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passivent

*i*MEV

INTELLIGENT MECHANICAL EXTRACT VENTILATION

*i*MEV - INTELLIGENT MECHANICAL EXTRACT VENTILATION

Whole-house ventilation
Passivent intelligent Mechanical Extract Ventilation (*i*MEV) offers effective whole-house ventilation for residential and similar buildings.

Benefits at a glance

- **Energy savings**
  All Passivent *i*MEV systems use constantly running low-power fans which reduce energy bills and the carbon footprint of the building.

- **Demand control**
  Systems automatically respond to the need for ventilation, increasing effectiveness and energy efficiency.

- **Complete solutions**
  Every Passivent *i*MEV system provides a complete ventilation solution which is individually tailored to a particular project by our expert design team.

- **Flexible**
  Our flexible range of systems is suitable for a wide variety of projects, no matter the type of usage. They can be installed in single houses and apartments; multi-occupancy dwellings such as care homes, student accommodation and hotels; changing rooms and toilet blocks.

- **Compliant**
  All our *i*MEV systems are compliant with Building Regulations Part F for England and Wales and Building Standards Section 3 for Scotland.

- **Positive airflow direction**
  The design of the air circulation means that all parts of the property are properly ventilated. The positions of the inlets and extracts ensure that air always moves from dry rooms to wet rooms, where it is extracted.

- **Discrete**
  With their compact size and quiet motors all our fans can easily be placed within a cupboard or roof space.

- **Simple installation**
  Full fitting instructions are supplied with every system, with additional technical support if required.

PASSIVENT *i*MEV SYSTEMS

Need for ventilation

Everyday activities such as cooking and bathing, and even breathing, can cause internal humidity levels to rise. Without ventilation this stale air has no way to be removed, trapping potential pollutants and causing a stuffy, unpleasant atmosphere.

How traditional MEV works

A typical traditional MEV system works by drawing this moist stale air from 'wet' rooms such as kitchens and bathrooms, through ducts via a central fan and exhausting it through a roof-mounted terminal. Extraction happens at all times due to the continuously running fan.

To ensure the moist, stale air is replaced, through-wall and window vents allow fresh air from outside to enter. These vents are typically placed within habitable rooms such as living rooms and bedrooms.

This cycle of stale air out and fresh air in ensures good indoor air quality and a fresh clean environment. Importantly, it also removes moisture which can otherwise lead to damp and mould.

Shortcomings of traditional MEV

Traditional MEV systems rely on occupants to recognise the need for increased ventilation and use a manual switch to increase extraction when required.
There are a number of issues with this that can lead to over- or under-ventilation and increased energy costs:

- Users can forget to boost the system which means moist, stale air is not removed effectively.
- When the system is boosted, extraction is increased in all wet rooms, leading to unnecessary heat loss.
- Fan speed can be increased for longer periods than required, leading to higher energy usage.

Passivent *i*MEV

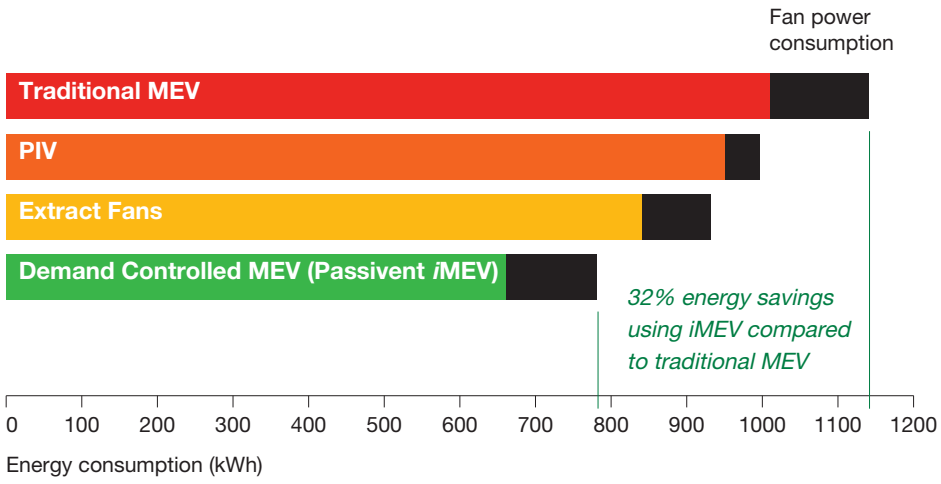
Passivent *i*MEV is 'intelligent', in that it removes the need for any occupant interaction, automatically detecting rises in humidity and responding accordingly.

