

Pupils Keep Their Cool in Science Lessons



Pupils at Jersey's Grainville School are "keeping their cool" in science lessons through an innovative scheme that helped win its architects a design award.

Nigel Biggar & Partners were commissioned to design the replacement science block at the school in St Saviour, to provide seven chemistry, physics and biology laboratories, a preparation room and a resource room, as part of an upgrade programme to the 650-pupil school.

Ventilation Strategy

The architects worked closely with Passivent who designed a natural ventilation system that would complement the science block's design and meet DfES guidelines for controlled background ventilation airflow rates of 3 litres per second per person in winter and 8 litres per second per person in summer as demand and warmer temperatures required. The solution comprised of three bespoke aluminium passive stack High Capacity Terminals, transfer grilles and motorised louvres. The ventilation strategy

combines cross flow ventilation through several laboratories, venting at high level via Passivent motorised insulated louvres and exhausting via the three large volume aluminium passive stack terminals.

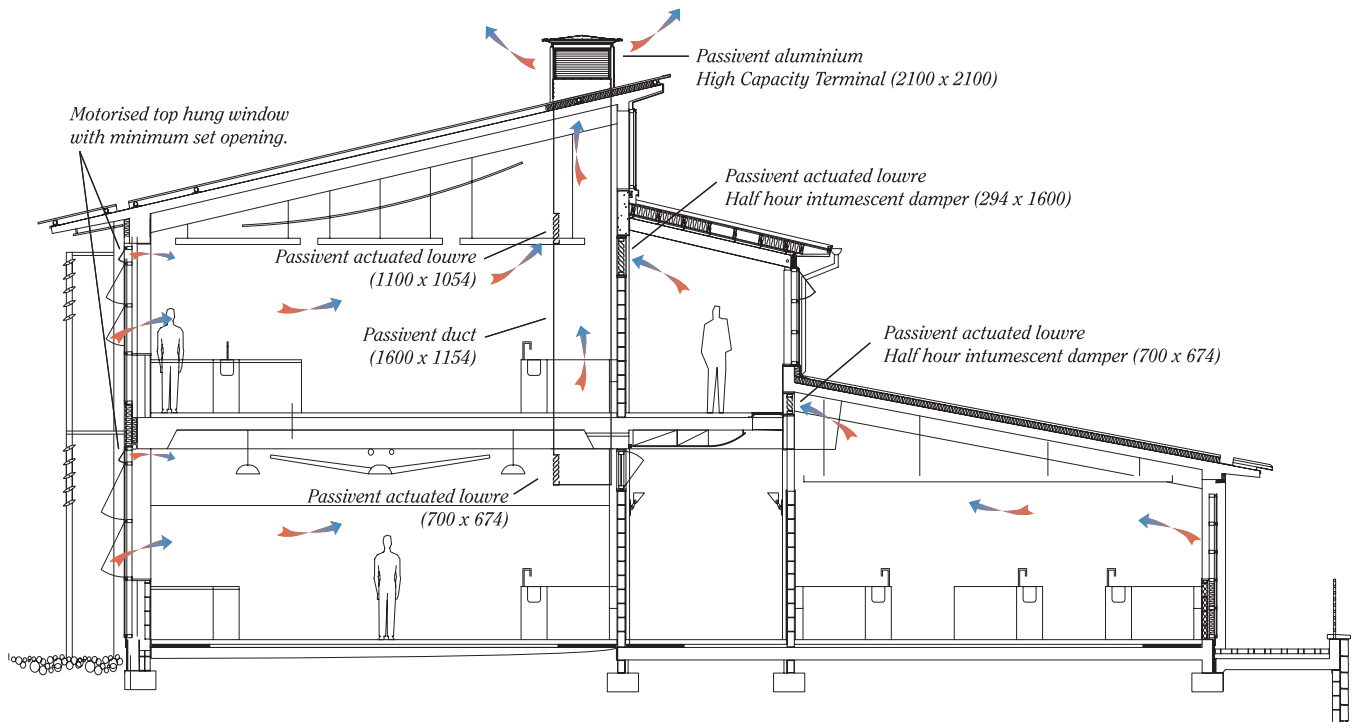
To optimise energy efficiency the passive stacks and terminals were sized to provide 5 air changes per hour for summer cooling. In the winter heating season the motorised louvres would be closed down and top hung windows with a minimum set mechanical opening would provide background ventilation. The whole system

is computer controlled to ensure a comfortable internal environment is achieved throughout the year without draughts.

Free Night Cooling

Air intake would be provided via purpose-designed top hung window vents complete with insect screens. These would also feature a minimum background trickle ventilation setting and would be controlled automatically by motorised actuators.





Being automatically controlled the motorised Passivent louvres and window vents are operated at night to provide free night cooling @ 1/50th of the floor area. This optimises the ventilation systems capability of maintaining comfortable conditions during warmer weather.

Commented Grainville School site manager Martin Hougueuz; "The science block has won a design award for the architects. The facility is in constant use during the school day, so the ventilation needs to be efficient to cope with the demands made on it, to maintain a comfortable internal temperature level without draughts, yet removing any noxious odours that may emanate from the pupils' work!"

Passive stack is the most effective natural ventilation strategy with its combination of cross ventilation, convection (warm air rising) and the venturi (wind passing over the terminals causing suction) effect.

Use of Passivent High Capacity Terminals

can ventilate twice the depth inside the building compared to conventional single sided strategies, and provides effective night cooling as internal and external temperatures have a higher variance at night increasing convection.

Naturally ventilated buildings typically consume half the electricity of air conditioned buildings, with capital costs on average 15% lower and operating costs reduced by up to 40%.

Technical specifications

The roof-mounted terminals are designed and manufactured in satin anodised aluminium by Passivent to the architects brief. The terminals, along with the external louvres, incorporate unique and patented secondary internal louvres, which provide the highest level of performance in regard to driving rain protection. This has been confirmed by independent testing by BSRIA to BS EN 13030:2001 Performance

testing of louvres subject to simulated rain.

The design and manufacturing are controlled under a BS EN ISO 9001 quality system, which is independently audited by Lloyds Register.



Engineered in aluminium and featuring patented double bank louvres Passivent HCT terminals combine excellent weather rejection with high volume airflow rates.