Air Conditioning

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

MITSUBISHI ELECTRIC
LIVING ENVIRONMENTAL SYSTEMS

Air Conditioning | Heating
Ventilation | Controls

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The modern school is designed to provide an excellent and sustainable place of learning.

Mr Slim units supply cooling to the school's offices using the ozone-friendly refrigerant R410A.

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.

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.

The heating, cooling and ventilation was planned by Manchester-based consultants, BCM Consulting, who used advanced energy modelling techniques to determine the optimum energy solution for the building.

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Wall-mounted PKA-RP71KAL cassettes help to provide cooling to the school's server room.

The new system is regulated using PAR-30MAA-J remote controllers which are simple and easy to operate.

The team then set to work designing a cost-effective energy efficient system in close collaboration with Mitsubishi Electric.

Having produced the new design, the team called Liverpool-based renewable energy experts A&B Engineering, to install the new system. Mr Slim air conditioning units were chosen to deliver energy efficient heating and cooling to the general offices, the staff room, head office and server room to provide a constant, comfortable temperature with low running costs and minimal maintenance.

Externally, six Mr Slim split system air conditioning units have been fitted including three PUHZ-RP35VHA4 units, two PUHZ-RP71VHA4 units and an PUHZ-RP100YKA. Whilst internally one PLA-RP50JAQ and four PLA-RP35JAQ ceiling ducted cassettes and two wall-mounted PKA-RP71KAL cassettes, have been installed in various hot spots throughout the school. The new systems are regulated using five PAR-30MAA-J remote controllers.

The Mr Slim range is designed to fit any project, with compact outdoor units that can be wall or roof mounted. Units use the ozone-friendly refrigerant R410A to ensure zero ODP (Ozone Depletion Potential).

The Mr Slim range is fitted with highly efficient compressors, and near-silent operation is made possible by the units' advanced fan and grille design, along with a low noise mode to reduce noise levels to a minimum.

"The school building had to meet strict criteria for energy conservation and efficiency and it does just that, but this means that the building is 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 heat from the outgoing air and transferring it to heat up the incoming air flow.

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Installation Summary

Application:
Primary school

Products installed:
4 x PEAD-RP35JAQ indoor unit
1 x PEAD-RP50JAQ indoor unit
1 x PUHZ-RP100YKA power inverter
3 x PUHZ-RP35VHA4 power inverter R410A
2 x PKA-RP71KAL indoor
2 x PUHZ-RP71VHA4 power inverter
5 x PAR-30MAA-J remote controller

Providing cooling to:
General office, staff room, head office and server room

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

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 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 air conditioning product range simply visit http://airconditioning.mitsubishielectric.co.uk/ or call 01707 282880.

MITSUBISHI ELECTRIC
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Telephone: 01707 282880
email: airconditioning@meuk.mee.com
web: www.livingenvironmentalsystems.mitsubishielectric.co.uk

UNITED KINGDOM Mitsubishi Electric Europe Living Environmental Systems Division
Travellers Lane, Hatfield, Hertfordshire, AL10 8XB, England General Enquiries Telephone: 01707 282880 Fax: 01707 278881
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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