Beat the Bills this Winter

Simple tips to save you money from our expert on energy saving



This year we need to look to make savings on our energy bills more than any other time in living memory. Peter Wiltshire is a member of Lancaster Civic Vision Executive Committee and also a qualified Commercial Energy Assessor with over twenty five years experience in most areas of construction.

He will be writing a series of articles to identify simple and easy actions that you can take around your home and save money on your energy bills - sometimes, as in today's article, by simply turning a dial slightly.

His first - Save Eight per Cent on your Gas Bill is below

Save Eight Per Cent on your Gas Bill - Turn Down the 'Flow' Temperature on a Combi Boiler

A recent report by the Heating and Hot Water Council (HHIC)* found that households can save around six to eight per cent in gas just by turning down the heating flow temperature on their condensing combi boiler.

This is not just turning down the thermostat

Most combi boilers are not optimised to run as efficiently as they should, which increases household gas bills and emits more carbon. Reducing the operating temperature for heating will help your boiler run more efficiently without reducing your comfort.



We help you check if you have the right sort of boiler and show you how to make this simple change.

NB turning down your heating flow temperature is separate to setting your hot water temperature, this is covered in section 11.

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1) What does 'turning down the flow temperature' mean?

The 'flow temperature' is the temperature your boiler heats up the water to before sending it off to your radiators. Most gas boilers are set up to operate at what is called 80/60 flow and return temperatures. This means the boiler heats up the water (called ‘the flow’) to 80°C. The water returns to the boiler after travelling around all your radiators (called ‘the return’) at 60°C, having given off 20°C to the room.

However 80/60 flow and return temperatures are too high for a condensing gas boiler to achieve the A-rated efficiencies shown 'on-the-box'. It is a little known fact that modern boilers

have a variable efficiency between A-E, in other words they are not A-rated out of the box. Studies have found most to be C-E-Rated in the home, equivalent to just 75-85% efficiency.

Your installer should have reduced the flow temperature to give the boiler a chance to run in what is known as 'condensing mode' as much as possible. This is when it can recover the heat that was previously lost through the flue on old style boilers.

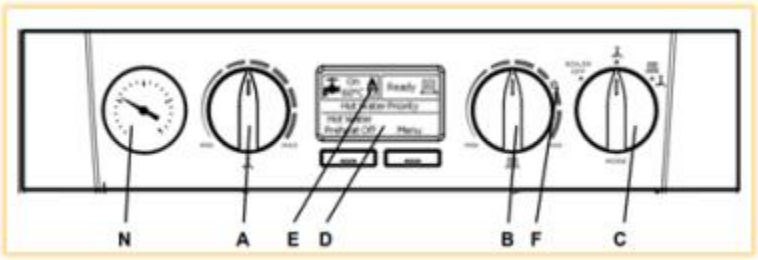
At 70/50°C the boiler will start to operate in condensing mode. Only when the flow temperature is 60°C or lower will the boiler recover enough heat to reach its higher efficiency potential.

2) What type of boiler do I need?

You will need to have a *condensing combi* boiler, i.e. a boiler that produces your heating and hot water. You will have a combi boiler if you *do not* have a hot water cylinder. It will definitely be a condensing boiler if it was fitted in the last 16 years. A condensing boiler will also have a white plastic pipe underneath the boiler (although it can be grey or black).

3) How do I reduce the flow temperature?

You need to go to the controls on front of your boiler. To be clear this is not your room thermostat, this sets the flow temperature for the boiler. The way in which you adjust the flow temperature and the display information available varies a great deal. Three common are examples are given below:

