Let your building breathe

**ventilation**
- *noun*
  1. the act or process of ventilating or the state of being ventilated
  2. an installation in a building that provides a supply of fresh air

**sentient**
- *adjective*
  1. having the power of sense perception or sensation; conscious *[from Latin sentiēns feeling, from sentīre to perceive]*)
Without electric power, sensors or human intervention, **Proctor Ventient™** technology can automatically control ventilation dependent on ambient temperatures, optimising the benefits of natural ventilation without introducing air that is too hot or too cold.

**BUILDINGS ARE FOR PEOPLE**

*Indoor Environmental Quality (IEQ)*

With the focus on the environmental and economical sustainability of new buildings, it can be easy to forget that most buildings exist to provide a safe and comfortable environment for people to live and work in.

And it is not just the initial construction costs, operational and ongoing maintenance expenses that need to be considered. Did you know that in a typical office building, the cost of the employees or "human capital" far outweighs that of the "building’s capital"?

Research from BOSTI shows that people costs were far greater than office costs, in a ratio of 13 to 1 for newly built offices.

Smart design, planning and management of the interior environment has substantial implications for organisations in economic terms, such as higher job satisfaction, higher employee productivity and team performance, plus lower staff turnover.

Just as there are benefits for an appropriately designed building, there are negative costs for a poorly designed one. The introduction of a natural ventilation system can not only reduce running costs and carbon emissions, but also improve many of the key elements of good IEQ.

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*Improved Indoor Air Quality*

As part of a natural or mixed mode ventilation system, Proctor Ventient™ allows for the intake of outside air with additional filtering of up to 68% of typical airborne dust [ASHRAE 52.1 - 1992].

*Improved Thermal Comfort*

Proctor Ventient™ overcomes one problem of operable windows and standard trickle vent systems, by passively changing the size of the ventilation intake in relation to ambient temperature.

*Improved Acoustic Comfort*

One reason that windows are just not opened is due to external noise pollution. Although a vent can never be as quiet as a closed air tight window, some Proctor Ventient™ devices can incorporate a sound absorption material whilst still providing fresh air flow.

*Occupancy Control*

IEQ occupancy satisfaction surveys continually highlight the importance of easy to understand devices that offer occupants control of their own environment. This is a key consideration for effective natural ventilation. All Proctor Ventient™ devices can operate in auto open mode, but can also be manually closed. Some devices can also be set to override the auto mode and remain open, whatever the temperature.

*Natural (Passive) Ventilation*

Natural ventilation has become regarded by many architects as the socially responsible alternative to mechanical ventilation in today’s green buildings.

Natural or passive ventilation is considered a low cost energy solution, whilst providing an optimum level of thermal comfort and a healthier indoor environment by the use of a sustainable, natural resource...air!

By controlling air movement through natural ventilation, many risks associated with a poorly maintained HVAC system on occupant health, such as upper and lower respiratory ailments, eye and skin irritations, headaches and fatigue can be alleviated.

In buildings with few or no operable windows, the inclusion of Proctor Ventient™ can improve the indoor air quality. With an effective filter, up to 68% of typical airborne dust can be collected. The reduction in harmful microbiologic exposure has both public health and economic benefits, with a decreased prevalence of sick building symptoms and the increased productivity of occupants.

There have been many published studies which show that the human thermal sensation index in a natural ventilated environment is more receptive than that of a mechanically ventilated environment.
Proctor Ventient™ can help manage indoor moisture to prevent mould and mildew forming in your building.

Consider how much thought and expense goes into the quality of the 1-2kg of food and 2-3 litres of water we eat and drink each day. It is all too easily forgotten that we all breathe an estimated 15,000L or 12-15kg of air every day.

**BENEFITS**

The Proctor Ventient™ Solution

Proctor Ventient™ devices can be used as part of a natural or mixed mode ventilation approach to make use of outdoor/indoor pressure differentials to bring in natural, clean, fresh air.

