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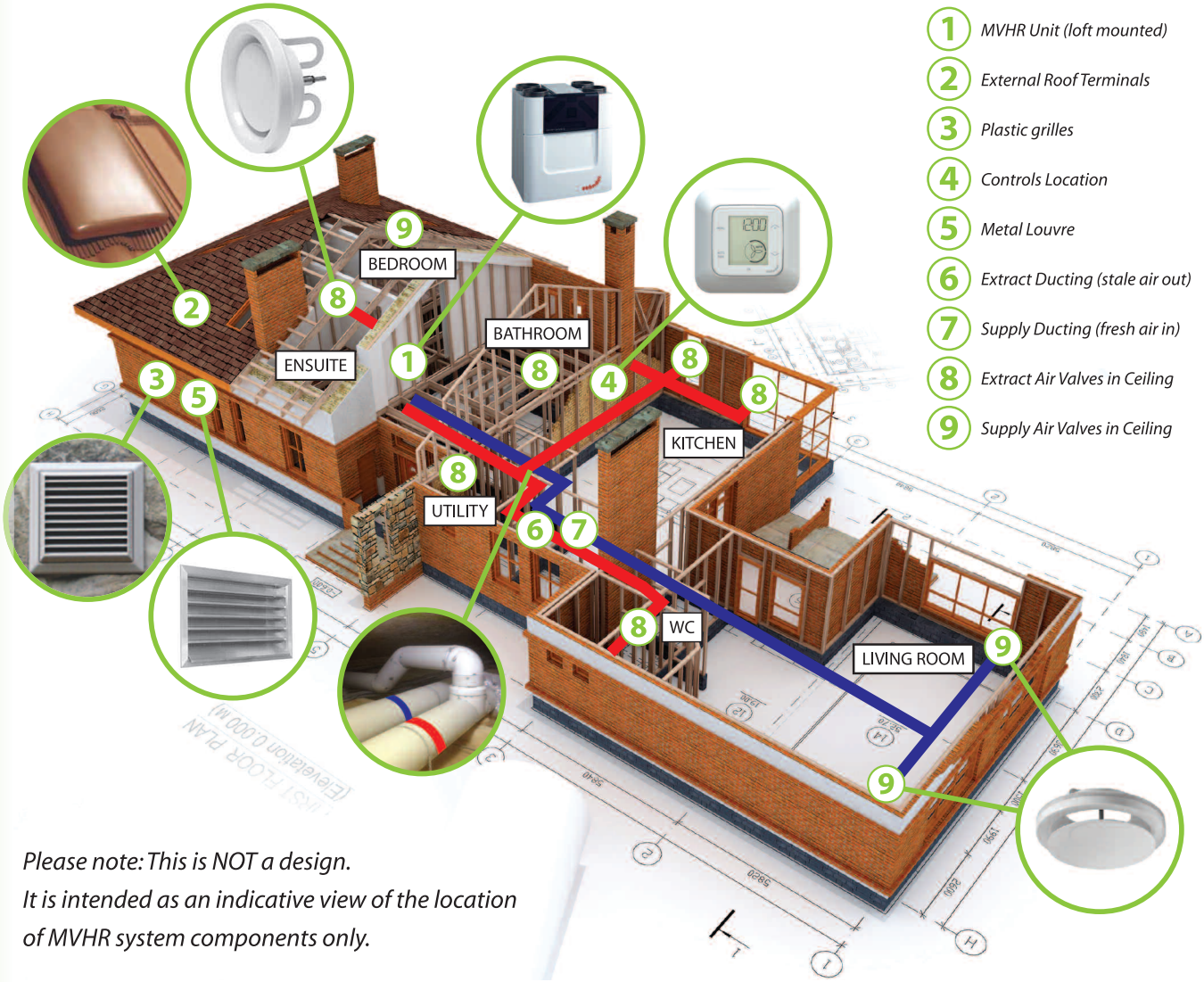
Independent Heat Recovery
Ventilation Specialists

# Mechanical Ventilation with Heat Recovery (MVHR)

# HEAT RECOVERY VENTILATION (MVHR)

It's important to note that heat recovery ventilation is NOT a heating system nor is it an air conditioning system. However, it can and does minimise the heat losses from within your property. Mechanical Ventilation with Heat Recovery (MVHR) is a balanced whole house ventilation system that both supplies fresh air and extracts stale air throughout a property.




