



Discrete natural ventilation solution for Milton Keynes School

Pupil concentration in lessons at a Milton Keynes Foundation school is being assisted, naturally, through an innovative approach to ventilation.

Walton High School needed an extension, to cope with increasing demand for places at the school. Milton Keynes Council's in-house design team, "Architecture MK", designed the new extension containing 33 classrooms to reflect the appearance of the existing school building. Initially ventilation was to be provided by individual mechanical extract fans, however the Headmaster Mr Blatchford expressed concerns about the potential for noise generation, having had experience of fans in the original school.

Ventilation Strategy

The design team asked Passivent, the UK's leading supplier of natural ventilation systems, to prepare design ideas, with a specific brief that roof mounted passive stack terminals should be avoided as the Architect wished to retain the horizontal

roofline to reflect the adjoining schools appearance.

Collaboration between the design team and Passivent resulted in an innovative solution that met the ventilation performance requirements of DfES Building Bulletin 87 and maintained the aesthetic requirements of the brief, whilst enabling the natural ventilation to be incorporated into the existing design without major modification.

Passivent Solution

The result was a Passive Stack Ventilation system, adopting windows as air inlets and using twelve combined, masonry "shunt stack ducts", from the ground, first and second floors. The passive stacks terminate in a continuous roof plenum, which runs the full length of the building and incorporates aluminium weather louvres.

To counteract the restricted "stack" dimensions a low noise, temperature controlled, extract fan is sited above each stack, which automatically increases the

extract rate during periods of high demand.



On the first two floors an extract grille is fitted at high level in each classroom feeding into the common stack duct. Each grille is fitted with an insulated motorised louvre and is controlled by the building management system. These can be closed down to reduce heat loss in winter.



To ensure waste air from lower floors does not enter the top floor rooms, the masonry passive stack ducts have been isolated from the lower floors, and the top floor treated as a separate ventilation area.

Clerestory Detail



The siting of the top floor room extracts at high level assists the cross ventilation/passive stack strategy. The extracts have been positioned either in daylight shafts to high-level windows or short individual ducts within the roof plenum. These then link to a continuous

run of Passivent motorised Aircool window ventilators that maintains the building's external appearance.

Comments Liam McDermott, the school's manager for the project, "The extension has only just been handed over, but initial impressions are that the ventilation system is working properly in that we have fresh air in all areas, and no noise, enabling the pupils to concentrate on their lessons without being distracted by fans switching on and off."

Passivent is part of the Building Product Design Group, which specialises in ventilation products for the construction industry. The company undertakes a continuous research and development programme, to bring to market innovative yet practical products in line with changing requirements.

