

Fig 5. Independent laboratory tests has proven the effectiveness of some leading electronic water conditioners



Over the past two decades, alternative technologies have been used increasingly as a replacement for more traditional types of hard water treatment. But whereas traditional technologies tended to be viewed as an optional extra, installed only where budgets allowed, the development of low cost, easy to install and, in some cases, maintenance free alternatives have made hard water treatments more accessible.

However, it could be argued that the introduction of a requirement to treat hard water to reduce energy losses in domestic water heaters, as detailed in the *Domestic Heating Compliance Guide* published alongside Part L of the Building Regulations in 2007, was the real catalyst for change. Suddenly limescale encrustation was an issue that needed to be addressed, catapulting new technologies into the specifications of housing associations and housebuilders; driving forces behind large-scale residential developments.

Over a decade since the introduction of the *Domestic Heating Compliance Guide*, can we assume that housing associations have embraced the requirements for energy conservation in hard water areas? Have new technologies filled the void created by regulatory reforms?

Water treatment survey

Lifescience Products commissioned a research project to help gather answers from housing associations working in hard water areas. Of the 53 organisations who responded, somewhat worryingly it was found that 25 (see fig. 1) of the respondents were still unaware of both Part L and the associated compliance guide. New social housing is often built by private developers

Hard water treatment

Are housing associations getting the right water treatment? Darren Stacey analyses the results of a research project exposing a gap between modern regulations and the social housing providers left behind.

Fig.1 Housing associations were asked if they were aware of Part L of the Building Regulations and the requirements set out in the Domestic Heating Compliance Guide

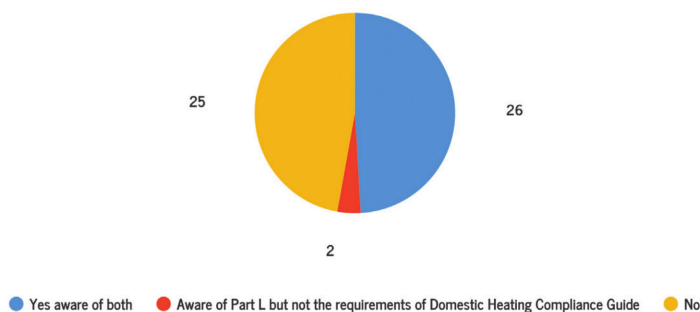
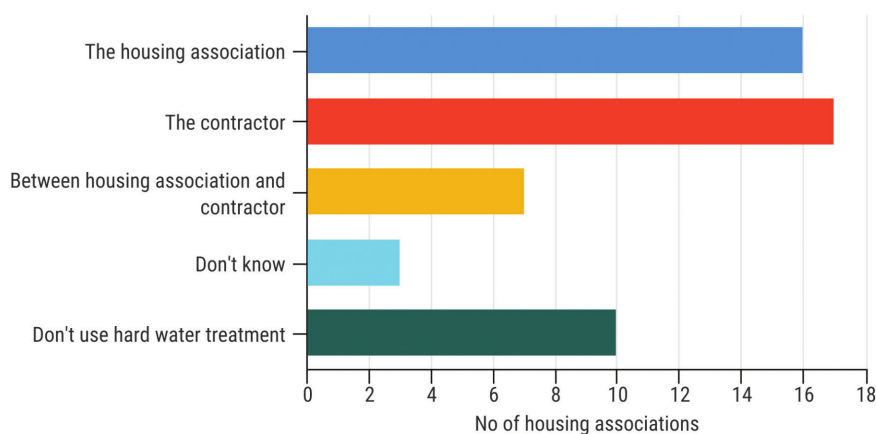


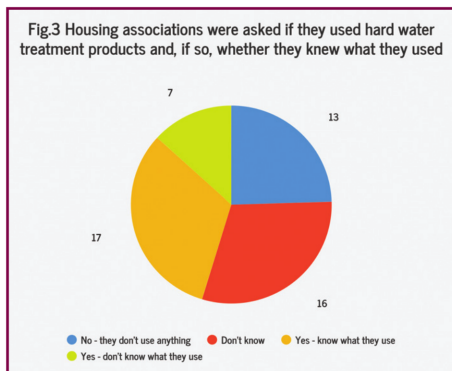
Fig.2 Housing associations were asked who decides on the type of water treatment installed



on behalf of housing associations, so the lack of awareness may be a result of devolved responsibility. In these cases it should be noted that the interests of private developers building homes for sale and housing associations assuming full responsibility for the lifelong maintenance of rental homes is very different.