*Please note: This is NOT a design.*
*It is intended as an indicative view of the location of MVHR system components only.*

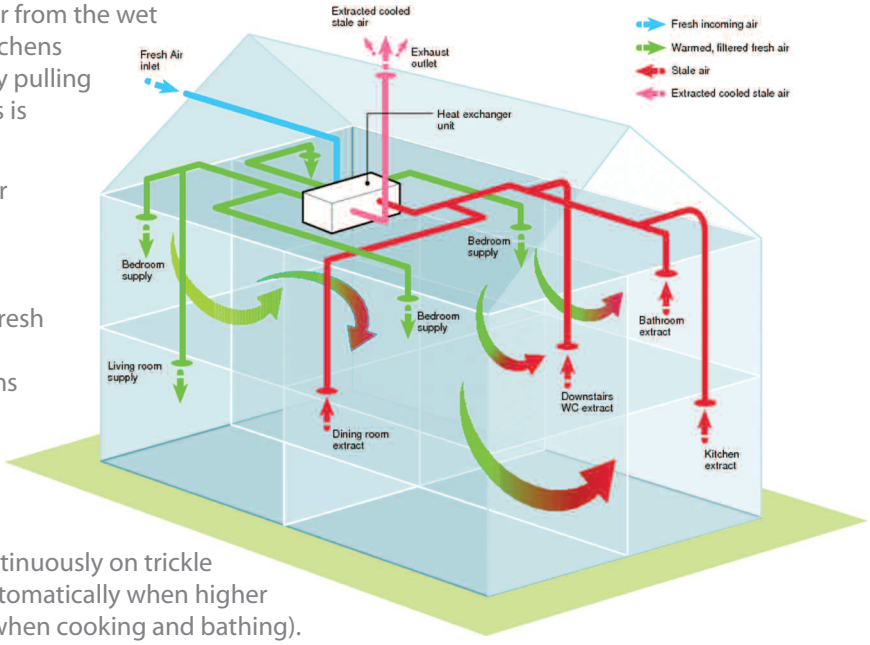
It offers an efficient low energy solution primarily aimed at highly insulated airtight properties to improve or maintain good indoor air quality. Your MVHR ventilation system can be fitted into new self build homes or custom build homes as well as commercial properties such as care homes or offices. The system can also be successfully retrofitted during the renovation of your property. It eliminates the need for unsightly trickle vents and noisy extractor fans and increases the security of your property.

Your heat recovery ventilation system can recycle around 90% of the heat that would otherwise have been lost in your property and help reduce your carbon footprint. It is designed to run quietly and continuously in the background and will not be affected if you open your windows!

A compliant heat recovery ventilation system is generally made up of an MVHR unit, vent ducting, internal air control valves and external wall or roof vents, as well as all the necessary insulation and acoustic attenuation required.

# How Does MVHR Work?

A balanced mechanical heat recovery ventilation system (MVHR) works by continuously extracting air from the wet rooms within your property (e.g. kitchens and bathrooms) and simultaneously pulling in fresh filtered air from outside, this is achieved via a network of ducting.



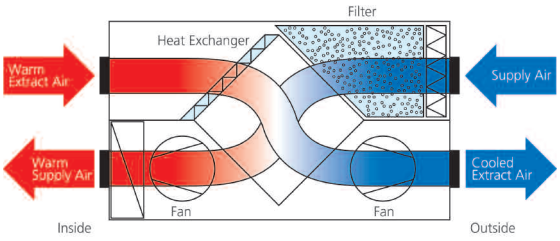

The heat from the extracted stale air is drawn through an air-to-air heat exchanger located within the heat recovery ventilation unit itself and is used to warm the incoming fresh filtered air for the habitable rooms in your property such as living rooms and bedrooms. In some cases up to 90% of the heat generated within your property can be retained.

The system is designed to work continuously on trickle and can be boosted manually or automatically when higher levels of moisture are present (e.g. when cooking and bathing).

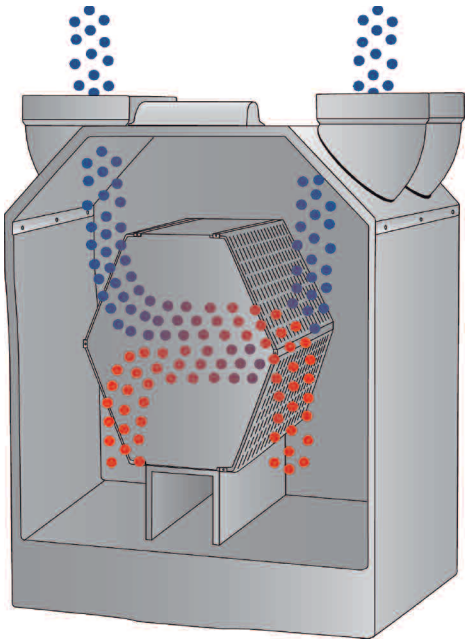
Some systems also offer a summer bypass facility which normally activates during the summer months and allows the heat to exit the property without passing through the heat exchanger. Depending on the unit specification, this feature can be controlled automatically or via a manual switch.

