WIND DRIVEN TURBO VENTILATORS

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The HURRICANE™ & WINDY

Wind Driven Turbo Ventilator

Manufactured

In Technical Collaboration with

EDMONDS

Pty Ltd, Australia

Technologies for a Sustainable Future

SVS
WIND DRIVEN TURBO VENTILATORS

Ventilate your building with

NO

- Electricity
- Maintenance
- Noise
- Back Draft
- Rain Water
- Birds
- Dust

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THE IMPORTANCE OF GOOD VENTILATION

The introduction of clean, fresh air into factories and workplaces is important for the following reasons:

1. To dilute and remove process odours, volatile compounds and carbon dioxide thereby rendering the building a safe working environment

2. To neutralise the effect of heat produced by factory processes, lighting and human beings

3. To remove trapped ceiling air –This trapped air reaches temperatures well above ambient due to the effects of radiant heat transfer

4. To remove heat generated through incidence of solar energy on large window panels

5. To improve worker productivity by providing the benefits (1) –(4) above

How do the SVS Turbine Ventilators Improve Building Conditions?

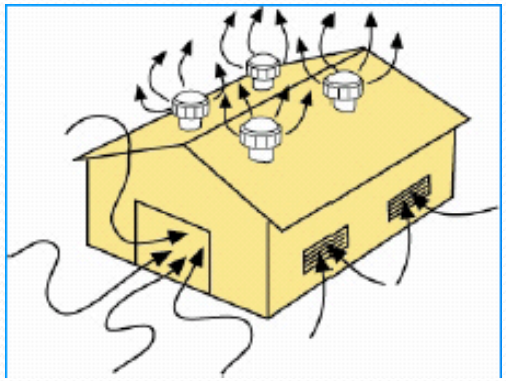
1. During the evening, SVS ventilators help speed up the rate of factory cooling by removing hot, residual air and replacing it with cooler air

2. The night air infiltrates items of thermal storage such as concrete floors, steel work, walls, machinery and sometimes finished product

3. During the next morning, as heat is generated from the sun's radiation and factory processes, the thermal storage helps delay heat gain

4. At the same time, hot buoyant air is extracted by the SVS ventilators

5. This extraction of air can cause the factory conditions to be cooler than the external temperatures until early afternoon



6. Internal and external temperatures will equilibrate in mid afternoon but excess factory heat is removed by the SVS ventilators

7. In the evening the same process re-commences

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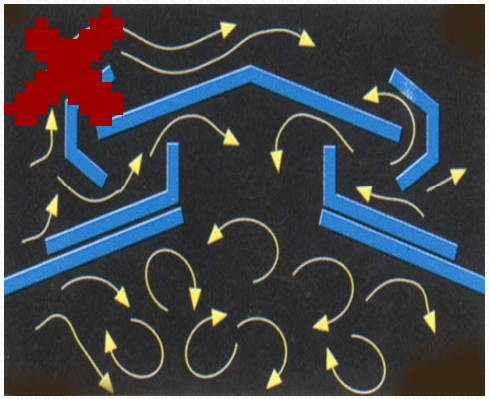
Importance of ventilator design or placement

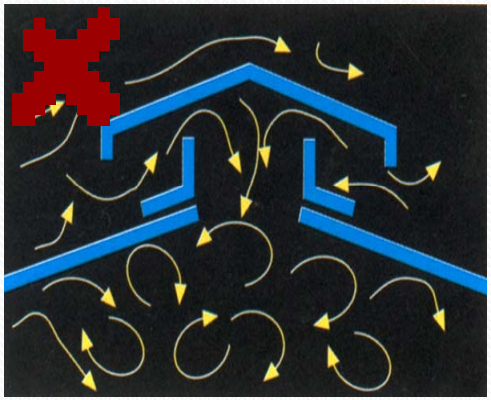
As a general rule, hot or stale air will not exhaust through an opening into which wind can blow. Therefore, regular static ventilators, which allow outside wind to enter in the shed because of poor design or location on the roof, cannot be expected to exhaust because they back draft. An efficient means of extracting warm and stale air is through roof mounted turbo ventilators, which create positive back draft. Adequate low level provision for the entry of fresh air at ambient temperature should be provided.

Regular Static Ventilators



Monitor Roof / Jack Roof

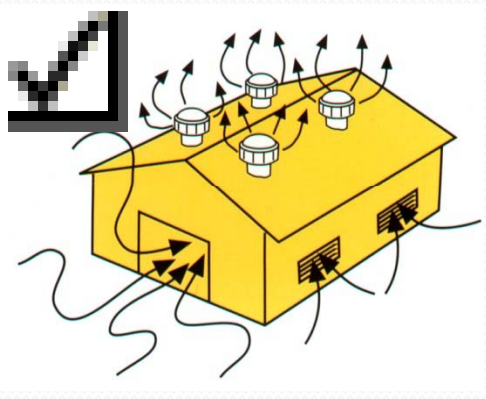
Receives no assistance from the wind. Back draft restricts exhaust of air from building



Poorly designed ridge / gravent ventilator

Do not promote adequate ventilation or air movement in building. Design can allow entry of rain

Roof mounted turbo Ventilators



Good Ventilation

Efficient turbine ventilators exhaust hot and stale air and provide a given number of air changes per hour for the building. Does not allow entry of rain.

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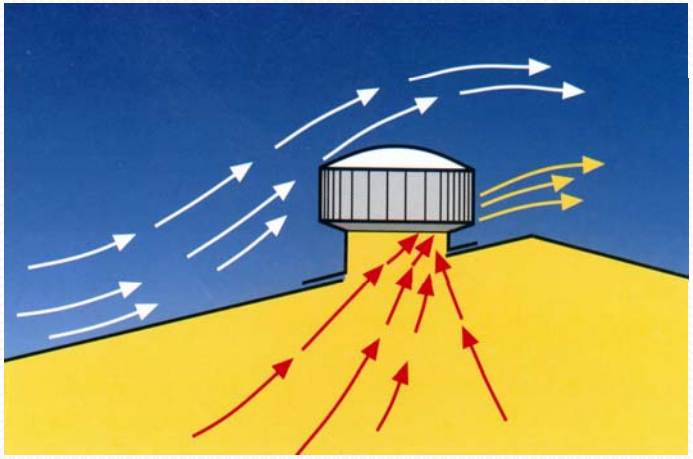
The Dynamics of the SVS Turbo Ventilator
How does it work ?

An SVS Wind Driven Turbo Ventilator takes advantage of the wind to create a positive flow through the throat of the ventilator. The wind influences the performance of the ventilator in two ways :



1. As the wind approaches and strikes the ventilator, it jumps, creating an area of low pressure on the leeward side of the turbine.

   This low pressure zone is fed by drawing air from the turbine, causing a continuous extraction of air from the building, and

2. As the turbine rotates, the centripetal forces associated with the rotation fling air outwards from the tips of the vanes. Replacement air is drawn into the throat of the ventilator from the building causing continuous ventilation.

The SVS Wind Driven Turbo Ventilator will even rotate and exhaust in the absence of wind using the thermal currents developed within the building.

