



AIRCOOL® VENTILATORS





AIRCOOL VENTILATORS

Passivent Aircool is a range of controllable insulated ventilators primarily for installation in external façades in commercial and similar buildings.

The electrically-actuated dampers provide controlled air intake and extract in natural ventilation systems, and may also be used for air intake or extract in mechanical ventilation systems. They are particularly suitable for night cooling strategies, where daytime heat build-up is dissipated from the structure during the night, producing lower internal air temperatures with a reduced need for daytime cooling or air conditioning. Natural ventilation methods can save energy, reduce greenhouse gas emissions, and reduce or eliminate the capital and running costs of ventilation or air conditioning plant.

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Quality assurance

The systems and processes by which the product are manufactured have been appraised under BS EN ISO 9001 which covers design, development, manufacture, and installation (if by approved installers), giving an independently audited and maintained assurance that the products will meet their intended purpose.

Sustainability assurance

All Passivent manufacturing is accredited to ISO 14001, the international standard for environmental management systems. Passivent are committed to minimising our impact on the environment using recycled and recyclable materials where possible.

BENEFITS

- Improved insulated internal dampers provide a superior U-value as low as 0.86W/m²K when closed, to minimise heat loss.
- Primary construction materials are aluminium and ABS, which are 100% recyclable.
- Electrically-actuated low-voltage dampers provide optimum safety and flexibility, with virtually silent modulating operation.
- Designed to be installed in masonry walls, curtain walling, window frames or profiled sheet cladding.
- Excellent airtightness performance when closed.
- Excellent weather protection and security are provided by the external weather louvre, even when the internal insulated louvre is open.
- Thermally broken frame, and insulated and orientated dampers minimise the risk of nuisance condensation and draughts.
- Thermal, acoustic and hybrid air mixing variants are available to attenuate or treat the incoming air in various ways as required by the user (see pages 6, 8 and 9).
- Discreet and functional yet aesthetically pleasing, with internal protection cover grilles supplied as standard.
- The internal cover grille protects against impact damage, for applications such as gymnasiums or sports halls.
- Integrates with the Hybrid Plus2 Aircool for single sided strategies (see pages 6 and 7).
- Can be supplied in modular form to provide greater flexibility in use (see page 10).



DESCRIPTION

Composition, manufacture
Frame and external weather louvres are extruded aluminium, with ABS thermal break.

Internal motorised dampers are fabricated from a double skin of aluminium with ABS thermal break and blade compression seals; supplied as a complete assembly including the actuator. Removable aluminium actuator cover for ease of maintenance. Insect screen is 4mm black polypropylene. Internal cover grille is fabricated from extruded aluminium.

Sizes

Made to order in the size ranges shown below.

Aircool wall ventilators:

Heights 255 up to 1490mm;
lengths 400 up to 2300mm.
Wall thickness from 195mm upwards; specify when ordering.

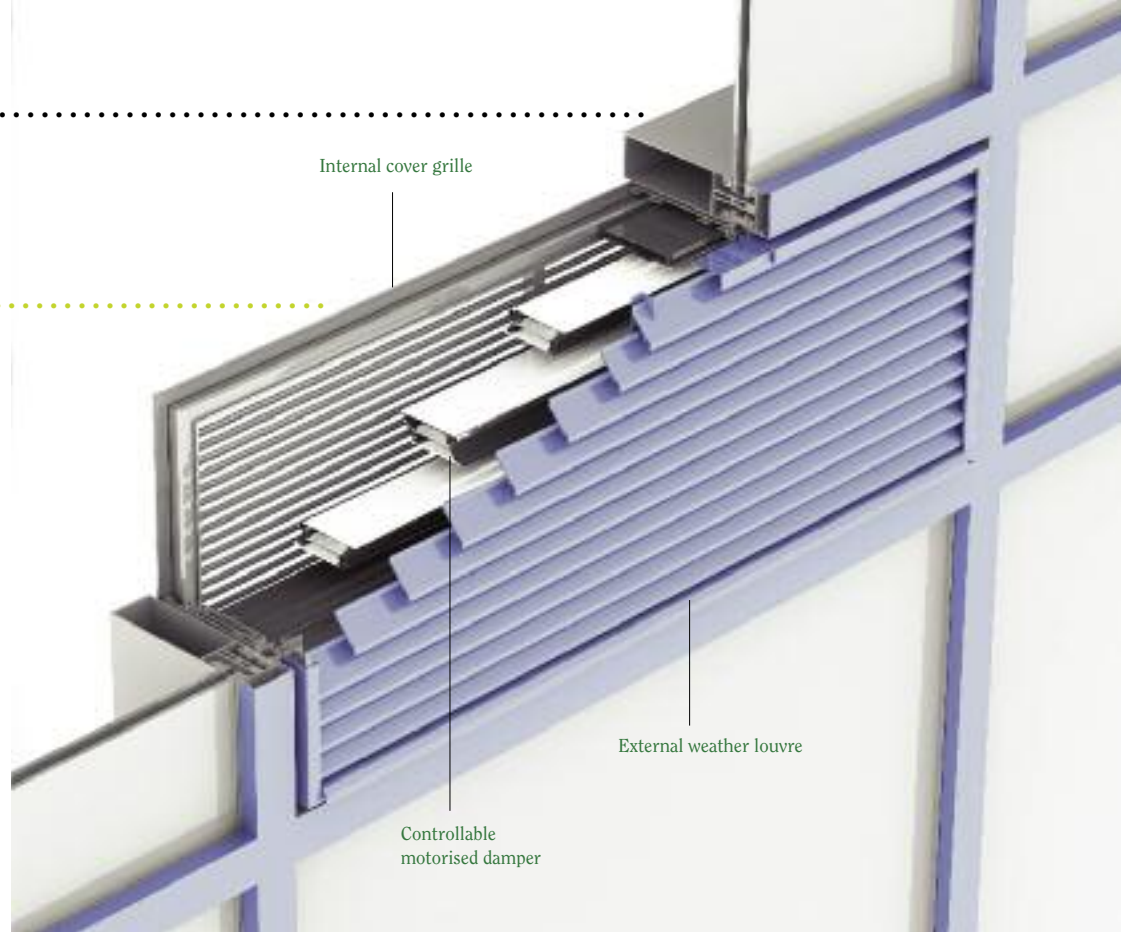
Aircool window/curtain wall ventilators:

Heights 270 up to 1505mm;
lengths 400 up to 2300mm;
to suit glazing thickness from 24mm.
Depth front to back (including cover grille) 183mm plus glazing thickness.