The system only increases extraction when required, so it uses much less energy as the central fan is not running at a higher speed unnecessarily. Heat loss is also reduced as *i*MEV relies on demand control (extraction when and where required); extraction is only increased in the areas where humidity has risen. Alternatively, extraction control can be via PIR activation based on occupancy levels, allowing automatic energy saving intelligent control.

This has many additional benefits including:

- Lower energy usage due to lower overall fan speeds.
- Fit and forget solution, as the rate of ventilation is not controlled by the user.
- No switches to worry about as the system provides efficient whole-house ventilation at all times.

Energy use of ventilation systems in a typical three-bedroom house (based on data from CIBSE Guide F 2012)



SYSTEM SELECTION

Passivent offer two main types of *i*MEV system to support the whole-house ventilation requirements of any dwelling. Whilst both are based on the same principles, each system has features which are particularly suited to the needs of different types of project.

Passivent *i*MEV Local

An intelligent mechanical extract system to provide effective whole building ventilation with low energy costs and automatic control of operation.

Uses

Individual houses, apartments with one fan unit per flat, care homes and student accommodation.

Key benefits

- Constant fan speed provides continuous low level extraction resulting in lower energy costs.
- Extraction is boosted automatically in rooms where needed by means of humidity-sensitive extracts in each wet room (bathroom, kitchen etc) i.e. local to the source of the humidity.
- Quiet fan means less occupant disturbance.
- Local automatic control keeps system working as it should – extracting at high levels where needed.

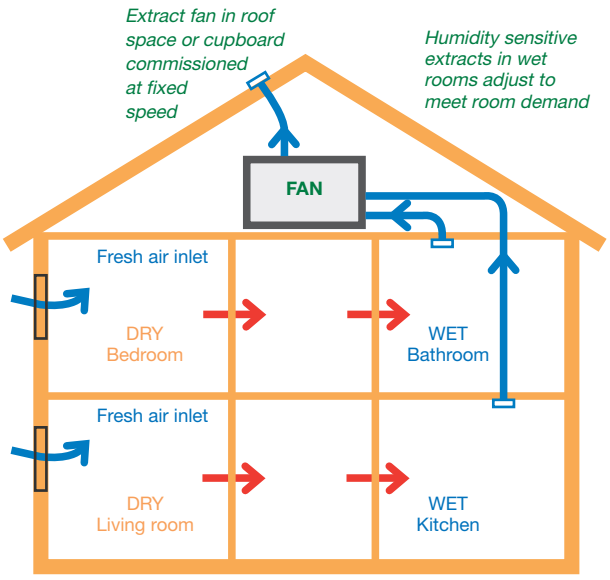
*i*MEV Local in use

Ventilation automatically matches demand in individual wet rooms using humidity-sensitive extracts.
Total extraction rate for the building is constant, avoiding over-ventilation (example scenario only).

	Kitchen	Bathroom	En-suite
You're at work and the kids are at school - home is unoccupied	Normal	Normal	Normal
You're home from work and start cooking dinner	Boost	Normal	Normal
Dinner is cooking whilst it's bathtime for the kids	Boost	Boost	Normal

How it works

The system uses a low power constant-speed fan, discretely installed in a roof space or cupboard. Humidity-sensitive extracts located in wet rooms remove moisture-laden air.



Air circulation provides whole-house ventilation

As humidity increases in a wet room, the humidity-sensitive extract within that room opens to allow more air to be extracted. The fan speed remains constant, so at the same time the extraction rate in other (unoccupied) areas decreases, maintaining the overall system extraction rate.

Fresh air is provided by either through-wall or window tricklevents. Humidity sensitive versions are available which operate automatically.

Acoustic options for these inlets can reduce noise ingress.

Passivent *i*MEV Total

A constant pressure system is ideally suited to provide effective ventilation for larger buildings.

