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Enlightened Fresh Air For a Healthy House

Introducing Environmental Sciences New Zealand's (ESNZ) **SkyVent™**, **VentaLite™** and **SkyVent Hybrid +** technology.

Low cost, low impact, natural ventilation systems which are capable of lowering relative humidity inside NZ housing, combining ventilation with the benefits of natural daylighting to create a Healthy House Environment.

For a Healthy House- Daylight and Superior Natural Ventilation in the one product!

SkyVent Ventelite

ventilation and
light to any room
in your house!

Ideal for
bathrooms
or walk in
robes!



ventilation
& light

SeaBreezer -

light & ventilation
into your attic space!



Connect clothes
dryer & mechanical
ceiling vents
to SkyVent tube!

Ideal for laundries,
ceiling vents to connect

Extracts hot moist air
at the source- connect
your clothes dryer and
mechanical bathroom fan
and vent to the outside!

Reduces condensation,
mould, asthma & dust mites.

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What does NZ Energy Efficiency and Conservation Authority (EECA) recommend? www.energywise.govt.nz/at-home/ventilation/

“Ventilation

Good ventilation is essential for maintaining air quality and removing excess moisture from your home. Having a draughty house is not the same as having good ventilation. As houses get more airtight, they become easier to heat, but good ventilation is still important to stop inside air getting stale and damp.”

ESNZ can offer patented sustainable technology that has been **fully tested to the AS/NZ 4740 Natural Ventilation** standard and produces best in class performance.

ESNZ offer a complete ventilation package that complies with the NZ EECA recommendations: <https://www.energywise.govt.nz/at-home/ventilation/>

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What does NZ Energy Efficiency and Conservation Authority (EECA) recommend? www.energywise.govt.nz/at-home/ventilation/
Do we need to be cocooned and have continuous mechanically filtered air supplied to us in a sealed envelope? We have lived for thousands of years with natural ventilation?

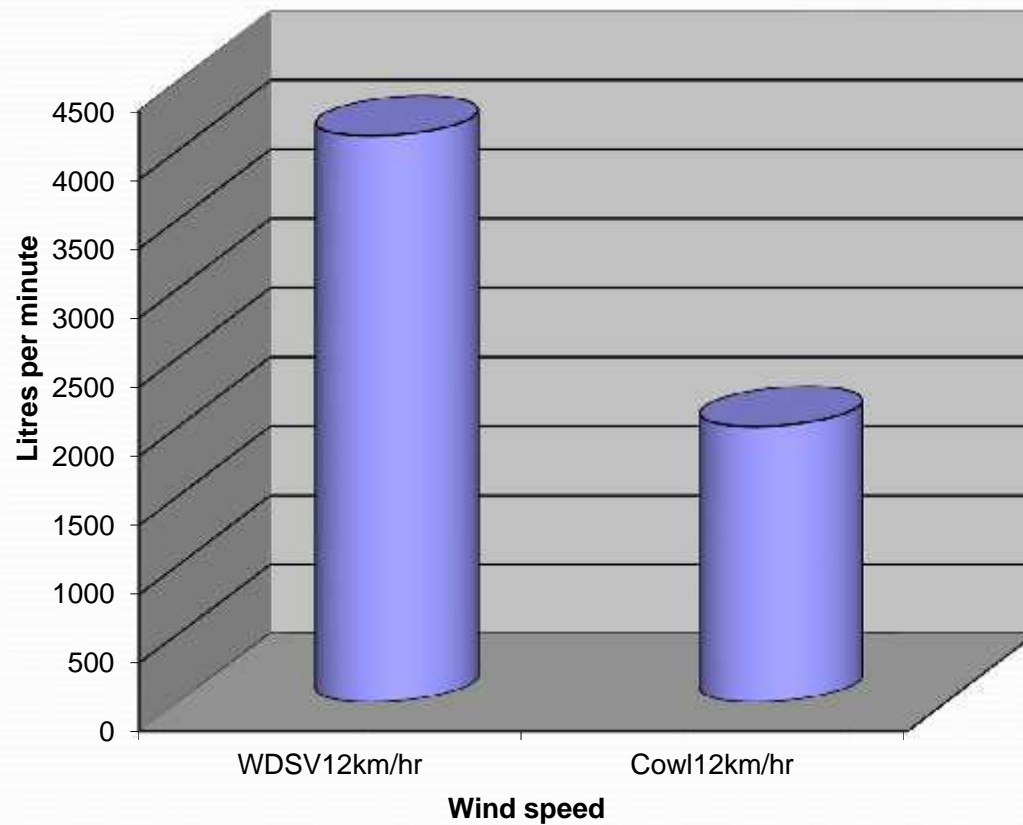
Extractor fans

Make sure you've good extraction systems in wet areas of your home, such as your bathroom, laundry and kitchen. Fans or extractors should vent to the outside, not into your ceiling space or where they will recirculate damp air. Make sure extractor fans are:

- **properly sized and located** - for the type of room. Ask your supplier for advice.
- **turned on before having a shower or bath** - and shut the bathroom door. Leaving the bathroom window open slightly allows air flow into the bathroom and will improve the extractor fan's effectiveness.
- **run for a few minutes after a shower or bath** - with the bathroom door shut.
- **cleaned regularly** - to maintain their performance."

