

## RENEWABLES

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SUNWARM AIR

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CONSTANT VOLUME

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## SUNWARM AIR SOLAR PRE-HEAT VENTILATION SYSTEM

SUNWARM USES SOLAR ENERGY TO REDUCE THE HEATING DEMAND OF THE HOME AS WELL AS PROVIDING A COMPLETE VENTILATION SOLUTION.



## BENEFITS

### SUNWARM AIR

Sunwarm Air provides both a ventilation strategy and renewable pre-heating system in one.

Sunwarm solar collectors provide heating to the ventilation supply when required. The Sunwarm air handling unit intelligently monitors the temperature of the home and selects the optimum source of fresh air to maintain the desired interior temperature.

The system is mounted discreetly within the loft space and provides filtered air directly to the central hallway of the home.

Sunwarm is quick and simple to install making it a very cost effective ventilation renewable solution for new-build homes.

### SAP APPENDIX Q RECOGNISED

Cost-effective means of complying with codes 3&4 of the Code for Sustainable Homes. Potential annual energy savings 1142kWhrs.

### MEETS RENEWABLES OBLIGATION

Can provide over 25% of a home's space-heating as well as providing cool air in warmer months.

### COMPLETE VENTILATION SOLUTION

Classified as Positive Input Ventilation, significantly improves indoor air quality.

### EXTREMELY LOW POWER CONSUMPTION

4-15 Watts, dependent on duty.

### EXCEEDS REGULATIONS

Compliant with Part F of Building Regulations and BBA certified.

### SIMPLE INSTALLATION

Installer-friendly panels, self calibrating air handling unit and insulated duct. No balancing required.

### HEATING SYSTEM COMPATIBILITY

Provides pre-heating support for all boilers and heat pumps, and can be installed alongside solar water heating.

### IMPROVES AIR QUALITY

Continuously delivers fresh, filtered air to the centre of the home.

### USER FRIENDLY

Simple control panel with unit/filter status indicator.

### SUPPLIED COMPLETE

Supplied as two kits - first and second fix - the system comprises two solar collectors, air handling unit, control, diffuser and ducting.

### FULL DESIGN & SUPPLY PACKAGE

Quotation supplied with complete ductwork layout.

### STRAIGHT FORWARD MAINTENANCE

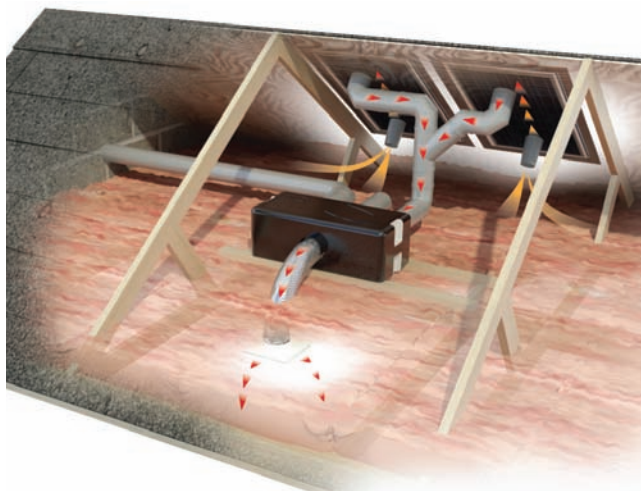
Easy access for annual inspection & filter change.

### 5 YEAR WARRANTY

5 year parts and 1 year labour warranty guarantee reduced life costs and peace of mind.



## INSTALLATION FEATURES



Solar air collectors installed on the roof.



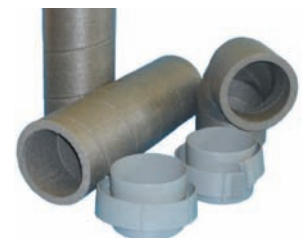
Simple to use control panel.



Air Handling unit for Sunwarm Air.



Ceiling Diffuser.

