Sola-boost Windcatcher

Energy free powered ventilation

Monodraught

VKR
Part of the VKR Group

Patent Application Number: 0523033.9

hev news AWARDS 2007
FINALIST

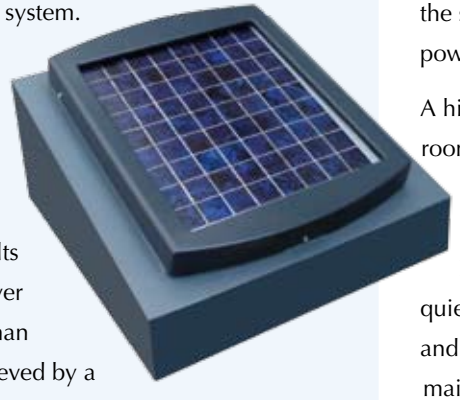
Winner of the Interbuild 2006
"Best Building Services Product of the Show"
and Finalist of Air Movement Product of the year 2007

The Sola-boost is an extension of the proven Windcatcher design, providing additional ventilation on sunny days whilst maintaining zero running costs.

Monodraught Windcatchers have been a tremendous success since first launched 15 years ago and more than 4,000 have now been installed but it is recognised that faced with the potential problems of global warming and a predicted continual rise in energy costs, the application of an increased range of successful energy free natural ventilation strategies has become even more urgent and important.

Monodraught have significantly improved the potential of Windcatcher systems by the addition of a solar driven internal fan that brings in additional fresh air up to 260l/s. Conversely, the fan operation can be set to extract stale air. All this without any energy cost.

A unique feature of the system is the patented PowerTrack™ control system. This system works on the basis that the brighter the sun, the greater the speed of the boost fan. The unique switching results in 2½ times more power from the solar panel than can otherwise be achieved by a direct connection.



How does it work?

The high-efficiency polycrystalline solar panel is optimised for sunny weather, so more power is transmitted on sunny days.

The PowerTrack™ control system is an intelligent power conditioning system which has been designed to produce maximum power from the solar panel.

The system monitors the output from the solar panel every 5 milliseconds and changes its configuration to maximize the power available. With the normal solar panel connection, a 12V solar panel will provide approximately 100 l/s of extra ventilation. However with PowerTrack™ when the threshold of 14V is met, the Powertrack™ controller boosts the voltage of solar energy to 25V. Under low sunlight conditions, the system shuts down the output to the fan to prevent low power from damaging the boost fan.

A high efficiency DC fan carries an air stream into the room through the central duct in the Windcatcher unit. The fan features a unique Feathered Edge blade so as to be ultra-quiet. It runs on ball bearings and has a brushless motor for zero maintenance and a very long life.

Externally

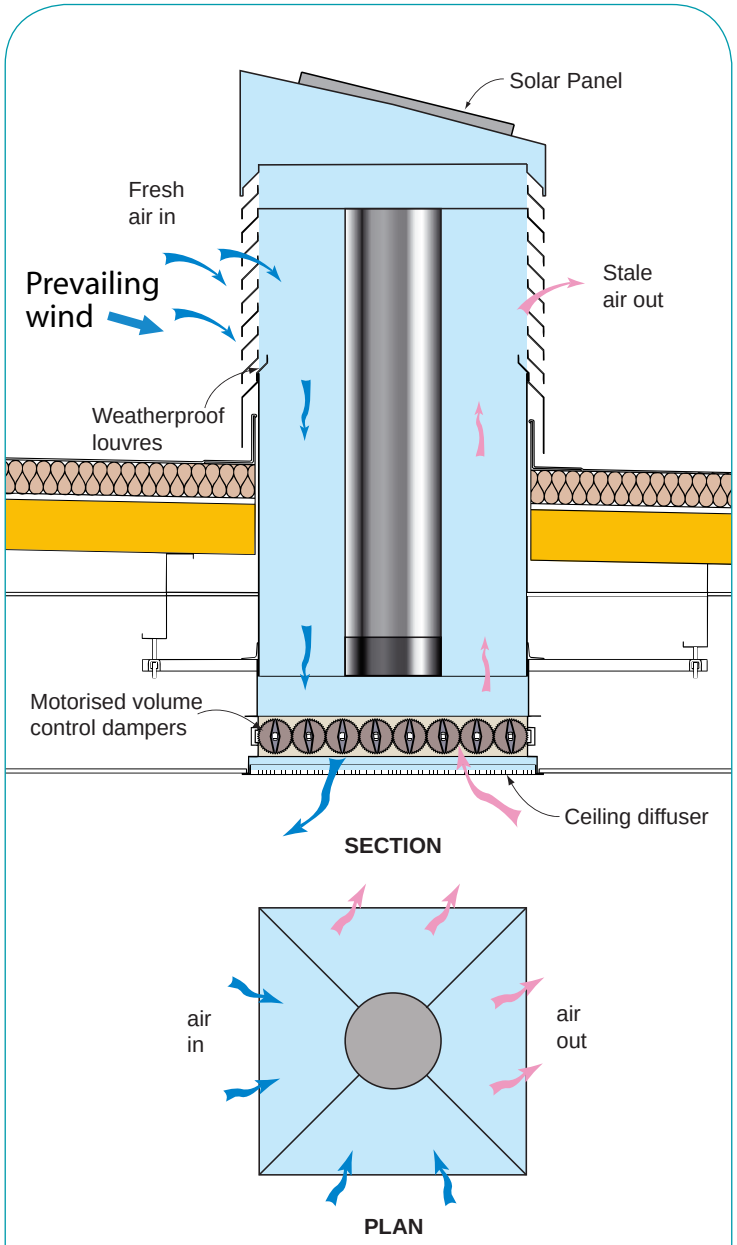
The Windcatcher Sola-boost systems are supplied with the distinctive blue/black crystalline photovoltaic panels. The GRP louvres and capping can be supplied in any BS or RAL colour. Both Square and Circular options are available so that Architects can ensure that the Windcatcher systems they select, can become both an integral part of their overall design and contribute to the low energy performance of the building to maximise energy efficiency.

