



*natural ventilation & lighting* 

# *naturally driven installations*

an introduction to our natural ventilation & lighting products  
suitable for schools, offices, hospitals & the workplace

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## introduction

# JOIN THE NATURAL REVOLUTION

One of the major challenges faced by the modern workplace in recent years has been the search for new ways to **significantly reduce energy consumption**. Faced with the prospect of rising energy costs, increasing environmental damage and forthcoming behaviour-orientated legislation, many businesses have now become critically aware of their buildings energy consumption and carbon emissions. The main result of which has been to find new ways to **cut costs** and **improve efficiency** where associated with heating, lighting and air conditioning.

Our Naturally Driven designs are leading the way in offering **natural solutions** to problems like these faced by the modern working environment. So how do you meet new environmental legislation without compromising the demands of the workplace? How can you **improve staff productivity & reduce absenteeism** without radically changing the way things work? And how is it possible to find simple, **cost-effective solutions** that will combat **rising energy prices**?

Our Naturally Driven products like the Midtherm **Windvent**, **Litepipe** and **Ventlite** systems can solve these complex problems whilst offering a modern, aesthetic, natural alternative to office workplace ventilation and lighting whose rewards will astound you.

With companies and individuals worldwide increasingly taking a more positive approach to environmental issues, many are beginning to reap the financial and health benefits of naturally driven systems like ours now detailed for you.

*“From an environmental point of view  
the Windvent is both energy efficient & has  
a low carbon footprint”*





**windvent**

## WHY CHOOSE WINDVENT?

Natural ventilation is a logical and suitable strategy for many types of buildings, from low rise dwellings and schools to small or medium sized offices, recreational or public buildings. It is also very cost-effective compared with the capital, maintenance and operational costs of conventional mechanical ventilation systems. Natural ventilation systems have been proven to improve staff productivity and are already successfully in use in many private, commercial and industrial premises from offices to hospitals, schools to factories, warehouses to gymnasias.

The Midtherm Windvent operates purely on aerodynamic principles. It is driven by the provision of an air supply and a corresponding extraction rate and therefore needs no power to activate the unit. In fact, the only power required at all is a low voltage controller unit that drives the dampers to modulate the input of natural air.