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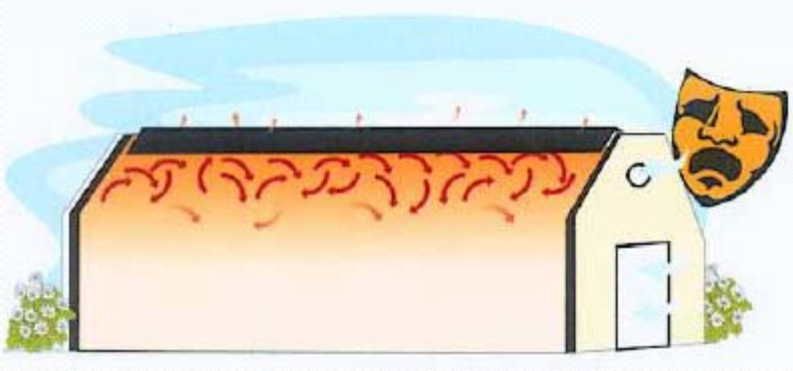
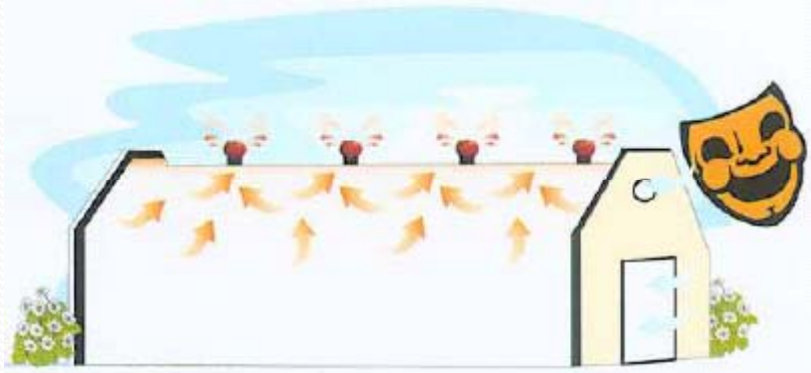
SVS Turbines Promote

- Healthy living
- Increase in productivity
- Reduction in maintenance of plant & machinery by reducing humidity levels
- Increased life of roofing sheets
- Use of renewable source of wind energy
- Achievement of environmental standards



Without SVS Ventilators



With SVS Ventilators

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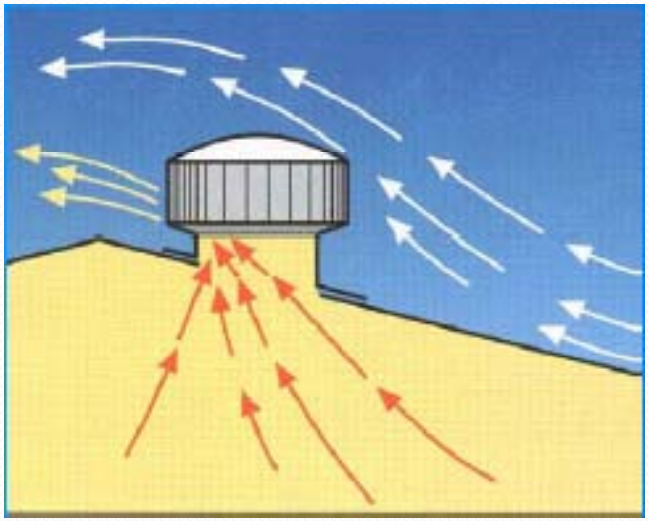
The SVS Turbines ventilate your building by utilising two forces of nature

•Wind rotates the aerodynamic turbine head

•As the turbine rotates, it creates an area of low pressure on the leeward size of the turbine

•This low pressure zone is fed by drawing air from the turbine, causing a continuous extraction of air from the building



•Wind speeds even below 1km / hr. cause vent rotation

•Highest winds occur in the afternoon

•Exactly at the time when you need greatest amount of ventilation

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VENTILATOR DESIGNS AVAILABLE

1. VERTICAL VANE DESIGN

- MODEL HURRICANE - 40% HIGHER DISCHARGE THAN SPHERICAL VANE DESIGN
- Sizes Offered – 24”& 36”

2. SPHERICAL VANE DESIGN

- MODEL WINDY PLUS
- Sizes Offered : 14”& 24”

Strengths of HURRICANE™ design

- Vertical vane design gives at least 40% higher discharge efficiency than spherical designs of the same size
- Complete protection against dust ,soot, oily smoke, etc. as bearing is placed outside the path of discharge air
- Discharge efficiency is maintained over a large number of years
- Longer product life
- Unique Vari-pitch Elbow ensures vertical installation
- Lowest starting speed of less than 1 km / hr. in its class of ventilators keeps the turbine always rotating and exhausting contaminated air
- Optional UV stabilized coatings give enhanced protection to the aluminium construction

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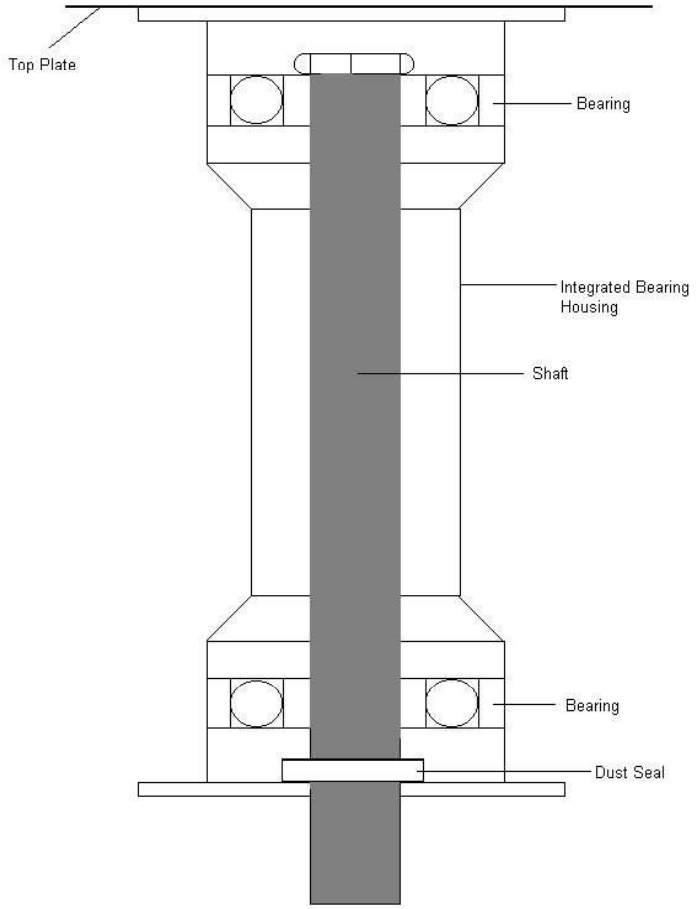
Strengths of WINDY design

- Complete protection against dust ,soot, oily smoke, etc. as sealed bearings are placed in a completely enclosed & integrated bearing housing
- Lowest starting speed of less than 1 km / hr. in its class of ventilators keeps the turbine always rotating and exhausting contaminated air
- Low starting speed gives at least 25% higher discharge efficiency than other competing spherical ventilators
- Discharge efficiency is maintained over a large number of years
- Longer product life
- Unique Vari-pitch Elbow ensures vertical installation
- UV stabilized coatings give enhanced protection to the aluminium construction



Integrated Bearing Housing Sketch (WINDY 14PLUS)

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The HURRICANE™& WINDY Ventilation system

- Extremely low payback periods in comparison to powered ventilators (below one year in most cases).
- Easy to install
- Provides greater safety by eliminating the need for overhead high speed propellers and roof top maintenance
- Hurricane™ & Windy ventilators provide a healthy, cooler indoor environment
- This is achieved by extracting of hot, stale or odorous process air and then introducing replacement, fresh air into the building

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Certifications

- WINDY Design
  - Performance test certificate from IIT
- HURRICANE 600 Design
  - Resistance to rain water leakage & wind load test certificate
  - Testing of vertical vane Hurricane™ ventilators versus spherical vane ventilators

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Industry-wise Prime Customers

