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**SE**  
**CONTROLS**  
[secontrols.com](http://secontrols.com)





“We passionately believe that our solutions will improve the indoor built environment”

We formed SE Controls almost 30 years ago, at a time when the use of window automation was in its infancy. Through continued reinvestment in research and development we have grown in to one of the pre-eminent companies delivering natural ventilation, smoke control and window automation solutions throughout the world. We use cutting edge technologies and simulation packages to optimise designs for the benefit of our clients.

## Our solutions...

Now on a global stage, we offer our expertise to designers who want to create environmentally friendly, naturally ventilated and safe buildings. We want to share our 30 years experience of literally thousands of projects with our partners to optimise every solution.

## We want...

Through optimal design, buildings can consume less energy and be healthier, safer places to work and live. We are actively involved in every stage of the life cycle of the building – from planning and early design to delivery and installation through to post occupancy optimisation and maintenance. We have a reputation and a retained client base that underlines the excellence of our solutions.



“We want to help our clients optimise their building throughout its life”

#### Design & Cost Planning

During early design stages SE Controls can assist the client and design team in specifying the most cost efficient and practical solution for natural ventilation, smoke ventilation and window automation.

#### Approval and Tendering Process

SE Controls offers coordination with the client, the approving body and bidding contractors throughout the tendering process.

- Coordination with approving body
- Production of specifications for tendering
- Planning and mid-tender meetings.

#### Coordination

At early stages of the project vital information is required by the contractor. AOV openings may be built into the shell and the core of the building including, walls, roofs and façades.

#### Commissioning Handover, Training and Optimisation

During the final completion stages of the project build phase, SE Controls will commission the ventilation system. This will typically involve detailed cause and effect testing of all the system components against the design specification. Our trained commissioning engineers will then hand over the system to the client together with detailed operating instructions and training. After occupation the system can be optimised to suit client requirements.

#### Cable Installation

Full wiring schematics are produced for cable installation with all devices located and detailed. This work can be carried out by SE Controls or the contractor who is already on site.



#### Product Installation

At suitable stages the associated ventilation products are installed and connected. SE Controls ventilation products are certified and compliant to International standards and are CE marked.





### Maintenance

SE Controls maintenance department offer problem solving, advice and alternative solutions to existing systems that require modification or refurbishment, to ensure reliability and peace of mind across multiple sites.

SE Controls' investment in cutting-edge technology allows our products to be optimised to maximise performance of our systems. These improvements can deliver increased efficiency, safety and functionality of our customers' ventilation systems. Our modifications comply with the Buildings Regulations and European and British Standards.



### Smoke ventilation

Fire costs money. The cost as a consequence of fire, including property damage, human casualties and lost business, was estimated at £2.5 billion in the UK. If a fire does occur then occupants must be protected.

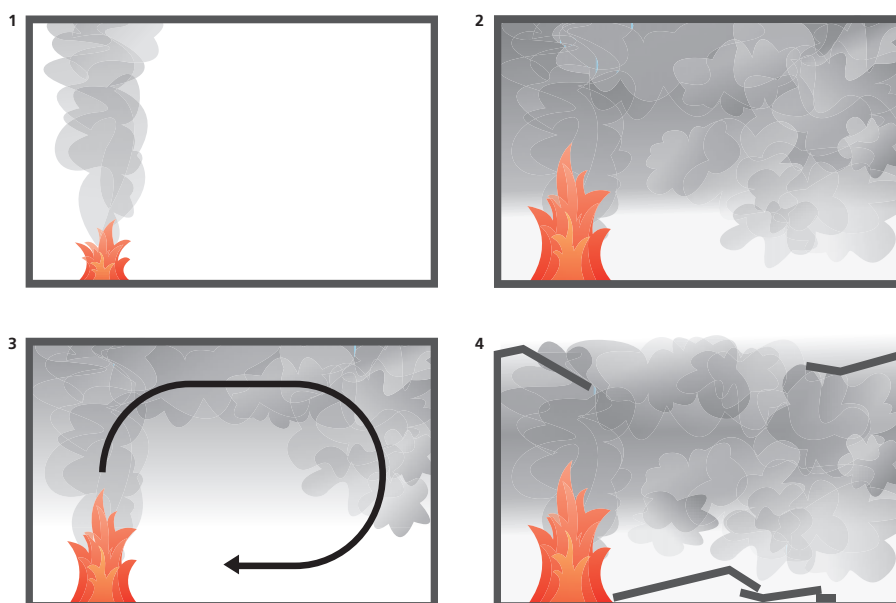
SE Controls offers a comprehensive range of natural and powered Smoke Heat and Exhaust Ventilation systems (SHEV) suitable for any size and type of building. Systems are designed to facilitate the safe escape of occupants in the event of a fire and to enable the fire to be fought in its early stages.



