



## **X-Stream**Systems

X-Stream Air Natural Ventilation kits are predominantly designed for self-installation. Suitable for ventilating existing and new build applications.



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# Keeping it natural

Natural ventilation has rapidly become an essential part of modern building, being considered by architects, builders and the environmentally enlightened.

The need to reduce energy consumption has led to a greater awareness of carbon emissions and subsequent changes to building codes and legislation have followed this necessity.

The non-energy related benefits are a marked improvement in room comfort levels too, allowing occupants to benefit from the changing seasons rather than feeling environmentally oppressed by their extremities.

The X-Stream system allows for natural ventilation using our terminals, with an optional low-energy solar fan to deliver or extract additional ventilation capacity when required.

Alternatively natural lighting can be incorporated within the terminal, saving daytime lighting costs in windowless or dull rooms, while helping alleviate seasonal affective disorder (SAD) for occupants. Both options provide environmentally friendly, cost effective ventilation solutions for buildings.

Combined with Midtherm's i-Window product range, automatically opening windows or Midtherm's Crossvent wall mounted electrically activated ventilation plenum, X-Stream can provide a totally natural solution to ventilation, with the extra flexibility of solar power to keep occupants comfortable whatever the atmospheric conditions, even on still summer days.

X-Stream can be used in conjunction with Natural Ventilation Systems, Intelligent Controls and i-Window Systems.

## X-Stream Air Natural Ventilation kits

### The technical benefits of utilising X-Stream Air systems are:

- Patented louvre blade technology (Midtherm developed in conjunction with Sheffield Hallam University and the EPSRC).
- Four years of research and design.
- Enhanced airflow characteristics.
- Enhanced acoustic performance.
- Enhanced weather proofing.
- X-Stream room air damper can be operated from a wall switch or fully automatic intelligent controls.
- Optional solar boost fan input/extract up to 76l/s.
- Optional natural day lighting systems with 99.7% daylight reflectivity.

### The manufacture and longevity benefits of utilising X-Stream Air systems are:

- Standard choice of colours RAL 7015 slate grey or RAL 7047 light grey.
- Other RAL colour finishes are available at an optional extra cost.
- X-Stream GRP construction retains colour and is more stable than ABS plastic which conversely discolours and can become brittle with prolonged exposure to ultraviolet light (UV).
- Terminals are internally insulated and utilise fire retardant acoustic flexible ducting for ease of installation in difficult areas of a building.
- UPVC duct sections are 0.6m lengths (Note: UPVC ducting simply twist together to provide a fast fix and can be additionally sealed at the joints for positive pressure applications).

## Standard X-Stream Air kits consist of the following items:

- X-Stream Air GRP roof louvre terminal.
- GRP pre-insulated roof flashing plate to suit curb mounting to prevent any cold bridging.
- 1m of internal UPVC ducting being 550mm diameter overall width.
- High efficiency air damper and 230v fail safe modulating actuator arrangement.
- Standard single wall rocker switch for electric manual operation.
- Fixing kit and installation guidelines.

## X-Stream: NVX200-3 and NVX200-7

Introducing the entry-level X-Stream Air Natural Ventilation System. The simple cost effective lightweight solution to natural ventilation.

The NVX200 units are available as three-louvre models (NVX200-3) or seven-louvre models (NVX200-7), both using patented X-Stream natural ventilation airflow louvres.

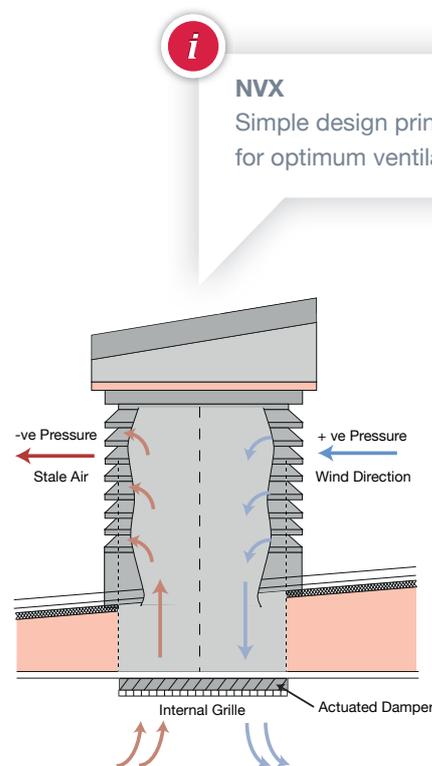
These 'balanced stack' versions provide a naturally driven input and extraction ventilation rate, determined by external wind conditions and thermal effects. This makes them especially useful in closed room conditions where a separate incoming air supply, such as openable windows or Midtherm's Crossvent automatic wall damper units, is not available.