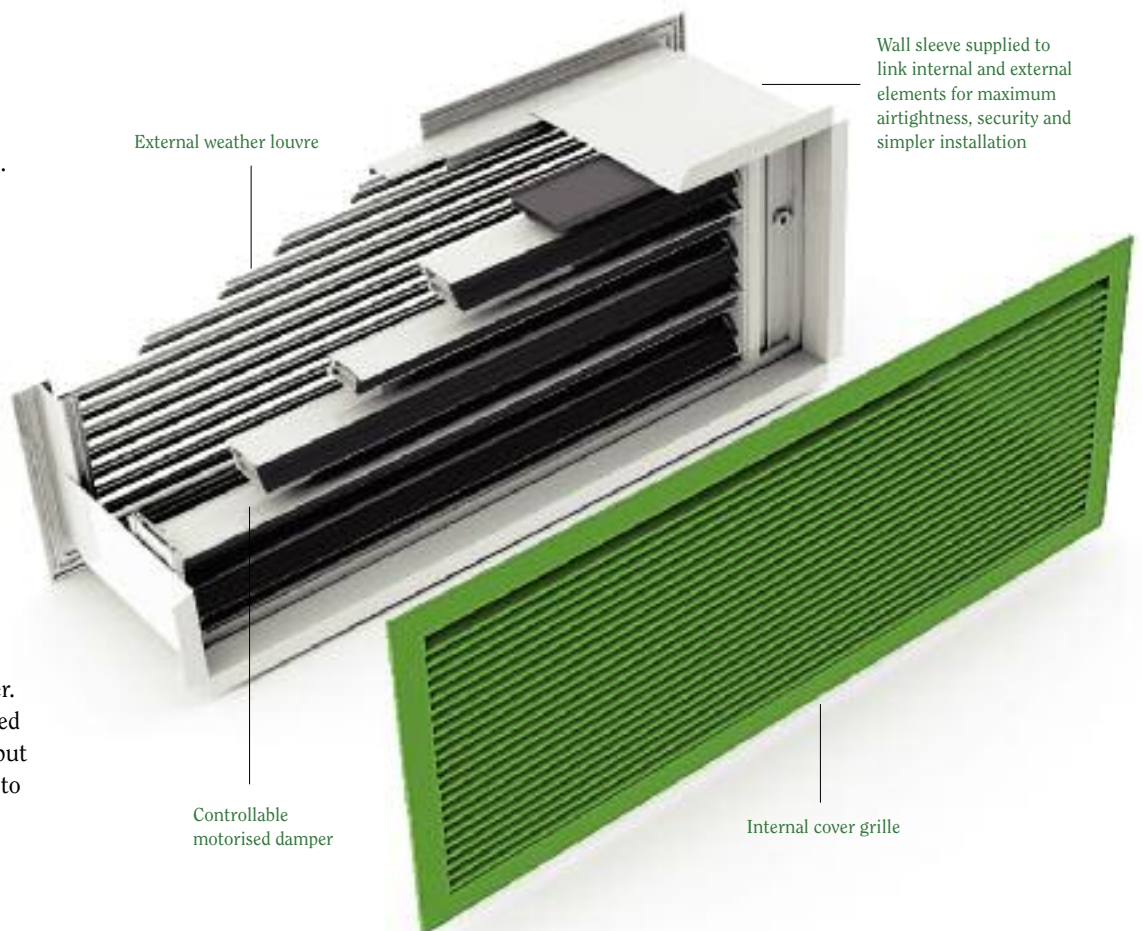
Please enquire for specific size availability.

Appearance

External louvres and frame are polyester powder coated to order. Internal cover grilles are supplied in white RAL 9016 as standard but can be polyester powder coated to other colours to specific order. Internal motorised dampers are mill finish aluminium.



Aircool window ventilator for window/curtain walling viewed from outside



Aircool wall ventilator for masonry wall viewed from inside

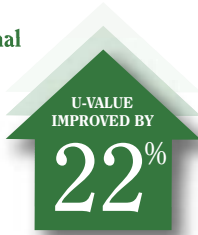
PERFORMANCE

Ventilator performance

Passivent can advise on the number and size of ventilators needed according to air flow volume required (see Services, back cover).

New and improved thermal insulation performance

The average calculated U-value of the ventilators for the whole Aircool range has been improved to **0.86W/m²K** in wall applications, one of the best in its class.



Fire performance

Materials used for internal frame and dampers when closed achieve a Class 1 rating when tested to BS 476: Part 7.

Weather performance

The external louvres provide 98.6% (Class B) rain rejection when independently tested at BSRIA to BS EN 13030. When tested to BS EN 1027 the closed ventilators are watertight at over 1000Pa pressure.

Air leakage performance

When tested the air leakage rate of the closed ventilators is 0.57 m³/hour/m at 50Pa pressure. The linear metre length is defined as the perimeter of the unit plus the total length of the louvre-to-louvre contact. This equates to an approximate value in terms of face area of 9.7m³/hour/m² at 50Pa pressure (depending on unit size).

Controls and sensors

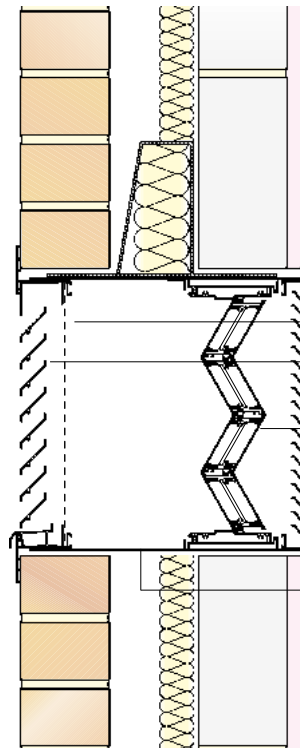
Ventilation airflow is continuously variable by means of 24V modulating actuators. Ventilators can be controlled by Passivent's range of thermostatic controls or programmable controllers, or linked to a building energy management system. Passivent also offer a range of control sensors for temperature, CO₂ and wind for exposed locations.