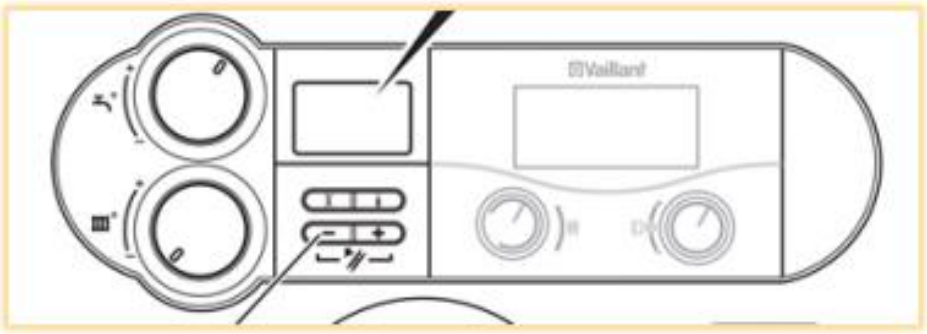


One or two dials

Most combi boilers have two dials: one for heating (usually with a little radiator icon over it) and one for hot water (with a little tap icon). Some only have one dial but it is usually for the heating flow temperatures. We've had lots of feedback on dials that do not provide the actual temperature setting. Some like Worcester are numbered 1-6, some have dashed lines and others a curved line of increasing thickness. Some user manuals do provide additional information.

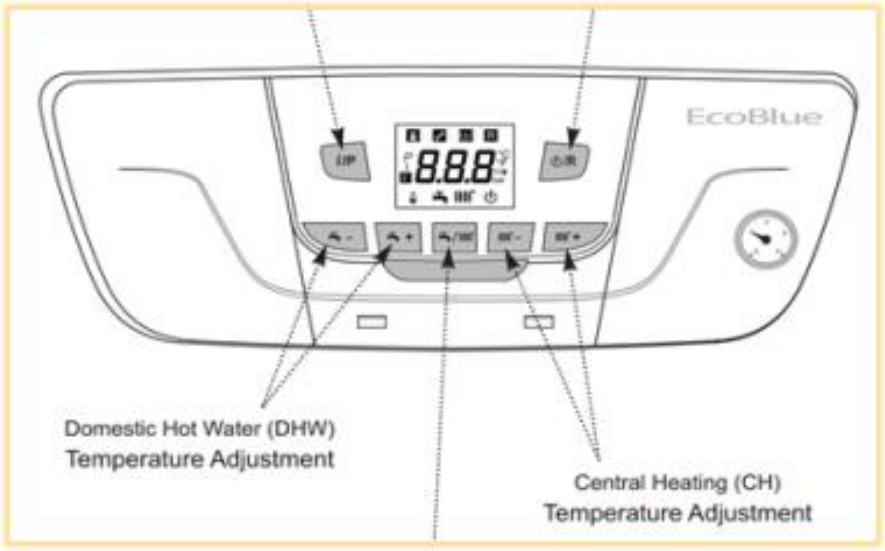
If you have to work it out manually, then as a guide most boilers have flow temperatures that operate between 30°C-80°C. Which means 60°C will be about half way or the No. 3. We suggest

setting to No.3 to begin with or at the half way mark (12 o'clock position). If there is a 'e' on the dial (not always present) it stands for 'economy' and will be around 70°C, so actually not that economical. Our advice is to ignore it.