- **Automobile Mfg :** General Motors, Hero Honda, Honda SIEL Cars , Mahindra & Mahindra, Tata Motors
- **Auto Component :** Autoline Ind., Avtec, Badve, Enkei Castalloys, Endurance, Igarashi Motors, Sansera, SM Auto, Subros, TC Springs, Varroc
- **Engineering :** Alfa Laval, Alstohm, Crompton, DGP Hinoday, ESAB, Jaksons , Legrand, NRB Bearings , Paharpur Cooling Towers, Siemens, Suzlon, Thermax, Utkal Asbestos
- **Consumer Goods :** Havells, Videocon
- **Steel & Aluminium :** Ghatge Patil , Jindal Aluminium, JSW , Mahindra Ugine Steel, Patnaik Steel, PG Foils
- **Food & Drugs :** GSK (Horlics), ITC , Richter Themis, Sakthi Sugar, Uttam foods (Britannia)
- **Cement :** My Home
- **Textiles :** Anchor Socks , GHCL ,Ginni Knit Processing, LNJ Denim, Sparkon
- **Warehouses :** Aditya Birla Group “More” Stores, AS Group, Reliance Retail
- **Printing & Packaging :** Hindustan Times, Multiflex India Ltd., Repro India Ltd.
- **Infrastructure:** JSW Energy, Shell Petrol Pumps, Tata Power Company

Installation Locations

A.P. :	Chirala, Hyderabad, Kakinada, Kothur, Medchal, Rajahmundry,Secunderabad, Vijaywada, Vishakhapatnam
Assam :	Guwahati, Tinsukia
Daman	
Gujarat :	Vapi, Vadodara, Ahmedabad, Gandhidham
Goa :	Bethora
Haryana :	Bawal, Faridabad, Dharuheda, Gurgaon
H.P :	Baddi
J & K :	Jammu
Jharkhand :	Jamshedpur
Karnataka :	Bangalore, Belgaum, Bellary, Gulbarga, Mysore
Maharashtra :	Ambernath, Ahmednagar, Aurangabad, Chakan, Jalna, Khopoli, Kolhapur, Lote Parshuram, Mahad, Mumbai, Navi Mumbai, Nasik, Nagpur, Panhala, Pirangoot, Pune, Ranjangaon, Shikrapur, Thane, Vasai
M.P. :	Satna, Dewas, Indore
Orissa :	Keonjhar
Punjab :	Nabha, Rajpura
Rajasthan :	Banswara, Bhiwadi, Bikaner, Kishangarh, Pipalia Kalan
T.N. :	Chennai, Erode, Hosur, Madurai, Salem
U.P. :	Faizabad, Greater Noida , Kanpur, Lucknow , Noida, Varanasi
Uttarakhand :	Dehradoon, Haridwar, Pantnagar, Rourkee
West Bengal :	Kharagpur, Kolkata

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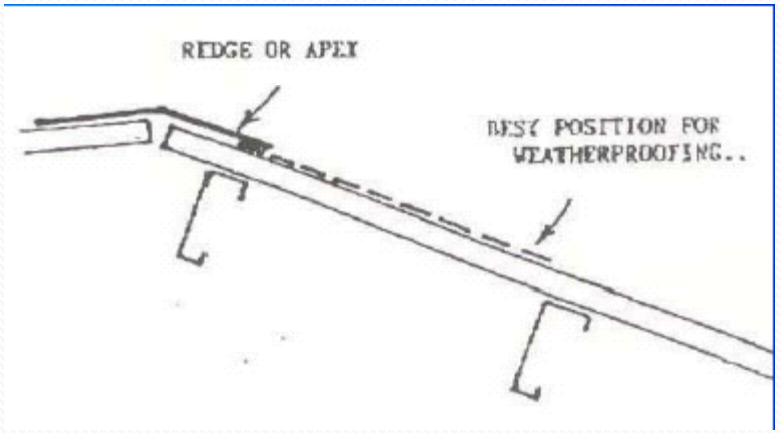
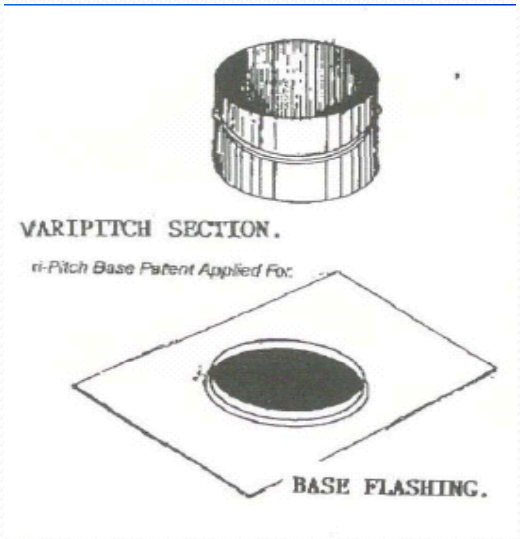
Sample Photographs

INSTALLATION

1. Select the mounting position on the roof, lay the base flashing in place and cut hole in roof



2. Consider the best method for weatherproofing the opening



3. Fasten the vari-pitch throat to the self flashing base with six screws and rubberised washers

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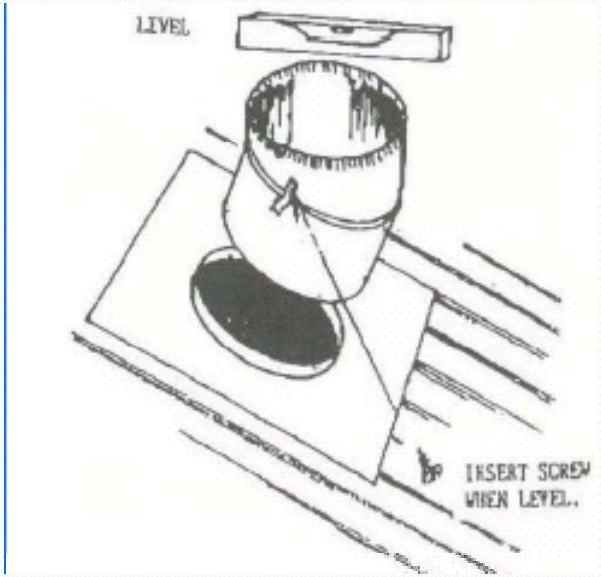
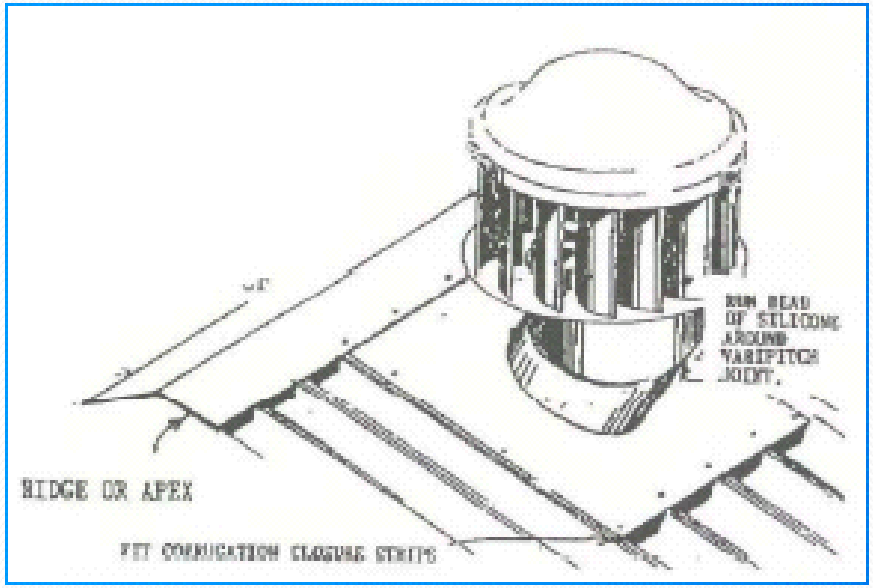
INSTALLATION

4. Rotate vari-pitch, if necessary, for level installation.





5. Then simply mount the head to the vari-pitch throat using rivets.

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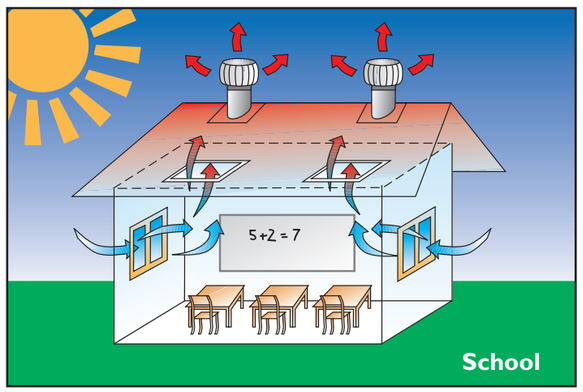
School Classrooms

In many states of Australia it is Government policy to use various means of ventilation to improve classroom conditions during summer rather than rely on energy intensive air conditioning. However the performance of wind turbine ventilators is always subject to wind conditions. The use of wind turbines with fan power assist has been used but these products have lower wind turbine extract rates due to throat blockage and are significant power users. ***ecopower***® will provide unimpeded wind performance with low energy power boost option.