When questioned, only 16 (fig. 2) respondents identified their housing association as taking sole responsibility for specifying hard water treatments. This contrasts with 24 who either leave the

decision to a contractor or make a decision in consultation with their contractor. For many of these housing associations appointing a third party contractor to manage the ongoing maintenance of their properties allows them to focus on the welfare of their tenants, rather than the upkeep of their housing stock. But, even if one assumes that these housing associations have measures in place agreed with their contractor, there's a significant minority who choose to fit nothing. When asked specifically if they installed hard water



treatment products for domestic water services (fig. 3) 13 respondents did not, 24 respondents did, but only 17 of the total number could identify the type of technology they used. So it's possible that over half of social housing providers could be non-compliant, either by design or by default.

Water treatment

Those respondents able to identify their chosen technology overwhelmingly favour physical water conditioners (fig. 4). A minority, around three, continue to use base exchange softening on at least some of their projects.

This is somewhat surprising given that they are expensive to buy and to maintain. Whilst they utilise a tried and tested ion exchange process to replace hardness minerals with sodium, this comes at a cost with ongoing servicing and provision for salt needed to keep them fully operable. A separate potable water supply may also be required to provide safe drinking water to tenants.

In contrast, physical water conditioners do not need to remove the calcium from hard water to prevent limescale encrustation. This means hardness minerals continue to be brought out of solution during a 'scaling event' but form onto seeds

in the water, thus mitigating their effect on water heaters, valves, appliances and pipes.

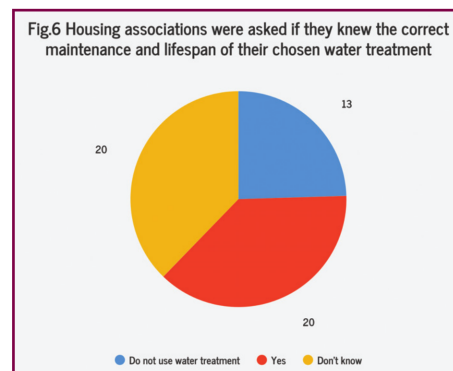
Water conditioners

Most water conditioners fall into two categories differentiated by the way they encourage limescale to form in suspension. Many release zinc. The most effective tend to use galvanic corrosion to break down a sacrificial zinc anode over time. They are often the least expensive and easiest to install of the inline water conditioners, making them the go to for many private developers. But their lifespan can be limited to just a few years.

For those looking for longer term protection, electronic/electro-magnetic water conditioners may be a more sustainable option. Most are designed to be maintenance free and the design life can be in excess of 25 years. By and large they act indirectly to encourage the formation of limescale in suspension. Most will only treat water locally to where they are installed, relying on a temporary 'memory' effect to prevent scale encrustation further downstream, although some utilizing radio wave technology can continuously treat water irrespective of flow.

Of the many electronic water conditioners commonly available in the UK, some are considerably more effective and reliable than others. A few have been the subject of independent laboratory analysis and one has been tested by IAPMO to the IGC-335 protocol, showing more than 80% reduction in limescale encrustation.

All of the abovementioned products can provide effective limescale reduction, but it's important to understand the relative merits and limitations of each. For those housing associations using products with relatively short lifespans, appropriate measures should be incorporated into



their maintenance programme to ensure continued protection. When asked about ongoing maintenance, only (fig. 6) 20 respondents identified themselves as knowing the expected lifespan of their chosen treatment product. It is therefore unsurprising that, of those housing associations responding to our survey who were able to answer, 79% were experiencing scale-related failures occasionally, regularly or very frequently. Only 8% of the total number of respondents claimed to never experience scale-related problems.

Analysing the results

It seems clear from the results that many housing associations remain unaware of the requirements set out in the *Domestic Heating Compliance Guide*. Often the treatment of hard water is delegated to a contractor as part of a wider maintenance package or inherited from a private developer building new homes. This has created a lack of awareness likely to be the cause of legacy issues, particularly where low cost and potentially short-lived products are installed without any provision for their ongoing maintenance.

Housing associations wanting more effective, longer term solutions, must take an active role in the specification process. Lifescience Products can provide expert technical advice and free independently accredited CPD training seminars.

All research was carried out on behalf of Lifescience Products. The research questionnaire was responded to by 53 housing associations, whose answers provide the data used in the report.

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