Using state-of-the-art passive temperature perception technology, Proctor Ventient™ is an environmentally friendly technology that does not require the use of electric power or sensors. In utilizing the physical characteristics of a unique Shape Memory Alloy (SMA), Proctor Ventient™ can adjust the volume of ventilation levels depending on ambient temperature.

Proctor Ventient™ will usually work in automatic mode but most devices will also offer the ability for occupants to manually close the ventilation if required. The devices can also be easily accessed for maintenance and to clean or replace filters.

**Key benefits**

- Maximises the benefits of natural ventilation
- No reliance on occupants to set and mange
- No electric power or sensors required
- Potential for reduced cooling loads
- Occupants can override to manually open or close
- Operates even when the space is not occupied
- Lower noise pollution than open windows
- Option for filters to reduce particle content of ventilated air
- No fear of intruders
- Works where operable windows cannot be used
- Child safety
- No need for fly screens
- Very simple installation
- Prevents possessions or documents from flying out the window or falling on passers by.

**APPLICATIONS**

The Proctor Ventient™ Range

A wide range of devices are available for curtain walls, windows, walls, doors, floors, roof spaces and for basements and sub floors.

The Proctor Ventient™ range has devices that are ideally suited to any building from high rise commercial and residential buildings to free standing homes. All buildings however big or small, still need to breathe.

Amongst the wide range of patented Proctor Ventient™ products is the Ventient™ SCW unit which can be used in curtain walls with minimal impact on the exterior or interior design finishes.

**Applications**

Unlike conventional systems such as operable windows or louvres, Proctor Ventient™ can be left to get on with the job of providing fresh air circulation with less worry about negative impacts on indoor environment quality resulting from airborne contaminants, noise, high winds and rain ingress.

- Natural ventilation helps reduce the need for cooling in office buildings and provides fresh air for educational and healthcare facilities.
- Providing ventilation for rooms or spaces that can remain unoccupied for periods throughout the year. Perfect for student accommodation and hotels.
- When occupants return home in the evening or after a few days away, they don’t need to head straight for the air con control to get rid of warm, humid and musty air. Ideal for residential buildings such as modern air tight medium and high rise developments.
- Known as night purge, on summer nights, outdoor air can enter the building via Proctor Ventient™ devices to lower interior temperatures and cool thermal mass, consequently reducing the energy requirements for air conditioning systems the following day.
By avoiding the unnecessary provision and operation of mechanical systems at times and in places where natural ventilation could achieve the task more efficiently, Proctor Ventient™ can lower energy use and associated greenhouse gas and pollutant emissions.

PROCTOR VENTIENT™ FOR CURTAIN WALLS & WINDOWS

One advantage of using window trickle vents is that most rooms have at least one window so no additional penetrations in the building envelope are required to provide ventilation. Proctor Ventient™ trickle vents can be integrated into both windows and curtain walls.

Options include the Proctor Ventient™ SCW device which has a strong track record dating back to 2006, and has been used in high rise buildings in Japan over 40 stories high. This device can be mounted in any orientation and although it can be used with more conventional windows, the device is commonly installed as part of a curtain wall on the interior either at floor, sill or ceiling level.

Method of operation

The Proctor Ventient™ SCW device is simple to operate by pulling up the lever to open and pushing flat to close ventilation.

The Proctor Ventient™ Eco Smart Breathe device can be integrated into the frame or installed separately between the frame and single or double glazing units. Both types of device allow for simple operation by occupants and access for cleaning of the filter.