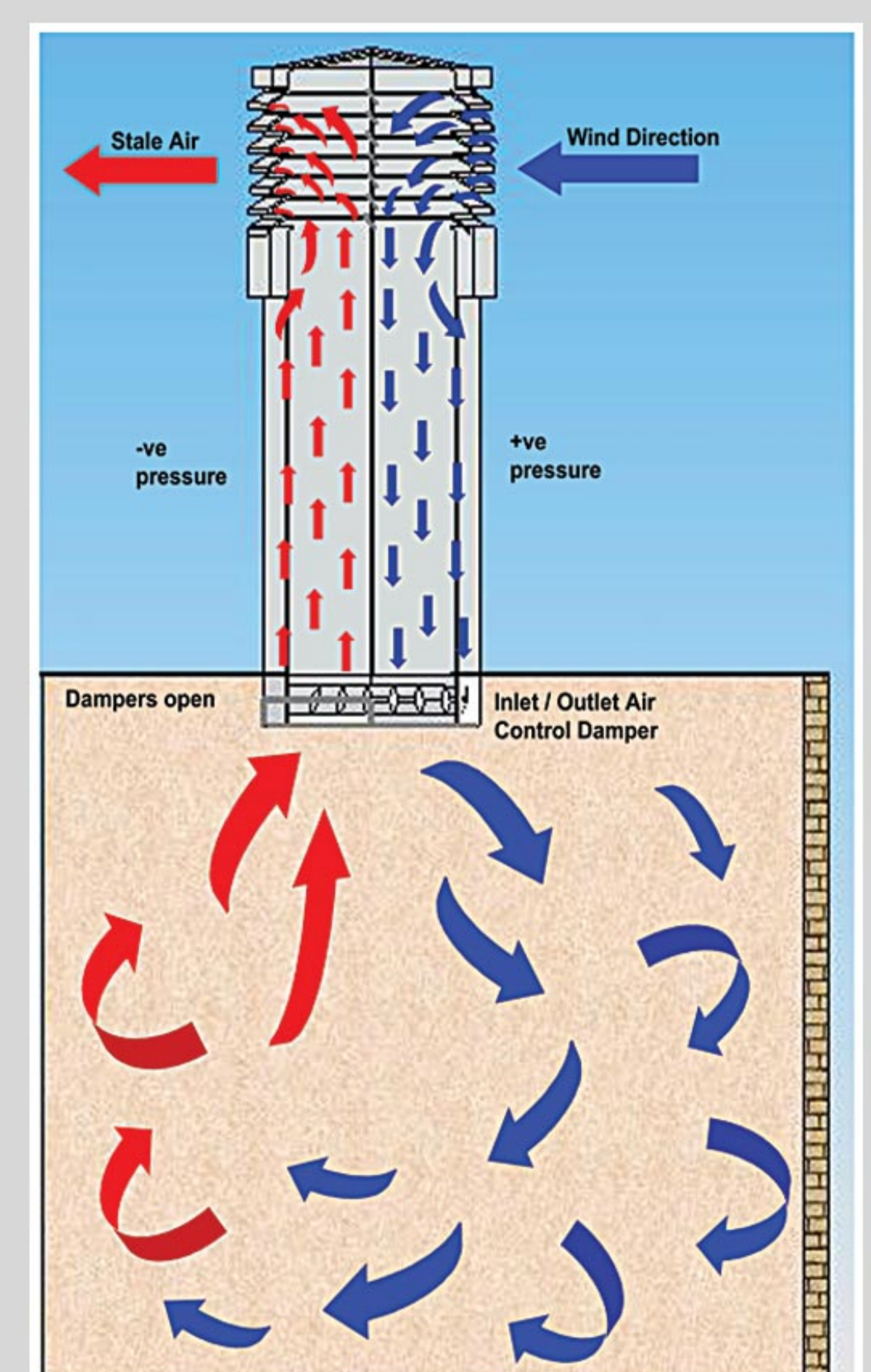
Energy-efficient schools and commercial buildings that have chosen Windvent have not only benefitted from saving energy and reducing CO<sup>2</sup> emissions but have found these systems can lead to much improved performance from their occupants. For example, by delivering a fresh, cool air supply to an office environment, the Windvent system has been proven to reduce staff sickness and improve productivity compared to offices that have air-conditioning or other mechanically cooled ventilation.

The Windvent natural ventilation system is also ideal for delivering a 'fresh' air supply to areas where conventional room ventilation is difficult due to critical noise issues. The Windvent offers architects and consulting engineers not only a natural and environmentally-friendly solution but an acoustically efficient, economical and aesthetic answer to ventilation needs.



### HOW A WINDVENT WORKS

The natural ventilation system operates on well-established aerodynamic principals - as air flows around the terminal itself, positive and negative pressure areas are generated. On the positive side air enters the louvres of the terminal and is directed down through the internal vanes into the room below. The negative pressure on the leeward side of the terminal induces air to leave the louvres and stale air from the room below will rise and be expelled from the terminal. This process is aided by the stack effect - *as cool air enters the windward side of the unit it descends into the room below and the warm stale air rises into the ducts facing the leeward side.*



*“The Windvent system offers a fresh, cool air supply all year round regulated by the electronic control panel, 24 hours a day”*





## BESPOKE DESIGN

Because we manufacture the Windvent ourselves, we are able to meet any design requirements. Whether you would like the Windvent to stand out or fade in - we can supply the windvent to suit your needs...

*become part of the*

## DESIGN, MANUFACTURE & INSTALLATION

### Design

Terminals can be manufactured in keeping with the architectural aesthetics of the buildings to which they are installed or alternatively, they can be designed and manufactured to give a contrasting appearance, adding a feature aspect to the overall structure of the building.