**Smoke ventilation allows the creation of a smoke free layer above the floor by removing smoke. This improves the conditions for safe escape and permits the fire to be fought in its early stages.**

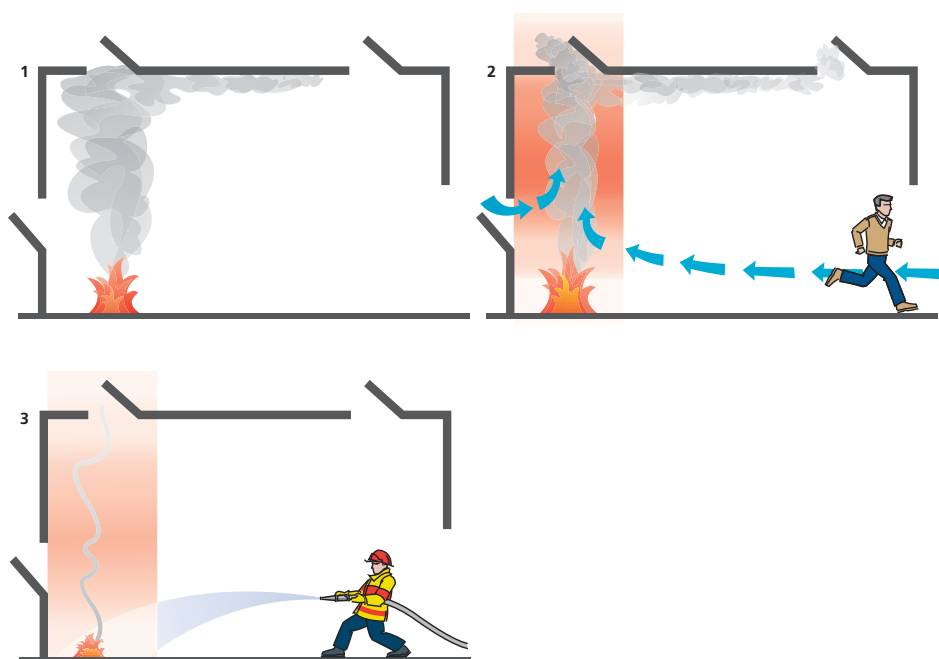
**What happens if there is no means of smoke ventilation?**

1. In an unventilated room, smoke will rise directly to the ceiling.
2. The smoke will begin to fill the space available moving laterally instead of vertically.
3. Convection of the smoke will cause it to be drawn back down to low level reducing visibility and the chances of a safe escape.
4. Temperatures will continue to rise causing the potential flash over and collapse of the building.



**What happens if there is a smoke ventilation system?**

1. In the event of a fire, actuators open high level smoke vents and low level fresh air inlet vents.
2. This allows cool air into the building, forcing the hot air and smoke out via the roof, providing a smoke free layer for safe escape.
3. The smoke free layer allows safe access for the fire to be fought and extinguished.



## Natural Ventilation

Natural ventilation improves indoor environments, reduces CO2 emissions and is cost efficient. Adaptive natural ventilation systems are less costly than traditional HVAC systems, being cheaper to install, run and maintain. With buildings currently consuming almost half of all commercial energy usage, producing 50% of global carbon emissions, adaptive natural ventilation is leading the way for a sustainable future.

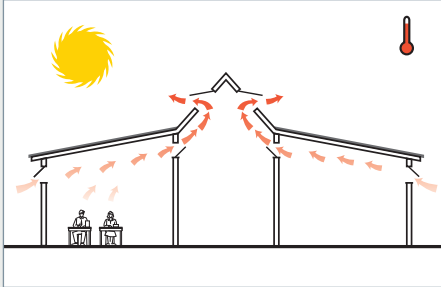
SE Controls are passionate about delivering energy efficient buildings with productive, healthy indoor environments; occupant productivity is significantly improved when thermal comfort and indoor air quality are optimised. SE Controls' turnkey solution incorporates design, supply, installation and commissioning through to maintenance.

