

Gobbledygook in Part L

Lifescience Products looks at Part L's attempt to address the problem of limescale in hot water systems

It's official – limescale causes a loss of energy efficiency.

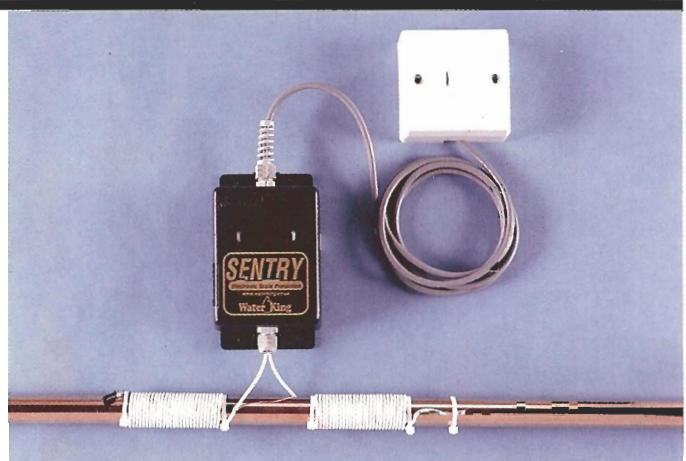
Anyone involved with domestic plumbing doesn't need to be told this – one look at a scaled up heater coil makes it blindingly obvious, but it has taken about six years to convince the Energy Saving Trust (EST) that there is a problem worth addressing.

Limescale is roughly 400 times less conductive of heat than copper, so even a thin layer of scale on a heat exchanger can significantly

reduce the rate of heat transfer.

Thanks to the work of the UK Domestic Water Treatment Association, together with Dr Carl Jasper and others, the Office of the Deputy Prime Minister ODPM (as it was) has finally acknowledged that scale is an energy issue in domestic hot water systems and has done something about it – but not with much clarity.

The Domestic Heating Compliance Guide (DHCG) was published in April alongside the new Part L regulations,



Using a scale prevention product in a hot water system is proven to be effective in the long term

containing a requirement to address the problem as follows: "Where the mains water hardness exceeds 200 parts per million, provisions (sic) should be made to treat the feed water to water heaters and the hot water circuit of combination boilers to reduce the rate of accumulation of limescale."

While the Deputy Prime Minister is not known for his verbal dexterity, one would have hoped his advisors could have done a bit better than this. Talking about "feed water" and "the hot water circuit of combination boilers" is bad enough, but their definition of "water hardness" is seriously confusing.

Water hardness is caused by many different dissolved salts, but by far the most significant is the calcium salt – calcium bicarbonate. To get over the problem of listing all the different salts that might be found in any particular water supply, the convention is to measure them all individually and then convert them to a single 'index' figure called Calcium Carbonate Equivalent (CCE). The result is known as total hardness. The DHCG doesn't mention total hardness and it is not at all clear which of the many individual salts they might be referring to.

Let's be charitable and agree they actually meant to include the word total, and that what they really mean is 200 parts

per million CCE. How do you know if you have got 200ppm CCE in the mains? Water supply companies are obliged to provide data on water quality, including hardness. Some of them even do it online based on a post code.

The problem is that sometimes they show total hardness and sometimes they show calcium on its own. To convert calcium to CCE you need to look at their relative atomic weights. Calcium's atomic weight is 40 and calcium carbonate's is 100. This means that an innocuous reading of 100ppm calcium actually converts to a rather threatening 250ppm CCE, even before you start adding all the other salts such as magnesium.

Having worked out that under Part L "provisions (sic) should be made", what do you do about it? Clearly, there is a benefit to using a scale prevention product that is proven to be effective over a long period of time.

As well as meeting DHCG requirements, it will also remove existing scale from a system that needs refurbishment and is proven to produce softer hot water. These benefits outweigh the small additional cost over an 'in-line' system that has a shorter life, can't treat existing scale and doesn't have any softening effect.

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