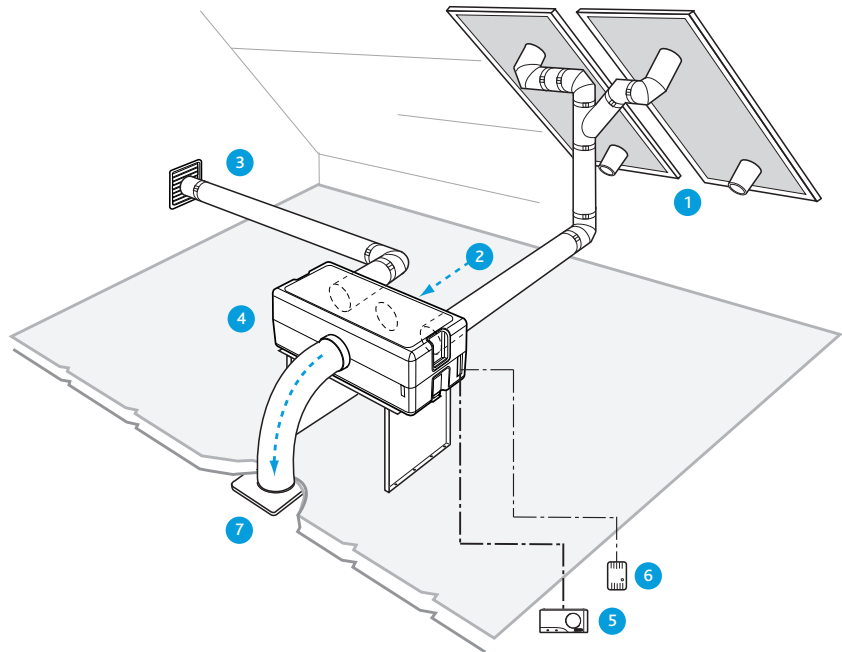


Thermally insulated foam duct.

HOW THE SYSTEM WORKS

There are three sources of fresh air which are drawn on depending upon the temperature of ventilation air required. The solar collectors (1) heat fresh air using solar energy. When no solar gain is available but warm air is needed, heat that has escaped from the home is drawn from the loft space (2). An outside terminal - mounted in the roof or gable end - draws cool air when required (3).

The central controller mounted in the air handling unit (4) takes temperature readings from sensors located at the mouth of each supply duct (1,2&3) and compares them with one mounted within the home (6). The air handling unit constantly blends supply air from the appropriate ventilation source/s based on the user requirements selected via the user control (5) also mounted in the house. Supply air is mixed with the air within the home using the supplied diffuser (7).



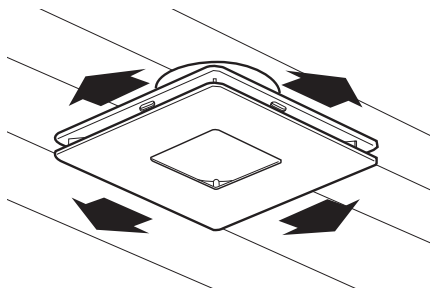
SUNWARM INSTALLED IN LOFT

Scenario	Inside	Outside	Action
A	Heat required	Solar gain available	Induct air through panels (1)
B	Heat required	Solar gain not available	Induct lost heat from loft space (2)
C	Heat not required	Solar gain available	Induct cooler air from outside (3)

AIR DIFFUSER

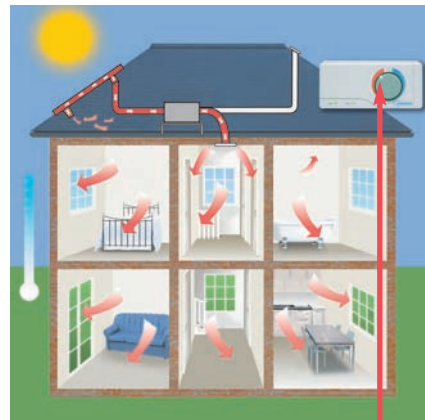
Thanks to its innovative design, the air diffuser is able to mix pre-warmed or cooled fresh air with the air inside the home. Mixing minimises any temperature differential which may otherwise cause discomfort.

Mounted in the central landing or hallway of the home and connected directly to the air handling unit, the diffuser can be set to deliver air in any of four directions.



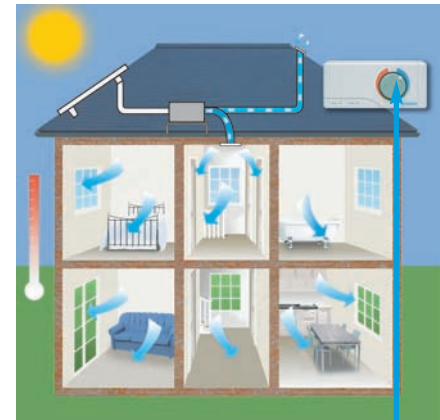
300mm square patented diffuser.