## Natural Ventilation Principles

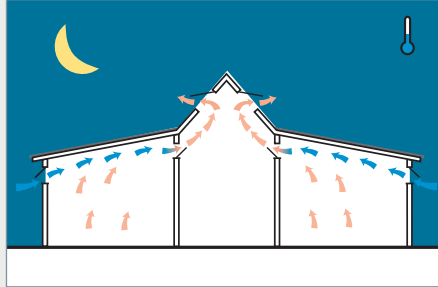
SE Controls' Natural Ventilation strategies are based on six stand-alone principles, which function differently depending on the building shape, internal heat loads and location of openings. Common ways of capitalising on 'free' air movement is through the stack effect, cross ventilation and passive night time cooling using opening windows to facilitate the natural ventilation.



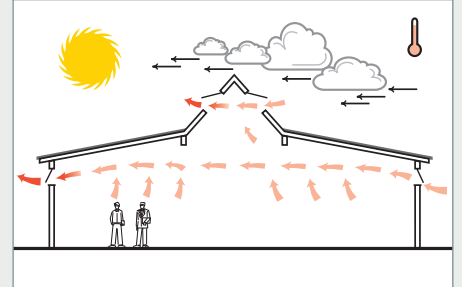




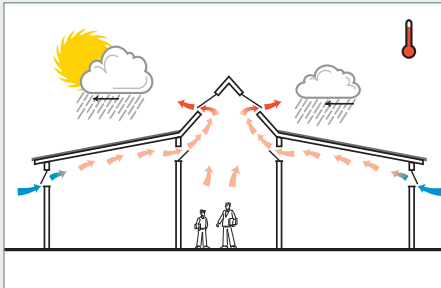
Stack Ventilation



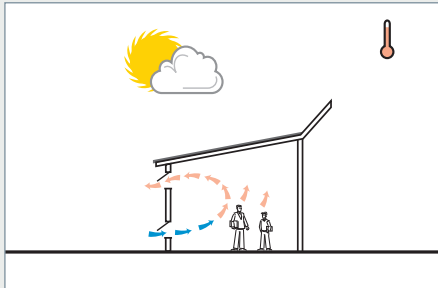
Night or Passive Cooling Ventilation



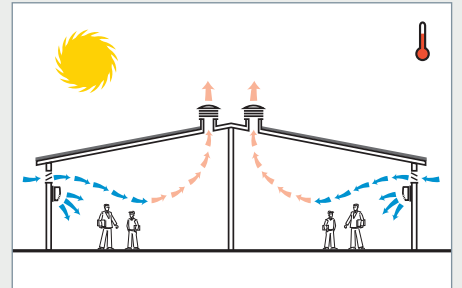
Cross Ventilation



Trickle Ventilation



Single Sided Ventilation



Mixed Mode Ventilation



### Window Automation

The use of actuators to automate windows can be used in both natural and smoke ventilation systems by reacting to sensors (rather than human response to stimuli) to control the level of comfort within an indoor environment, or to clear smoke to aid in the means of escape or fire fighting operations.

Automating a facade can also provide convenience for the building occupants. Large heavy vents can be easily operated and held at various angles where appropriate to ensure the level of ventilation is sufficient.

### Natural Ventilation by Automatic Window Control

Automatic opening windows can provide an efficient way of cooling a building and removing airborne contaminants inexpensively and effectively, to improve the indoor environment for its occupants.

For natural ventilation systems, the window openings can be controlled by smart algorithms to provide a greater efficiency of comfort. Operating in this manner rather than opening the windows in an arbitrary pattern provides more flexibility to changing external conditions for increased ventilation rates.

### Smoke Ventilation by Automatic Window Control

The automation of windows or vents for smoke ventilation is widespread as it is a cost effective way of delivering a smoke ventilation system, with low capital cost but also the added advantages that it allows natural daylight in as well as doubling as a natural ventilation system.

By introducing automatic vents at high level that open upon detection of smoke, the smoke is allowed to escape to the atmosphere providing a clear escape route and increased visibility for the fire service to enter the affected area.