When used in conjunction with EC Damper Grilles, ***ecopower***® provides a means of efficiently ventilating individual classrooms directly to freshen air and remove trapped heat.

Alexandra Hills State High School, Brisbane, QLD

The ***ecopower***® EP600 has been used on Alexandra State High School to replace the existing spherical shaped wind driven ventilators as the system was not performing to desired standards.



Electronic Control Cabinets

Rail authorities have trialed the use of ***ecopower***® for cooling of electronics in signaling control cabinets to improve system reliability. Results to-date have been impressive with low energy usage a feature of ***ecopower***®.

A Substitute for Powered Ventilation

Powered ventilators have been used for ventilation purposes in many factory and commercial applications. Although they may adequately achieve air movement requirements, they do so with;

1. High energy consumption and often the need to use 3 phase power
2. High noise levels often exceeding 60dB(A) @ 3m

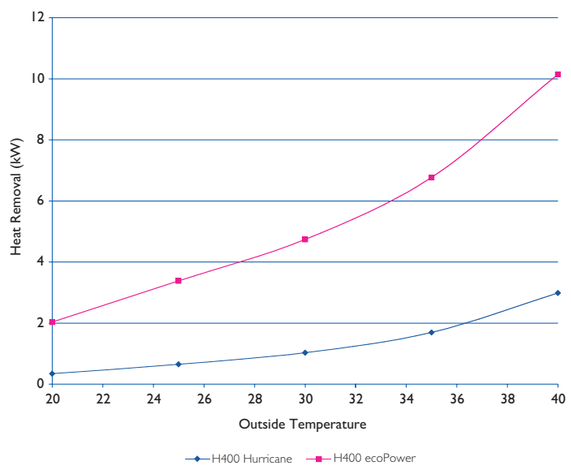
The ***ecopower***® overcomes these limitations significantly by employing low speed, high energy efficient hybrid technology.

Homes

Trials conducted by CSR Edmonds have shown very promising results for use of ***ecopower***® technology in homes to remove heat. In conjunction with proper insulation levels, this technology could significantly reduce energy usage for cooling in homes.

The following figure is an example of the heat removal rates of the Hurricane H400 & the ***ecopower***® EP400 for varying ambient conditions. It shows the greater capacity of the ***ecopower***® EP400 to remove heat compared with equivalent sized wind driven ventilators.

HEAT REMOVAL RATES OF VENTILATORS



Conditions indicated by the follow parameters:

- *Stack height = 3m*
- *Wind Speed = 10.8km/h*
- *Flow rates calculated according to AS4740:2000*
- *Varying temperature difference (range 3–15°)*

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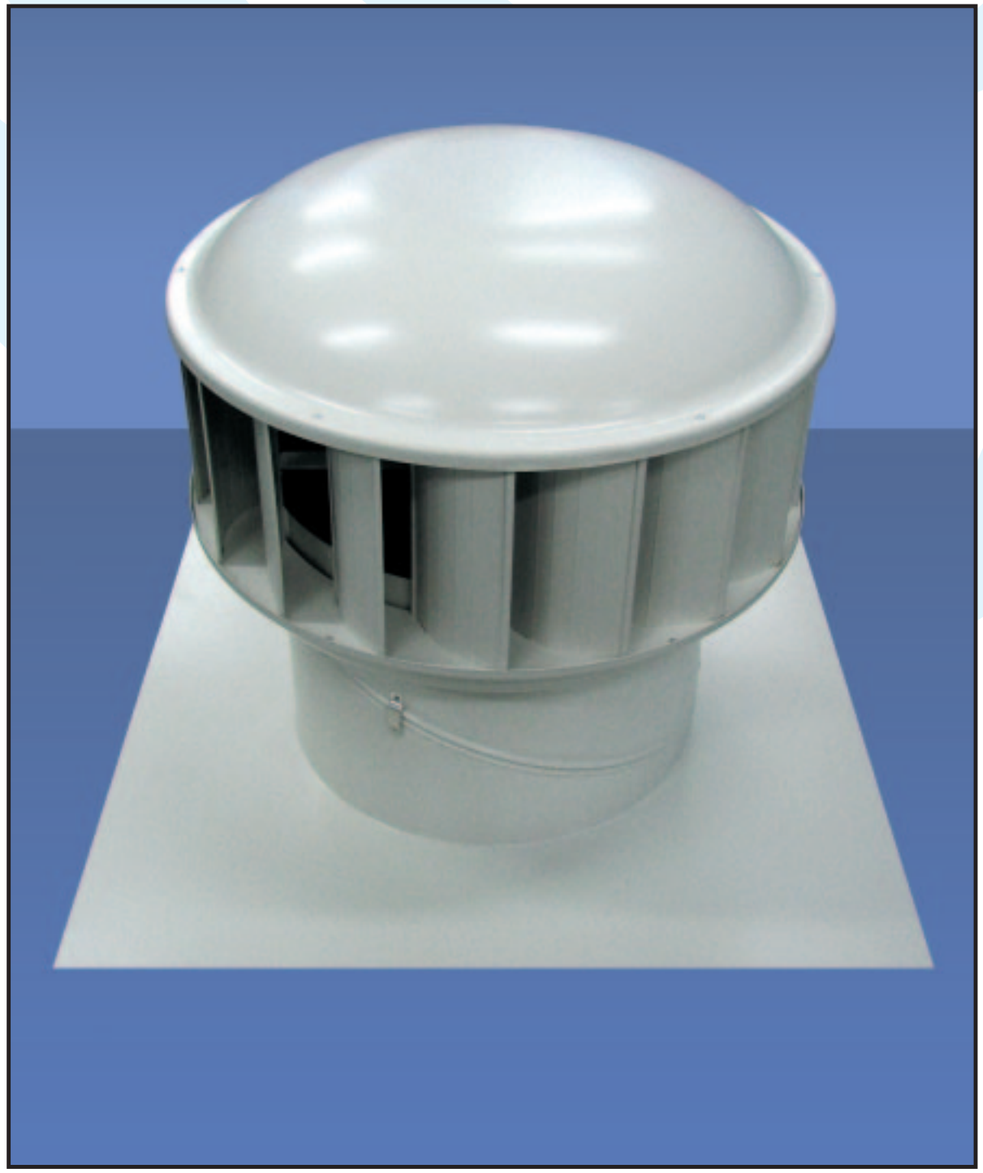
ecopower®

energy efficient ventilator technology

The world's first, true hybrid ventilator. Combining reliability and performance.



