A guide to

WET CENTRAL HEATING SYSTEMS

severn wye

If your home is heated by a boiler pushing hot water around radiators or underfloor pipes, then you probably have a ‘wet’ central heating system.

It’s generally the most cost effective and efficient way to heat your property and is the most common form of heating in the UK.

This guide will take you through how these systems work, different ways they can be controlled and some things you could consider to get the most out of your system.

Where do boilers feature in these systems?

In most wet systems, a boiler heats the water that then supplies the system. The boiler will usually be fueled by gas, but some boilers use oil or LPG (Liquid Petroleum Gas) if there is no mains gas supply available.

There are two main types of boilers:

Standard
Standard boilers have a cylinder or tank separate to the boiler, where hot water is stored ready for use.

Combination
Combination (or 'combi') boilers are the most popular type in the UK. They provide hot water on demand without the need for a cylinder, which also means they take up less space.

In most cases, heating water instantly is more energy-efficient than 'stored' hot water systems. This is because a standard boiler will heat water (usually twice a day) regardless of whether it's used or not. It takes extra energy to heat up and store water, whereas an 'on demand' combi boiler only produces hot water when it's needed.

Servicing your boiler

Getting your boiler serviced every year is a great way to maintain its efficiency. Regular servicing will also ensure its operating safely and not producing dangerous gases such as carbon monoxide.

Make sure you use a Gas Safe engineer if your boiler is fueled by gas or LPG, or an OFTEC registered engineer if you have an oil-fueled boiler.

Even a well-maintained boiler will become less efficient over the years. If your boiler is over 15 years old, replacing it with a modern condensing boiler is a good idea.

Not all boilers are built the same

Most standard and combination boilers are condensing boilers. When a fuel such as gas or oil is burned by your boiler, gasses are released via a flue. A condensing boiler can capture these gases and recycle them back into the system via a heat exchanger. Depending on the boiler type, this heat is then either moved directly to the means of heating (such as radiators) or to hot water in the property. Overall this means that condensing boilers produce less waste and are more energy efficient than non-condensing boilers.

Like most appliances, boilers come with an energy efficiency rating. There are two different systems for rating boiler efficiency:

ErP

Every new boiler has an ErP (Energy Related Products) energy label, which ranks its efficiency from A++ to G. Nearly all modern gas boilers have an energy rating of A or above, which means they're highly efficient.

SEDBUK 2009

SEDBUK stands for 'Seasonal Efficiency of a Domestic Boiler in the UK,' and the 2009 system gives each boiler an exact percentage score. This score is the one to look for if you really want to get into the detail, but a few percentage points won't make that much difference.

The most important thing to consider is replacing your old boiler for a new, more efficient one. A new A-rated gas, oil or LPG boiler will be more than 90% efficient, which means that they will use at least 90% of the energy stored in the fuel to heat the water in the system, with very little waste. Older boilers are much less efficient and if your boiler was manufactured before 2005, it might not be condensing.

Controlling your wet central heating system

With UK energy bills at unprecedented highs, it's important to know how to control your heating efficiently and effectively. Using heating in this way is good for your pocket and good for your wellbeing. A warm and comfortable home is essential to maintaining physical and mental health.

Most wet central heating systems will have one or more of the following controls:

- A boiler thermostat
- A programmer or timer
- A room thermostat
- Thermostatic Radiator Valves
- A hot water cylinder thermostat (on standard boilers with hot water storage)

Boiler thermostat

Most boilers are fitted with their own thermostat (which is different to a room thermostat that you'll find on your wall). It's usually a dial, marked by either numbers or a scale from minimum to maximum. This controls the temperature at which the water leaves the boiler. If it's not set high enough, your system may struggle to heat rooms to the temperature you want.

In standard boilers, this thermostat controls the temperature of the water sent to both the hot water cylinder and the radiators. With a combination boiler, the temperature for the heating and hot water can often be set separately.

Programmer or timer

Learning how to use your programmer or timer means that you can set the heating so that it comes on at the best time for you. Don't be taken in by the common energy myth that it's more energy efficient to have your heating on constantly at a low temperature. It's more energy efficient to only have the heating on when the property is occupied.

It's worth remembering that it will take some time for the property to heat up, but it will also keep the heat for some time after the heating is switched off. You should factor in these warm up and cool down times when you set your programmer or timer.

If you go away from the property for any length of time (for example, on holiday), you can always switch the heating off. If it's very cold, you could leave your timed programme running, but reduce the temperature you want the system to reach.

If you have a standard boiler, it's likely that your programmer will control the hot water as well as the heating. It's sometimes possible to set the hot water times separately and it's best to only set the hot water to come on for as long as required for the amount of hot water you need. You can experiment with reducing the amount of time the hot water is on each day to find the minimum amount of time it can be on, whilst still producing enough water.