ABS Sola-boost

The ABS Sola-Boost is the smaller brother of the Sola-Boost systems and is available with a 550mm diameter trunk. The system is ideally suited to internal areas such as small offices, meeting rooms, group rooms, nurses stations etc.

The internal boost fan supplies an additional ventilation boost of 50l/s at full summer sun. The system is constructed from recycled ABS with internal aluminium supports providing a lightweight system.

The unit can be supplied with a moulded ABS flashing plate to suit flat roofs or a painted galvanised flashing plate to suit tiled or slate roofs. For metal roofs the roofer is required to prepare a circular upstand to which the system fits to. The system is provided in a standard dark grey finish but can be provided in any BS or RAL colour.



Normal Windcatcher Operation

For any weather.....

Normal Conditions

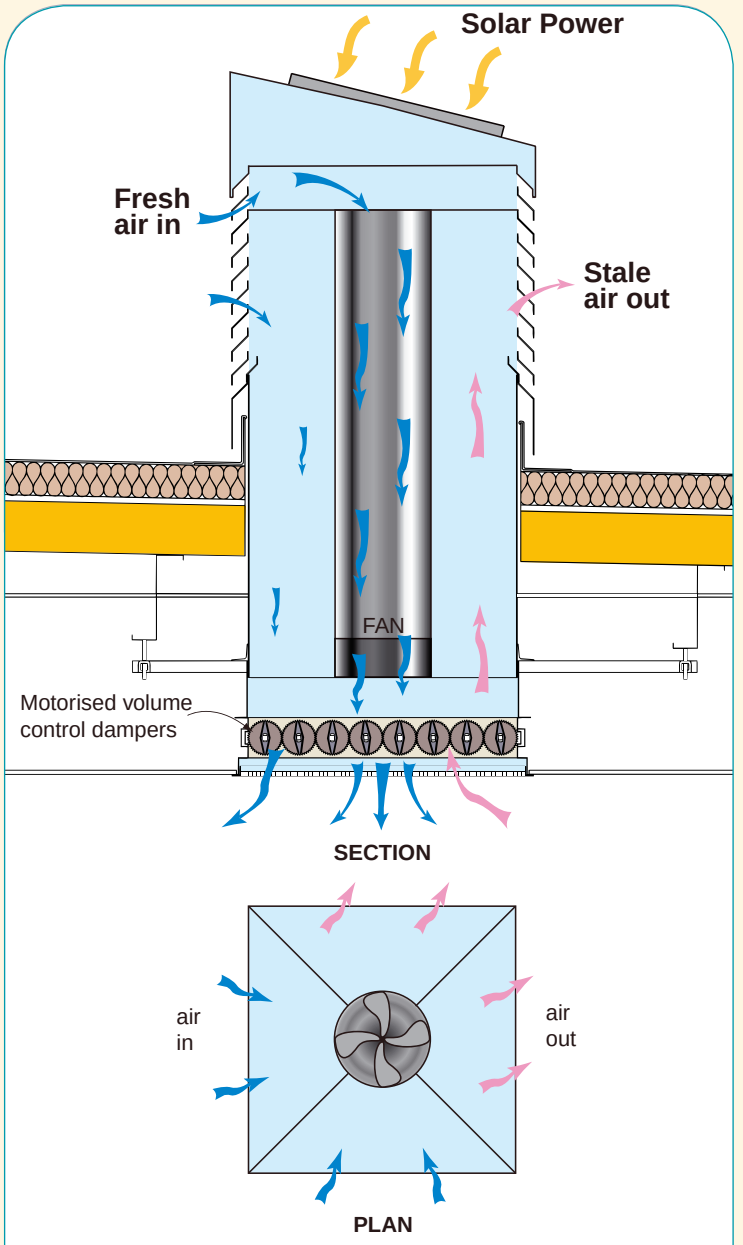
Under normal conditions, the Monodraught Windcatcher technology provides natural ventilation without any moving parts. Any prevailing wind no matter how light is encapsulated by the air intake louvres and turned through 90°. Using compartmentalised vertical vents, fresh air is brought into the room and stale warm air expelled using the natural energy of buoyancy and stack effect.