Uses

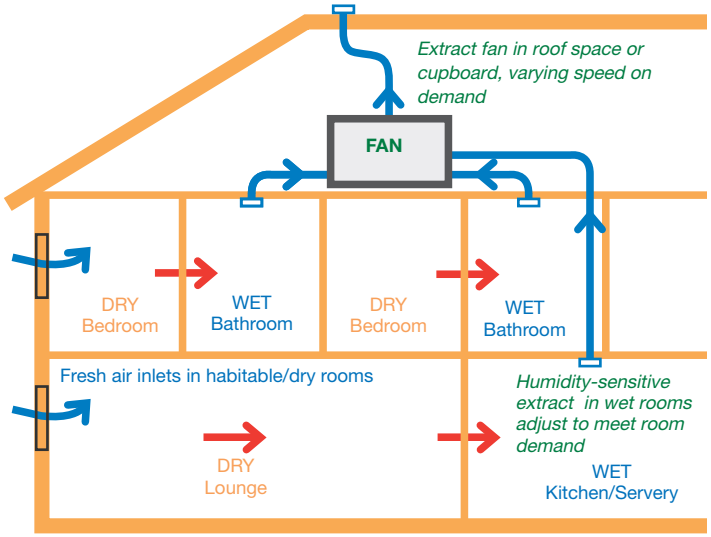
Premises where individual spaces may require different controlled extraction rates, such as large dwellings, care homes or student accommodation.

Key benefits

- Fully automatic control maintains effective ventilation throughout a building.
- Ventilation is tailored to the needs of individual rooms or spaces.
- Zonal control minimises heat loss from areas where additional extraction is not required.
- Quiet fan that reduces speed at night eliminates occupant disturbance.

How it works

The system uses constant pressure and humidity-sensitive extracts which control the extraction rate in different areas according to need.



Air circulation provides whole-house ventilation

A sensor in the fan monitors the pressure within the system. As humidity increases in one area the humidity-sensitive extract opens; the pressure sensor detects the resulting pressure drop and increases the fan speed to bring the overall system pressure back to the preset level.

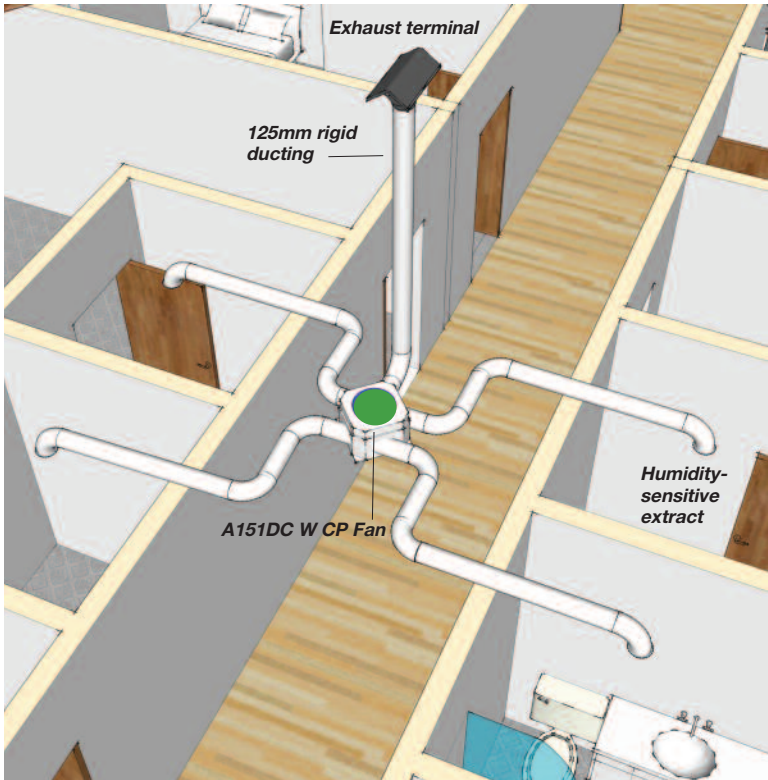
This operation increases extraction only in the area(s) where it is required, whilst maintaining a sufficient level of extraction in other rooms.

This provides a guaranteed performance, unlike other constant pressure systems which are based on the fan performance.

*i*MEV Total in use

Ventilation automatically matches demand in individual wet rooms using humidity-sensitive extracts.
Total extraction rate for the building is variable, avoiding over-ventilation (example scenario only).