Most programmers allow you to set the heating (and hot water) to turn on and off several times during the day, but they vary in the degree of flexibility they offer. Some only allow a single setting which applies to every day of the week, whilst others allow you to set different times for weekdays and weekends. The most advanced allow you to set different times for every day of the week. If your property is sometimes empty during the week, it may be worth considering upgrading to a programmer that offers more flexibility.

There are two main types of programmer:

Mechanical programmers

These usually have a set of sliders (called 'tappets') which are moved around a clock face to set the times of day you want the boiler to switch on and off.

Digital programmers

These display information on a screen. The options you have for daily settings are usually more flexible with this kind of programmer.

Smart controls

Smart heating controls are a growing area of the market that allow you to control your heating when you're away from home, using your phone or tablet. The 'smart' aspect of these programmers means they can learn your daily habits and adjust your heating accordingly, so your home will be warm when you arrive, but you won't be wasting unnecessary energy by keeping the heating on longer than you need to.

Room thermostat

A room thermostat allows you to set the desired temperature of the heating, using either a dial or a digital display. The thermostat senses the air around it and sends a signal to the boiler to switch off once the property has reached the temperature you want.

On some modern systems, the thermostat and the programmer are the same unit. The position of the thermostat will affect the temperature your property reaches overall. If the thermostat isn't in your main living area, you may need to experiment with the setting to get the temperature right for you. For example, we usually recommend that you keep the temperature in your hallway around 18°C, as opposed to living areas which should be kept at 21°C.

In terms of saving energy (and money), it's best to have the temperature as low as possible whilst keeping the temperature in the property comfortable. Turning down your heating by just one degree could cut your heating bill by up to 10%. However, this should never be done at a cost to your health or the health of the house (cold houses are more likely to be damp and have problems with condensation).

Remember – turning the thermostat up won't heat the property quicker. It still takes the same amount of time to heat up, but if you turn the thermostat right up, it will carry on getting hotter, making rooms too warm and wasting valuable energy.

Thermostatic Radiator Valves (TRVs)

TRVs are useful because they can be used to control the temperature in each individual room (where a TRV is present). The higher the number selected, the hotter the radiator will get.

TRVs measure the surrounding air temperature so should not be covered over or enclosed. For example, being boxed in behind a cupboard or covered by a curtain will restrict the TRVs' ability to control the radiator.

It's now possible to buy smart TRVs, that have a few advantages over the standard option. You can control them remotely using your mobile or tablet and create a heating schedule through an associated app. Smart TRVs can be set using degrees celsius, so you have greater control over the temperature of the room, and many of them contain energy saving smart features such as 'open window detection,' that prevent unnecessary waste of energy.

Set TRVs higher in rooms that are used frequently and lower in rooms that aren't used as often (such as toilets, utility rooms and spare rooms). However, remember that rooms that are too cold for too long can develop damp and condensation problems.

Just as with room thermostats, setting a TRV higher won't make a room heat up quicker.

Hot water cylinder thermostat
If you have a standard boiler, you will also have a hot water cylinder that stores hot water for taps and showers. A thermostat is usually fitted in the lower half of the cylinder and is marked with a temperature scale. This should be set to 60°C, which is hot enough to kill harmful bacteria without using excessive energy.

If you find that the water your system produces is too hot (for example, if it comes out of the taps 'scalding'), you could consider installing a thermostatic mixing valve which will automatically ensure that hot water comes out of taps and showers at a safe temperature.

Getting the most from your wet central heating system

- Air can become trapped in the heating system, which means radiators won't work as effectively. To prevent this, bleed your radiators regularly to allow trapped air to escape. You can find detailed instructions here: homeserve.com/uk/living/heating-and-cooling/how-to-bleed-a-radiator.
- Check that the time on your heating is set correctly and remember to adjust it when the clocks change (unless your system does this automatically).
- Avoid opening external doors and windows whilst the heating is on, as this lets out valuable heat.
- Fit reflective foil behind radiators on external walls to reflect heat back into the room.
- Make sure that radiators are not covered and have plenty of space around them to allow the heat to circulate effectively (this includes curtains).
- Insulate and draught-proof your home effectively to prevent heat from escaping.
- If you have a standard system with a hot water cylinder, you could consider covering it with an insulating jacket. Most modern cylinders are factory insulated to keep the water at a higher temperature, however some older models are not well insulated. You can purchase an insulating jacket at most DIY shops.

Wet central heating systems provide the heat and hot water in many of the UK's homes. This guide will take you through how these systems work, different ways they can be controlled and some things you could consider to get the most out of your system.

For a full range of advice, check out our website.

Accessible guides are online:

01452 835060

severnwye.org.uk

@Severn_Wye

severn wye

Severn Wye Energy Agency is a non-profit company (company no: 03830608) and registered charity (charity no: 1083812) primarily operating throughout Wales and its English border counties, supporting communities, residents and businesses to create a sustainable, affordable, low carbon future.

Copyright © 2022 Severn Wye Energy Agency