Sunny Conditions

It is on hot, sunny days when extra ventilation may be required. The Windcatcher Sola-boost solar-powered fan provides additional ventilation when extra air movement is needed most!

Sola-boost systems can be used on virtually any building. For example the Sola-boost system can be used to overcome excessive heat gains created by large levels of external glazing where solar gain is at its highest.

The Sola-boost system provides the comfort of knowing that it will provide a constant supply of ventilation air, even when there is no wind. This guarantees a zero energy solution allowing the building's natural ventilation design to be optimised and ensuring a low energy natural ventilation strategy to be maintained.



Sunny Summer Day

Technical Specification

	Size of System	Size of Fan core	Windcatcher Ventilation rate	Additional Ventilation from Sola-Fan	Solar Panel Size	Typical Operation Time
ABS 550 System	550mm Circular	150mm Diameter	upto 120l/s with external wind speed of 3m/s.	50l/s	15W	8 hours per day during summer time
600 System	600mm Square or Circular	200mm Diameter	upto 285l/s with external wind speed of 3m/s.	260l/s	40W	10 hours per day during summer time
800 System	800mm Square or Circular	200mm Diameter	upto 540l/s with external wind speed of 3m/s.	260l/s	40W	10 hours per day during summer time
1000 System	1000mm Square or Circular	200mm Diameter	upto 790l/s with external wind speed of 3m/s.	260l/s	40W	10 hours per day during summer time

Control Options

Fully Automatic Control

The oval control panel includes three settings for the Sola-boost fan.

Full speed – allows the Powertrack™ controller to boost the fan speed automatically.

Half Speed – limits the fan speed to a maximum of 50%.

Off – shuts the fan off.

The automatic settings can be overridden by the user from the Open and Close manual damper controls which either fully open or fully close the dampers for a set period, usually of 20 minutes.

The Sola-boost system can be interlinked with a Control panel, or similar, allowing seasonal control via an integral time and date clock to alter the operational parameters dependant on the season.

Semi Automatic Control

The Sola-boost system can be provided with its own independent control panel which includes the Sola-boost fan controls as detailed above but, with the addition of a turn dial positioner to control the volume control dampers. If the in built internal temperature sensor detects the room temperature dropping to below 20°C the control panel will automatically shut off the fan. The dampers can also be controlled within set parameters.

NBS Specification

Windcatcher with Sola-boost Natural Ventilation System

- Manufacturer: Monodraught Ltd, Halifax House, Cressex Business Park, High Wycombe, Bucks HP12 3SE, telephone number 01494 897700, fax number 01494 532465
- Type: Monodraught Windcatcher Sola-boost system
- Size: 600mm, 800mm, 1000mm, 1200mm
- Outer Casing: 5 ply glassfibre construction in Class 1 fire retardant resin
- Internal Airways: 5 ply GRP airway protected internally with plastic anti-bird mesh
- Truncated Capping: 5 ply GRP construction
- Solar Panel: Polycrystalline Photovoltaic Panel
- Solar Controller: Powertrack controller
- Sola-boost: 200mm diameter DC Solar powered boost fan
- Volume Control Dampers: Motorised volume control damper with 24Volt actuator
- Ceiling Grilles: White powder coated eggcrate grille
- Controls: Automatic control: Cylon programmable control system with night-time cooling facility.
  OR
  Sola-boost fan controller including temperature sensor and damper override - Contractor to allow for internal electrical wiring

Available to download as a word document format at www.monodraught.com/downloads

Monodraught

Halifax House, Cressex Business Park, High Wycombe,
Buckinghamshire HP12 3SE
Tel: 01494 897700 Fax: 01494 532465
email: info@monodraught.com www.monodraught.com

July 2007