Modular applications

Aircool ventilators can also be supplied in modular form, see page 10.

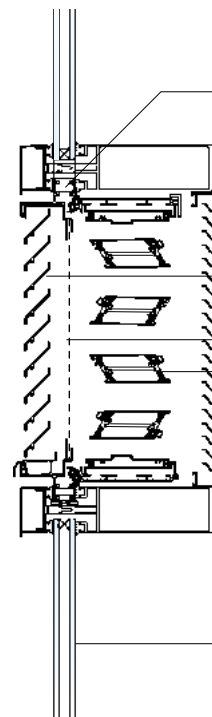
Complete Aircool units in masonry walls and windows/curtain walling

Aircool wall ventilator in masonry wall



- Insect screen
- Fixed external weather louvres
- Controllable motorised insulated internal dampers (shown closed)
- Internal protective cover grille
- Wall sleeve supplied to link internal and external elements for maximum airtightness, security and easier installation

Aircool window ventilator in curtain walling



- Thermal break
- Fixed external weather louvres
- Insect screen
- Controllable motorised insulated internal dampers (shown open)
- Internal protective cover grille (alternative fixing shown)
- Glazing



Specification clause

Standard Aircool louvre ventilators for masonry walls/windows/curtain walls* having extruded aluminium frame with ABS thermal break, extruded aluminium external weather louvres, 4mm insect screen, and aluminium internal cover grille. Insulated internal motorised controllable dampers fabricated from double skin of aluminium with ABS thermal break and blade compression seals. U-value 0.86W/m²K when closed. 24V modulating actuator for internal louvres controlled by eC/ic8000* wall-mounted switch-gear. Ventilators designed and manufactured under BS EN ISO 9001, and supplied by Passivent, North Frith Oasts, Ashes Lane, Hadlow, Kent TN11 9QU Tel: 01732 850770, Fax: 01732 850949, Email: projects@passivent.com (and installed by an approved installer).

*Delete as applicable.



HYBRID PLUS2 AIRCOOL VENTILATOR

Specification clause Hybrid Plus2 Aircool, incorporating Aircool ventilator with a mixing chamber. Aircool for masonry walls/windows/curtain walls* having extruded aluminium frame, extruded aluminium external weather louvres, 4mm black polypropylene insect screen. Insulated motorised controllable dampers fabricated from double skin of aluminium with ABS thermal break and blade compression seals. Mixing chamber finished to RAL 9016 white, incorporating variable speed fan, controllable mixing dampers.

Ventilator U-value 0.86W/m²K when closed. 24V modulating actuator control for dampers, controlled by Passivent iC8000 intelligent controller. Fan flow rate of up to 150 l/s.

Ventilators designed and manufactured under BS EN ISO 9001, and supplied by Passivent, North Frith Oasts, Ashes Lane, Hadlow, Kent TN11 9QU. Tel: 01732 850770, email: projects@passivent.com.

*Delete as applicable.

The Hybrid Plus2 Aircool ventilator combines the features of the Aircool ventilator with an innovative air tempering and mixing unit utilising a single energy-efficient fan.

It has been primarily designed to be used in a single-sided ventilation strategy and to meet the requirements of the Facilities Output Specification for Priority Schools Programme Phase 2, Building Bulletin 101, 'Guidelines on ventilation, thermal comfort and indoor air quality in schools' and Building Bulletin 93, 'Acoustic design of schools: performance standards'.

The system has been developed to provide a simple cost-effective solution for specifiers and main contractors. With a focus on indoor air quality and thermal comfort, the Hybrid Plus2 Aircool is the ideal product to incorporate into schools and other educational buildings.

Air quality and thermal comfort

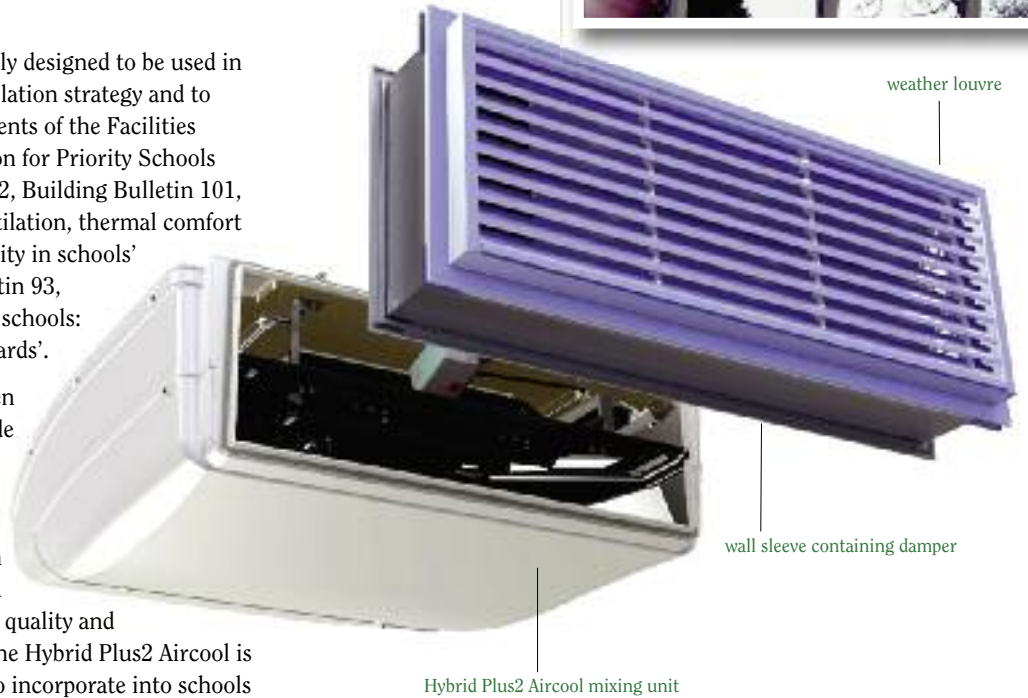
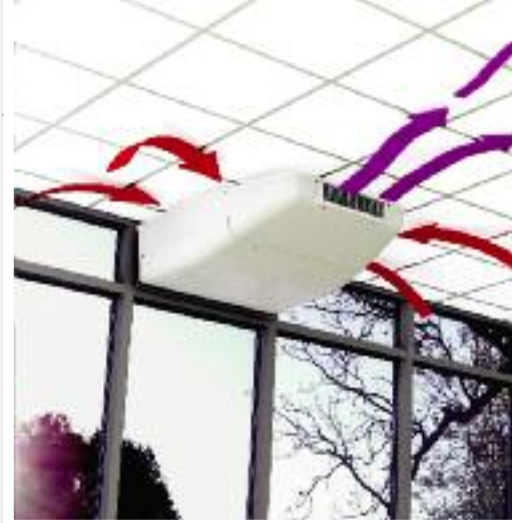
Heating and cooling are important in maintaining a comfortable indoor environment, together with the provision of good air quality and the removal of pollutants, especially important in maintaining CO₂ levels to below 1,500ppm.

