most of the time. Typically, in a wet heating system with manual radiator valves the boiler will only operate in condensing mode about 5% of the time, compared with 80% if TRVs are fitted.

As part of a hydraulically balanced system, TRVs will also prevent unwanted overflows, and wasted energy through the radiators. According to some figures, this could bring up to 36% of extra savings for homeowners compared with constantly open manual valves. Additionally, TRVs are easy to install and offer an affordable solution for consumers with an estimated payback period of just two heating seasons.

## Cost-effective solutions

As energy costs continue to soar, recent studies into modern domestic heating controls illustrate how these simple and easy-to-install products can improve system efficiency and reduce energy bills.

Heating professionals who want to find out more and get hands on with the latest heating controls and tech can come along to the 2022 Danfoss Installer Life Tour, which is currently making its way around Britain. Installers can hop onto the tour bus when it comes to their area and meet the Danfoss team.

Once on board they can check out new products, take part in training sessions and have fun while learning new tips and tricks of the trade. To get a list of tour dates and locations, use the reader link below and sign up to the newsletter.

■ [phamnews.co.uk/522/38](http://phamnews.co.uk/522/38)