### Manufacture

Our Windvent units are constructed in-house by experienced craftsmen and women. They are made from fully welded, corrosion-resistant aluminium and fitted with BSRIA tested internal acoustic and fire-resistant material. Adjustable modulating dampers and transfer grilles are manufactured from anodised aluminium or perforated stainless steel panels so they maintain weather integrity at all times. All units are manufactured to BS EN ISO 9001 and suit most architectural design requirements. *The units may also be powder coated to your specifications in any RAL colour of your choice.*

### Installation

Windvents are installed by our own highly experienced fitting teams, all trained to the highest health & safety standards. Installations onto flat, pitched roofs or even onto the roof apex itself are regularly achieved. The units are capable of being linked to the buildings BMS to ensure dampers close or open (as directed by each local fire service) in the event of a fire. Windvent units can be controlled via master control panels, room temperature sensors and CO<sup>2</sup> sensors. We also offer a manually operated system called 'Teleflex' where the dampers can be opened and closed by use of a rotating lever operated by the room occupants when required.



*"All of our natural ventilation systems are manufactured in the UK"*





*sustainable revolution* <

## SAVING YOU MONEY

The estimated cost saving over a 5-year payback period would be on average **£1,680 per year** rising to **£3,650 per year** after the payback period.

*\*based upon approximate annual running and maintenance costs of an air conditioning system within a medium to large office installation.*

## WINDVENT IN PRACTICE

### *How does the Windvent compensate for changes in weather?*

Adjustable dampers are provided with the system to allow for differing temperatures, wind conditions or building requirements. These dampers are linked to a programmable control system which allows for the ventilation rate to be controlled by room sensors. For example, control units can be purge set to leave the dampers fully open during the warm summer month evenings when the buildings are empty so that stale air can be fully removed, leaving a clean atmosphere within for occupants to have a truly 'fresh' start in the morning. Conversely, in the winter months the controller would set the flow rate to reduce the effect of cold air diluting the heated warm atmosphere while still performing its overall function and eliminating any condensation.

### *How do I know how much air supply I will need?*

Air change rates are determined by the building use and calculated according to CIBSE or BB101 standards and guidelines. A low voltage controller unit then maintains this provision of fresh air and the corresponding extraction rate.

### *How many Windvents will I need?*

The size and quantity of terminals required is based on the calculated air change rates. For larger rooms a series of units may be required. *Windvent louvres are designed to ensure that the maximum available free area of the unit is utilised but all designs are calculated in house.*



We believe the average install cost of an A/C system inclusive of electrical connections, controls, condensate pumps, ductwork connections, labour, access & building works is approximately £15,000 for an office of 24 m<sup>2</sup>, coupled with the cost of running for a national average of 500 hrs per year with maintenance and parts contract implications.

The estimated average yearly running cost (over a 5-year payback period) would be £6,650 net. However, after the 5-year period has elapsed, the continuation of electrical supply costs, parts and maintenance charges would still apply amounting to an average cost of £3,650 per year.

*The average install cost of a Windvent system using manual controls inclusive of terminals, dampers, ductwork connections of 1.5m, labour, access & builders works is £24,850 (for an office of 24 m<sup>2</sup>) but there are no maintenance costs and a natural air supply is available all year round with no major impact on electricity costs.*

*The average yearly running cost over a 5-year payback period would be £4,970 net. And nothing to pay after the 5-year period has elapsed.*

*\*Figures are approximate and for comparative purposes only*

*“Stale air can be fully removed overnight leaving a clean atmosphere for occupants to enjoy a truly ‘fresh’ start in the morning”*





## ACOUSTIC REPORT

An acoustic test of the standard Windvent terminal has been conducted by BSRIA to identify the effects on sound dBA level in a room benefiting from Windvent installation.

The report found that the ventilation system only raised the noise level 3.2dBA above ambient levels with the dampers fully open and by a negligible level when in the fully closed position.