# Heat Exchanger Options

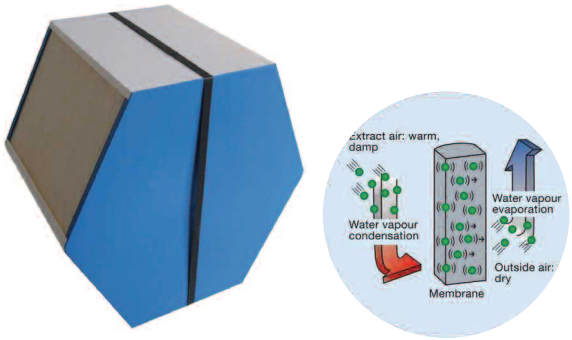
The heat exchanger itself is the heart of the machine. The extract and supply airstreams are pulled through the heat exchanger which allows the outgoing air to pass most of its heat to the incoming air without the two airstreams actually mixing together.



The Heat Exchanger Principle



## The Enthalpy Exchanger




Homes which have very low humidity can cause issues for occupants such as dry skin and chapped lips. This unique easy to clean, polymer heat exchanger is designed to optimise indoor air comfort by reintroducing humidity back into the property. It also negates the need for a condensate drain within the MVHR unit itself, and can be retrofitted in some models at a later date if required.

# Integrated Air Tempering

As demand increases for more airtight and highly insulated properties and we experience hotter, drier summers and milder winters, overheating in newly built homes is becoming a key issue.

Not to be confused with traditional air conditioning systems that only work in the room in which they are located, the ComfoCool air tempering unit (equipped with a compression cooling system as used in refrigerators)lowers and moderates the air temperature supplied to all habitable rooms within the property.

Designed to work in conjunction with the low energy low noise ComfoAir Q heat recovery ventilation unit it will help reduce humidity. It does this by setting a user-defined comfort temperature which monitors both intake air and internal air temperatures. The ComfoCool will automatically trigger when the indoor temperature is higher than the preset comfort temperature and also when opening windows and doors does not provide enough cooling.

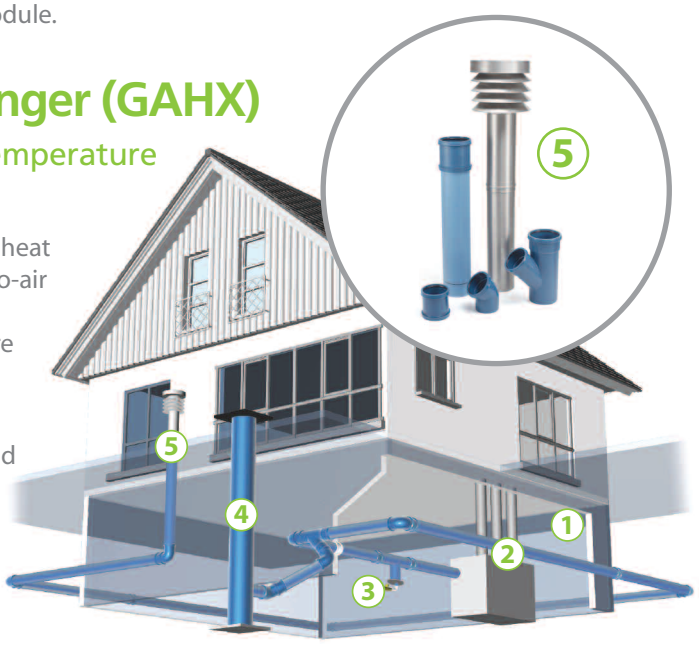
When integrated with the Enthalpy Exchanger, no condensate drain is required from the MVHR unit, only from the ComfoCool module.