The Hybrid Plus2 Aircool system can provide ventilation up to 150 l/s via the fan operation offering an energy-efficient means of maintaining thermal comfort in a 'free running building'. The mixing of fresh air with internal room air is an integral part of the design of the unit which reduces the risk of cold draughts during cooler periods.

The system is controlled by using a Passivent iC8000 intelligent controller which provides fully automatic control.

Appearance

External louvres and frame are polyester powder coated to order. Internal cover grille and housing are supplied in white RAL 9016 as standard, but can be provided in other colours upon specific request.



Performance

Equivalent free area of each unit: 0.054m².

Max. flow rate when inlet & outlet resistances are equal and fan is in operation: 150 l/s.

Compliance: Building Bulletins 93 & 101.

Acoustic: A 30dB_{Dn,e,w} noise reduction is possible through the product with the damper in the open position, when tested to BS EN ISO 10140-2:2010 for element-normalised level difference and BS EN ISO 717-1:2013*.*

The system can be used to meet the acoustic requirements of BB93.

*All acoustic testing was independently carried out by Acoustical Investigation and Research Organisation Ltd, an UKAS accredited testing laboratory.

Dimensions

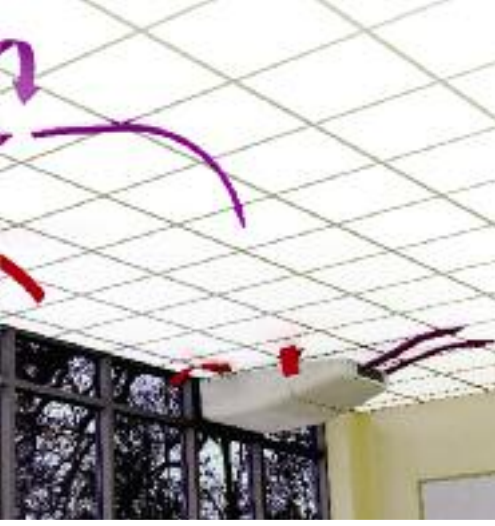
Internal tempering and mixing unit:

967mm(w) x 330mm(h) x 1253mm(d).

Aircool size would be supplied to suit the building requirements:

typically 842mm(w) x 320mm(h) for wall applications and 873mm(w) x 351mm(h) for window applications.

Weight: 32kg.



Exceptional design

Slim and sleek

The unit is one of the slimmest in its class due to its unique internal design. Its aesthetic, contemporary look and flexible design means that it can be mounted exposed or, if preferred, within a bulkhead.

Versatile

It can be fitted to external facades, including all forms of wall construction, curtain walling and window profiles.

Quiet

The ventilator utilises silent, controllable insulated dampers from the Aircool range. The system can be used to meet the acoustic requirements of BB93.

Energy efficient

Thanks to the energy-efficient fan and the ultra-energy-efficient passive mode, power consumption is kept to a minimum.

Scalable

One unit can accommodate up to 16 occupants. The addition of a second unit can accommodate up to 32 per room.



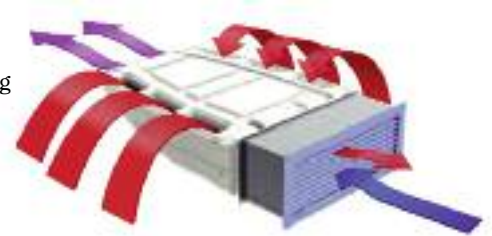
Adaptable modes

The unit can operate three modes of ventilation dependant on the internal and external environment of the room being ventilated.

1 Mixing mode

In winter, colder spring and autumn periods the Hybrid Plus2 Aircool tempers the incoming air with warmer internal air before it enters the space, thereby minimising the risk of cold draughts for the occupants. By mixing and utilising any excess of heat gains within the space, there is no need to use additional energy to warm the fresh air.

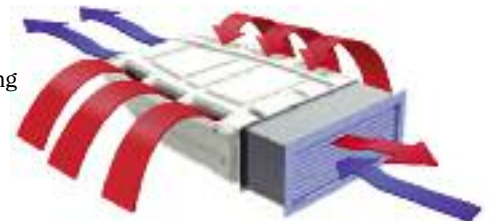
Warm internal air enters the unit at ceiling level and is also discharged across the ceiling once mixed to ensure thermal comfort levels are the highest possible.



2 Cooling mode

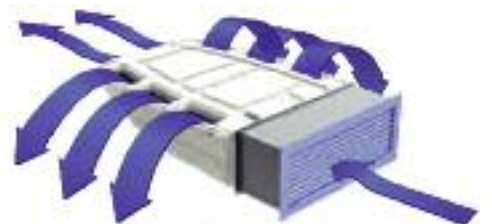
In peak summer conditions, the energy-efficient, low power fan can be activated to promote air movement, keeping the ventilation strategy operating and temperature under control.

When the building encounters high heat gains, the fan can be activated to purge the space more rapidly than a passive ventilation system. The fan speed will automatically adjust to suit the temperature and CO₂ requirements within the space.