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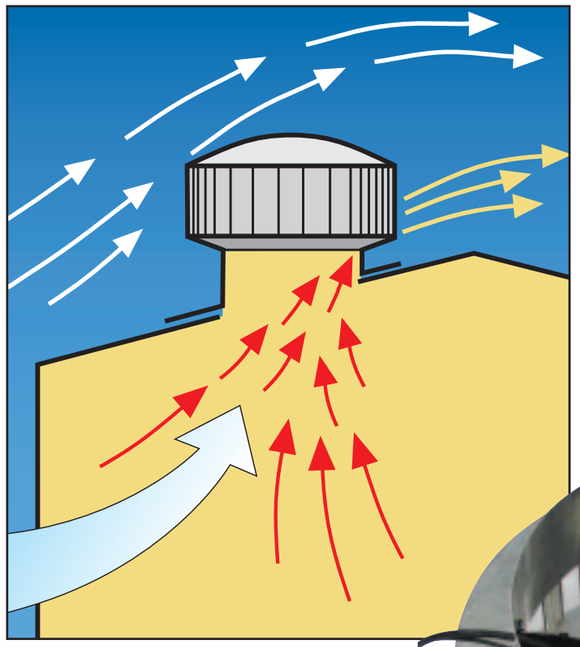


THE IMPORTANCE OF DEPENDABLE VENTILATION

Ample research is available to show that adequate fresh air exchange is crucial for workers, students and home occupants to perform at their best. A well designed ventilation scheme can:

(1) lower temperatures in homes and buildings during summer by cooling roof spaces and even removing trapped ceiling heat through ceiling grilles,

(2) improve air quality by lowering impurity levels caused by human respiration and chemical emissions – mainly volatile organic compounds (VOCs) – from carpets, furniture, paints, cleaning products and the like.

Long-term exposure to VOCs causes sick building syndrome, in which building occupants experience rising levels of eye, nose and throat irritation, headache and allergic reactions.

Under requirements to maintain a safe working environment, many factories now need adequate fresh air exchange to remove gaseous, process emissions and/or heat build up.

IMPORTANCE OF ENERGY EFFICIENT SOLUTIONS

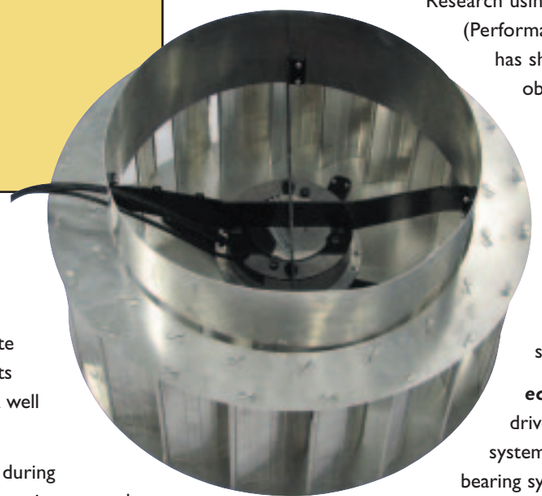
Growing environmental concerns demand that ventilation requirements be met by the most energy efficient means available. Wind turbine ventilators can perform this function well, however for reliability they depend on favourable wind conditions, which are not always present when temperatures are extreme. They are, in effect, 'slaves to the vagaries of wind'.

CSR Edmonds has developed and secured intellectual property rights for the world's first true hybrid ventilator. The ***ecopower***® is both a wind driven and motorised ventilator with the capacity to operate by wind alone or by both wind and electrical power simultaneously.

ecopower® – TRUE HYBRID VENTILATION

ecopower® utilises an electronic commutating (EC) motor installed in the head of the ventilator to enable motorised boost during periods of low wind speed or special ventilation needs. The motor can be activated by any digital measure, such as temperature, humidity gas concentration level etc. The standard product is controlled manually by a switch (not included).

Unlike previous attempts to produce a hybrid mechanical/wind vent, ***ecopower***® has **no motor and fan blade in the throat** of the vent. This is **extremely** important. Research using AS4740:2000 (Performance of Natural Ventilators) has shown clearly that any obstruction in the throat of a wind ventilator will greatly decrease vent performance under wind load. The level of flow reduction can be 40% or greater. Also, axial fans located in the throat of wind vents can produce significant noise levels.



ecopower® is one large direct drive centrifugal fan. The bearing system of the motor becomes the bearing system of the ventilator. This means that the vent can be free spinning under wind load or power activated as conditions require. The use of an EC motor ensures that the best energy efficiency features available are factored into the product design.

PRODUCT RANGE

ecopower® is presently available as standard product in four sizes, viz. 100mm, 150mm, 400mm and 600mm throat sizes. Further sizes including a tailored domestic product will follow. For the most up to date information, please check with our website www.hybridvent.com.au

Table 1.

ecopower® model	Power source	Weight of head	Noise dB(A) @ 3m	RPM
EP100	6VDC	2.1kg	N/A	424
EP150	9VDC	2.5kg	N/A	410
EP400	240V AC	10.7kg	38.5	313
EP600	240V AC	14.4kg	40	235

EXTRAORDINARY PERFORMANCE

The ***ecopower***® concept has demonstrated extraordinary energy efficiency under power load (Table 2). Exhaust rates per unit of energy are well above that achieved by comparable sized axial fans while noise levels are significantly lower.

Table 2.

ecopower® model	Optimal Exhaust Rate m^3/hr	Power (W)	Specific Flow Rate $m^3/hr.W$
EP100	99	3.6	27.5
EP150	198	10.0	19.8
EP400	2020	39.6	51
EP600	3910	88.0	45.3

Full specifications are available in techinical data sheets.

PERFORMANCE UNDER WIND POWER ALONE

How does ***ecopower***® perform under wind power alone compared with the standard Hurricane wind turbine? The results in Table 3 show the performance of both ***ecopower***® and standard Hurricane when tested to AS4740:2000 – Australian and New Zealand standard for Natural Ventilators. The results show clearly that ***ecopower***® provides exhaust rates about 10% greater than standard Hurricane due to less throat blockage.

Also shown in Table 3 is a comparison of flow rates from AS4740:2000 with the traditional approximations derived from a modified formula for estimating discharge from an open cavity. The latter has been widely used in many product brochures but lacks any scientific basis. It will be noted that the results measured under AS4740:2000 are about 40% of that reported using the traditional approximation. This subject is discussed more fully at www.hurricanevent.com.au

Table 3.

Model		Flow Rate AS4740:2000 m^3/hr	Flow Rate Traditional Approximation m^3/hr
100	***ecopower***®	41.4	113
	Hurricane	N/A	113
150	***ecopower***®	N/A	255
	Hurricane	106	255
400	***ecopower***®	864.6	1812
	Hurricane	778.8	1812
600	***ecopower***®	1435.4	4077
	Hurricane	1246	4077

SUPPORTED BY THE LATEST RESEARCH

CSR Edmonds has been the first entity in Australia, and indeed the world, to establish test facilities in accordance with AS4740:2000 requirements. This initiative has enabled CSR Edmonds to fully evaluate vent performance across a wide spectrum of designs and materials.

The results to-date have shown:

- The Hurricane vertical vane design has flow coefficients up to 97.5% higher than comparable spherical shaped ventilators.
- The performance of any ventilator is highly dependant on minimising blockages in the throat of the ventilator. Therefore the use of motor and fan blades in the throat will reduce the performance of any ventilator significantly.

The CSR Edmonds test rig.

BENEFITS OF *ecopower*®

ecopower® offers customers the following unique benefits:

- Optional powered ventilation without reducing the performance of wind exhaust levels (which occurs when motor and fan blades are installed in the throat).
- High levels of energy efficiency.
- Much lower operational noise levels compared with similar capacity axial fan products.
- Dependable ventilation that performs when required.
- Advanced German motor technology.
- CSR Edmonds' vertical vane vent technology, which outperforms traditional spherical shape metal vents of the same throat diameter*.
- Lighter weight than comparable axial fans.
- Single phase (EP400 & EP600) and low voltage (EP100 & EP150) power, allows simpler electrical installation.

