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COMMERCIAL BOILERS – PAST, PRESENT AND FUTURE

Yan Evans, Technical Director for Andrews Water Heaters and Potterton Commercial, examines the benefits of modern commercial condensing boilers, how they have developed in terms of specification and compatibility with Low and Zero Carbon (LZC) solutions and what the future may hold for them as research continues into possible alternatives in the commercial heating sector.

Commercial heating systems have altered dramatically within the last decade, due to the wide spread use of condensing boiler technology and the development and introduction of LZC solutions, together with improvements in building design and materials such as insulation. Condensing boilers are now available that are significantly lighter and more compact than earlier models and wall-hung boilers are now available with much higher outputs up to around 115kW , providing a much larger range of solutions for new build and refurbishment projects. One result of the increase in smaller and lower output commercial boilers is that applications such as large restaurants or small hotels that may have had to look towards choosing a large domestic boiler can now find a more suitable alternative in the commercial sector.

Lower output commercial boilers provide a more robust option, as they are of the same construction as the higher output models designed for plant room service. In addition, they have the added capability of linking to Building Energy Management Systems (BEMS) and being monitored remotely or even off site.

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The Benefits of Pre-Fabricated Systems

The reduction in size of commercial boilers has been developed alongside other space and energy saving solutions, including prefabricated system solutions using wall hung condensing boilers. Off-site pre-assembly, preferably incorporating boilers, pumps, pressurisation system and heating controls, minimises on-site assembly and delivery energy requirements. The integration of LZC technologies may also be an option to further improve energy efficiency. Some of the more versatile models on the market offer enhanced flexibility with the introduction of individual modules, allowing the system to be connected in a number of configurations. This minimises the site space required for installation and makes the heating plant adaptable to a range of boiler rooms.

Heat Boxes for the Centralised Plant Room

The increase in smaller and lower output commercial boilers has also served to compliment the recent shift back towards centralised plant systems within multi-residential accommodation. Smaller appliances mean smaller plant rooms and a centralised system removes the necessity for individual boilers in each dwelling, consequently allowing more room for valuable letting space.

To manage the heat coming into the dwelling from the plant room, a 'heat box' needs to be installed in each. This acts as a hydraulic interface between the centralised heating and the dwelling. There is also the option of running a centralised hot water system through the same heat box by choosing a model with a plate heat exchanger to convert the centrally produced heating locally within the dwelling into domestic hot water. For dwellings with larger hot water loads, heat box models are also available for integration with indirect hot water cylinders. In addition, a heat box will usually include a heat meter for resident consumption-based charging for the provision of heating and hot water. Options are also available for additional meters for cold water consumption metering and billing. A centralised plant system has the added advantage of offering ease of integration with LZC technologies such as solar thermal solutions, ground source heat pumps, and combined heat and power products, which are capable of significantly reducing the building's fuel consumption, carbon footprint, energy expenditure and therefore the operational cost for the entire building.

Low/ Zero Carbon Solutions

Although a number of LZC products and solutions have been available in the UK for several decades, they have only made a significant impact on the market in the last few years. One of the main reasons for this is the increase in boilers and other conventional products that are now being designed to operate in conjunction with these technologies, itself a result of manufacturers' initiatives as well as new government legislation.

The need for heating appliances such as boilers to be compatible with LZC solutions has been taken one step further by leading brands like Baxi Commercial, who now offer 'one-stop-shop' solutions, including boilers, water heaters and solar thermal or ground source heat pumps that can be purchased individually or as a complete, fully integrated heating system.

Looking Ahead

In the commercial sector, boilers are without question here to stay. Unlike the residential sector where LZC technology such as ground source heat pumps would replace the conventional domestic boiler, we believe that we will continue to see plant rooms utilising a mixture of heat sources. For instance, the base heating and hot water load will be supplied primarily by some form of LZC technology whilst being supported by fossil fuelled appliances such as condensing boilers and direct-fired water heaters. Admittedly, standard efficiency boilers and water heaters will have a limited shelf life when the Energy Using Products (EuP) Directive really starts to have implications on the market in 2011, but some of the traditional cast iron pressure boilers fired on liquid bio-fuels may offer a life-line for such products. There is certainly a place in the UK commercial sector for boilers, water heaters and LZC technologies to 'live' along side each other in harmony.

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