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<table>
<thead>
<tr>
<th>Ventient™ SCW</th>
<th>Ventient™ Eco Smart Breathe</th>
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</thead>
<tbody>
<tr>
<td><strong>Material</strong></td>
<td>Extruded aluminium with anodized composite film</td>
</tr>
<tr>
<td><strong>Standard Colours</strong></td>
<td>Ivory, Silver</td>
</tr>
<tr>
<td><strong>Standard Dimensions</strong></td>
<td>W: 500mm to 1,200mm</td>
</tr>
<tr>
<td><strong>Ventilation open area</strong></td>
<td>25.2cm² (aA15.9cm²) ~ 62.3cm² (aA39.1cm²)</td>
</tr>
<tr>
<td><strong>Typical SMA passive temperature points</strong></td>
<td>Option A: Closed &lt;12°C Fully Open&gt;18°C</td>
</tr>
<tr>
<td><strong>Strength test</strong></td>
<td>3,600Pa (JIS A 1515)</td>
</tr>
<tr>
<td><strong>Air tightness</strong></td>
<td>100Pa (JIS A 1516)</td>
</tr>
<tr>
<td><strong>Water tightness</strong></td>
<td>1,500Pa (JIS A 1517)</td>
</tr>
<tr>
<td><strong>Acoustic performance</strong></td>
<td>T-3 Grade (JIS A 4706)</td>
</tr>
</tbody>
</table>
Natural ventilation is important because it can provide and move fresh air. For warm and hot climates, it can help meet a building’s cooling loads without using mechanical air conditioning systems. This can be a large proportion of a building’s total energy use.

**PERFORMANCE AND TESTING**

Just like an open window, ventilation by its very nature forms a break in the continuity of the building envelope. It is therefore important to test and fully understand how a Proctor Ventient device impacts on air and water tightness, structural integrity and acoustic performance.

Particularly for window trickle vents Proctor Group Australia will work with window manufacturers to ensure that when integrated into a window or curtain wall design that Australian standards and building code requirements can be met.

Sahara K.K. has worked with their customers to supply and test products that need to survive Japanese extremes including typhoons, heavy seasonal rainfall and earthquakes. This experience assists in the optimal integration of Proctor Ventient™ into the curtain wall, window or building design in Australia to meet local standards.

**Testing**

The Proctor Ventient™ SCW device for example, as an individual unit has been tested as follows.

**Water tightness**

1,500Pa of wind driven rain in accordance with JIS A 1517 : No water ingress when closed

**Air Tightness**

100Pa of positive and negative wind pressure in accordance with JIS A 1516 : No measurable air leakage

**High wind loads**

3,600Pa of positive and negative wind pressure in accordance with JIS A 1515 : less than 0.2mm deflection.

**Noise**

Acoustic testing in accordance with JIS A 4706.

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**Acoustic Testing Results**

![Sound Transmission Loss (dB) vs Frequency (Hz)](image)

**Ventilation Volume**

<table>
<thead>
<tr>
<th>Ventient™ SCW dimensions</th>
<th>Length = 1000.0mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ventilation volume at ∆P=9.8Pa</td>
<td>a=111.0m³/hr</td>
</tr>
<tr>
<td>Ventilation open area</td>
<td>A=170.9cm²</td>
</tr>
<tr>
<td>Effective open area</td>
<td>αA=78.0cm²</td>
</tr>
<tr>
<td>Ventilation volume</td>
<td>Q=111.0 (∆P/9.8)(^{0.5})m³/hr</td>
</tr>
</tbody>
</table>

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**Ventilation Volume Curve (1,000mm Proctor Ventient™ SCW)**

![Friction Loss Curve (P=Q)](image)
The environmental imperative, trends in public attitudes, and good engineering practice make serious consideration of passive, low-energy solutions essential.

OPTIONAL SPECIFICATIONS

Temperature sensing flow control
Utilising a patented shape memory allow (SMA) spring system the Proctor Ventient™ device can automatically adjust the size of the ventilation inlet as ambient temperature changes.

Constant ventilation volume damper
Important for high rise buildings, the Proctor Ventient™ SCW device can be fitted with air buffering material and a pressure differential dampener for more constant air flows balancing out wind gusts.

Air Filter
Filters can be included to the interior side of the vents that will reduce the ingress by up to 68% of typical airborne dust.

Insect, rodent and ember screens
Proctor Ventient™ devices can be supplied with screens that serve the purpose of keeping out insects and rodents but also acts as an ember guard. The mesh is non-combustible with a maximum aperture (gap) of 2mm as required by AS3959:2009 Amdt. 2011.

Intumescent fire barrier
For further protection against fire an intumescent material can be added which will expand to fill the opening when it reaches high temperatures, as experienced in a fire.