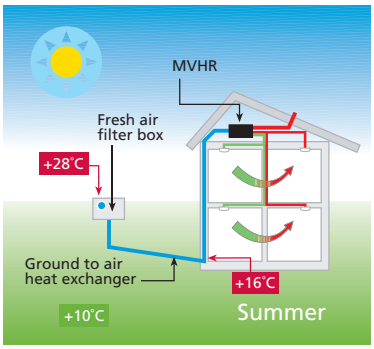
# Ground-to-Air Heat Exchanger (GAHX)

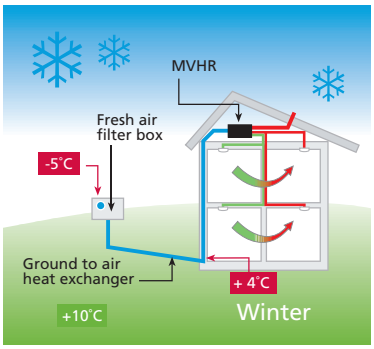
## Utilises the natural constant 8-12°C temperature 1.5m - 2m beneath ground level

When used in combination with your mechanical heat recovery ventilation system (MVHR), the ground-to-air heat exchanger (also known as earth tube) takes advantage of the natural geo-thermal temperature of the earth 1.5-2m below the ground generally a constant 8-12°C all year round.

It works by drawing in fresh air via an underground pipe which can cool the air in the summer and works in reverse in the winter months to ensure that the temperature is never below 5°C even with outdoor temperatures as low as -15°C.




1. *250mm diameter pipe with anti-microbial inner layer (sits1.5-2m below the surface of the ground)*
2. *MVHR unit located in the basement*
3. *Condensation Discharge (for buildings with cellars)*
4. *Condensation Chamber (for buildings without cellars)*
5. *Air inlet tower (Other terminals are available)*

***System available with 42m or 60m pipe lengths***

## *Pre & Post Heat Options*

In some instances there may be an opportunity to increase the air temperature coming into your property during cold spells to ensure that balanced ventilation can be achieved, and you can also add further heat to achieve a preferred "comfort" temperature. Pre- and post-heaters are usually fitted in-line in the ducting.

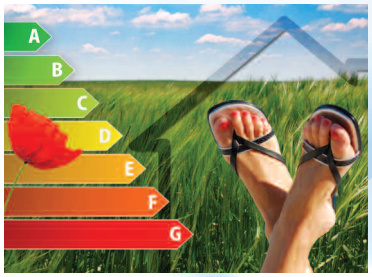
We strongly recommend that you speak with your appointed heating engineers in order to determine what system is best for your property, as this arrangement normally will not replace a traditional heating system.

# Benefits of MVHR

Mechanical ventilation with heat recovery (MHRV) is a simple technology that has a multitude of benefits. Not only does it provide you with a constant supply of fresh filtered air for a healthier indoor environment but it will also have a direct impact on the Dwelling Emission Rate required in SAP which will ultimately reduce your carbon footprint.

There are so many decisions to be made. Nothing is more important than getting your ventilation system right first time and choosing the right ventilation partner to help you do that is also essential.

## Energy efficient

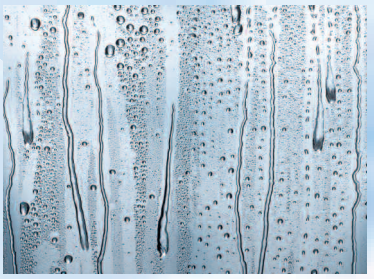



**Looking to make energy savings?**
MVHR recovers and reuses up to 90% of the waste heat within your property and has a direct impact on the Dwelling Emission Rate required for the Standard Assessment Procedure (SAP) energy assessment. All of our units are either SAP Appendix Q accredited or Passive House approved.

## Alleviates allergies & asthma symptoms

**Suffer from allergies or asthma?**
As the incoming fresh air is filtered, allergy and asthma symptoms are reduced. This will not only help asthma sufferers but also those with bronchitis, rhinitis, hay fever and chronic obstructive pulmonary disease (COPD).

## Controls condensation



**Don't let the rot set in!**
Concerned condensation might take over your home? An MVHR system will control moisture and condensation in your property and not only put a stop to condensation on windows but also the development of damp and mould growth to ultimately improve indoor air quality

## Tackles unpleasant odours

**Can smells linger in your home for days?**
The fresh air from the MVHR system will tackle everyday strong odours in your property typically emanating from cooking and pets that would ordinarily linger for days!

## Filters out harmful pollutants

**Everyday household products and furnishings can be detrimental to your health!**
Volatile organic compounds (VOCs) are 2.5 times more likely to be present in your home than outside. They can be found in everyday household products such as paints, cleaning fluids, aerosol sprays as well as building materials and furnishings.

## Reduces outside noise pollution

**Ventilating your home through noisy open windows?**
Fresh air will still circulate within your property so don't worry about keeping your windows closed! Not only will you keep the noises out you will also increase security in the home.

