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HEAT BOXES BROADEN OPTIONS FOR MONITORING AND CONTROLLING MULTI-USER CENTRALISED HEATING PLANT

Paul Hardy, Managing Director of Andrews Water Heaters, Potterton Commercial and BAXI SenerTec UK, examines how the new generation of 'heat boxes' can effect energy savings for occupants and reduce the carbon footprint of multi-residential buildings.

For many years, heating and hot water for multi-occupancy residential buildings had moved away from commercial centralised provision to, wherever possible, domestic gas-fired boilers installed in each individual dwelling. This enabled each dwelling occupant to define and control its own comfort levels while being individually responsible for their energy consumption. However we are now seeing a return to centralised commercial boiler plant with modern 'heat boxes' providing the interface for individual monitoring control and billing of the energy consumed.

Heating Control and Monitoring developments

Over the last decade, there has been a trend in commercial gas boiler development resulting in high output, high efficiency, compact floor standing and lightweight wall hung, modular condensing units, suitable for installation either singly or in series. Packaged systems incorporate a number of boilers, pumps, pressurisation unit and controls, preassembled offsite with factory fitted hydraulic connections and controls for quick and cost effective installation. Reduced footprint and versatility of plant design means smaller plant rooms, allowing more room for valuable letting space.

In addition, modern commercial boilers have the capability of linking to Building Energy Management Systems (BEMS) and remote monitoring and control.

The integration of LZC technologies is increasingly an option to further improve energy efficiency. Landlords are now required by law to provide Energy Performance Certificates (EPCs) for dwellings, increasing consumer awareness of the financial benefits that can be derived from the installation of LZC technologies. Therefore this may well encourage them to choose properties with an integrated renewable energy source over one utilising only fossil fuels with the ability to independently monitor and control their household's consumption. Consequently, the efforts taken by a landlord to lower energy costs for each resident could greatly improve its letting appeal.

The Benefits of Central Plant and Heat Boxes

These factors are facilitating the recent shift back towards centralised plant systems within multi-residential accommodation such as sheltered housing, social housing, and key worker schemes. There are several drawbacks to having individual boilers installed within each dwelling of a block of flats. First, it would not be practicable to link each one to an LZC energy source and there is the number of individual boiler flues to consider. The strict regulations surrounding the ways in which these flues may be installed and the aesthetic appearance from outside the building can raise issues in building design and planning consent.

Individual boilers are far more costly to provide, due to the number of appliances required, the multiplicity of boiler connections and multiple installation costs. It is a legal requirement for landlords to ensure all individual boilers in a building are serviced annually. As well as being another financial drain in itself, this can be magnified by access difficulties. With a centralised system, however, the boiler can be serviced in one visit at the convenience of the landlord. This saves time and, although overall service costs for a commercial boiler will be higher, the number of appliances is significantly less. In addition, mains gas being supplied only to the plant room makes for greater safety and reduces the cost of gas installation.

Heat Box Functionality

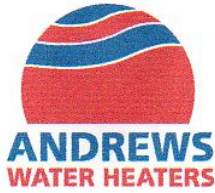
To manage the heat coming into the dwelling from the plant room, a heat box needs to be installed in each apartment. This acts as a hydraulic interface between the centralised heating and the dwelling.

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.

Some technologically advanced heat box models, such as Sirius SAT from Potterton Commercial, have the option of being able to transmit data wirelessly, which reduces meter reading costs and avoids possible reading mistakes. The billing company operative does not need access to the dwelling. The heat box can be interrogated from outside for the data on consumption as well as supply status or whether any interruptions to service have occurred.

A centralised plant and heat box system has the added advantage of offering ease of integration with LZC technologies such as, heat pumps and combined heat and power (CHP) products. These are capable of significantly reducing the building's fuel consumption, carbon footprint, energy expenditure and therefore the operational cost for the entire building.

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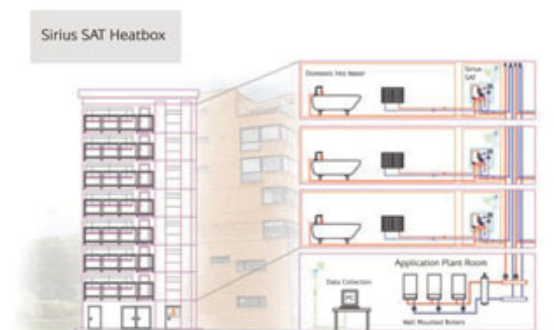
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SIRIUS SAT



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