A cold day.



Sunwarm captures solar energy to help heat the home.

A warm day.

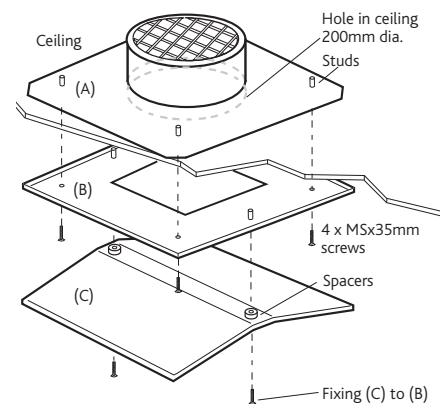


Sunwarm also brings cool fresh air into the home when required.

Airflow is set to ensure air within the home is changed every two hours (0.5 ach). In accordance with CIBSE guidance, boost speed increases the flow rate by 25%.

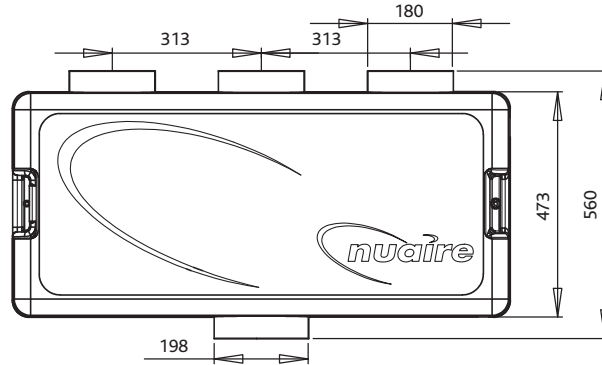
AIR DIFFUSER WITH FIRE DAMPER

For use in stairwells of three story properties, the optional powder-coated aluminium diffuser with 'Fireblock' provides 1 hour of fire resistance in accordance with BS476 Part 20 and ISO834.



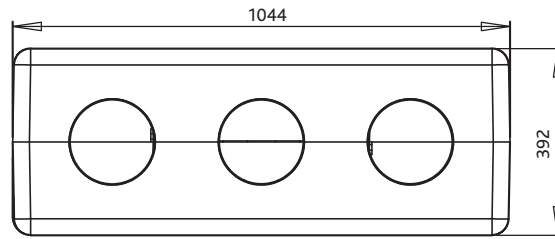
SUNWARM AIR - DIMENSIONS (mm)

Air handling unit, plan view.

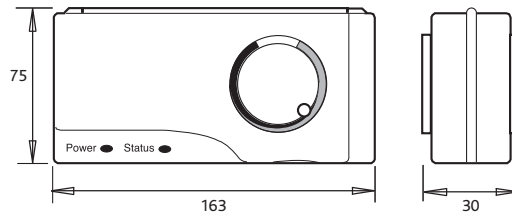


Air handling unit, rear view.

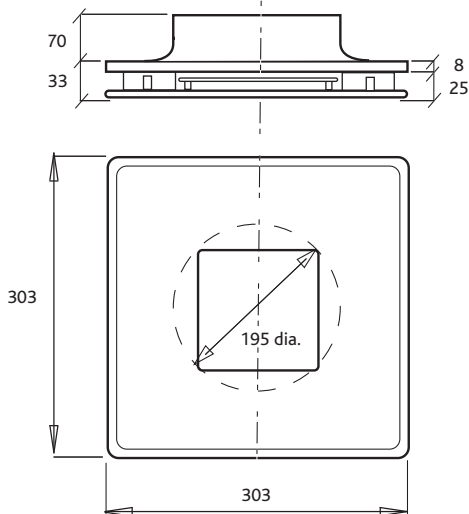
Note: A clear maintenance gap of 500mm should be left above the unit.