3 Passive mode

Due to the low airflow resistance of the system, the Hybrid Plus2 Aircool is able to operate in a passive mode without any need for fan assistance. This mode offers single-sided ventilation to provide an equivalent area of 0.054m² and is highly cost-effective due to the lack of energy required to motorise the fan unit.



For more information on this product, please see separate Hybrid Plus2 brochure.

THERMAL AIRCOOL



Specification clause

Thermal Aircool louvre ventilators for masonry walls/windows/curtain walls* having extruded aluminium frame with ABS thermal break, extruded aluminium external weather louvres, 4mm insect screen, and aluminium internal cover grille. Includes heater coil. Insulated internal motorised controllable dampers fabricated from double skin of aluminium with ABS thermal break and blade compression seals. U-value 0.86W/m²K when closed. 24V modulating actuator for internal louvres controlled by iC8000. Ventilators designed and manufactured under BS EN ISO 9001, and supplied by Passivent, North Frith Oasts, Ashes Lane, Hadlow, Kent TN11 9QU Tel: 01732 850770, Fax: 01732 850949, Email: projects@passivent.com (and installed by an approved installer).

*Delete as applicable

The Passivent Thermal Aircool has been specifically designed to supply buildings with warm, fresh air during cooler weather particularly when the Hybrid Plus2 Aircool is not suitable due to inadequate availability of “free heat” from the room itself or a requirement for higher airflows than can be provided when in passive mode.

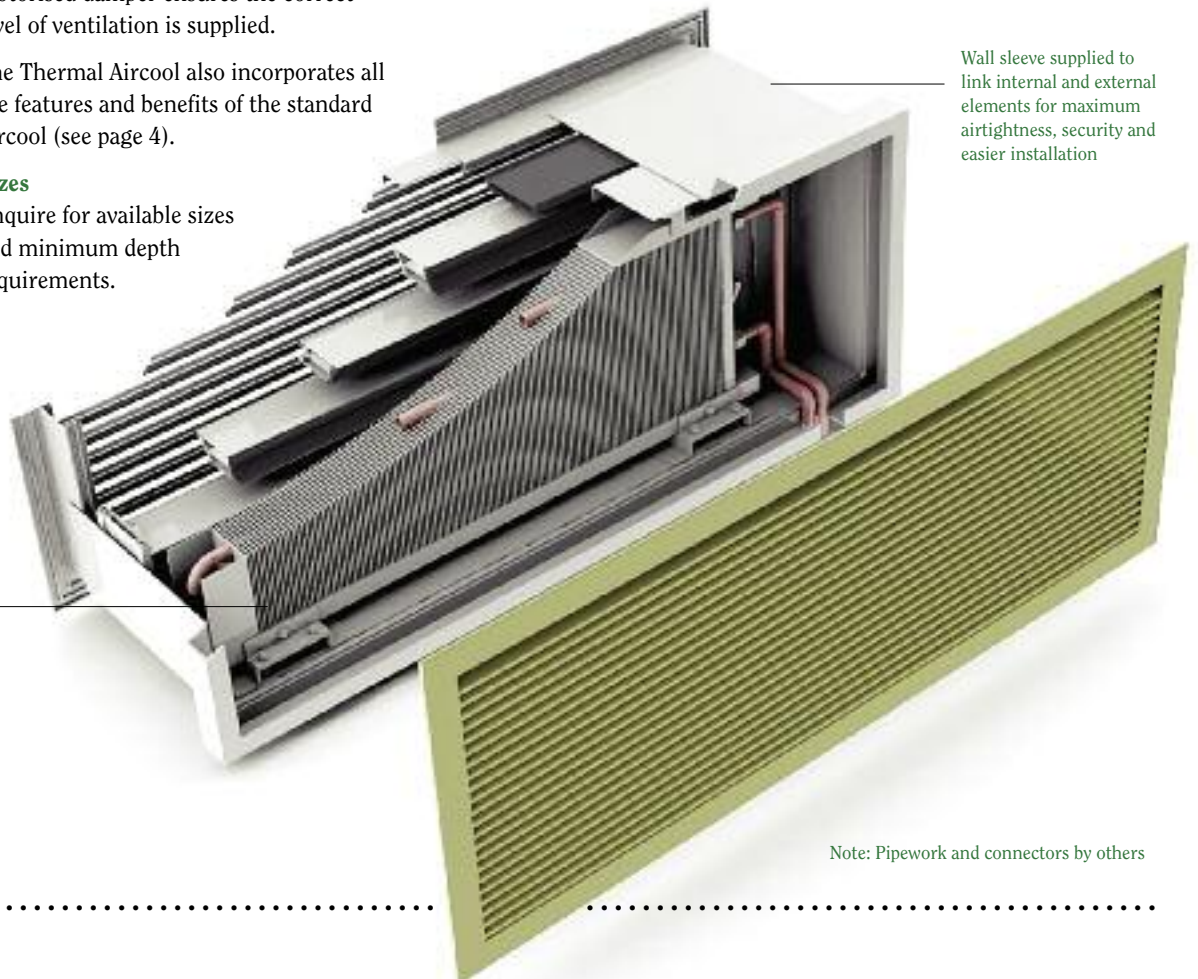
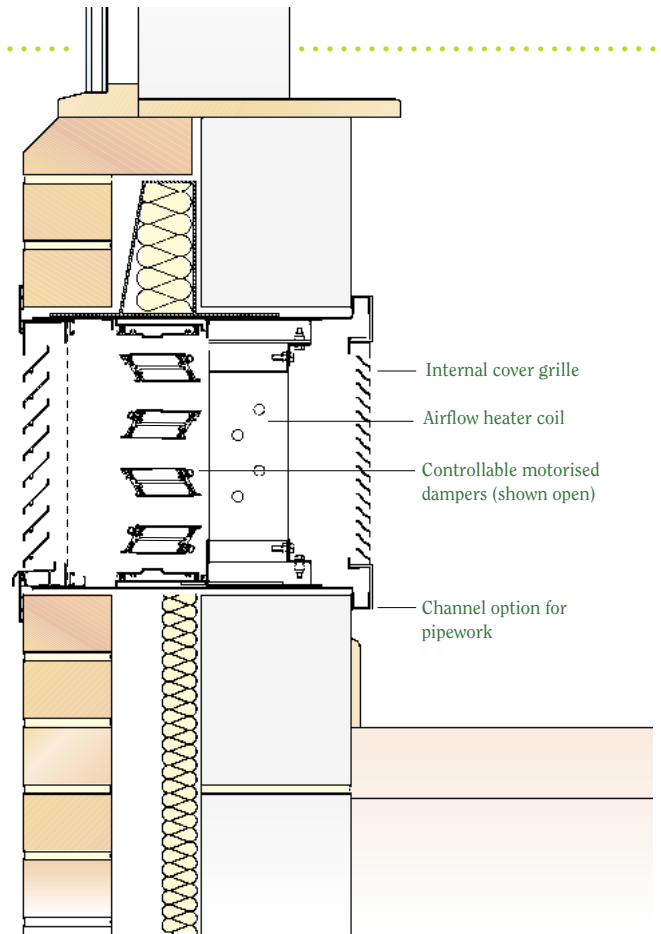
The Thermal Aircool will also provide a fresh air inlet in warmer conditions, when air warming is not required thus provide fresh air ventilation throughout the year and a secure night cooling strategy in warmer weather.

