Domestic Heating and Hot Water Controls Are Easy – And they don't cost a fortune

A simple guide to how you can take control of your central heating and hot water

With the cost of central heating oil and gas continuously at the forefront of consumer's minds it's reassuring to know that a few simple upgrades of your central heating and hot water system can save you up to 40% * on heating and hot water costs. And the good news is it doesn't require a huge investment to do.

Under current building regulations, if you change or upgrade your central heating boiler you must ensure a minimum control of hot water and central heating is met. Part L, which is a technical booklet to support our N.I. Building Regulations calls for central heating to be split into two zones and one hot water zone. In other words, you can control say upstairs heating separately from down stairs heating – or bedrooms from living areas, and also be able to control your hot water separately from central heating. This is the how you get two heating zones and one hot water zone.

If you have a central heating system that was installed more than twelve years or so ago chances are very likely that controls will either be 1. very basic or, 2. non-existent. How many times have you heard your central heating boiler working away, producing hot water and heat, even when your home is as warm as you need it and you can't hold your hand under the hot tap because the water is too hot. Sounds familiar?

Well the answer to these problems is to have a qualified installer fit a controls pack to upgrade your existing central heating system. Something which will put you back in control.

So what does a control system consist of and what does it do to help you save on your fuel bills? There are some very simple items in a control pack which normally consist of the following:

1. A time control
2. A room thermostat
3. A hot water cylinder thermostat
4. Motorised valve(s)
5. Electrical interlock system
6. Thermostatic radiator valves

Each of the above items plays a simple but very effective role in making sure you save on running costs of your central heating and hot water. Let's deal with each of them in turn.

1. Time controls

Time controls are on the “front line” when it comes to ways of holding down your home’s heating bills. They do this by switching your heating system off as often as possible. Time controls trigger the “chain of command”, sending automatically timed On and Off instructions to other system components helping maintain desired comfort levels and prevent excessive fuel consumption by inhibiting unnecessary boiler firing.

There are in general two types of time controls and they are known as Times switches and Programmers.

Time switches are for controlling single heating zones in your home or the heating that is typical from combination boilers. Programmers however, control more than one heating zone and are generally used when you wish to have control over both central heating and hot water totally independent of each other.

2. Thermostats

Room thermostats limit fuel consumption and enhance comfort by controlling the temperature of air within your home, whereas cylinder thermostats control the temperature that hot water is stored at within your hot water cylinder. There operation is very simply explained by the way they switch Off the heat source when a desired temperature has been reached, and switching back On the heat source when a temperature drop has been detected. In their simplest forms they are nothing more than an electrical switch.

Generally speaking it is good practice to fit a room thermostat in each heating zone – upstairs/downstairs or bedrooms in one zone and living areas in another. Some room thermostats have a Frost Protection setting which can be set when the likelihood of frost is great, possibly when you may not be at home when and burst pipes is just what you don’t need.

3. Cylinder Thermostats

Cylinder thermostats monitor the cooler temperatures at the lower half of your tank in order to maintain the hotter water at the top. As you draw off hot water the tank cools as new fresh cold water is introduced to your hot water cylinder in replacement of the hot water and when a pre-set temperature is sensed by the cylinder thermostat it switches the heat source On to re-heat your hot water cylinder back to its pre-set temperature.

4. Motorised valves

A motorised valve is a compact device which simply permits the flow of heated water to either your radiator zones or hot water cylinder. They operate on very, very small amounts

of electricity and help you save fuel by only permitting hot water from your boiler to to go where it is needed ie radiators or hot water cylinder. Some central heating systems require only one motorised valve where others may require two or possibly three or more depending on the level of control required.

5. Electrical Interlock

Unlike the other parts of a central heating control pack mentioned above, “Electrical Interlock” isn’t actually a physical device supplied in the controls pack. Electrical Interlock, sometimes referred to as Boiler Interlock, is just the technical way of explaining how a central heating boiler should not be allowed to fire if there is no demand for central heating or hot water – it’s as simple as that. All qualified installers know of this important detail and how it is achieved, usually by a small dedicated wiring box that most controls manufacturers supply within their control packs.

6. Radiator thermostats or Thermostatic radiator valves

Top quality radiator thermostats control the desired room temperature within the room in which they are fitted. This is a very accurate process and it allows only essential heat to be generated in any given room.

TRV’s as they are commonly known in the plumbing and heating trade sense room temperature changes in individual rooms – including extraneous “ free heat” from sunlight, appliances and occupants, and adjust the flow of heated water through the radiator which they are fitted to. This simple but highly effective control provides you with a comfortable, pre-set room temperature and helps conserve fuel. Radiator thermostatic valves do Not, contrary to popular belief, sense the temperature of the radiator or the water within it.

Really good thermostatic radiator valves react fast to room temperature change. This all depends on the type of sensor fitted to the radiator valve body and whether or not that sensor is filled with wax or vapour. Wax reacts much slower than vapour or gas as it is sometimes known. The faster the reaction to temperature change the more comfortable your room will become in a shorter time so it makes sense to insist your installer fits high quality valves that have a vapour or gas fill in the sensor.

One extremely important feature to ask for when you have thermostatic radiator valves fitted is a 100% Positive Off feature. This is very important if you think a radiator might, at some point in time, need to be removed say for decorating. A 100% Positive Off feature means that there is never any likelihood of water passing out of the valve because a rooms cools down so far with the radiator obviously removed. This is an extremely important feature and only top quality radiator thermostats can provide and guarantee it.

Most Thermostatic good quality radiator valves can provide temperature control in the range of 8°C - 28°C and also incorporate a frost protection setting. Again, just like a room thermostat, a frost protection works by setting the radiator thermostat at a position where

if room temperature was to drop top say 8°C the radiator valve would allow hot water to pass into the radiator and provide the important frost protection the room may need. This can only be achieved of course when time control and any other temperature in your system is “calling” for heat in order for your boiler to produce heat.

Other radiator thermostatic control options include remote sensors where the “sensing” part of the thermostat is perhaps wall mounted away from the radiator. This is particularly useful where radiators are fitted behind heavy curtains or drapes and room temperature may not be easily detected by the sensor if it was mounted directly on the radiator.

We hope you have enjoyed this brief introduction to central heating and hot water controls. Please do ask your installer to include a controls upgrade when you change or replace your current system and begin immediately to benefit from the command you put at your fingertips of when, how much and how hot you want your home and hot water to be.

Please also consider other energy saving means like loft insulation upgrade and cavity wall fills to ensure your precious heat is maintained in your newly controlled home.

*

In October 2013, the BEAMA Heating Controls Association, which represents UK manufacturers of controls used in heating systems, commissioned the University of Salford to carry out some independent tests on the performance of heating controls on their Energy House facility. From the research and test results showed that heating controls can cut household bills by up to 40%.

Test Results

1. No temperature control	£5.31	0%
2. Control by Room thermostat only	£4.68	12%
3. Control by Room thermostat + TRV’s	£3.15	40.70%

*Based on British Gas Clear & Simple cash/card payment 07 May.