**We believe the heavy gauge, high density materials and acoustic products applied in our terminals to reduce sound levels currently leads the market in terms of performance.**

Additionally, terminals can be lined on the internal trunk of the system using different thicknesses of the fire-rated material to suit any acoustic requirements.



## windvent

# TECHNICAL INFORMATION

### Terminal Specification

Terminals are constructed from type 1050 AH14 pure aluminium of 2mm thickness minimum making them highly resistant to weathering & chemical attack. Internal cross dividers are also manufactured from corrosion resistant aluminium. The units are manufactured in accordance with BS EN ISO 9001. Airways are protected by the incorporation of bird proof mesh to the terminal louvres.

### Insulation/Acoustics

Open cell foam 12.5mm THK is used in preference to mineral wool/glass fibre insulation as it does not shed fibres or release particulate matter. The selected foam offers favorable acoustic performance and meets the necessary fire performance criteria. Please see *BSRIA Acoustic Report* (summary left). Data sheets can be made available on request or downloaded from our website.

### Windvent Controls

A sophisticated intelligent control system is used to regulate the windvent(s) and provides the flexibility to control temperature, humidity, air quality and CO<sup>2</sup> levels using a single or multiple terminal/zone applications. The clear digital display shows real-time sensor readings, set-points and the terminal damper % open position.

During the commissioning stage, minimum trickle ventilation settings, override functions and night cooling modes can all be set (or adjusted later should the client's requirements change). These settings are password protected via a four level access code system for security.

The controllers can be linked to incorporate a common fire alarm override signal or to a local network with a master controller touch screen. Connection with other BMS systems is possible via a communications card to carry the protocol of the host LAN/BMS network.



*“Our units are manufactured from highly durable, corrosion-resistant aluminium and in accordance with the BS EN ISO 9001 standard”*