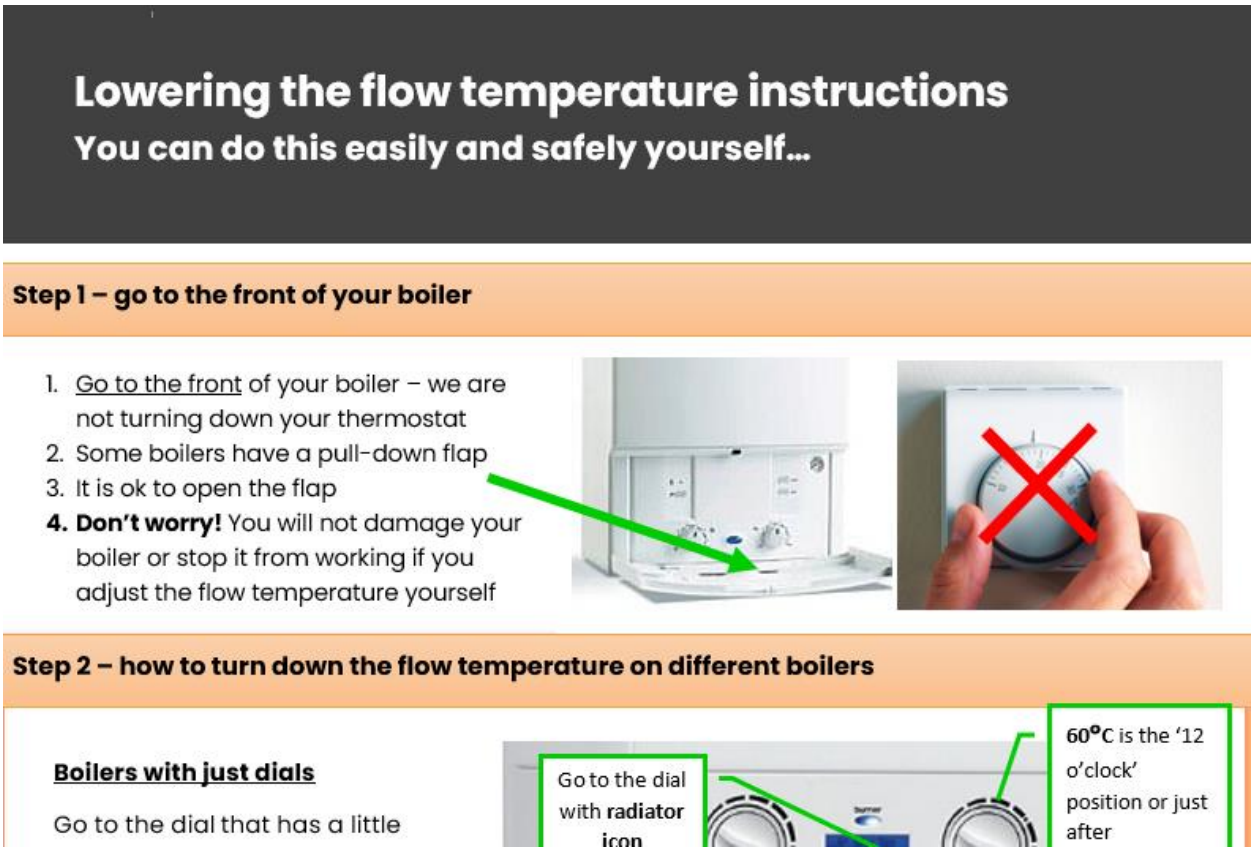
Dials with digital displays

Some boilers have a dial but the flow temperature figure will appear in the digital display. Turn the dial with the radiator icon down until you reach 55-60°C. NB the boiler may not operate at the temperature set, rather it will target that temperature but reduce further when not needed. Our advice is not to get too distracted by what it does after you have turned the dial.



Digital displays with up and down buttons

Some newer boiler models have digital displays with up and down buttons or plus (+) and minus (-) buttons. You simply adjust the flow temperature via the 'down' or 'minus' button and the flow temperature figure will show in the digital display. Sometimes you have to press and hold a menu button to bring up the flow temperature, reduce it to 60°C, then press the menu button again to set (like setting the time on a cooker).



4) What is the correct condensing boiler temperature setting?

The correct temperature setting for heating on a combi boiler is 'as low as possible', but as a guide most older homes can run their heating systems at 60-65°C and newer homes at 50-55°C. They start to reach their very highest efficiency potential at 45°C flow temperature or lower, but this can be too low for older properties.

Ultimately how low you can turn your flow temperature down will depend on the size of your radiators, how well insulated your home is and your thermostat temperature.

Lower flow temperatures need more surface area of radiator to meet your desired room temperature; hence why we need much larger radiators for an air source heat pump. The good news is that most radiators are bigger than they need to be as the industry has sized based on guesswork or used basic online calculators that almost always overcompensate. We recommend trying it at 60°C. If you have a home built after 2010, try 50°C.