The NVX200-3 offers up to 77l/s volume flow rate at 4m/s external wind speed, and the NVX200-7 offers up to 180l/s at 4m/s.

The patented X-Stream airflow blades are specially designed and manufactured to be highly resistant to almost all rain conditions, having been tested to 'Class A' rain resistance at 0.5m/s in accordance with BS EN 13030:2001. The blades' low resistance coefficient ensures the most efficient airflow performance, while delivering improved acoustic performance.

Specially designed air dampers have been configured for the X-Stream system, resulting in virtually no leakage up to 15pa pressure. Even at greater pressures, the dampers provide a 98 percent seal.

Combined with the benefits of being a totally natural ventilation system using patented and tested X-Stream technology, the NVX200-3 and NVX200-7 are the first choices for an entry-level X-Stream Air Natural Ventilation System.



## X-Stream: VLX200-3 and VLX200-7

The next model in the X-Stream range offers all of the benefits of the entry-level system – plus a high quality natural daylight system.

The VLX200 units are available as three-louvre models (VLX200-3) or seven-louvre models (VLX200-7), both using patented X-Stream natural ventilation airflow louvres.

Whichever VLX200 unit you choose, it will include a 250mm reflective natural daylight rigid tube system.

This makes the VLX200 the ideal choice for internal areas that require a source of daylight, such as stairwells, corridors or small and medium sized rooms. Combining a source of natural light with an effective ventilation system is an efficient use of space. Multiple units can be utilised for larger room applications.

The innovative X-Stream VLX200 design ensures high levels of performance alongside the natural daylight core. Driven by external wind conditions and thermal effects, the VLX200-3 offers up to 50l/s volume flow rate at 4m/s external wind speed and the VLX200-7 offers up to 115l/s at 4m/s.

The VLX200-3 and VLX200-7 are the environmentally-friendly and cost-effective solutions for any indoor area that requires high quality natural ventilation, with the additional benefit of daylight, while minimising costly building work requirements by virtue of a single penetration to room interface – with the reassurance of patented and tested X-Stream Air Natural Ventilation System technology.



**VLX**  
Natural ventilation & lighting combined, featuring a 99.7% reflectivity core.



### X-Stream Air – The Airflow Blade Technology

The ground breaking X-Stream Air Natural Ventilation System is a natural-active solution to the provision of building ventilation.

X-Stream Air systems use the smallest possible amount of energy to produce optimum airflow resulting in an increased comfort level for the building occupants. Its constant ability to react to ever changing internal and external climatic conditions, coupled with additional options for a solar boost fan or natural lighting unit make X-Stream Air a designer-led and very versatile product.

The patented louvre pitch angle and spacing offers increased performance over a reduced number of louvre blades. This in turn reduces the overall height of each system and enables X-Stream units to equal the performance of other units approximately 1/3 greater in size. The patented angle of each blade leads to an improvement in noise level, performance and the ability to resist driving rain.

The patented louvre profile and its incorporation to this system has been tested and patented in conjunction with Sheffield Hallam University under a jointly funded programme, resulting in improved room comfort levels, better acoustic reductions and rain weather performance.

