Domestic Heating

Case Study

Victorian brick-built water tower
October 2011

Making a World of Difference

RENEWABLE SOLUTION PROVIDED

Energy efficient heating and hot water system for Grade II listed, Victorian building.

Historic water tower receives renewable 21st Century makeover

When architect, Andrew Critchlow, bought this Grade II Listed, Victorian water tower at an auction on a spur of the moment decision, he knew it had the potential to be both his dream home and an energy efficient living space.

During a stunning redesign of the solid brick tower in Congleton the thermal properties of the structure were upgraded by adding layers of insulation within a new inner stud wall. Having maximised the thermal efficiency of the three-storey, five-bedroom home a 14kW and 5kW Ecodan air source heat pump was fitted to the roof in order to supply heating and hot water.

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The Ecodan units are discreetly sited on the roof top.

Installation Summary

1 x 14kW and 1 x 5kW Ecodan air source heat pump

Ecodan units supply the under floor heating and hot water

The Ecodan units work in conjunction with Mitsubishi Electric Photovoltaic panels and a DC Lossnay heat recovery system

Took 2 days to install

With a huge capacity for thermal mass in the existing masonry (600-700mm solid brickwork walls) and its unusual shape, Andy designed the project to use under floor heating.

"I wanted to demonstrate how we can take solid brick buildings and adapt them to suit the needs of energy efficient, modern living," said Andy Critchlow. "Although heat pump systems work in a slightly different way to traditional heating, it is very easy to control and because it gets about two-thirds of its heat energy from the outdoor air, it is incredibly efficient."

The energy to run this and also to supply the building's hot water is provided by two Ecodan air source heat pumps from Mitsubishi Electric. A 14kW and a 5kW Ecodan are discreetly sited on the rooftop and connect to a water cylinder in a special plant room on the top floor.

"We always intended to use an air source heat pump and my M&E consultant pointed me towards Ecodan because it has developed such an impressive reputation. We built-in a small plant room on the top floor and this links straight to the Ecodan units on the external balcony."

MITSUBISHI ELECTRIC
Changes for the Better

Telephone: 01707 278666
email: heating@meuk.mee.com
web: www.domesticheating.mitsubishielectric.co.uk

EU Ecolabel www.ecolabel.eu

APPROVED PRODUCT MCS BRE GLOBAL VERIFIED
Certificate Number: MCS HP0002
Product Reference: PUHZ-W50VHA-(BS) PUHZ-W85VHA2-(BS), PUHZ-HW140VHA2/YHA2-(BS)

Green Gateway
www.greengateway.mitsubishielectric.co.uk
Mitsubishi Electric's commitment to the environment

UNITED KINGDOM Mitsubishi Electric Europe Living Environmental Systems Division
Travellers Lane, Hatfield, Hertfordshire, AL10 8XB, England General Enquiries Telephone: 01707 282880
IRELAND Mitsubishi Electric Europe Westgate Business Park, Ballymount, Dublin 24, Ireland
Telephone: Dublin (01) 419 8800 Fax: Dublin (01) 419 8890 International code: (003531)

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The Ecodan units connect to a water cylinder located in a specially–built plant room.

Built in 1881, the 15 metre high water tower was fully functioning until 2001 when it was decommissioned. Owner and Director of AEW Architects, Andy Critchlow, has taken the historic, local landmark and produced a stunning £400,000, 21st Century eco-home, using the most advanced heating, ventilation and power generating equipment currently available.

"We moved in during November and the building has been warm and comfortable throughout the winter. We always intended to use an air source heat pump and it's easy to see why Ecodan has become market leader."

Other renewable technologies were used in the restoration of the tower including 20 Mitsubishi Electric Photovoltaic panels which produce an estimated 3,000 kW hours of energy per year, and the company's DC Lossnay mechanical heat recovery ventilation system, which delivers fresh air to the high-tech living space without wasting valuable energy.

The conversion and refurbishment of the historic building was documented on Channel 4's Restoration Man allowing viewers to follow the restoration of the tower, which had lain dormant for several years.

Further information on the Mitsubishi Electric Ecodan air source heat pump range can be found at www.domesticheating.mitsubishielectric.co.uk

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