For homes with modern double glazing, cavity walls and good levels of loft insulation you should be able to drop your flow temperature down with no impact on comfort. Even older homes, particularly terraced houses, will be able to do this if they have been modernised and draft proofed.

5) Can I use trial and error?

Yes you can. Without an accurate heat loss calculation and radiator sizing exercise, it will be a matter of turning down the flow temperature and testing it to see if your house stays warm. You can turn it down little by little, or turn it down a lot and notch it back up if it doesn't seem warm enough.

It may be that you can turn it down to below 60°C for most of the year but still need to notch it up in really cold weather.

6) Will I notice any changes in my heating system?

Yes. Your radiators will not feel so hot. This is a sign that the system is running a little cooler, which is what you are trying to achieve. Providing your home does not feel cold and you do not feel cold, the boiler and system are working correctly and more efficiently.

If you have your heating programmed to come on for a very limited amount of time, you may notice that it will take longer for your home to heat up. Many households are accustomed to short heat up times because they run so hot. Lower flow temperatures will mean slightly longer heat up times.

For those that have the heating on much of the day, you will move to lower temperatures for longer periods which will have a positive impact on fuel bills.

7) What if I have a health condition?

We would caveat the above advice for those with health conditions. Staying warm is very important and we would not wish you to risk your well being by adjusting your heating system on a trial and error basis.

8) Where can I get more help with this?

For more information on your boiler you can look in the instruction manual. You can usually find your manual on-line if you search for the make and model of your boiler. To be totally sure you have the right manual, find the boiler's 'GC' number. Every boiler has one and its usually on the boiler's data-plate. It will start with GC followed by a 7 digit number.

Alternatively you can ring the manufacturer's technical helpline for customers. They will need the model or preferably the GC or serial number to help you with your particular boiler.

You can also ask your installer when you next have the boiler serviced. NB not all installers are familiar with condensing boiler technology, but should be able to assist with this function.

9) Why have I not been advised about this before?

A vast skills and knowledge gap (that dates back to 2005 when condensing gas boilers become mandatory) means 99% of installers do not understand how condensing gas boilers work and therefore cannot set them up to run as they were designed to. Installers have been let down and so have UK households. We have simply not benefited as much as we should have from this leap forward in boiler efficiency.

Part of our work is to educate households on their heating systems and help them get higher efficiencies from their existing boilers. The over-replacement of boilers is a problem in the UK. We want to see more existing boilers running optimally with small changes that reduce energy bills and our carbon footprint.

10) Is there anything else I can do to improve efficiency?

Yes lots. Lowering the flow temperature is just step 1. Most boilers are running 10-25% under their A-rated efficiency due to incorrect set up. A number of changes can be made to any boiler and heating system to tap latent efficiency. We help households invest in low cost efficiency measures to their existing boiler and heating system to harness untapped efficiency. To be clear we rarely advocate replacing a working, condensing boiler.

11) What temperature should my combi boiler be set at for hot water?

You can adjust your hot water temperature somewhat, but you must be mindful of legionella risks. Legionella is a bacteria that can occur in domestic hot water systems. It is more common in stored hot water, i.e. hot water cylinders, although still very rare .

There is a lower risk of legionella occurring in domestic dwellings that have a combi boiler (i.e. no hot water cylinder) and where there is daily usage of hot water. The HSE state that hot water outlets (taps and showers) should achieve 50-60°C. Depending on your levels of pipe insulation and length of the pipe runs, you may be able to set the hot water temperature on the boiler to 55°C, and possibly lower if you live in a modern flat or smaller modern home.

What is the solution? The boiler needs to be set up with separate heating and hot water temperatures, a low efficient temperature for heating and a high safe temperature for hot water. Adapting your boiler so it can supply a lower flow temperature for heating (that you can adjust) requires boiler-specific advice and some minor works to your system.

Peter's next article in the series 'Beat the Bills this Winter' will be 'Ventilation versus Draughts' and is due to be published shortly

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