*further products*

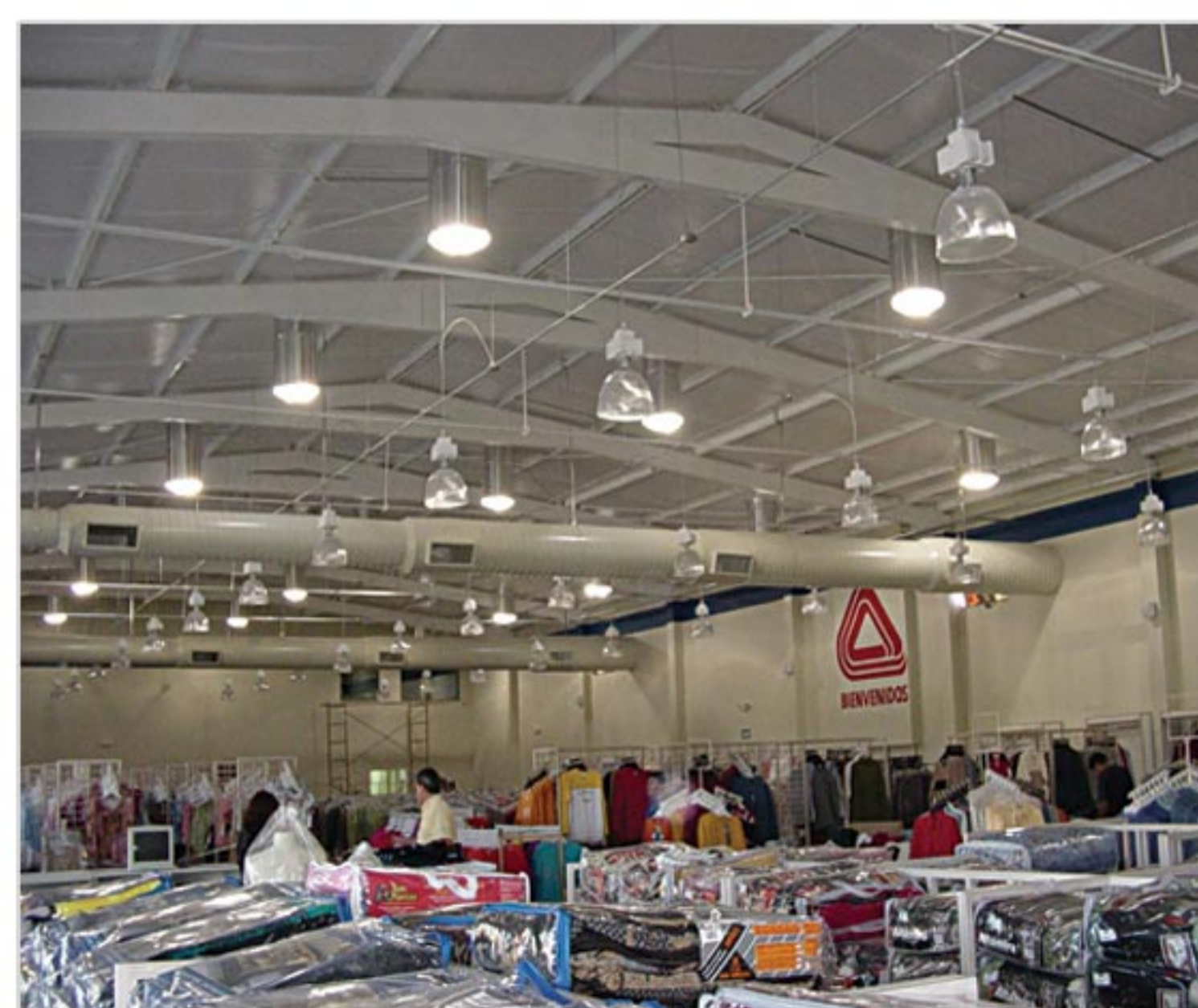
## *LITEPIPE NATURAL LIGHTING*

Our Litepipe natural lighting system is designed to complement the Windvent system by providing a constant daytime source of free, natural light comparable in its workings to traditional electrical lighting but without the drain on your electrical supply, therefore saving your business a significant amount in energy bills each year. The Litepipe system has also been proven to reduce SAD and can be designed and installed to meet your architectural and aesthetic requirements.

Litepipes require no maintenance. The unit is sealed so no dust can gather inside. Condensation will not form inside the unit due to the use of a brushed nylon gasket on installation. The Litepipe can be fitted to any roof surface including pitched, flat, kalzip profile steel sheeting, tile corrugations, concrete and pressed steel types.

Litepipe units comprise of a circular ceiling diffuser, reflective silverised aluminium tubes and elbows, rooftop dome and roof interface flashings to suit all roof applications.

