How to meet current legislation

Gareth Ash of HWA member Ariston explains how to select a hot water cylinder properly for use with different domestic heating systems

hot water association

There are a number of important considerations that need to be made when selecting a hot water cylinder for a domestic property.

One of these is to ensure that the cylinder meets with current legislation.

The recently-proposed changes to Building Regulation Part L are due to be implemented this month, and include amendments to the acceptable levels of standing heat loss for hot water cylinders.

These levels are scheduled to be significantly reduced, meaning hot water storage vessels in newbuild properties must have a standing heat loss not exceeding $Q=1.15x(0.2+0.051V^{2}/_{3})$kW h per day (where V is the volume of the cylinder).

In replacement systems, where a vented copper cylinder or combination unit is used, then the heat loss must not exceed $Q=1.28x(0.2+0.05V^{2}/_{3})$kW h per day.

BE READY FOR RENEWABLES

Another important aspect to consider when selecting a hot water cylinder model is whether the homeowner wants their home to be set up ready for the future integration of renewable technologies.

Some leading manufacturers offer tank guarantees of up to 25 years, and consequently it is important to select a model that is adaptable to future legislation concerning energy efficiency and renewable technologies.

By 2020, according to the Climate Change Act 2008, the government wants to ensure that 15% of the UK's energy comes from renewable sources.

This deadline is only 10 years away – less than half the life expectancy of some hot water cylinders – so it is important to think carefully when choosing which model to go for.

Twin-coil cylinders are essential for renewable technologies such as solar thermal and heat pumps, as the lower coil of these cylinders is served by the solar panels or the heat pump. The upper coil is served by a traditional heating appliance such as a high-efficiency gas boiler, which will top up the water temperature if required.

As the emphasis on installing renewable technologies continues to grow, more and more homeowners are going to be looking to select twin-coil cylinders for their hot water systems.

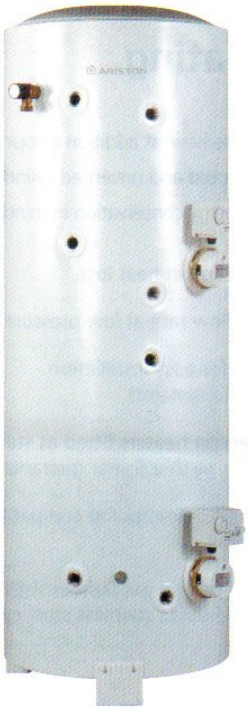
It must be noted that a twin-coil cylinder that is perfectly acceptable for a solar thermal system is not necessarily going to be suitable for a heat pump system.

For a heat pump to operate most effectively, the temperature difference between the flow and return needs to be lower, and the flow rate higher than that of a standard heating system.

In order for this to be maintained, a cylinder with a coil surface area of at least 3m² is required in order to transfer the heat correctly.

Solar thermal systems, however, can happily operate alongside a twin-coil cylinder with a standard coil surface area of around 0.7m².

Therefore, if some form of renewable technology is required, it is essential to decide which would be most suitable before the type of cylinder is selected.



L-r: Ariston's Primo Twin cylinder; inside the cylinder is a twin coil for renewables

SOLAR CYLINDERS AND COMBI BOILERS

In the UK, renewable technology systems will be backed up by a more traditional appliance such as a high efficiency boiler, which will top up the water temperature when required.

In some cases, it may be presumed that renewable technology cannot be integrated with existing heating and hot water systems that don't require a hot water storage cylinder, such as those served by a combi boiler, without the expense of stripping out the existing appliance in favour of a system or regular boiler.

Combi boilers are by far the most popular boiler type today among installers, and so will continue to make up a large proportion of the UK's housing stock.

Fortunately, a recent technological development has arrived – solar thermal systems that can be integrated with a combi boiler. Instead of the hot water being delivered directly to the tap, it is sent directly to the cold inlet of the boiler via a mixing valve.

The boiler consequently requires less energy to heat the water to the required temperature, as it is already a much higher temperature when it enters the boiler.

This system also requires a hot water storage cylinder to store the heat collected by the solar panels, although it must be noted that this cylinder would ideally incorporate an immersion heater to allow for a pasteurisation cycle.

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