ESNZ offer a complete ventilation package that offers outstanding performance:

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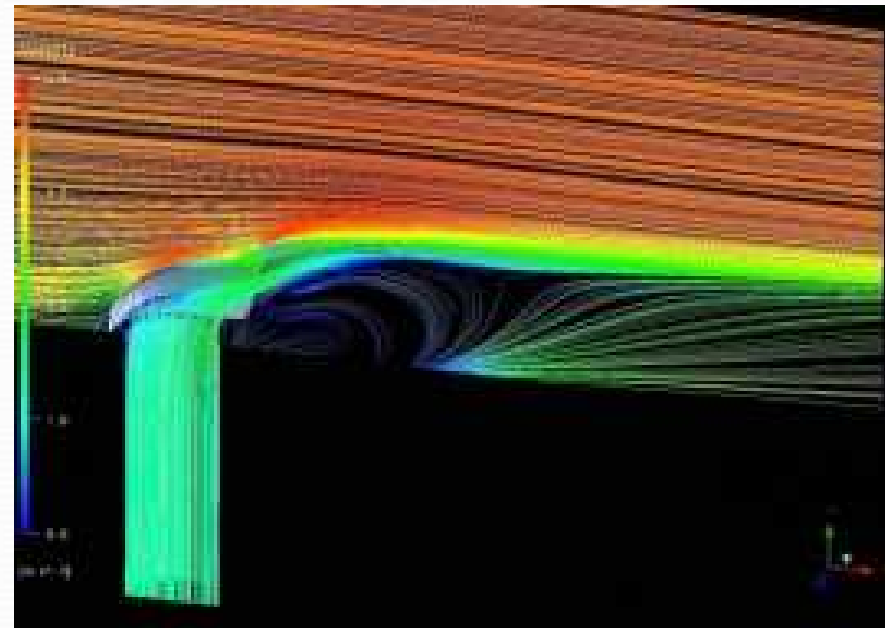
Volumetric exhaust flow rate comparison @ Sydney's average wind speed



ESNZ offer a complete ventilation package

How does SkyVent work?

- Wind extraction
- Stack & Buoyancy (Solar Chimney)
- Clear Dome for daylight



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Add a VentaLite kit to:

- Bring daylight into a room
- Ventilate from a room

Advantages:

- Silent operation with no flickering of daylight
- Removes moisture and contaminated air from bathrooms and laundries
- Ability to close off venting
- Provides healthy IEQ

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A **bathroom without a shower** only requires 6-8 ACH and the SkyVent with a **VentaLite** kit is all that is required.

To supplement the need to have extra ventilation extraction for a **bathroom with a shower**: A bathroom with a shower requires 15-20 air changes of air per hour (ACH)

An average size bathroom with a shower of 3 metres (length) x 2 metres (width) x 2.4 metres (height) x 15 (average changes or air per hour) = **216m³/h required**.

The SkyVent has been tested in the Aerodynamics Laboratory of the University of Technology, Sydney to AS/NZ 4740 Natural Ventilation standard to achieve 3,600 L/ min extraction with a 12km/hr wind speed. Sydney's average wind speed is 12km/hr and the **SkyVent provides the 216m³/h required**. (Auckland's average wind speed is higher)

However, many bathrooms with showers may not provide adequate air intake and a mechanical exhaust fan is recommended to be utilised during showering. Also, for a mechanically powered exhaust fan to perform at maximum efficiency, air inflow must be provided, usually from a window, vent or grille to provide air flow.

The simple answer is the ***SkyVent Hybrid +*** combining the ***VentaLite*** kit with a bathroom exhaust fan (min 350m³/hr) connected to the SkyVent tube to vent hot moist air outside of the building envelope (not into the roof attic cavity where it either condenses or is recirculated internally). **The *SkyVent Hybrid +* is the simplest and most cost effective way of meeting the EECA recommendations.**



Stainless steel faced 445m³/hr ducted exhaust fan IPX2 rated to connect into the SkyVent for bathrooms with showers

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Similarly, clothes dryers can be connected to the SkyVent tube in the laundry and provide a pathway to exhaust outside while providing daylight and ventilation 24/7 into the laundry.