** Flow coefficient tests performed under AS4740:2000 by CSR Edmonds.*

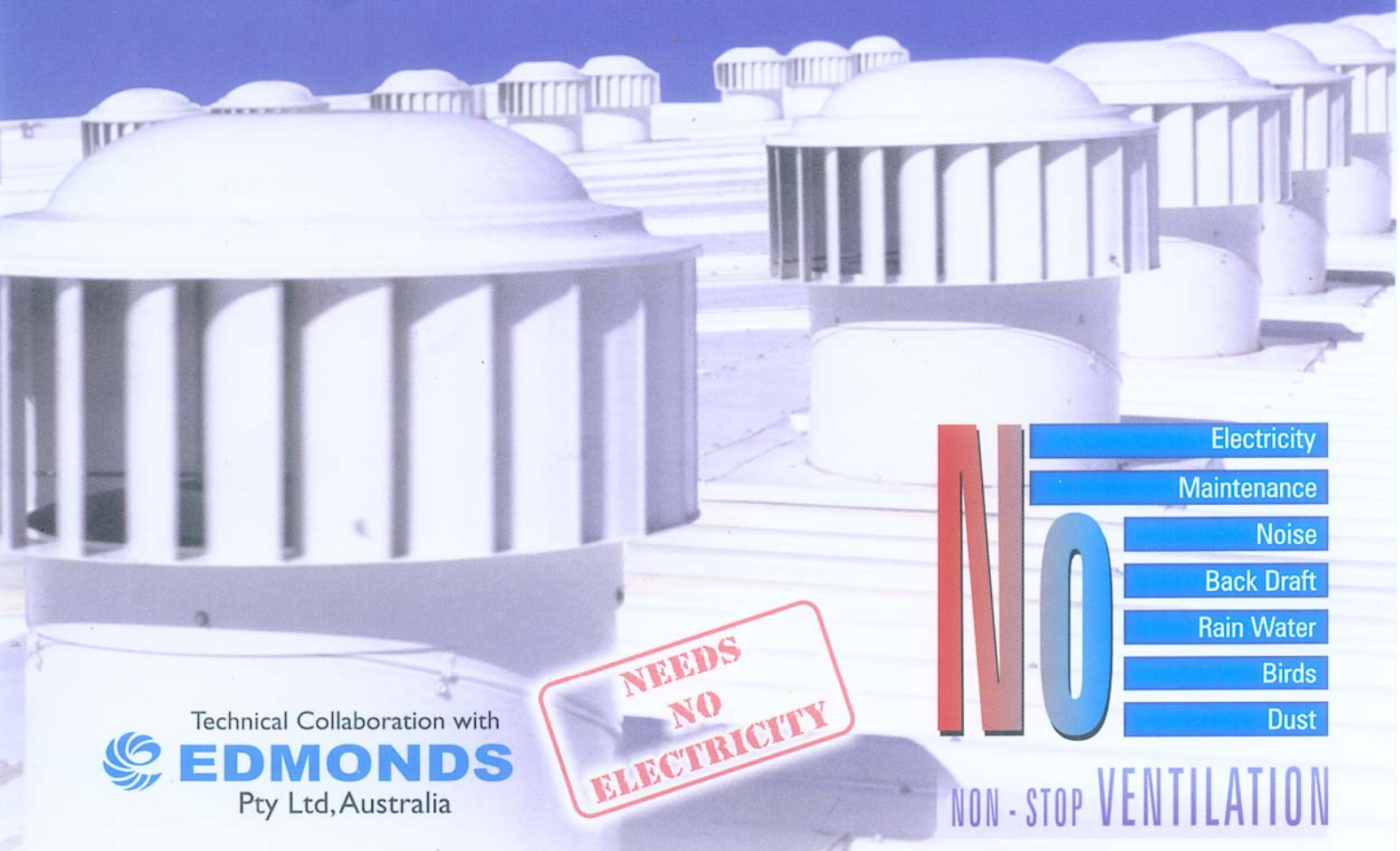
APPLICATIONS OF *ecopower*®

The likely range of potential applications for ***ecopower***® are **unlimited** but include:

Remote Toilet Systems

Removal of gaseous by-products from hybrid, composting an chemical toilet systems. Already Gough Plastics, a very successful North Queensland manufacturer of remote toilet systems is using the ***ecopower***® EP100 to reliably remove odours from their highly successful solar powered, hybrid toilet systems due to its (1) dependable flow rate (2) long life (3) low maintenance (4) high corrosion resistance and, (5) high energy efficiency (crucial when relying on solar power).

HURRICANE
AUSTRALIAN
TURBINE
VENTILATOR
NOW MADE IN INDIA



Technical Collaboration with
EDMONDS
Pty Ltd, Australia

NEEDS NO ELECTRICITY

No
- Electricity
- Maintenance
- Noise
- Back Draft
- Rain Water
- Birds
- Dust

NON-STOP VENTILATION

INTRODUCING THE HURRICANE TURBINE VENTILATOR

The installation of Hurricane Turbine Roof Ventilators will provide an efficient and cost effective system of natural ventilation. Designed in Australia for a harsh environment, the Hurricane is suited for industrial, commercial and community buildings. It has also passed the requirements of the Low Speed Dynamic Rain Penetration Test (3 l/m at 57.4 km/hr)

HURRICANE TURBINE VENTILATORS IMPROVE THE WORKING ENVIRONMENT

The wind-driven Hurricane ventilator exhausts hot, stale air from buildings and allows it to be replaced at low level with fresh air at ambient temperature. The result, naturally, is a much more pleasant working environment. The Hurricane has other benefits too. It prevents condensation by exhausting moist air. And, in cases of fire, it plays a safety role by exhausting smoke and fumes from the building.

THE HURRICANE TURBINE VENTILATOR OFFERS

• All aluminium construction. • A varipitch base that suits all roof slopes to 45° or ridge mounting base available. • The Tandaco prepacked double row ball bearing system. • Vertical vanes for improved starting torque.

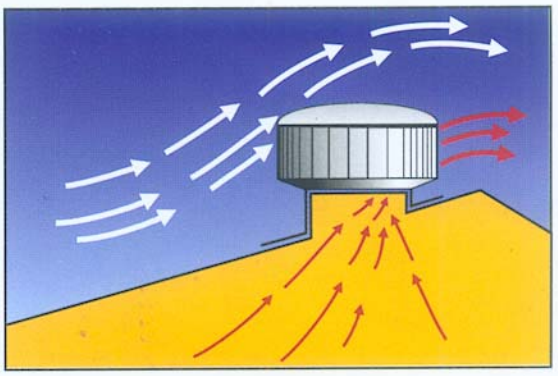
THE DYNAMICS OF THE HURRICANE TURBINE VENTILATOR

A well designed turbine ventilator, like the Hurricane, takes advantage of the wind to create a positive flow through the throat of the venti lator. The wind influences the performance of the ventilator in two ways :

1. As the wind approaches and strikes the ventilator, it jumps, creating an area of low pressure on the leeward side of the turbine. This low pressure zone is fed by drawing air from the turbine, causing a continuous extraction of air from the building

2. As the turbine rotates, the centripetal forces associated with the rotation fling air outwards from the tips of the vanes. Replacement air is drawn into the throat of the ventilator from the building causing continuous ventilation.

The Hurricane will even rotate and exhaust in the absence of wind using the thermal currents developed within the building.



THE UNIQUE TANDACO BEARING SYSTEM

The Hurricane incorporates the Tandaco double row heavy duty ball bearing system manufactured to perform for a lifetime It is secured into a reinforced bearing holder with variable length buttresses designed to stabilise the turbine at all wind speeds.The bearing is completely isolated from corrosive environmental conditions by its location between the dome and top diaphragm.The Tandaco bearing is a precision ground spindle bearing with a double row ball bearing cage.