The Thermal Aircool system incorporates a low resistance airflow heater coil, which has been specially designed for natural ventilation systems and is connected into the main central heating system of the building. An integral sensor clipped to the coil reports the temperature of the incoming air so that the water flow and temperature can be regulated via third party heating controls. When combined with the Passivent range of natural ventilation controllers, the motorised damper ensures the correct level of ventilation is supplied.

The Thermal Aircool also incorporates all the features and benefits of the standard Aircool (see page 4).

Sizes

Enquire for available sizes and minimum depth requirements.



Note: Pipework and connectors by others

ACOUSTIC AIRCOOL

Specification clause

Acoustic Aircool ventilators for masonry walls/windows/curtain walls* having extruded aluminium frame with ABS thermal break, extruded aluminium external weather louvres, 4mm insect screen, and aluminium internal cover grille. Units to have single/double* acoustic chevrons to achieve a weighted normalised sound level difference of up to 22/26dB* $D_{n,e,w}$ across the ventilator to BS EN 20140-10. Insulated internal motorised controllable dampers fabricated from double skin of aluminium with ABS thermal break and blade compression seals. U-value 0.86W/m²K when closed. 24V modulating actuator for internal louvres controlled by iC8000. Ventilators designed and manufactured under BS EN ISO 9001, and supplied by Passivent, North Frith Oasts, Ashes Lane, Hadlow, Kent TN11 9QU Tel: 01732 850770, Fax: 01732 850949, Email: projects@passivent.com (and installed by an approved installer).

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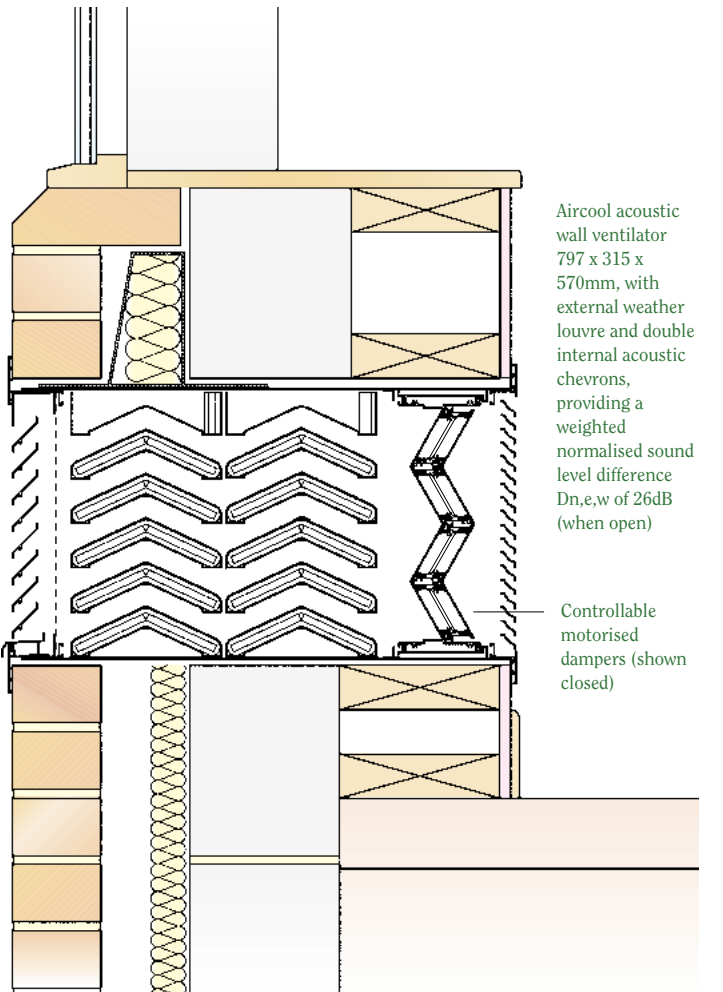
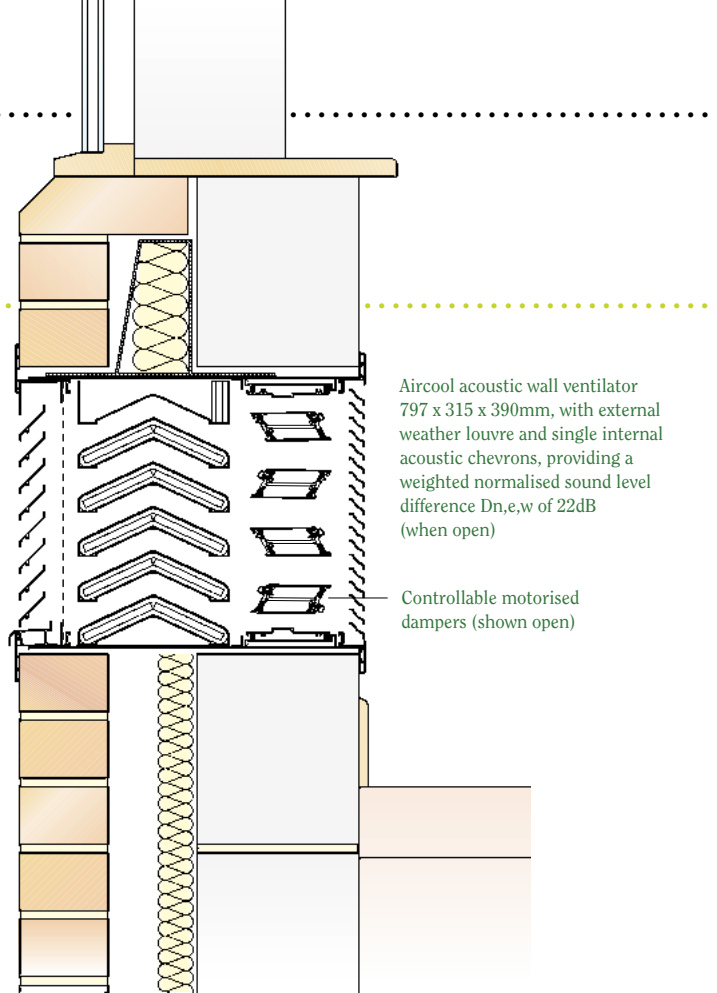
The Acoustic Aircool range is available in wall and window versions. The range has been developed to meet increased regulation requirements for sound reduction, and the increased noise exposure resulting from the greater use of brownfield sites.