## X-Stream: SVX200-3 and SVX200-7

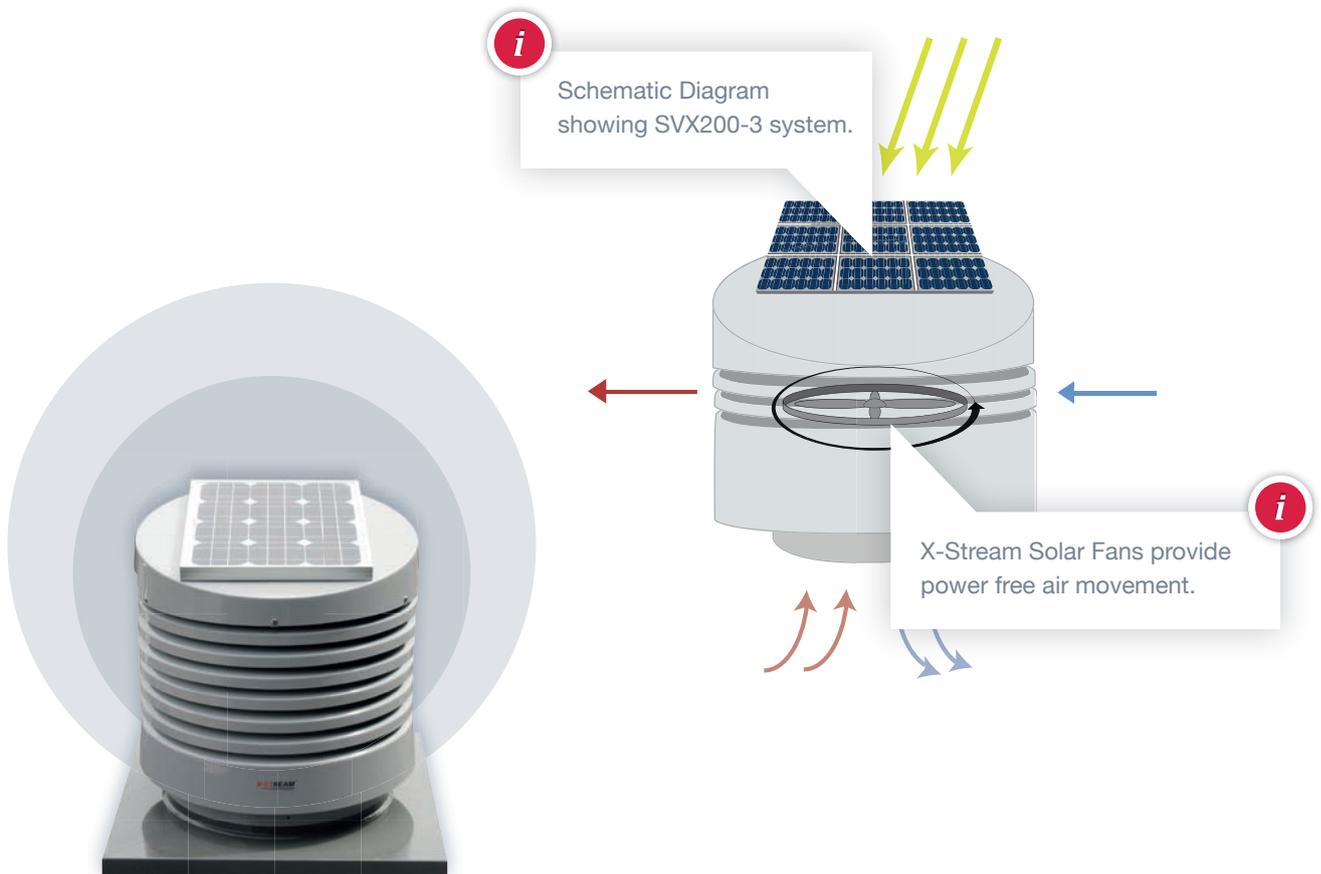
The highest specification and most comprehensive X-Stream Air Natural Ventilation System in the range offers all of the features of the entry-level solution plus a whole lot more.

An integrated X-Stream solar powered fan provides maximum flexibility and suitability for all room conditions, with minimal energy use and the ability to react to changing needs whatever the room condition. The very low power fan uses just 12vDC and only operates when the need for ventilation exceeds the level provided by natural wind-driven ventilation.

