Fresh Air Ventilation

Case Study

Chapelford Primary School
Warrington

Making a World of Difference

Energy efficient, low carbon technology helps achieve ‘very good’ BREEAM rating

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 environment to keep the school environment fresh and comfortable for both staff and pupils.

MITSUBISHI ELECTRIC
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The modern school is designed to provide an excellent and 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 2,219m^2 and includes 14 classrooms.

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.

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Lossnay brings fresh outdoor air up to room temperature ensuring the classrooms are fresh and comfortable all year round.

"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 and ventilation system in the school.

Fundamental to the comfort of those using the building is the use of Mitsubishi Electric's Lossnay fresh air, mechanical heat recovery ventilation and Ecodan® CAHV air source heat pump boilers to provide the school's hot water and heating. Mr Slim air conditioning units are used to deliver efficient heating and cooling.

"The building needed to meet strict criteria for energy conservation and efficiency and the school does just that, but this means that it's almost airtight which can lead to problems with the build-up of stale air," explained James Gaskill, Commercial Manager for A&B Engineering.

For Chapelford, this challenge has been overcome with the installation of 18 LGH100-RX5E Lossnay mechanical heat recovery ventilation units. The units keep the classrooms full of fresh air, whilst extracting up to 80% of the heating from the outgoing air and transferring it to heat up the incoming air flow.

The school also benefits from four Ecodan CAHV air source heat pump boilers which are the modern, renewable, low carbon method of delivering reliable heating to commercial buildings.

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Installation Summary

Application:
Primary school

Product:
18 x LGH100-RX5E Lossnay mechanical heat recovery ventilation units

Results:
The units keep the classrooms full of fresh air, whilst extracting up to 80% of the heating from the outgoing air and transferring it to heat up the incoming air flow

"Like most commercial buildings, there is a tremendous amount of heat-generating equipment in the school such as lights, computers and TV screens, but Mitsubishi Electric's advanced air conditioning is one of the best at delivering energy efficient cooling to where it's needed most," explained A&B Engineering's James Gaskill. "And with the Lossnay fresh air ventilation units and Ecodan CAHV heating system the school will be both fresh and comfortable all year round, whatever the weather."

The decision to place the school at the heart of its new Chapelford Urban Village in Warrington, has enabled the local authority to develop a state-of-the-art facility which will not only enhance pupils' learning experience, but will also provide cost effective, low carbon community facilities for the surrounding area.

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 Mitsubishi Electric's Lossnay range visit http://airconditioning.mitsubishielectric.co.uk or call 01707 282880.

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