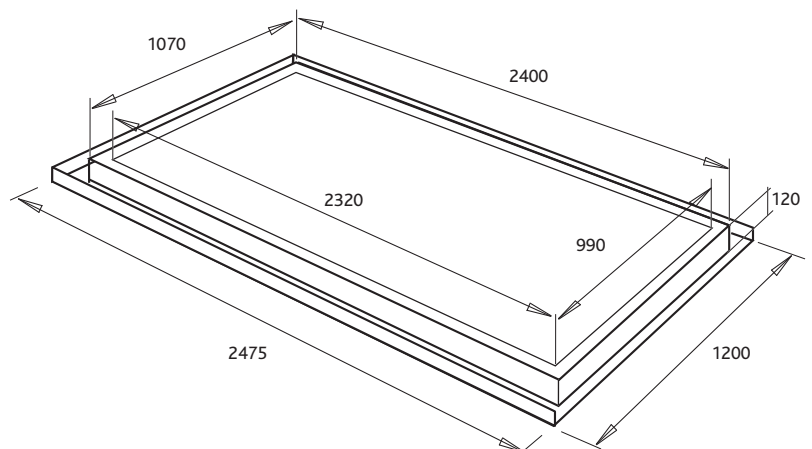
User control, front view, side view.



Diffuser, side view, base view.



Solar collector, 3/4 view.



### TEMPERATURE SENSORS & LOCATIONS

Sensors are placed at the following locations:

- 1 Collector
- 2 Within the home
- 3 In the loft (at the air handling unit)
- 4 At the outside air intake

### PACK CONTENTS

#### Part A (First fit)

##### Solar collectors x2

- Mounted directly onto roof trusses prior to the roof covering being installed

##### External (roof) grill x1

- To supply external air when cooling required

#### Part B (Second fit)

##### Control dial and cable x1

- Used to select desired air temperature
- Also includes status indicators

##### Insulated ducting kit x1

- All components required to couple the collectors and external grill to the air handling unit

#### Supply air temp sensors x4

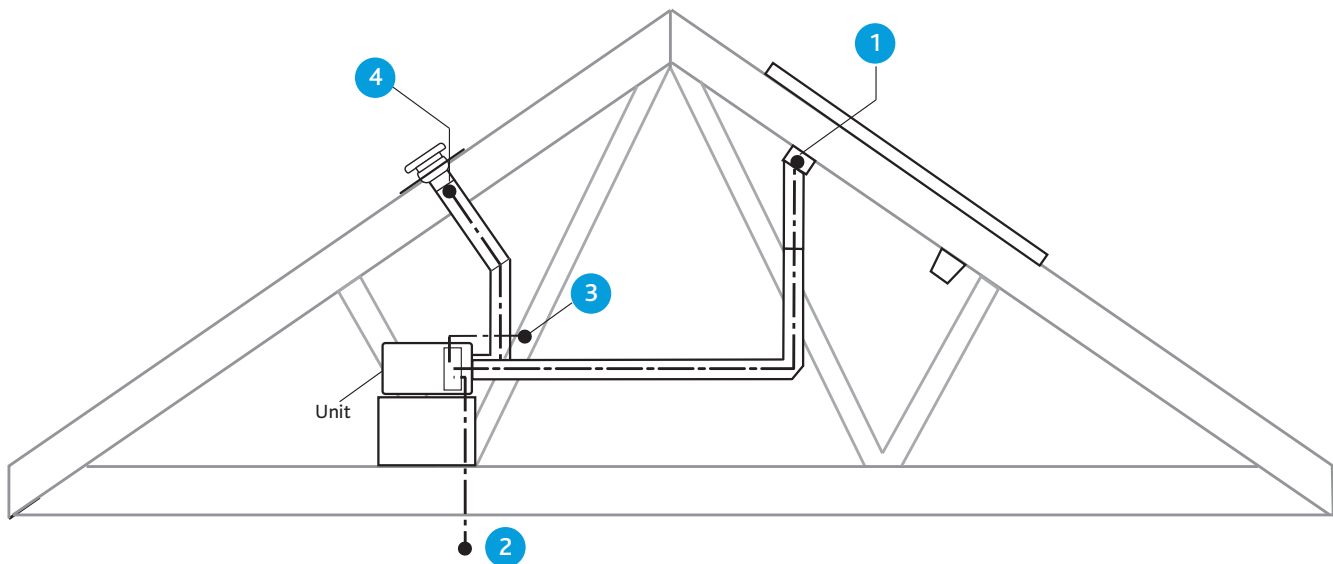
- Positioned at the mouth of the 3 supply ducts and within the home, they are used to determine the appropriate source of fresh air