Sound Absorption
Recognising that outside air carries with it noise, some Proctor Ventient™ devices can integrate an acoustic absorbent material to minimise this issue.
Proctor Ventient™ as part of a natural or mixed mode ventilation system can reduce the need for air-conditioning.

By combining the advantages of natural ventilation, assisted by any mechanical engineering services it is possible to provide suitable levels of performance, health, safety, comfort and occupant satisfaction.

**OTHER VENTIENT PRODUCTS**

### Interior wall vents
- **Material**: Highly UV resistant AES plastic
- **Standard Colours**: Bronze, Ivory
- **Standard Dimensions**: W: 393mm H: 158mm
- **Ventilation open area**: 170cm²
- **Typical SMA passive temperature points**:
  - Option A: Closed <12°C Fully Open >24°C
  - Option B: Closed <18°C Fully Open >26°C

### Louvres & Gable Vents
- **Material**: Aluminium extrusion with anodized composite film
- **Standard Colours**: Silver, Bronze, White, Black, Ivory, Dark Bronze, Stainless Steel
- **Standard Dimensions**: W: 250mm - 1000mm H: 300mm - 1300mm
- **Ventilation open area**: 58.8cm² - 1948.8cm²
- **Typical SMA passive temperature points**:
  - Option A: Closed <10°C Fully Open >18°C
  - Option B: Closed <12°C Fully Open >25°C
- **Watertightness of open vent**: Up to 10m/s

### Exterior wall and subfloor vents
- **Material**: Highly UV resistant AES plastic
- **Standard Colours**: Grey, Bronze
- **Standard Dimensions**: W: 410mm H: 165mm
- **Ventilation open area**: 300cm²
- **Typical SMA passive temperature points**:
  - Option A: Closed <3°C Fully Open >9°C
  - Option B: Closed <12°C Fully Open >18°C

### Floor vents
- **Material**: Aluminium, Plastic cover
- **Standard Colours**: Light Bronze, Bronze, Ivory
- **Standard Dimensions**: 455 Type: 468x100x25mm 910 Type: 923x100x25mm
- **Max. Ventilation open area**: 40cm²-110cm²
- **SMA Passive temperature points**:
  - Option A: Closed <7°C Fully Open >17°C
  - Option B: Closed >28°C Fully Open <18°C
- **Compressive strength**: 4,000N (400kg)

### Manufacture

All Proctor Ventient™ devices are 100% designed, manufactured and assembled in Japan by Sahara K.K. to meet strict quality control requirements of Japan’s major house builders, window and curtain wall manufactures. As the largest supplier of trickle vents in Japan, Sahara K.K. has a wealth of expertise in ventilation and product design with the ability to adapt and integrate their devices to suit specific window and curtain wall types.
Proctor Group Australia and Sahara Corporation are working together to supply the state-of-the-art Ventient™ natural window ventilation system to Australia and New Zealand.

About Proctor Group Australia

Established in 2005, Proctor Group Australia has been servicing the Australasian building and construction industry with an extensive portfolio of high-performance thermal and acoustic insulation, plus high quality geotextiles and vapour control construction membranes.

100% Australian owned and operated, Proctor Group Australia brings a wealth of experience and knowledge from around the globe in solving problems through research and product development, designed to meet local climates, building regulations and construction practices.

Proctor Group Australia continues to expand its product range in Australia and New Zealand by assessing the requirements of local customers and meeting these needs with a combination of product development and tried and tested leading edge products and systems from around the world.

Proctor Group Australia will continue to work tirelessly to pre-empt future thinking to consistently deliver innovative products at the top end of the performance spectrum.

About Sahara Corporation

Established in the 1950s, Sahara is Japan’s largest trickle vent manufacturer with half a century of experience and knowledge. Sahara designs and manufacturers state-of-the-art ventilation products for leading aluminium alloy door and window manufacturers. Sahara is a long term supplier to respected major residential house builders and commercial builders.

Sahara’s products have been widely used in residential homes, office buildings, high rise apartments, hotels, and other facilities throughout Japan, and these precision-engineered products are now available in Australia.

Environment    Quality   Thermal Comfort

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