SkyVent Benefits:

- Daylight
- Air extraction
- Removes moisture
- Removes fumes
- No power usage
- Easy retrofit
- Reduced bearing wear
- Proven technology





Ventalite Benefits:

NZ Case study by Professor Bin Su: Professor Bin Su's 2013 Report on *Indoor Moisture Control of Auckland Houses with Different Ventilation Systems* published in World Academy of Science, Engineering and Technology International Journal of Civil, Architectural, Structural and Construction Engineering Vol:7 No:10, 2013

Proven technology- Three similar size and insulated houses were measured for their internal Relative Humidity (RH). One without a ventilation system, one with a positive pressure attic space intake and one using a SkyVent + Ventalite system

The house with the *SkyVent + Ventalite* system had lower internal relative humidity and also had warmer temperatures in the bedrooms with both houses having similar insulation.



Ventallite Benefits:

NZ Case study by Professor Bin Su: Professor Bin Su's 2013 Report on ***Indoor Moisture Control of Auckland Houses with Different Ventilation Systems:***

IMPACT OF VENTILATION SYSTEM ON INDOOR RELATIVE HUMIDITY LEVEL

*According to previous field studies [6], during the wintertime, indoor relative humidity levels of the house A using a whole home mechanical ventilation system are lower than not using the ventilation system (see Tables VI, VII). **Mean relative humidity of all indoor spaces of the house A using the ventilation system are lower than 70%** (see Table VI). A whole home mechanical ventilation system can reduce indoor relative humidity levels, and improve indoor air quality and health conditions. **Mean relative humidity of all indoor space of the house B using a wind directional skylight vent are lower than 65%** (see Table VIII). The house A and the house B have insulation with the same R-values in roof space (R1.9), wall (R1.5) and floor (R1.3), and single glazed window with R0.13. Two houses regularly used temporary heating during the winter time. **The house A and the house B do not have mould problems. According to the threshold of relative humidity and time for mould germination (see Table I), indoor psychrometric conditions of the house A and the house B are lower than the threshold of mould germination***

Positive Pressure ventilation systems:

“The New Zealand Building Code requires homes to ventilate using outdoor air to maintain air purity. Ventilation systems that draw air from the roof space and not directly from outside do not comply with ventilation standard NZS4303:1990 "Ventilation for acceptable indoor air quality". They cannot be used to comply with the Building Code Acceptable Solution for ventilation.”

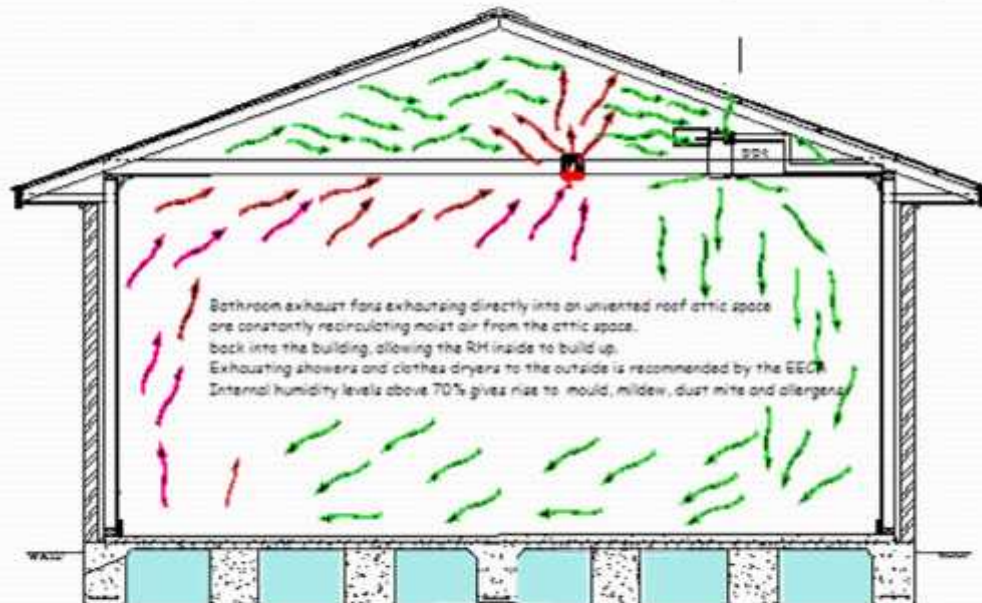
Source: www.energywise.govt.nz/at-home/ventilation/home-ventilation-systems/positive-pressure-ventilation-systems/

University of Otago research shows that moving roof space air into your home doesn't provide adequate heat to keep your house warm in winter. It also found that this could often push internal temperatures away from the desired level, rather than toward it.