	Communal Lounge/Servery	En-suite 1	En-suite 2
Residents are waking up and using bathrooms	Normal	Boost	Boost
General activity time	Normal	Normal	Normal
Mealtime when food is being prepared and eaten	Boost	Normal	Normal
Night time all asleep			



FANS

It is important to choose the right fan for a project. The descriptions shown indicate the main uses for each fan type, but Passivent can advise on the most suitable for any given project.

A151DC E fan

Main use: Passivent iMEV Local

Capacity: 325m³/hr @ 100Pa

The A151DC E fan incorporates one of the lowest energy motors on the market, despite it being one of the most powerful. It can be commissioned as fixed speed or with a manual boost control that can be easily commissioned during installation.

Key features

- To further enhance occupier comfort the fan is fitted with an internal silencer, reducing mechanical noise and allowing the fan to be placed within a cupboard space near habitable rooms.
- The A151DC E is eligible for energy use calculations under Appendix Q of SAP (Standard Assessment Procedure for Energy Rating of Dwellings) and has a Specific Fan Power as low as 0.17W/l/s.

A151DC W fan

Main use: Passivent iMEV Local

A151DC W CP fan (constant pressure)

Main use: Passivent iMEV Total

Capacity: 360m³/hr @ 100Pa

The A151DC W fan is perfect for large multi-residential properties which require individual areas to be monitored and ventilated separately, without the need for occupant involvement. The constant pressure version is designed to be used with humidity-sensitive extracts as part of a Passivent *i*MEV Total system.
Its compact size and range of fixing positions means it can be concealed within a roof or cupboard space, with one fan serving multiple dwellings. This fan is especially useful for care homes and student accommodation where extraction may need to increase in different areas at different times, without affecting other areas where additional ventilation is not required.

Key features

- Energy efficient.
- Can be mounted in various different profiles e.g. on the floor, wall or ceiling.
- Spigot orientation can be changed for even more installation possibilities.
- Fan blade orientation improves acoustic performance and reduces air resistance which improves longevity.
- Constant pressure version features a malfunction warning light to easily identify issues with individual units when multiple fans are used. Great for care homes where multiple fan units may be clustered together.

SUPPLY AIR

When using mechanical extract systems, fresh air vents must be provided to replace the extracted air.

Inlet vents are usually located within habitable rooms such as living rooms, bedrooms etc.

Passivent has various inlet vent options available to provide sufficient levels of background air but at the same time ensure that resident comfort is maintained.

Benefits

- Supply of sufficient fresh air.
- Controlled air distribution so do not cause draughts.
- Automatic humidity-sensitive control if required.
- Acoustic vents minimise noise ingress.

Comfort

Passivent window and wall vents are designed to direct air flow around the outside of the room and not into the occupied areas. This stops draughts but also allows the fresh air to mix with the warm air from the central heating, creating comfortable conditions.

Window vents

These are incorporated within the head of the window. There are various types available with different controls, from manual cord operated units to fully automatic humidity-sensitive versions.

These units are usually installed by the window manufacturer at the time of making the windows. Each is designed to ensure that airflow is not directed into the centre of the room which residents mainly occupy, but is directed upwards, reducing the effect of draughts.

There are also acoustic options including either manual or automatic control.
These can give sound reduction of up to 42dB $D_{n,e,w}$ providing a quieter, peaceful living environment.

Fresh ALdB

Energy saver vent (ES4)

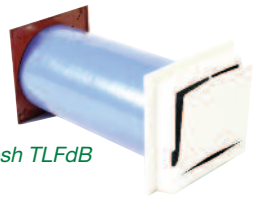
Wall vents

A range of through-wall vents is also available. These can be used where it is not possible or desirable to fit a window vent or where a greater control of supply air is required.

Wall vents are infinitely adjustable between open and closed, so allow close control of how much air is allowed in.

Humidity-sensitive options are also available where manual control is not required.

The acoustic range can also provide substantial sound reduction of up to 50dB $D_{n,e,w}$.



Fresh TLFdB

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AIR EXTRACTS

Passivent has a wide range of extract options available for use in the different applications. They are located in wet rooms such as bathrooms, WCs and kitchens.

Each extract provides a level of control that is suitable for the room and activity at any time. Each room has different requirements from the ventilation system; Passivent provides a truly adaptive solution for each.

For example, a WC is not permanently occupied and so does not need such a high level of permanent extraction. However, once occupied a boost rate is required.

