



The replacement sector makes up about 70% of the commercial boiler market. When selecting new boiler plant, recognising the characteristics of the existing heating system and building design is important. Richard Walker, Potterton Commercial's National Sales and Marketing Manager, looks at how both condensing and standard efficiency boilers play an important role in achieving energy efficient heating solutions.

Generally speaking, boilers should be replaced after they have been operating for 15 years or more. Although boilers are built to last, during this time period they can lose up to 10% of their efficiency, making them 10% more expensive in terms of fuel costs than any modern replacement model.

With the advent of the revised Part L Building Regulations, which aim to monitor heat effectively in order to reduce waste, since April this year new rules are in force governing the replacement of commercial boiler plant with Part L2B requiring 84% seasonal efficiency in replacement installations. Unlike new build specifications, however, replacements are often subject to the constraints of existing systems and space. Although the main priority is to achieve the required seasonal efficiency, cost is also usually an important factor.

In order to deliver the best efficiency at the best price, each installation must be considered on its own merits. Specifiers and installers need to look at the existing heating system including pipes, flues and pumps, the overall building design and uses, as well as all the available boiler plant options: traditional, condensing or a combination of both in a modular arrangement.

Although condensing boilers are well known for their use of advanced technology, and are often perceived as the norm for high efficiency installations, they can sometimes be a more costly option in a replacement situation, for example the installation of a condensing boiler will also require a new single skin stainless steel flue. And in some cases, condensing boilers are just not suitable for the existing heating system.

Systems designed for 82° flow and 71° return water temperature don't allow condensing boilers to condense properly, preventing the level of energy savings that that would normally be associated with this technology. Another common issue is that condensing boilers generally have smaller waterways than atmospheric models and, if used in conjunction with older pipework, debris can make its way into the boiler resulting in maintenance problems and costs, as well as reduced efficiency, though there are ways of minimising this problem.

If there are any concerns over the suitability of a condensing boiler, it is always worth considering traditional boilers. If used in the right way atmospheric boilers - though they might fall slightly below the required seasonal efficiency of 84% - are capable of meeting Part L requirements. Under the credit system detailed in the Building Regulations, additional measures to improve the energy efficiency of the system can raise the calculated seasonal efficiency of the boilers.

For example, accurate heat load matching to ensure the heating system is oversized by 20% or less, will add an extra 2% to the seasonal efficiency. Controls including weather compensation, optimized start and stop and full BMS systems may also improve the seasonal efficiency of the heating system. The installation of a full building management system will offer the largest number of credits for a single improvement, as this ensures the system is fully controlled and achieves optimum efficiency.

Weather compensation allows a boiler to reach optimal performance and compensate for changes in the temperature outdoors, saving fuel when the weather is milder. Compensation controls meet the requirement of Part L2 to allow a building to be operated and maintained in such a way as to make the most efficient use of the fuel.

In addition to compensation controls, systems should be sub-divided into control zones, where each area may have differing uses and heat requirements - these zones must be capable of independent timing and temperature control. By providing different levels of heat in different environments throughout a building, end users are able to maximise levels of comfort and reduce fuel costs.

In replacement situations it is not necessarily a choice between condensing and atmospheric models. Modular systems combining both types of boiler can offer a highly efficient solution.

For modular installations, with either condensing, traditional or a combination of both, the controls are particularly important for effective sequencing. Sequencing can not only ensure that each boiler is used for a similar period of time, thus equally distributing the heat load and ensuring the boiler heat output closely matches the building heating demand, but also allows for the most efficient boiler to take the lead. In the event of a breakdown, advanced controls can isolate a faulty unit and share the heat load between the remaining boilers until repairs can be carried out, ensuring no disruption to the heating provision.

There is no doubt that both standard and high efficiency boilers have their place in today's commercial boiler market, resulting in greater choice and flexibility. Specifiers and installers should be versatile in their approach to specification, taking advantage of the different options available, considering not only what is right for the application but also what is the most cost effective and energy efficient solution on offer. The introduction of the Part L2 Building Regulations is really going to wake up the heating industry and the way controls are perceived. Far from being just an 'add on', controls will become an integral part of a heating installation. We at Potterton Commercial are already investing in researching and developing new control products to meet the demands of the post-Part L market where specifiers will need to be much more aware about the importance of taking control of commercial heating systems.