#### Air handling unit x1

- Supplies fresh filtered air to the home at the appropriate temperature blended from the available 3 sources

#### Diffuser and flexible supply duct x1

- Supplied with a flexible duct to enable installation in hinged loft traps, the patented design ensure optimum mixing of supply and internal air



### PERFORMANCE

**Airflow m<sup>3</sup>/s:** 0.04 (max selectable flow rate)

**Max property volume (m<sup>3</sup>):** <288

**Maximum wet rooms:** Kitchen + 3 (For applications with more than kitchen + 3 wet rooms please contact Nuaire technical support)

**Electrical supply:** (V): 230 (Hz): 50

**Input power (W):** 15

**Input current (maxA):** 0.14

**Fuse (A):** 3

**Max. operating loft temp (°C):** 55

**Max. airflow temp (°C):** 70

### WIRING

- Wiring to the unit must be carried out by a suitably qualified electrician
- Fuse rating: 3 Amp
- The unit must be earthed
- The three core cable from the mains power supply should be connected to a fixed wiring installation via a fused isolator in accordance with IEE wiring regulations

### MAINTENANCE

Annual maintenance should include:

- Filter change
- Visual check of electrical connections
- Vacuum of air diffuser if required

The status light on the user control panel will flash red should a filter change be required before the annual inspection is due.

New filters can be purchased direct from Nuaire using code 775631 (4 required).

## CONSULTANTS SPECIFICATION

### SPECIFICATION

The Nuair Sunwarm Air Pre-heat Ventilation System shall be in the form of a flat plate solar air collector using a coated absorber with minimum resistance to air flow, encased in a pre-painted aluminium frame structure with aluminium back plate capable of in roof installation.

The solar air collector shall have 3mm thick polycarbonate cover.

The solar air collector must incorporate an integral flashing system for in roof installation and should have passed tests in accordance to BS EN12975.

The solar air collector must be well insulated using an approved sustainable insulation material.

All external fitting components should be made of stainless steel, galvanized steel or aluminium to avoid corrosion. The solar air collectors must be well insulated to reduce heat losses and must include an over temperature protection device to ensure collector temperature does not to exceed 100°C.

The weight of each collector should not exceed 61Kg.

The system shall use DC fans with low noise and low wattage dampers.

The electronic controls must be easy to use and intuitive and must include automatic selection of fresh air source to provide warm air as well as fresh filtered air cooling.

The unit casing shall be manufactured from thermally insulated expanded polypropylene foam moulding. The unit shall incorporate filters of G4 grade with an area of approximately 0.47m<sup>2</sup>.

The unit shall incorporate a forward curved centrifugal impeller and high efficiency brushless DC motor fitted with sealed for life, self lubricating bearings with locked rotor protection. The unit shall incorporate 3 air inlet spigots, each with an integral damper, to allow air to be drawn into the unit from the collectors, loft space and outside.

The unit shall be supplied with a diffuser of design which provides efficient, directional controlled air supply using side blanking pieces supplied. The diffuser design shall minimise the accumulation of any condensate run off that may occur in the event of power to the unit being switched off.

The diffuser shall have been independently assessed by the BRE for behaviour in relation to fire and adjacent smoke detectors.

Optional fire damper and diffuser for use in fire protected stairwells in 3 storey properties (please refer to page 4).

All ducting within the loft space must be rigid insulated foam 180mm diameter, supplied by Nuair Ltd.

The unit shall be supplied with all the necessary temperature sensors and interconnecting cables. The unit shall incorporate selectable volume control for duties from 15l/s to 40l/s for maximum flexibility and occupant comfort.

The unit shall be supplied with a user control panel and interconnecting cable. The user control shall allow selection of on/off, auto/boost and target temperature. The control shall also provide unit/filter status indication.

An internal monitor shall record the unit's operational time.

The system may provide a solution for acoustic ventilation where required as per PPG24 – seek guidance from Nuair's Technical Dept.

The unit shall be offered with at least 5 year parts warranty and at least 2 year labour warranty.

For information on reducing radon ingress, it is suggested that the details given in Positive pressurization: a guide to radon remedial measures in existing dwellings may be considered. (See [www.nuair.co.uk](http://www.nuair.co.uk)).