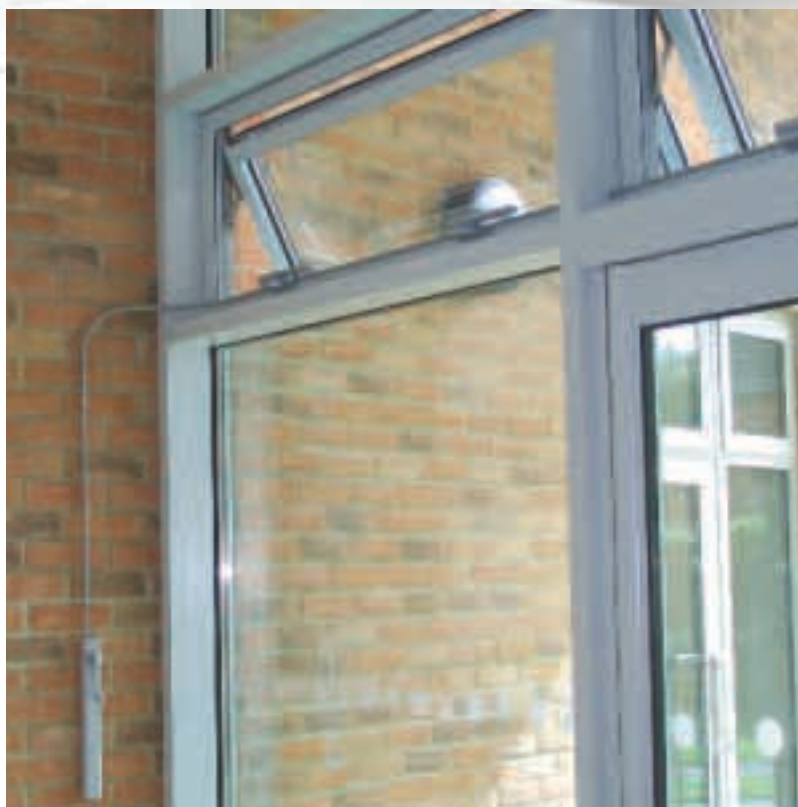
### Manual Window Control

Manual opening vents are used in applications where a number of high level out of reach windows or roof light systems require remote operation safely and securely.

Manual opening systems can be used for most window systems and can be applied to all forms of windows, bottom hung, top hung, side hung and central pivotal orientations.

SE Controls has the ability to design and install tailored solutions to meet the remote manual control requirements for natural ventilation in, offices, schools, colleges, hospitals, public buildings and shopping centers.

The operation of remotely opening either a single or number of high level windows can be achieved by our range of rotary handles available in a range of colours to meet the window profile and actuator to provide an inconspicuous solution.



## Residential Solutions



OS2 Control System



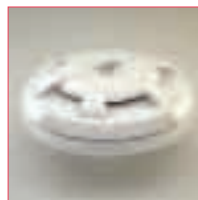
OS2 Loop Control System



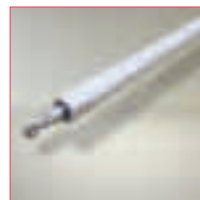
OS2 Manual Control Point (MCP)



Repeater Panel



Smoke Detector



Linear Actuator (Auto)



Chain Actuators (Auto)



SHEVTEC® Powered Extract Fans

### End of wall corridor AOV

If the corridor extends to the external wall an AOV can be installed to remove smoke from the common corridor/lobby.

### Escape/Fire Fighting stair

The prime objective of a smoke control strategy is to keep the escape stair free from smoke, by using the natural buoyancy of the hot gases to exhaust through AOVs.

### Mechanical Smoke Shaft

It is not always viable to install a prescribed natural smoke shaft, in which case a mechanical smoke shaft would be installed.

### Natural Smoke Shaft

A natural smoke shaft utilises automatic opening smoke doors or dampers to draw smoke into the smoke shaft and out the affected area through a roof vent at the top of the shaft.



SHEVTEC® Smoke Shaft Door and Actuator



Bottom Hung AOV



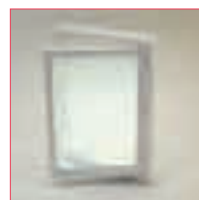
SHEVTEC® Glazed Louvre AOV



SHEVTEC® 140° Opening Roof Vent



SHEVTEC® Double Opening Roof Vent



Side Hung Opening AOV



SHEVTEC® Damper

## Residential Projects



**ABOVE:** Battersea Reach  
LONDON

**TOP RIGHT:** St. George Wharf  
LONDON

**RIGHT:** The Chips Building  
MANCHESTER

**FAR RIGHT:** One Hyde Park  
LONDON





## Education Solutions

### Atria (Natural Ventilation)

Atria are now a common feature in schools and universities, providing natural ventilation and light and thus saving energy.

