

# Natural ventilation strategy for Sunderland SEND school

Sunningdale School in Sunderland is a specialist school designed and developed by Sunderland City Council for children with severe learning difficulties.

**passivent**



End client  
**Sunderland City Council**

Architect  
**Sunderland City Council**

Main contractor  
**Kier**

Mechanical & electrical consultant  
**Integral**

Technology used  
**Aircool® window ventilators (standard and thermal acoustic), Litevent Airstract® rooflight/ventilator and Aircoop® roof ventilation terminals**

Sunningdale SEND School is the only school of its kind in Sunderland, specialising in teaching children between the ages of 2 and 11 with severe, profound and multiple learning difficulties.

The £13.3 million new build school, which was designed with specialist therapy provisions including nine sensory rooms, opened its doors in September 2022 as part of Sunderland City Council's £45 million programme to update schools that deliver life-changing facilities for young people.

## The challenge

At the design stage, Sunderland City Council identified the requirement for a natural ventilation solution for the school to reduce the need for mechanical fans and ultimately use less energy.

It also needed to find a solution that would not only provide effective cross ventilation in the classrooms but one which would also reduce noise pollution during its operation - a critical consideration for a SEND environment.



Thermal acoustic window  
Aircool ventilators



Litevent Airstract rooflight/Ventilator  
and standard Aircool ventilators

## The solution

Passivent proposed the use of a natural ventilation strategy, providing the school with its unique thermal acoustic Aircool window ventilators, standard Aircool window ventilators, Litevent Airstract rooflight/ventilators and Airscoop roof ventilation terminals which were used throughout the school in classrooms, corridors and halls.

Two of Passivent's thermal acoustic window Aircool units were installed vertically in the external wall of each classroom for the fresh air intake. These units warm the incoming air via heater coils and the acoustic baffles help to minimise the noise. The used air is then exhausted at the back of the classroom at a slightly higher level through the two standard window Aircool units installed horizontally.

A number of Litevent Airstract rooflight/ventilators were installed along the school's corridors, with the rooflights providing a great source of natural daylight and the Airstract terminal function in this combined unit providing controllable natural ventilation. The Passivent Litevent system reduces the need for artificial lighting thereby reducing further energy consumption.

Installed in both the dining and main halls are multiple Airscoop roof ventilation terminals which supply fresh air to the large open spaces, displacing any stale used air. The Airscoop has an optimised segmented design that delivers maximum airflow capacity and its patented double bank louvres provide Class A rain rejection so that the building can be fully ventilated regardless of weather conditions.

To easily control the entire ventilation system, which is split into 21 zones, Passivent's iC8000 controller has been installed with seven panels in four different locations across the school. These controls modulate the natural ventilation system, monitoring carbon dioxide levels as well as internal and external temperatures to ensure an optimal learning environment at all times.

Passivent offers natural and hybrid ventilation solutions for a broad range of sectors including education, commercial, leisure, healthcare and residential.



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