The system reacts immediately to internal room condition changes as the X-Stream 'solar boost' fan begins to work at much lower operating speeds than a traditional on/off fan. This reduces heat build-up and CO<sub>2</sub> concentration, while simultaneously operating in a more energy-efficient manner.

The standard SVX200 system is designed to allow the fan to run at a variable rate during daylight hours, when a fan is generally needed the most, but can be adapted to run beyond daylight hours by adding a solar battery back-up charger or a mains power connection.

The SVX200 units are available as three-louvre models (SVX200-3) or seven-louvre models (SVX200-7), both using patented X-Stream Natural Ventilation airflow louvres. The SVX200-3 offers up to 50l/s volume flow rate at 4m/s external wind speed and the SVX200-7 offers up to 115l/s at 4m/s. With the fan active this gives an additional 76 l/s approximately.





*Windvent and X-Stream units in operation*

## Solar Battery Backup with optional Mains Power Charging

SVX200 systems can be adapted to include the use of a Direct Current (DC) battery supply to the installed fans. This enables the fans to be run at an increased constant rate rather than the standard varying rate design. In short the power from the monocrystalline solar panel is used to charge the DC solar battery pack, and in turn this provides the power to the solar fan unit.

Where there is the likelihood that the solar fans would be required to run more than 2 daylight hours per day, we would recommend the addition of a solar battery backup mains charger. This would ensure that there is power available to the fans at all times no matter what charge is available at the battery. Midtherm have our own CIBSE based design package to help you make the choice to suit your specific requirements.

## The X-Stream Air Solar Fan

If you are looking for the most advanced and flexible X-Stream Air Natural Ventilation design then the SVX200 system is the one for you.

The standard integrated X-Stream solar powered fan unit provides a 'mains power free' supply of boost air when required. It is assumed that additional fan input/extract air movement would be during daylight hours with the rate of input or extract being variable throughout this period.

In short the standard design X-Stream Air units are designed to optimise ventilation efficiency whilst keeping low carbon emissions, reduced maintenance and very low energy costs.

For extreme weather conditions that require fan operation for night-time cooling, or when consistent fan function is required during daylight hours, the solar fan can be installed with a DC battery power supply.

## Installation

The X-Stream Air Natural Ventilation System is designed to make installation simple and reliable.

Midtherm's internal flexible duct extensions are ordered as 600mm linear units and are pre-insulated and fire retardant. They can be added to the standard system and are attached with a simple 'twist lock' function. This class leading component has excellent acoustic properties when compared to conventional flex or sheet steel duct work not to mention the dimensional flexibility inherent in its construction. A bespoke insulated flashing plate can also be added for installations in highly exposed locations.

### Optional additional items can include:

- Pitched and powder coated aluminium roof flashing plate to match the X-Stream colour of your choice.
- Pitched roof tapered finishing skirts, for a superior finish to your project.

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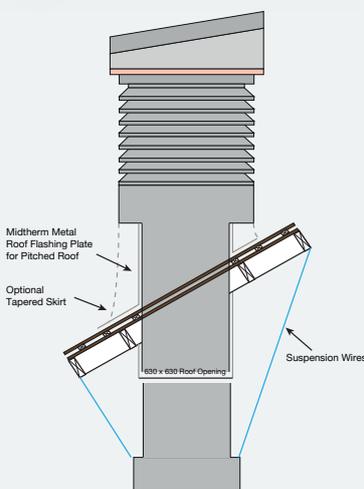
Effortless Installation



*Typical false ceiling grid application shown with insulated twist lock flexible duct*



*Ceiling assembly*



## Designed to suit your roof

The X-Stream system has been designed for maximum usability and can be fitted to both flat and pitched roofs.

To ensure compatibility, each system intended for use with a pitched roof will be provided with a bespoke flashing plate manufactured to match the exact roof pitch.

The pre-insulated welded aluminium roof plate can even be powder coated to match or contrast the

exterior system colours. The standard GRP roof plate fitting is fire retardant and features high quality thermal insulation, or users can upgrade to an aluminium flat roof plate with extra insulation allowing a wider RAL colour range.

