



The April 2006 deadline for the implementation of the revised Part L of the Building Regulations is now here and despite the delay in its enforcement from January 2006 the commercial boiler market will continue to rapidly change says Ken Percival director and general manager of Potterton Commercial, who has been proactively involved in responding to the Government's draft documents and consultation process over the last 12 months. Here Ken uncovers what the revised regulations mean for the industry.

The story so far

In 2004 the initial consultation document issued by the Government raised many issues and left many gaps and omissions for the commercial heating sector, but lobbying along with support and effort via the ICOM Energy Association, we have been influential in the consultation with ODPM, DEFRA and their advisors Faber Maunsell, in addressing the issues and omissions, and in bringing about important changes for the better in the proposed revised regulations.

At the time of writing the final document has not yet been published so there may be some final amendments but from the latest drafts it appears that the Government has listened to the heating industry. As a member of ICOM we have made a significant contribution to the Regulation's second tier guidance document, which is a major step forward in achieving a set of practical, workable guidelines for the implementation of Part L. The Regulations may tell you what to do, but the guidelines will more importantly tell you how to do it.

What is the scope of Part L2 for boilers ?

Part ADL2A relates to the installation of boilers in the new build sector while ADL2B relates to the replacement of boilers in existing buildings.

Part L2A New buildings

The draft Part L2A regulations require that new build projects use high efficiency boilers, with a seasonal efficiency of at least 84%. The perfect choice would therefore be a condensing boiler. With the Paramount wall hung, Eurocondense Plus and Derwent Compact plus Condensing floor standing models, Potterton Commercial, part of Baxi Heating UK's Commercial Division, offers high efficiency condensing boilers using the latest advances in condensing technology to suit all applications.

To ensure the optimisation of a condensing boiler, heat load matching must be carefully considered. For correct sizing, the heat load must be properly calculated, taking into account the heat losses and internal gains of the building. Historically, oversizing has always been an issue for the commercial sector and in the past plant has been oversized by as much as 200%. This practice is wasteful and unnecessary. With consideration given to good controls design and the installation of multiple boilers it is possible to give accurate heat load matching of boiler output to the building requirements. Multiple boilers give the added advantage of back up to provide heat requirement in the event of breakdown or routine maintenance.

As well as ensuring good matching of building heat requirements to boiler output,

system designers also need to consider heating systems at 20oC temperature differential if they are to make the most of the high efficiency technology - condensing boilers reach optimum performance with low return water temperatures which allow them to condense, therefore reducing emissions and wasted energy.

For installations where higher temperatures are required, where practical systems can be split using a mix of condensing and standard efficiency boilers to meet the heating load. In other cases it is practical to provide separate systems for example for potable hot water.

In considering Part L2A when designing a heating system for a new building the specifier is likely to choose a high efficiency boiler, because the system can be configured to suit a condensing unit and gain the benefits of maximising efficiency at low return temperatures.

#### Part L2B Existing buildings

The boiler replacement sector makes up about 70% of the market, and the new regulations should recognise the characteristics of the existing building heating system and design when boilers are selected for the application.

The existing flue system, pumps, original design criteria etc should all be considered in choosing the appropriate boiler. Of course the heat load of the building should be assessed and matched to the heat output of the boiler to avoid the energy waste of over sizing, and the matching of appropriate controls and systems will contribute to this, thus optimising efficiency gains with a new boiler installation.

While there is still the 84% seasonal efficiency requirement for boilers under PartL2B a system of credits allows for the selection of standard efficiency boilers. This recognises the fact that condensing boilers are sometimes difficult and more costly to install in a replacement situation and in some cases are not suitable for the existing system.

Under the credit system, the seasonal efficiency of a boiler may be raised by taking into account additional measures to improve the energy efficiency of the system. 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, full BMS systems and, for multiple boiler installations, sequential controls may also improve the seasonal efficiency of the heating system through the credit scheme. 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 therefore optimum efficiency achieved.

#### Controls

With the implementation of Part L2A and L2B, controls will become an even more significant part of specifying a boiler than ever before. Because the whole point of the regulations is to monitor heat effectively in order to reduce waste, controls will have a bigger role to play. Whether a boiler is standard efficiency or high efficiency, appropriate controls can help specifiers get the most from a heating system, thus saving fuel and minimising the environmental impact of carbon emissions.

When choosing controls, the energy efficiency of the boiler is a top priority for specifiers and installers. Under the credit system, traditional and high efficiency products can be used but they must be controlled very differently. The benefits of even the most energy efficient boiler will be greatly diminished if it is not properly utilised and controlled.

To maximise the potential of high efficiency technology by allowing it to condense, weather compensation controls are essential. Weather compensation allows a boiler to reach optimal performance and compensate for changes in the temperature outdoors, thus 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. It is important to note that the correct calculation of a building's heat load will ensure appropriate sizing and further boost the optimisation of a condensing boiler.

In addition to compensation controls, the current draft Part L2 Regulations state that 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.

For modular installations, controls are particularly important for effective sequencing. Sequencing ensures that each boiler in the module is used for a similar period of time, thus equally distributing the heat load, and ensuring that the boiler heat output closely matches the building heating demand. 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.

#### The future

With so much activity and changing developments surrounding the Regulations, it has been - and will continue to be - a challenging time for the marketplace and those industries involved with it. The new build market lends itself very well to condensing boilers and in some cases the replacement market does also. However we as manufacturers, specifiers and installers must be versatile in the approach to specification, considering not only what is right for the application but also what is the most cost effective and energy efficient solution on offer for every application.