Independent test data to BS EN 20140-10, ISO 140-10:1991 is available on request, with detailed performance figures for each application.

Depending on requirements, acoustic ventilators may have a single or double row of internal acoustic chevrons, acoustic liners. For special high noise reduction requirements, Passivent can design and manufacture bespoke ventilators to maximise sound reduction and minimise airflow resistance so as to achieve target air change rates.

Passivent Aircool acoustic façade ventilators can be complemented by Passivent Soundscoop® and Soundscoop iAT (intelligent airflow technology) acoustic ventilators for internal air transfer.

This broader product range provides designers with the opportunity to adopt complete natural ventilation solutions where buildings have high external noise levels.

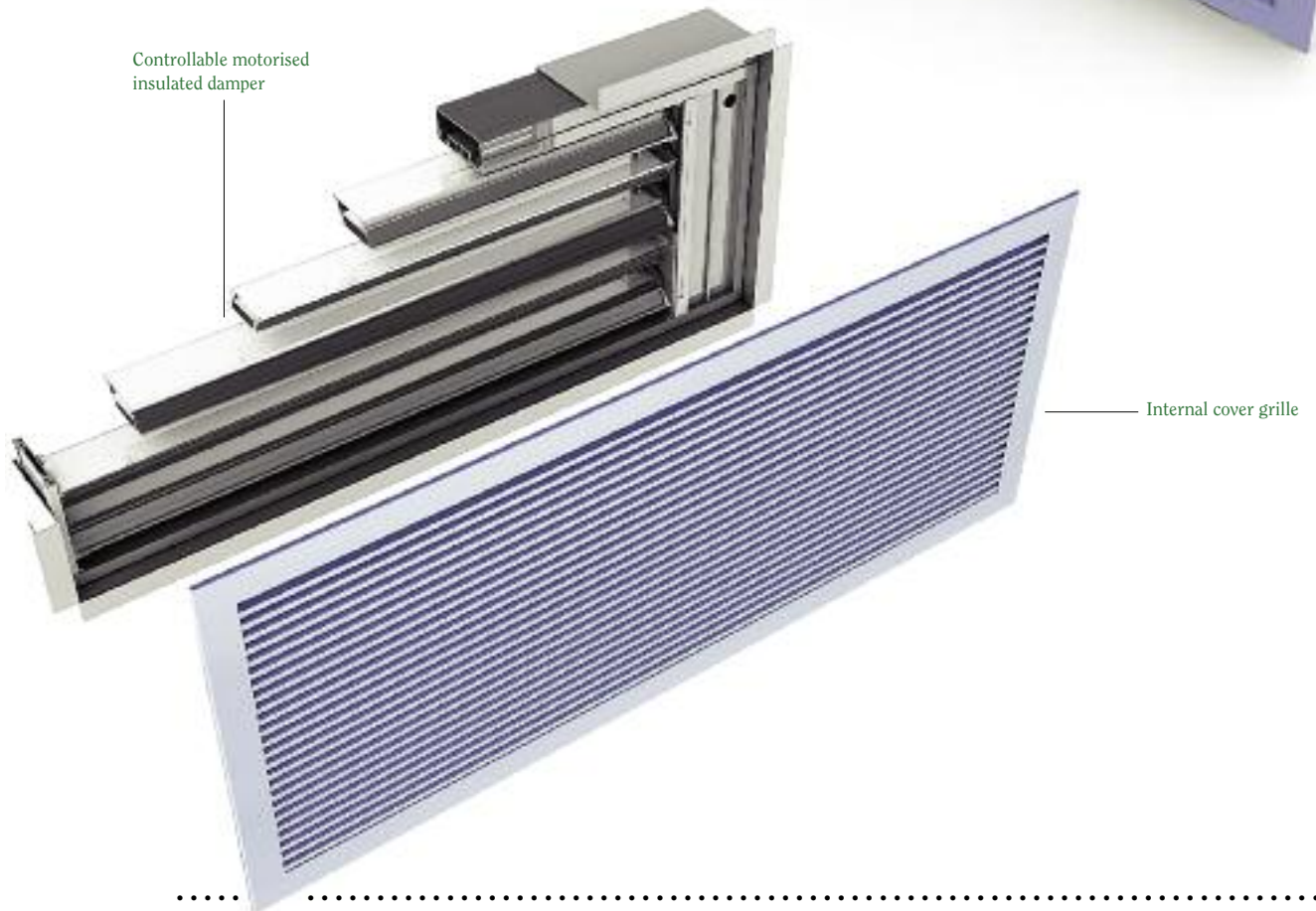
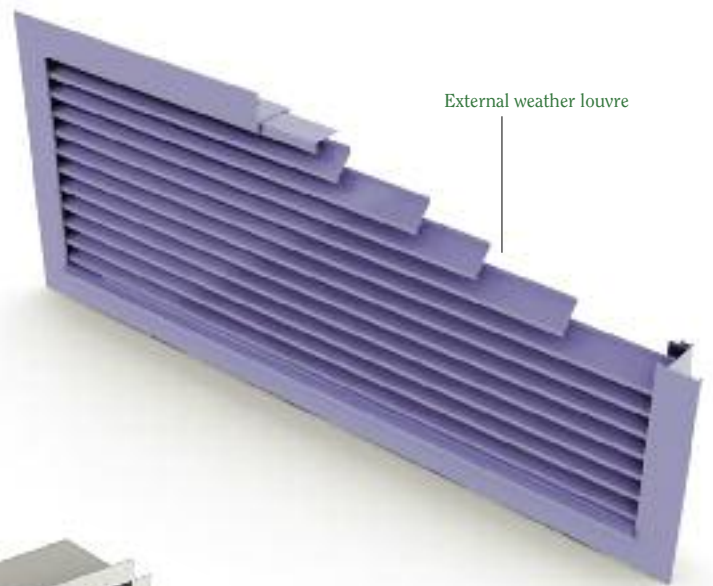


