Air Conditioning

Case Study

The Co-operative
Dagenham

Making a
World of
Difference

# Shoppers benefit from heat recovery

When The Co-operative's food store in Dagenham decided to refurbish its current heating and cooling system, the project presented the company with a few challenges.

The convenience store does not have a mains gas supply and the old heating system was made up of an assortment of equipment including electrical and oil-fuelled heaters.

These were extremely inefficient and costly to run and left some areas of the store cold whilst over-heating others.

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The City Multi R2 system boasts an intelligent refrigerant distribution unit that regulates flow according to the requirement of each indoor unit so simultaneous heating and cooling is possible using just two pipes.

"In keeping with The Co-operative's environmental ethos we wanted a new system that would reduce the store's energy use and its $CO_2$ output whilst providing our customers and staff with a comfortable shopping environment," said The Co-operative's Regional Energy and Environment Manager, Nick Cairns. "Any work involved had to be carried out quickly and quietly and create the least possible disruption to our trading."

To achieve this, the store needed the perfect partnership between easy to install, high-quality, technically advanced products and an experienced and skilled installation company that understood The Co-operative's need to work smart.

Having already worked with building and environmental specialists Stewart Anthony Ltd on a number of other projects, Mr Cairns was confident that they could provide the optimum solution to this challenge.

"As you can imagine Nick is pretty knowledgeable when it comes to renewables and efficient energy use and he was keen to try out the technology involved in heat pumps and heat recovery systems," said Ian Tarry, Director of Stewart Anthony. "As an experienced renewables specialist I was convinced that the combination of a heat pump boiler running off VRF air conditioning was the best solution for the store and it wasn't difficult for me to convince Nick of its suitability either."

The recommendation from Stewart Anthony was a system linking Mitsubishi Electric's PWFY heat pump boiler to a City Multi VRF R2 heat recovery system to provide both heating and cooling and sanitary hot water to the premises.

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Space-saving City Multi R2 units link to indoor ceiling cassettes to simultaneously heat and cool the store.

The PWFY unit sits in the store's plant room in place of the old oil boiler and is linked to both the air conditioning and the hot water cylinder. The heat pump boiler uses excess heat from the VRF system and transfers it to the hot water supply. It can achieve a flow temperature of 70ºC and is an ideal solution for providing a hot water supply to commercial buildings in an energy efficient manner.

Space-saving City Multi R2 units have been fitted outside the building which link to indoor ceiling cassettes in the store to ensure an even and pleasant temperature throughout.

Mitsubishi Electric's unique VRF system uses two pipes to simultaneously heat and cool the building rather than the standard three pipes needed with others. This helps to reduce both installation time and the costs of materials.

At the heart of the R2 system is Mitsubishi Electric's unique BC controller, an intelligent refrigerant distribution unit capable of distributing refrigerant according to the flow each indoor unit requires, making simultaneous heating and cooling possible through only two pipes.

Linking the air conditioning with the PWFY boiler makes the most effective use of any excess heat from the air conditioning, reducing energy usage and costs for the store. Pre-piped water connections to flow and return headers also help to make installation quick and easy, whatever the application.

Mitsubishi Electric has designed the PWFY heat pump boiler to deliver hot water and air conditioning from a single system making the unit suitable for a wide variety of applications from offices, gyms, restaurants and hotels, as well as retail outlets.

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## Installation Summary

PWFY heat pump boiler linked to City Multi VRF R2

Highly efficient VRF heat recovery system providing simultaneous heating and cooling, and sanitary hot water

Increased energy efficiency and corresponding EER/COP ratings

Reduced running costs and $CO_2$ output

The PWFY can often be retro-fitted to existing air conditioning systems offering the perfect solution to high efficiency hot water and air conditioning, and helping to control and reduce running costs and emissions levels.

“In the case of The Co-operative, our expertise and years of experience in this business meant that we knew the PWFY was the perfect solution for the job,” said Mr Tarry. “And we were even able to comply with The Co-operative’s waste disposal policy by recycling all the old system parts we had removed.”

Before installing the new system the Dagenham store was using 306,989kWh of energy a year at a cost of £33,769, plus a further £3.5K spend on oil.

The new system uses just 267,677kWh per annum at a cost of £29,444, which means The Co-Operative is using 39,312 kWh less energy providing them with a saving of £7,824 over previous bills.

For further information about The Co-operative stores visit
http://www.co-operative.coop/

For further information on Stewart Anthony Ltd visit
http://www.stewartanthony.co.uk/

For further information on Mitsubishi Electric’s air conditioning product range simply visit
http://airconditioning.mitsubishielectric.co.uk/ or call 01707 282880.

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