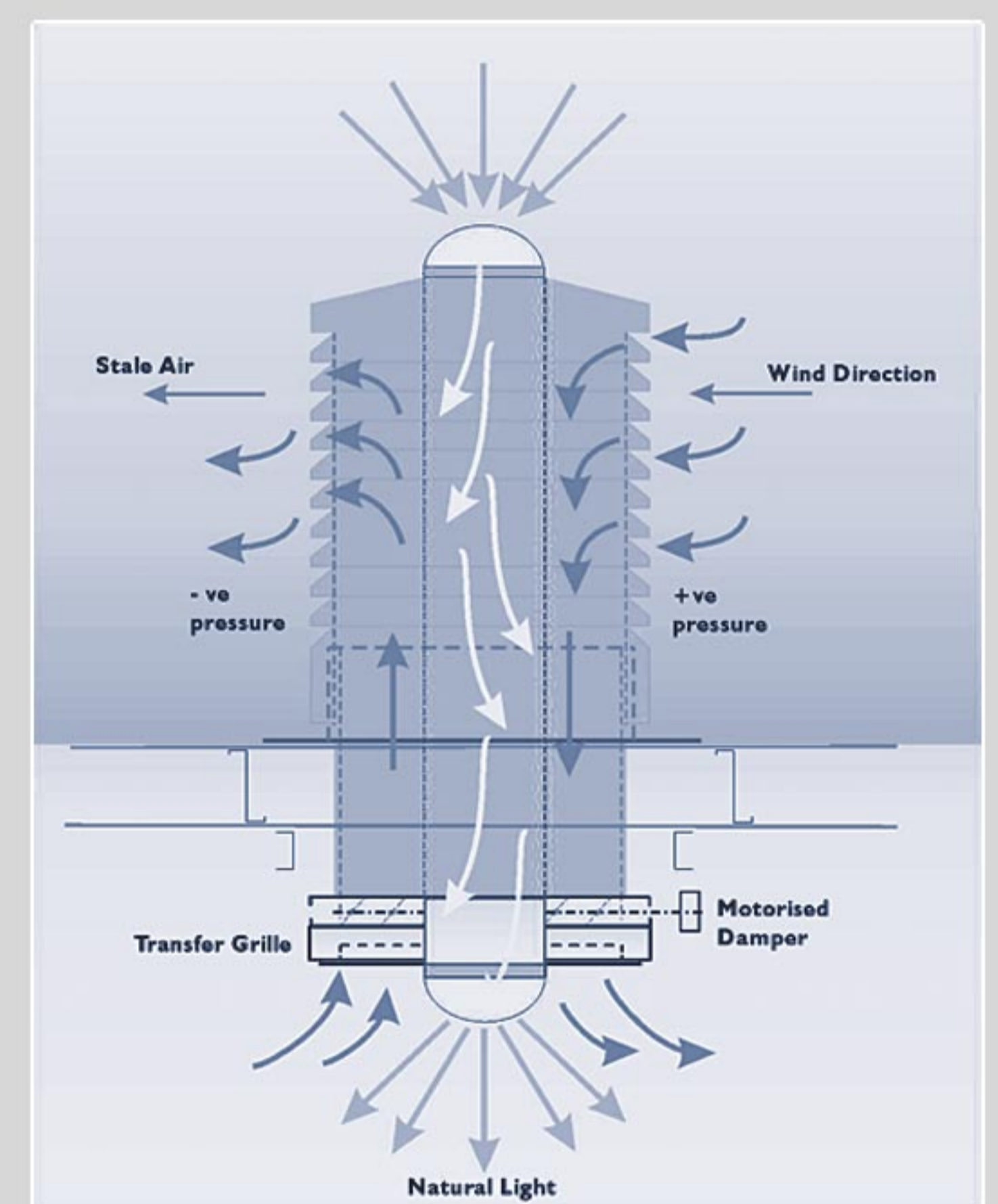
The most popular Litepipe dimension is 250mm (10") - suitable for corridors, shower rooms, small offices, changing rooms, store rooms, toilets and areas up to 7.5 m<sup>2</sup>. The 355mm (14") is more suited to kitchens, medium sized classrooms, study areas, libraries, small conference rooms, offices and landings. Our largest Litepipe is 530mm (21") and is best suited to ceiling heights of 3-4m, areas up to 40 m<sup>2</sup>, offices with ceiling grids of 5-6m and industrial areas. Multiple units are commonly installed for large rooms or halls.



*WINDVENT + LITEPIPE =*

## *VENTLITE*

The VentLite combination unit delivers the benefit of a Windvent system with the added facility of a natural light source being ducted through its silverised aluminium core. The VentLite is a highly versatile single use product delivering natural light through vertical and/or lateral space again via the silverised aluminium core ducts with a variety of prismatic, clear or opal diffusers available.



*“Litepipe provides a free source of natural light comparable to traditional electrical lighting but without the drain on your electrical supply”*





# *naturally driven installations*

*Midtherm Engineering Limited's Naturally Driven product range offers extensive solutions for natural ventilation and lighting systems.*

All products are designed and engineered to current BS, CIBSE and BB 101 standards.

*Midtherm's design department, contract engineers and site installation teams are highly experienced and ensure projects comply with all statutory requirements and standards. Technical data is quickly available for all systems using proven computer-aided sizing programs.*

**If you would like any more information about our Naturally Driven product range please call, email us or visit our website.**

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