A121

A141 PIR

Extract type	Model	Airflow performance (m^3/hr) @ 80Pa Normal	Boost	Typical applications
Automatic humidity-sensitive, some with switched boost Used to provide fully automatic extraction based on humidity levels within wet rooms (kitchens and bathrooms). Can also be boosted by the user if additional extraction is required (switch located in the vicinity causes extract to open further, increasing the level of extraction). Suitable for use within residential and care multi-occupancy buildings where individual users may be unable to control the system effectively.	A121	15 - 75	-	Bathroom, kitchen/utility
	A133	20 - 75	30 mins @ 150	Bathroom, kitchen/utility
	A133C	20 - 75	constant @ 150	Bathroom, kitchen/utility
	A133SH	10 - 45	30 mins @ 90	Bathroom, en suite
Constant volume with switched boost The A141E is particularly suited as part of a dwelling house ventilation solution whereby a constant level of ventilation is wanted for the majority of the time, whilst still offering occupants the option to boost ventilation.	A141E	25	30 mins @ 90	Bathroom, kitchen
	A141EWC	15	30 mins @ 30	WC, store room
	A142E	25	30 mins @ 120	Bathroom, kitchen/utility
	A142C	20	constant @ 120	Bathroom, kitchen
Constant volume with passive infra-red boost Provides constant extraction at a relatively low level but boosts automatically for 30 minutes upon detecting a presence within the room. This is has added advantages within bathrooms as it can be used to tackle odour as well as humidity.	A141PIR	15	30 mins @ 65	Bathroom, kitchen/utility
	A141PIRWC	15	30 mins @ 30	WC
Constant volume Extract is set at a constant level so extraction is always the same. Increased extraction is regulated by fan speed rather than the extract itself. Suitable for when similar levels of extraction are always required (kitchens, store rooms).	A141/15	15	-	Store room
	A141/30	30	-	WC
	A141/45	45	-	WC
	A141/60	60	-	Bathroom, kitchen
Boost switch (timed for 30 minutes)	A132	Use with A133, A133SH, A141E, A142E		
Constant boost switch	A134	Use with A133C, A142C		

DUCTING & TERMINALS

DUCTING

Plastic rigid circular ducting

Can be used to connect all parts of a Passivent system including extract to fan and fan to roof terminals. Available with a number of different connection pieces to navigate different project layouts. Insulation is available to prevent heat loss and condensation.

Plastic rigid flat channel ducting

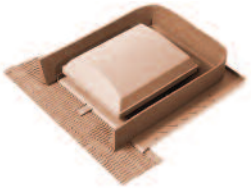
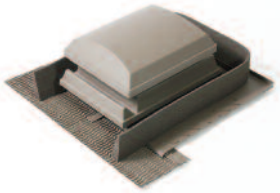
Flat channel ducting is suitable for extraction from wet rooms such as bathrooms and kitchens (including cooker hoods). Its low profile enables ducting to be concealed. The various different types of ducting available mean that it can easily be incorporated into different types of project.

TERMINALS

Exhaust air terminals

Tile terminals are designed to blend with most available manufacturers' roof tiles, and will weather to match the surrounding tiles over time.

Wall terminals are also available.

Terminal	Duct/spigot diameter	Air flow performance
Versa-Tile TT9	125mm	50m³/hr at 1.1Pa 100m³/hr at 4.1Pa 200m³/hr at 16.8Pa
		
Versa-Tile TT13	150mm	50m³/hr at 0.3Pa 100m³/hr at 1.0Pa 200m³/hr at 4.2Pa 300m³/hr at 9.5Pa 500m³/hr at 27.4Pa
		

Services

Passivent has its own in-house research team dedicated to developing techniques and products for natural ventilation.

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

Names of approved installers can be provided on request.

Other products

Passivent sells a range of other ventilation and daylighting products for commercial and domestic buildings including:

Natural ventilation systems.

Aircool® ventilators for windows, curtain walling and walls.

Airstract® roof terminals for passive stack and other natural ventilation systems.

Airscoop® wind-driven ventilation terminals.

Litevent combined ventilator and rooflight.

Hybrid Plus2 Aircool® ventilators.

Hybrid Plus Airstract ventilators.

SoundScoop® acoustic transfer ventilation products.

PASSIVENT

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