## NATURAL VENTILATION - SAVING MONEY COMES NATURALLY

NUAIRE NOW OFFER NATURAL VENTILATION SOLUTIONS FOR **COMMERCIAL BUILDINGS**, KEEPING BUILDINGS SUPPLIED WITH CLEAN AIR, 365 DAYS A YEAR, WHILST REDUCING ENERGY COSTS.

By employing upward displacement in the summer and a patented mixing mode solution in the winter, e-stack uses natural ventilation to reduce CO<sub>2</sub> levels and energy bills while helping to maintain a constant room temperature, enabling occupants to work more efficiently and more healthily.

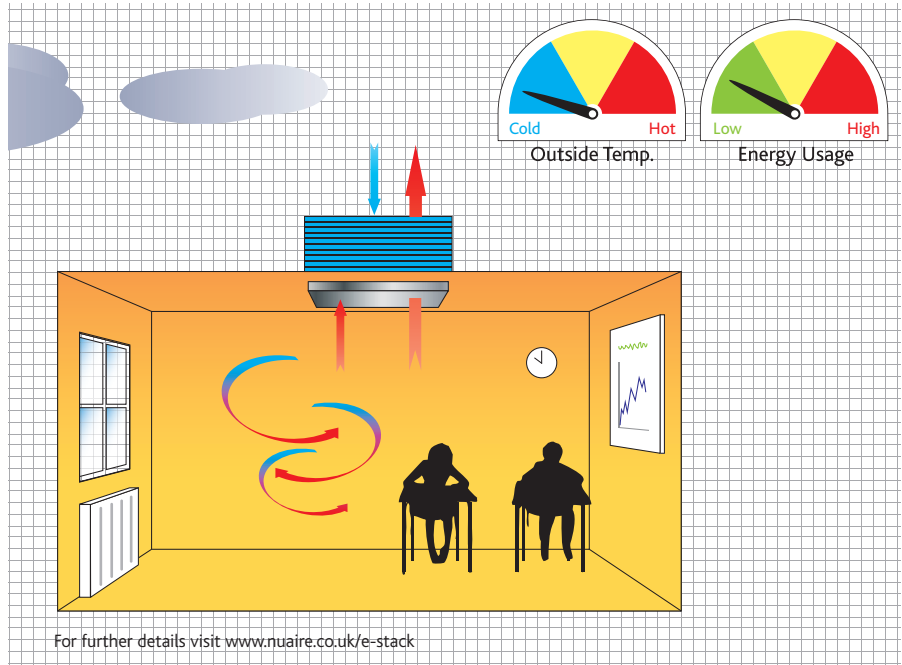
### IN SUMMER

Natural displacement ventilation can be utilised allowing opening windows/louvres to provide make up air for the natural stack effect through the e-stack unit. This can be boosted in very high temperatures to purge the rooms and return the space to a comfortable level. In night cooling mode the system allows cool air in through the e-stack unit to take advantage of the thermal mass and again can be boosted to provide additional supply air and cooling.

### IN WINTER

Fresh air is allowed to enter the space via the divided shaft in the e-stack unit where it is mixed with warm room air in the mixing box section. The mixed air is then distributed in to the space at the desired temperature avoiding cold drafts by constantly measuring internal and external temperatures. The remaining warm stale air is allowed to rise from the space to the atmosphere. Internal CO<sub>2</sub> sensors ensure the system operates within building regulations 365 days a year.

The combination of natural ventilation and mixed mode systems ensure ideal room conditions for the occupants 365 days a year by intelligently monitoring and controlling the ventilation system. We believe that using this combination you can create environments that are perfectly suited for all applications and buildings.



Intelligent all-year-round ventilation.



A-Series e-stacks: innovative low energy approach for buildings where rooms are connected to a central atrium.



S-Series e-stacks: Suited to spaces with higher heat gains and for rooms with more than 35 occupants, such as halls and theatres.



R-Series e-stacks: Designed specifically for rooms occupied by 10 to 35 people, ideal for classrooms and offices.



F-Series e-stacks: Designed for spaces which have access to the external wall and where sloping roofs are used for high level windows.

For further details see Nuaire's [Commercial catalogue](#) or visit: [www.nuaire.co.uk/naturalventilation](http://www.nuaire.co.uk/naturalventilation)