Source: <https://www.energywise.govt.nz/assets/Resources-Energywise/heating-potential-ventilation-systems-may-2011.pdf>

Positive Pressure ventilation systems:

Hot moist air exhausted straight into a cool attic space causes condensation, mould and allergen growth which are capable of creating an unhealthy IEQ inside your house.

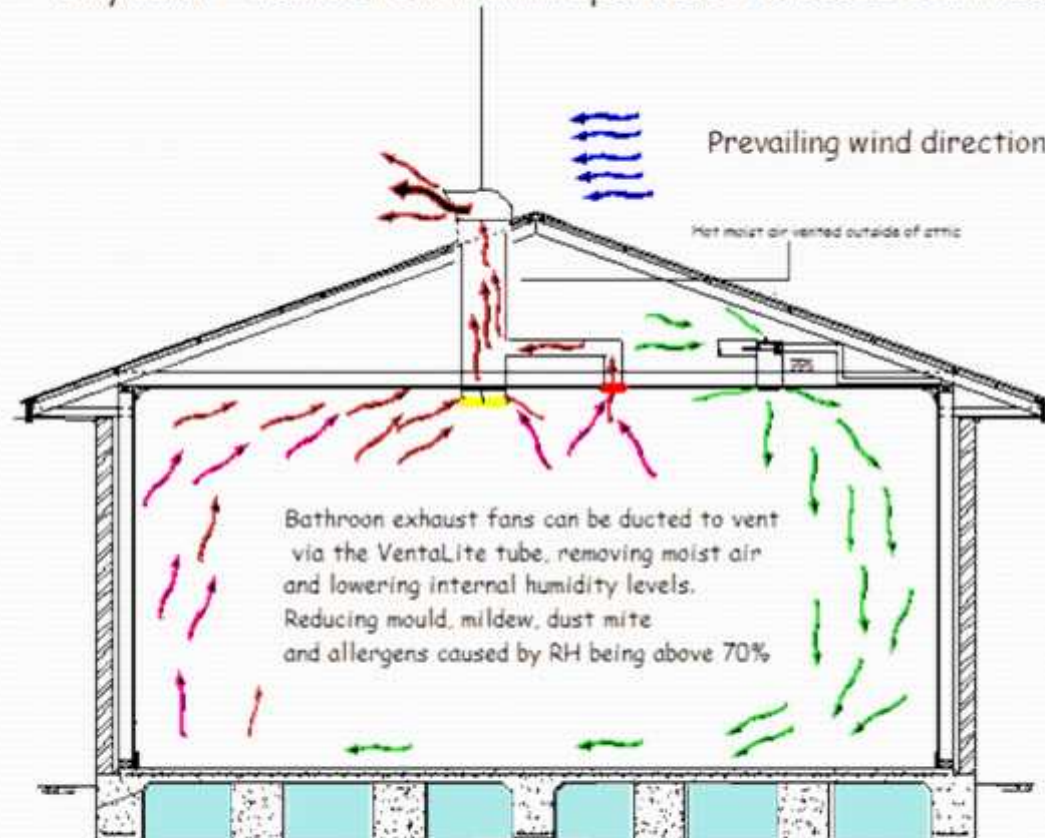


Positive pressure ventilation systems that take attic space air and have no moisture reducing medium are recirculating damp moist air from the attic space and pumping it back into the building and may be increasing the internal RH levels. Venting hot moist air to the outside is recommended by the EECA.



What can be done if I have a Positive Pressure ventilation system?

SkyVent + VentaLite Kit with openable / closeable diffuser.



SkyVent with VentaLite (natural ventilation and daylight) kit breaks the cycle of recirculating damp moist air from the attic by exhausting the moist air outside of the building envelope to create a healthy house.



Natural ventilation with exhaust fan venting to the outside for bathrooms with showers is the best answer for reducing moisture at its source

NZ Government Checklist

www.energywise.govt.nz/at-home/ventilation/ventilation-checklist/

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- ***cleaned regularly - to maintain their performance.***

This is why using the SkyVent + VentaLite kit with laundry dryer connections and bathroom exhaust fans coupled into the VentaLite tube to remove internal humidity at the sources is the best and cheapest answer.

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What is unique about SkyVent:

- ESA's patent covers the combination of a wind directional vent with a skylight in one unit

Environmental Performance:

- Fully tested to AS/NZ 4740 at the University of Technology, Sydney, Aerodynamics laboratory
- Extracts 3,600L/Min of air with a 12Km/h wind
- Extracts hot air even when there is no wind (stack)
- Daylighting reduces artificial lighting saving power
- SkyVent does all this with no power usage, ever
- Aids heat recovery systems and can duct mechanical fans and laundry dryers by exiting air via the SkyVent

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Thank You