OTHER APPLICATIONS



Modular applications

Aircool ventilators and the various elements that make the total unit can also be supplied in modular form, with the external weather louvres (also with the double bank weather louvre system), internal insulated dampers and internal cover grilles as separate components, providing extra flexibility in ventilation design.





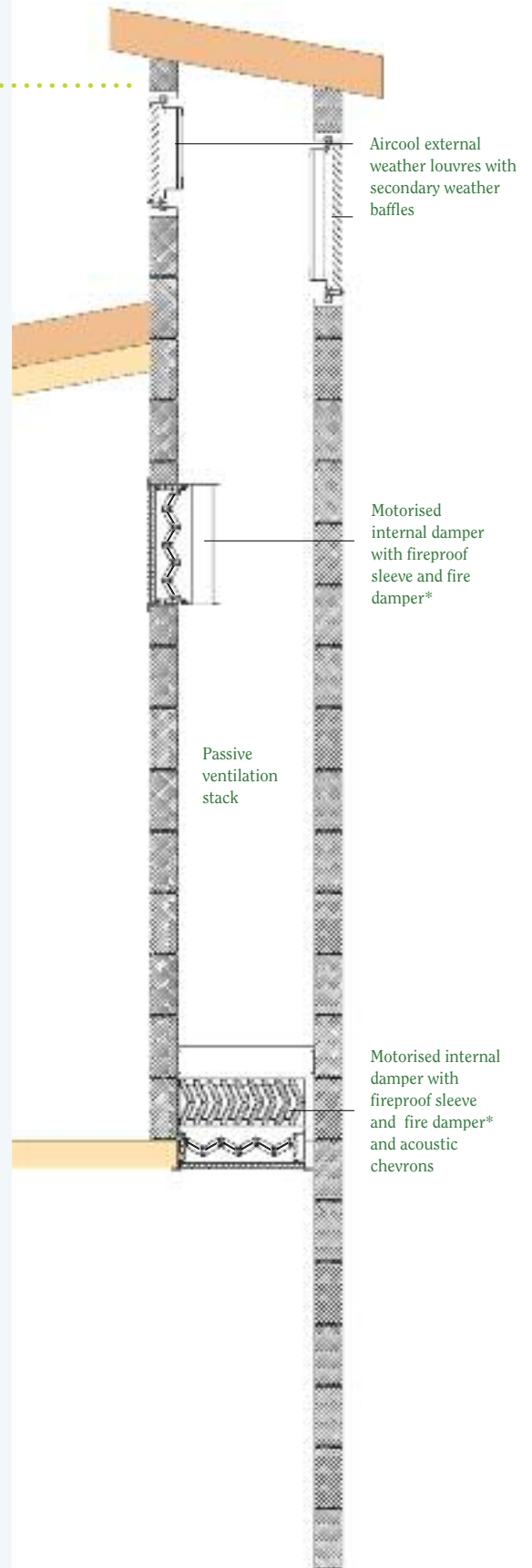
Passive stack ventilation

This design using passive stack ventilation was successfully adopted in a multi-storey building to meet fire regulations and reduce risk of 'cross talk' (ie sound leakage between floors).

Natural ventilation was achieved by passive induced cross ventilation before entering the stack. Fresh air was introduced at the windows and drawn across rooms, then through Aircool dampers, and extracted at high level through Aircool window ventilators located at the top of the light well/stack.

Aircool insulated dampers were used in combination with fire dampers to maintain the integrity of fire protection between floors. Acoustic chevrons were fitted behind the Aircool dampers to the louvres to provide acoustic attenuation between floors. Aircool dampers positioned in the rooms gave the users controllability with individual room air volume control, and provided thermal insulation during unoccupied periods.

In exposed locations Passivent secondary weather baffles were fitted behind the external weather louvres to provide a Class A weather rejection performance. Aircool extracts can be located in high level window frames, behind weather louvres, within a terminal arrangement or in purpose-designed parapet walls.



* Guidance from Building Control and the Fire Officer must be sought to ensure compliance.

FURTHER INFORMATION

SERVICES

Passivent has its own in-house research team dedicated to developing techniques and products for natural ventilation, and has been a leading partner in some of the most important research projects in this field including NatVent™, a consortium of European organisations headed by BRE.

We offer a comprehensive design and advisory service tailored to your specific project, covering both natural ventilation design and product selection. Advanced software based on CIBSE AM10 is used to calculate sizes of air inlets and outlets to achieve optimum performance.

Names of approved installers can be provided on request.

OTHER PASSIVENT PRODUCTS

Passivent offers a range of other natural ventilation and daylighting products including:

SoundScoop® acoustic transfer ventilation products.

Roof ventilation terminals incorporating Airtract®, Airscoop® and combined rooflights / ventilators.

Intelligent ventilation control systems.

iMEV intelligent mechanical extract ventilation systems.



PASSIVENT

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Passivent maintains a policy of continuous development and reserves the right to amend product specifications without notice.



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