### Atria (Smoke Ventilation)

Automatic opening vents (AOVs) are used to exhaust hot buoyant smoke to maintain the smoke reservoir within the atria to assist with the means of escape strategy.

### External Façade

External façades are used in a natural ventilation strategy to provide openings for either single sided or cross ventilation.

### Internal Glazed Screen/Façade

Within an education building, the internal glazed screen can be designed to provide ventilation, additional light and visibility into adjacent spaces.



OS2 Control System



NV Controller



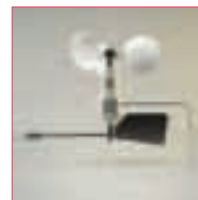
OS2 Module



Power Supply



Repeater Panel



Wind Speed and Direction Sensor



Rain Sensor



Remote Rotary Handle (Manual)



SHEVTEC® Aluminium Upstand Damper



Bottom Hung AOV



Sloping Roof Vent AOV



Parallel Opening AOV



SHEVTEC® & NVS Glazed Louvre AOV





CO<sub>2</sub> & Temperature Sensor



External Temperature Sensor



Smoke Detector



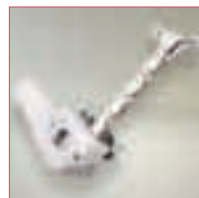
Manual Override Switch/Key Switch



Linear Actuator (Auto)



Chain Actuators (Auto)



Chain Actuator (Manual)

## Education Projects



**ABOVE:** Hackney City Academy  
LONDON

**RIGHT:** Fibbersley Primary School  
WOLVERHAMPTON

**TOP RIGHT:** Langley Academy  
LONDON

**FAR RIGHT:** Capital City Academy  
LONDON





## Commercial Solutions

### Atria (Natural Ventilation)

Atria are often used as a pump for drawing warm stale air from adjacent spaces and exhausting it to outside.

### Atria (Smoke Ventilation)

Automatic opening vents (AOVs) are used to exhaust hot buoyant smoke to maintain the smoke reservoir within the atria to assist with the means of escape strategy.

### External Façade

The external façade is typically used in natural ventilation strategies to provide either single sided or cross ventilation.

### Internal Glazed Screen/Façade

Within an education building, the internal glazed screen can be designed to provide ventilation, additional light and visibility into adjacent spaces.

### Smoke Shaft

A smoke shaft can be provided where the fire fighting core is not located on the external wall to provide smoke ventilation of the fire fighting lobby.

### Head of Fire Fighting Stair

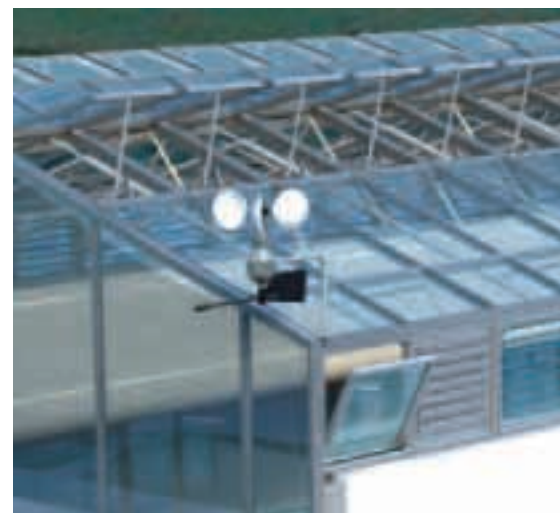
An automatic opening vent (or manually via a Manual Control Point activated from Fire Service Access level) with 1m<sup>2</sup> free area is required to the head of the stair to clear any smoke ingress.



Smoke Shaft



External Façade



Atria



OS2 Control System



NV Controller



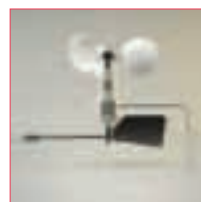
OS2 Module



Power Supply



Repeater Panel



Wind Speed and Direction Sensor



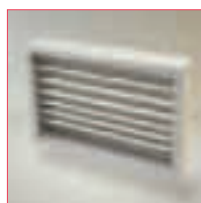
Rain Sensor



Remote Rotary Handle (Manual)