## X-Stream: Control Options

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Essential controls available in 3 options to suit your requirements and budget.

### Option 1 - Standard Controls:

The simple answer for the basic X-Stream Air Natural Ventilation System. It still includes the X-Stream Standard Control System with a single wall rocker switch to operate the damper (1 required per terminal) for the NVX200 and VLX200 units or a double switch to operate the dampers and fan of the SVX200 unit (control pictured).



MID-WRS

### Option 2 - Standalone Auto Controls:

For buildings that don't require a fully intelligent control system, the automatic X-Stream Standalone System 1.0 (Auto Control) can be fitted controlling up to six terminals per zone in unison.

Complete with heating system relay, temperature sensor, CO<sub>2</sub> sensor and a low-power damper actuator, the automatic system allows free night cooling\* and a manual boost over-ride facility. Wind and precipitation sensors also protect against extreme weather conditions.

Rain/snow and external wind/temperature sensors to suit control Option 2.0 Standalone facilitate the closure of air dampers at high set points only. Comes with heating relay interface for connection to heating systems.

\*in conjunction with timer unit



MID-2012



MID-CO<sub>2</sub>

### Option 3 - Intelligent Air Controls:

To realise the full potential of the X-Stream Air Natural Ventilation System, the control functions can be upgraded to the X-Stream Standalone Plus System 2.0. Controlling an entire building's ventilation requirement as a Building Energy Management System (BEMS), being an open protocol for MODbus, BACnet and others.

Fully automatic, the intelligent control system provides a master controller with a touchscreen interface, including pre-configured natural ventilation software and digital connections for building heating systems.

Precise airflow control is optimised by internal temperature sensors, CO<sub>2</sub> sensors, a low-power damper actuator and a roof-mounted weather station. Ventilation and fan activation are determined by climatic conditions, ensuring accuracy and efficiency. Climatic data and operational trends are digitally recorded and can be uploaded to a PC for further performance fine-tuning.

Adding a MID-WS485 MODbus weather station to controls as Option 3.0, monitors wind speed, external temperature and precipitation, to enable system modulation according to actual external conditions.



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## X-Stream Air Systems-Volume Flow Performance



SVX200-7	SVX200-3	VLX200-7
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Details

Seven ventilation airflow louvres with 12vDC solar powered boost fan powered by daylight alone. Also available with an optional solar battery standby facility with back-up mains charging for use during night time, or prolonged periods during very hot daytime conditions.

Three natural ventilation airflow louvres with 12vDC solar powered boost fan, powered by daylight alone. Not available with solar battery back-up facility.

Seven ventilation airflow louvres incorporating a 250mm diameter natural lighting system with 99.7% reflectivity. (No fan).

Airflow Volumes

Up to 115l/s @ 4m/s external wind & 90l/s @ 2m/s external wind + Solar driven Fan Volume.

Up to 50l/s @ 4m/s external wind & 40l/s @ 2m/s external wind + Solar driven Fan Volume.

Up to 115l/s @ 4m/s external wind & 90l/s @ 2m/s external wind.

Solar Fan Air Volumes

76l/s – Variable dependent upon external daylight levels for solar power.

76l/s – Variable dependent upon external daylight levels for solar power.



**VLX200-3**

Three ventilation airflow louvres incorporating a 250mm diameter natural lighting system with 99.7% reflectivity. (No fan).

Up to 50l/s @ 4m/s external wind & 40l/s @ 2m/s external wind.



**NVX200-7**

Seven ventilation airflow louvres to provide natural input and extract ventilation. (No fan/no natural lighting).

Up to 180l/s @ 4m/s external wind & 90l/s @ 2m/s external wind.



**NVX200-3**

Three ventilation airflow louvres to provide natural input and extract ventilation. (No fan/no natural lighting).

Up to 77l/s @ 4m/s external wind & 40l/s @ 2m/s external wind.



## **X-Stream**Systems

Other products available from Midtherm:

Flues Masts and  
Chimneys

Commercial  
Canopies

Industrial Fan  
Systems

Natural Ventilation  
Systems

i-Window Systems

Intelligent  
Controls

