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ENERGY EFFICIENT, LOW CARBON TECHNOLOGY HELPS ACHIEVE 'VERY GOOD' BREEAM RATING FOR NEW SCHOOL

When Warrington Borough Council decided to develop a new urban village, it wanted an innovative, ultra-modern primary school building at its heart that was able to demonstrate the council's commitment to sustainable living.

Key to the £4.3 million building project was a low-impact design which used advanced, renewable, energy efficient equipment to keep the school environment fresh and comfortable for both staff and pupils.



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Renewable Heating Technology

Heating

Case Study

Chapelford Primary School
May 2013

Making a
World of
Difference



The modern school is designed to provide a low carbon, sustainable place of learning.

To bring their vision to life the Council called in Manchester-based SBS Architects who designed a state-of-the-art building that would be fit for purpose for many years to come.

Included in the new design are features such as lighting control with absence detectors, mechanical heat recovery ventilation and the latest commercial air source heat pumps which offer renewable heating to the school.

Warrington Borough Council awarded the contract to build the school to construction specialist John Turner & Sons, located in Manchester and Liverpool, and work began on the 1.87 hectare site in March 2012.

“Central to the Council’s vision for the new school was a building that could achieve an energy efficient BREEAM rating of ‘Very Good’,” explained Peter Marshall from SBS Architects, who developed the plans for the school.

BREEAM is a globally recognised environmental assessment and rating system for buildings and sets the standard for best practice in sustainable building design, construction and operation. It promotes low impact design and minimising a building’s energy demands with the use of energy efficient, low carbon technologies.

Built with the support of the local education department, the new school has a gross floor area of 2,219m² and includes 14 classrooms.



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Certificate Number: MCS HP0002
Product Reference: PUHZ-W55VHA-(BS)
PUHZ-W55VHA2-(BS)
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Ecodan CAHV air source heat pumps operate as a single unit or as part of a multiple system to meet even the most dynamic load requirements.

These are now home to the 420 staff and pupils who attend the newly created Chapelford Village Primary School having relocated to the new building from an aging facility nearby known as Sycamore Lane Primary.

Heating, cooling and ventilation for the building was planned by consultants BCM Consulting, located in Manchester, who designed the cost-effective energy efficient system in close collaboration with Mitsubishi Electric.

“BCM used advanced energy modelling techniques to determine that the optimum energy solution for heating this building was to use air source heat pumps,” said BCM Engineer, Matthew Hakes. “And following further analysis we arrived at the conclusion that a Mitsubishi Electric system would provide the best technical solution for this application.”

So confident were the two companies that the new system would fulfil every requirement for the building’s heating and hot water that a decision was taken to only install a small gas supply that would service the kitchen area only.

Having produced the new design, the team then brought in Liverpool-based renewable energy experts A&B Engineering, to install the new heating system in the school.

Each individual Ecodan CAHV system offers space heating and sanitary hot water up to 70°C. Units operate effectively in ambient temperatures of -20°C to 40°C making them ideal for use all year round.



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Ecodan CAHV air source heat pumps provide the school with all its heating requirements.

Installation Summary

Application type:
Primary School

Capacity:
172kW at -3° ambient

Product:
4 x 43kW CAHV Ecodan Air Source Heat Pumps

Heat delivery method:
Underfloor heating and domestic hot water

The system at Chapelford Primary School is capable of delivering 172kW at an outdoor temperature of -3°C, with minimal drop off down to -20°C including defrost.

For every 1kW of electricity used to power an Ecodan CAHV air source heat pump, up to 3.2kW of heat can be delivered to the building; 69% of which is renewable energy.

Ecodan CAHV air source heat pumps can operate as a single unit or as part of a multiple unit system. When installed in multiples the units can cascade on and off to optimise performance and deliver peak efficiency.

Mitsubishi Electric's Ecodan CAHV monobloc systems are designed to meet even the most dynamic load requirements allowing output capacity to increase in 0.5kW increments, from 18kW all the way up to 688kW. This produces a level of modulation that is unprecedented within the heating industry.

The doors have now opened on Chapelford Village Primary School and it is ready to take the energy efficient message right to the core of this newly designed urban community – exactly as Warrington Borough Council required.

For further information about A&B Engineering visit <http://abeng.co.uk/> or call 0151 220 4206.

For further information on Ecodan air source heat pumps visit <http://heating.mitsubishielectric.co.uk/>



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