SHEVTEC® Smoke Shaft Door and Actuator



SHEVTEC® Aluminium Upstand Damper



Bottom Hung AOV



Sloping Roof Vent AOV



Parallel Opening AOV



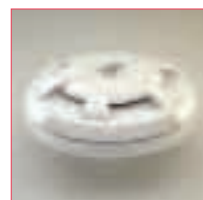
SHEVTEC® 140° Opening Roof Vent



CO<sub>2</sub> & Temperature Sensor



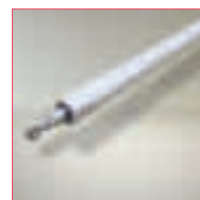
External Temperature Sensor



Smoke Detector



Manual Override Switch/Key Switch



Linear Actuator (Auto)



Chain Actuators (Auto)



Chain Actuator (Manual)



SHEVTEC® Double Opening Roof Vent



SHEVTEC® & NVS Glazed Louvre AOV



SHEVTEC® Damper



SHEVTEC® Powered Extract Fans

## Commercial Projects





**FAR LEFT: DOFA**  
SOUTH AFRICA

**BOTTOM LEFT: Bangkok International Airport**  
THAILAND

**MIDDLE LEFT: The Mailbox**  
BIRMINGHAM

**LEFT: Liverpool South Parkway**  
LIVERPOOL

**BELOW: Lime Street (Willis Building)**  
LONDON



## Healthcare Solutions

### Atria (Natural Ventilation)

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### Atria (Smoke Ventilation)

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### External Façade

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### Internal Glazed Screen/Façade

Within an education building, the internal glazed screen can be designed to provide ventilation, additional light and visibility into adjacent spaces.

### Smoke Shaft

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### Head of Fire Fighting Stair

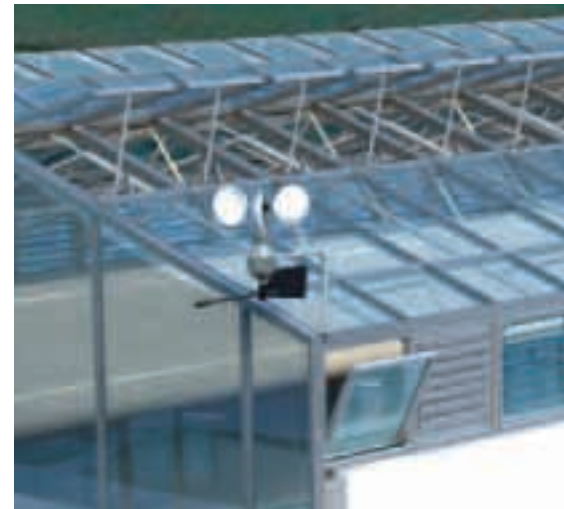
An automatic opening vent (or manually via a Manual Control Point activated from Fire Service Access level) with 1m<sup>2</sup> free area is required to the head of the stair to clear any smoke ingress.



Smoke Shaft



External Façade



Atria



OS2 Control System



NV Controller



OS2 Module



Power Supply



Repeater Panel



Wind Speed and Direction Sensor



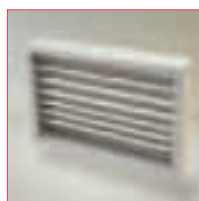
Rain Sensor



Remote Rotary Handle (Manual)



SHEVTEC® Smoke Shaft Door and Actuator



SHEVTEC® Aluminium Upstand Damper



Bottom Hung AOV



Sloping Roof Vent AOV



Parallel Opening AOV



SHEVTEC® 140° Opening Roof Vent





CO<sub>2</sub> & Temperature Sensor



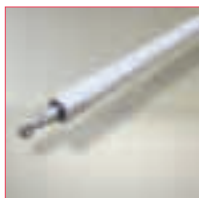
External Temperature Sensor



Smoke Detector



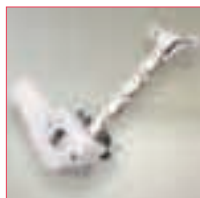
Manual Override Switch/Key Switch



Linear Actuator (Auto)



Chain Actuators (Auto)



Chain Actuator (Manual)



SHEVTEC® Double Opening Roof Vent



SHEVTEC® & NVS Glazed Louvre AOV



SHEVTEC® Damper



SHEVTEC® Powered Extract Fans

## Healthcare Projects





**LEFT & ABOVE: Evelina Children's Hospital**  
LONDON

**BELOW: Walsall Manor Hospital**  
WALSALL





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*Creating a Healthier and Safer Environment*