THE HURRICANE'S VERTICAL VANES

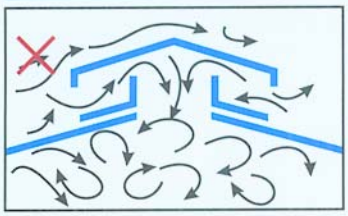
As well as exhausting warm and stale air, ventilators must be weather proof which imposes influences on design that can be detrimental to their performance. Vertical Vane design has distinct benefits over spherical turbines. They provide:

- *Improved torque at low wind speed.*
- *Excellent protection against rain*
- *Large exhaust opening.*
- *Positive locking to turbine ring.*
- *Greater "sail" area to drive the turbine.*

IMPORTANCE OF VENTILATOR DESIGN OR PLACEMENT

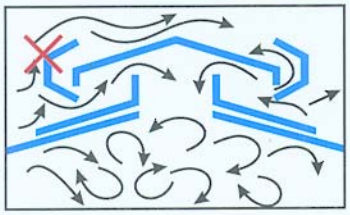
As a general rule, hot or stale air will not exhaust through an opening into which wind can blow. Therefore, regular static ventilators, which allow outside wind to enter in the shed because of poor design or location on the roof, cannot be expected to exhaust because they back draft. An efficient means of extracting warm and stale air is through roof mounted turbo ventilators, which create positive draft. Adequate low level provision for the entry of fresh air at ambient temperature should be provided.

Regular Static Ventilators



Monitor roof / jack roof

Receives no assistance from the wind. Back draft restricts exhaust of air from building.



Poorly designed ridge / gravent ventilator

Do not promote adequate ventilation or air movement in building. Design can allow entry of rain.

Roof mounted turbo Ventilators

Good ventilation

Efficient turbine ventilators exhaust hot and stale air and provide a given number of air changes per hour for the building. Does not allow entry of rain.

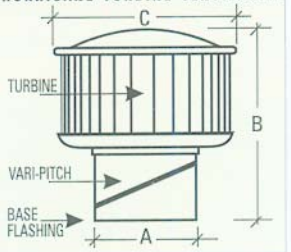
Exhaust capacity of Hurricane Ventilators at various wind velocities

Wind Velocity in km. / hr.	5	6	7	8	9	10	11	12	13
Discharge Capacity in cft. / hr. of Hurricane 450 (size 450mm)	47000	53000	59000	65000	71000	77000	83000	89000	95000
Discharge Capacity in cft. / hr. of Hurricane 600 (size 600mm)	83000	94000	104000	115000	126000	137000	147000	158000	169000

*As per ASHRAE formula at 30 feet height and 10°C temperature difference between replacement air and exhaust air temperature.

VENTILATOR SIZE	APPROXIMATE DIMENSIONS DIM 'A'	DIM 'B'	DIM 'C'
H. 450	455	750	650
H. 600	605	830	800

HURRICANE TURBINE VENTILATOR



SVS EDMONDS

WIND DRIVEN TURBO VENTILATORS

Manufactured in India by

SUDHA VENTILATING SYSTEM PVT. LTD.

B-85, M.I.D.C. AHMADNAGAR - 414 111. MAHARASHTRA, INDIA.

Tel : 91 - 241 - 6510285, Fax : 91 - 241 - 2777285. Cell : 091 98230 39485, 091 93253 92485

E-mail : svswindventilators@gmail.com Website : www.svswindventilators.com

WIND DRIVEN TURBO VENTILATORS

COMMERCIAL PROJECT PROFILE

Job No. : / 2007-08

Location : **General Motors**
A/c Shapoorji Pallonji
Chakan, Maharashtra

Business : Automobile manufacturing

Task **:** Ventilation required improvement in closed workshed. Client wanted heat & humidity exhausted from the building

Solution : Client went ahead with 162 Nos WINDY24PLUS Wind Ventilators.

Result **:** The 162 Nos. * WINDY 24 PLUS Wind Driven Turbo Ventilators achieved the objective set.

Sudha Ventilating System Pvt. Ltd.
B-85, MIDC, Ahmadnagar – 414111, Maharashtra, India
Ph: 0241 – 5610285 Fax : 0241- 2777285 Cell : 09823039485, 09823392485
E_mail : svspls_anr@sancharnet.in **Website :** http://www.svswindventilators.com/

Industry-wise Prime Customers

- **Automobile Mfg :** General Motors, Hero Honda, Honda SIEL Cars , Mahindra & Mahindra, Tata Motors
- **Auto Component :** Autoline Ind., Avtec, Badve, Enkei Castalloys, Endurance, Igarashi Motors, Sansera, SM Auto, Subros, TC Springs, Varroc
- **Engineering :** Alfa Laval, Alstom, BHEL, Crompton, DGP Hinoday, ESAB, Jaksons,Legrand, NRB Bearings , Paharpur Cooling Towers, Siemens, Suzlon, Thermax, Utkal Asbestos
- **Consumer Goods :** Havells, Videocon
- **Steel & Aluminium :** Ghatge Patil , Jindal Aluminium, JSW , Kalyani Forge, Mahindra Ugine Steel, Patnaik Steel, PG Foils
- **Food & Drugs :** GSK (Horlics), ITC, Richter Themis, Sakthi Sugar, Uttam foods (Britannia)
- **Cement :** My Home
- **Textiles :** Anchor Socks , GHCL ,Ginni Knit Processing, LNJ Denim, Sparkon
- **Warehouses :** Aditya Birla Group “More” Stores, AS Group, Reliance Retail
- **Printing & Packaging :** Hindustan Times, Multiflex India Ltd., Repro India Ltd.
- **Infrastructure:** JSW Energy, Shell Petrol Pumps, Tata Power Company

Installation Locations

A.P. :	**Chirala, Hyderabad, Kakinada, Kothur, Medchal, Nizamabad, Rajahmundry, Secunderabad, Vijaywada, Vishakhapatnam**
Assam :	**Guwahati, Tinsukia**
Daman	
Gujarat :	**Vapi, Vadodara, Ahmedabad, Gandhidham**
Goa :	**Bethora**
Haryana :	**Bawal, Faridabad, Dharuheda, Gurgaon**
H.P :	**Baddi**
J & K :	**Jammu**
Jharkhand :	**Jamshedpur**
Kerala :	**Kollam**
Karnataka :	**Bangalore, Belgaum, Bellary, Gulbarga, Mysore**
Maharashtra :	**Ambernath, Ahmednagar, Aurangabad, Chakan, Ichalkaranji, Jalna, Khopoli, Kolhapur, Lote Parshuram, Mahad, Mumbai, Navi Mumbai, Nasik, Nagpur, Panhala, Pirangoot, Pune, Ranjangaon, Shikrapur, Talegaon, Thane, Vasai**
M.P. :	**Satna, Dewas, Indore**
Orissa :	**Haripur, Keonjhar**
Punjab :	**Nabha, Rajpura**
Rajasthan :	**Banswara, Bhiwadi, Bikaner, Kishangarh, Pipalia Kalan**
T.N. :	**Chennai, Erode, Hosur, Madurai, Salem**
U.P. :	**Faizabad, Greater Noida , Jagdishpur, Kanpur, Lucknow , Noida, Varanasi**
Uttarakhand :	**Dehradoon, Haridwar, Pantnagar, Rourkee**
West Bengal :	**Kharagpur, Kolkata**

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WIND DRIVEN TURBO VENTILATORS

Micellaneous Statistics

Customer with 1000+ Ventilators	**–**	**1 Nos.**
Customer with Ventilators between 500 to 1000 Nos.	**–**	**4 Nos.**
Customer with Ventilators between 100 to 500 Nos.	**–**	**19 Nos.**
Customer with Ventilators between 50 to 100 Nos.	**–**	**27 Nos.**

Models sold to above Customers –

- **Hurricane 600**
- **Hurricane 900**
- **Windy 14 PLUS**
- **Windy 24 PLUS**

WIND DRIVEN TURBO VENTILATORS

COMMERCIAL PROJECT PROFILE

Job No. : / 2007-08

Location : Siemens Ltd.
Kalwa, Mumbai

Business : Motors & Switchboard

Task : Ventilation required improvement in workshed. Client wanted heat & humidity exhausted from the building

Solution : Client elected to proceed with 302 units in Motors Unit & 218 units in Switchboard Unit * Hurricane 600 Wind Ventilators.

Result : The 532 Nos. * Hurricane 600 Wind Driven Turbo Ventilators achieved the objective set. The customer has repeated order for further 55 numbers ventilators in its Nasik plant.

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E_mail : svswindventilators@gmail.com Website : http://www.svswindventilators.com

WINDY

WIND DRIVEN

TURBINE VENTILATOR

MADE IN INDIA

NO

- Electricity
- Maintenance
- Noise
- Back Draft
- Rain Water
- Birds
- Dust

NON-STOP VENTILATION

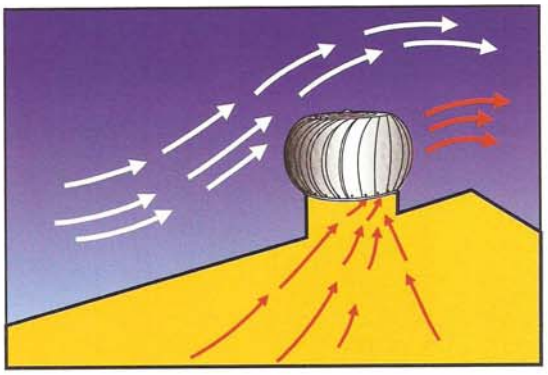
THE DYNAMICS OF THE WINDY TURBINE VENTILATOR

A well designed turbine ventilator, like the **Windy**, takes advantage of the wind to create a positive flow through the throat of the venti lator. The wind influences the performance of the ventilator in two ways :

1. As the wind approaches and strikes the ventilator, it jumps, creating an area of low pressure on the leeward side of the turbine. This low pressure zone is fed by drawing air from the turbine, causing a continuous extraction of air from the building, and

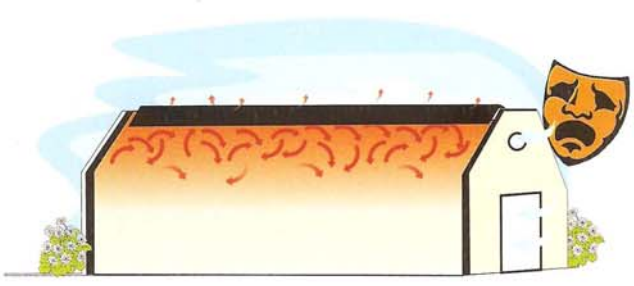
2. As the turbine rotates, the centripetal forces associated with the rotation fling air outwards from the tips of the vanes. Replacement air is drawn into the throat of the ventilator from the building causing continuous ventilation.

The **Windy** turbine will even rotate and exhaust in the absence of wind using the thermal currents developed within the building.

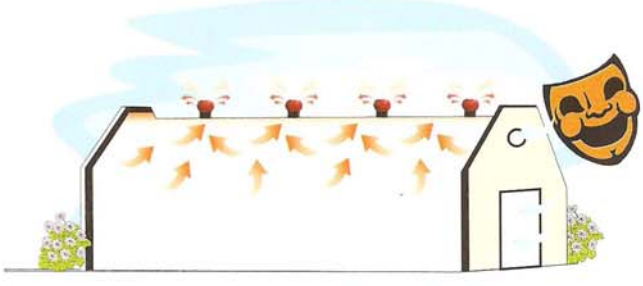


WINDY TURBINE VENTILATORS PROMOTE

- Healthy living.
- Increase in productivity.
- Reduction in maintenance of plant & machinery by reducing humidity level.
- Increased life of roofing sheets.
- Use of renewable source of wind energy.
- Achievement of environmental standards.



WITHOUT WINDY VENTILATORS



WITH WINDY VENTILATORS

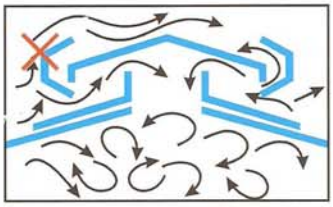
IMPORTANCE OF VENTILATOR DESIGN OR PLACEMENT

As a general rule, hot or stale air will not exhaust through an opening into which wind can blow. Therefore, regular static ventilators, which allow outside wind to enter in the shed because of poor design or location on the roof, cannot be expected to exhaust because they back draft. An efficient means of extracting warm and stale air is through roof mounted turbo ventilators, which create positive draft. Adequate low level provision for the entry of fresh air at ambient temperature should be provided.

Regular Static Ventilators

Monitor roof / jack roof

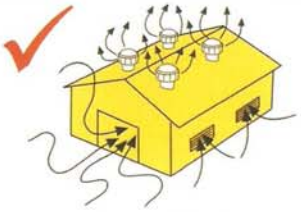
Receives no assistance from the wind. Back draft restricts exhaust of air from building.



Poorly designed ridge / gravent ventilator

Does not promote adequate ventilation or air movement in building. Design can allow entry of rain.

Roof mounted turbo Ventilators



Good ventilation

Efficient turbine ventilators exhaust hot and stale air and provide a given number of air changes per hour for the building. Does not allow entry of rain.

Comparision of WINDY PLUS with gravity ventilators.

Features	Model WINDY PLUS	Monitor Roof / Gravity Ventilators
Bearings	Steel	---
Dust Roof Individual Bearing Housings For Protecting Sealed Bearings		---
Completely Enclosed & Dust Proof Integrated Bearing Housing	Yes	---
Bearings Aligned With Each Other Due to Integrated Housing	Yes	---
Rotation at Nearly Zero wind Speeds Due To Aligned Bearings	Yes	---
Static Balancing	Yes	---
Suitable For Roof Heights Below 20 Feet	Yes	No
UV Stabilized Powder Coatings For Longer Product Life	Yes	Maybe
Suitable For Dusty / Smoky / Sooty / Oily / Harsh Conditions	Yes	No
Special Rubberized Hardware To Prevent Rain Ingress	Yes	No
Exhaust Capacity	High	Very Low
Exhaust Problem Due To Air Back draft	No	Yes
Depreciation In FY 2007-2008	80%	10%
Ventilator Material	Aluminium	Aluminium / GI
Hardware Material	SS	Zinc Plated

Other features of WINDY PLUS- No electricity, no wiring, no running expenses * Maintenance free * Fresh air 24 hrs x 365 days * Noiseless operation * Uniform ventilation * Exhausts stale, hot, humid air & fumes / pollutants non stop * Induces ventilation even in absence of breeze * Slightest breeze is sufficient to spin its turbine * Withstands high wind velocities * No ingress of rain water * Fits on any type of roof surface and gradient.

1. Reinforced bearing holder.

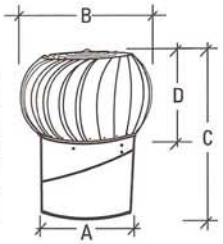
A special reinforced bearing holder ensures perfect alignment of bearings, a feature essential to long bearing life and quiet operation.

2. Precision steel bearings.

Full precision steel bearings are used - no plastic components.

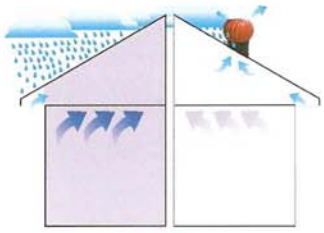
3. Fits all roof types.

WINDY'S "Vari-Pitch" throat and base flashing suits all roof types with slopes from 0° to 45°.



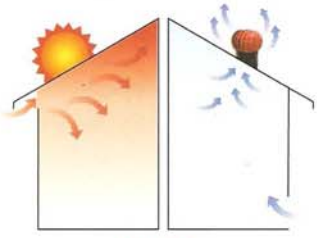
TECHNICAL SPECIFICATION FOR WINDY PLUS

MODEL	DIMENSIONS IN mm			
	A	B	C	D
WINDY 14 PLUS	360	500	600	325
WINDY 24 PLUS	600	766	725	485



WINTER

WITHOUT VENTILATION, MOISTURE LADEN AIR RISES AND CONDENSES IN ROOF SPACE. DAMPNESS IS TRAPPED.



SUMMER

WITHOUT VENTILATION HEAT FROM THE ROOF SPACE RADIATES INTO THE ROOM. HEAT IS TRAPPED.

SVS

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