# Choice of Units

**Our total independence from any one manufacturer means your choice of some of the most efficient and cost effective MVHR units on the market just got even wider!**

Here are some of the SAP Appendix Q and Passive House accredited heat recovery ventilation units we are currently able to offer you. Suitable for most residential applications from a single room to a multi-storey property. Quiet by design, you can choose from units that can be installed either vertically or horizontally, wall or ceiling mounted either within a loft void or in a designated plant room.

## ComfoAir Q 350/450/600

This new generation Passive House approved MVHR unit is one of the quietest on market. It features a unique diamond heat exchanger that features an especially large surface, which allows it to achieve a higher level of efficiency. Its guaranteed quiet operation and protection against excessive humidity contributes to a significantly more comfortable and healthier room environment.
The ComfoAir Q's innovative sensor technology automatically ensures balanced supply air and extract air volumes. Includes intelligent temperature control of the intake air for best energy efficiency.
A wide range of control options is available from a simple display on the unit, to remote WiFi and app controls, and Building Management Systems via the optional KNX interface

**Heat exchange efficiency up to 96%***
**Dimensions: H850mm, W725mm, D570mm**
**Weight: 50kg**

## HRV10M Q Plus B Eco

The HRV10M Q Plus is designed with extremely low power consumption in mind. It incorporates a highly efficient heat exchanger and can be fitted in larger properties. The unit is programmed via the LCD Aurastat wired controller and has connections for external switches that can be used to activate the 0-60 minute boost overrun. It also has a built-in condensation drain and intelligent frost protection. The unit is lightweight so handling when inside the property is made easier.

**Heat exchange efficiency up to 90%***
**Dimensions: H675mm, W800mm, D495mm**
**Weight: 31kg**

**DISCLAIMER: The efficiency rates stated in our literature were taken from manufacturers documentation and have not been defined by ADM Systems.*

## Sentinel Kinetic Plus B and High Flow

**The Sentinel Kinetic Plus** is one of our most versatile products. Complete with an automatic summer bypass, built-in condensation drain and integral humidity sensor which increases the fan speed in proportion to the relative humidity. Comes complete with remote wired controller (other control options are available).

**The Sentinel Kinetic High Flow** has all the features of the Kinetic range and is ideal for larger homes and multiple occupancy units such as care homes and student accommodation. The 1800mm/200mm spigots may be repositioned to give a combination of vertical and/or horizontal connection.

**Heat exchange efficiency up to 91%***
**Dimensions: H630mm, W775mm, D524mm**
**Weight: 24kg**

## Novus 300 and 450**

Passive House certified MVHR with 100% automatic summer bypass and patented reverse flow duct heat exchanger. Optional extras include, humidity recovery (enthalpy exchanger), integrated defrost pre-heater with energy efficient pulse controlled PTC heating element. Can be controlled by LCD control unit or coloured TFT touchscreen panel.

**Heat exchange efficiency up to 93% (Novus 450**) and 94% (Novus 300)***
**Dimensions: H978mm, W792mm, D601mm**
**Weight: 50kg**

***Please note only the Novus 450 is certified Passive House*

## H200 Q Plus Horizontal MVHR

Ideal for flats and apartments due to its low profile. Features 100% summer bypass, intelligent frost protection and fully adjustable boost overrun timer. Works with the auralite® and aurastat® controllers.

**Heat exchange efficiency up to 83%***
**Dimensions: H203mm, W1004mm, D604mm**
**Weight: 32kg**

# HRV 1.75 and HRV 2.85

The highly versatile compact **HRV1.75 Q Plus** is lightweight but large enough in size to be equally as functional in larger apartments as it is in small to medium sized dwellings. The Eco versions offer a 100% airflow diverting Summer Bypass. They also include intelligent humidity and frost protection options and can be fitted with the auralite® status indicator or the aurastat® controller.

The extremely low power consumption and a highly efficient heat exchanger of the **HRV2.85 Q Plus** enhances SAP performance via Appendix Q, yet it is still small enough to be easily incorporated into medium or large sized dwellings.

**Heat exchange efficiency up to 91%***

**Dimensions: H490mm, W715mm, D415mm**
(426mm with mounting bracket)

**Weight: 31kg**

# Vireo155WM

Perfect for small modest homes, flats and apartments, this compact lightweight MVHR will fit neatly into a kitchen cupboard or in a ceiling loft. Very simple to install and up to 70% quicker to commission due to the manufacturers innovative control technology. Features include summer bypass and integral humidity sensor and a smart timer facility to prevent unnecessary boost overrun.

**Heat exchange efficiency up to 93%***

**Dimensions: H644mm, W546mm, D298mm**

**Weight: 20kg**

# Sentinel Kinetic F

A small lightweight heat recovery unit suitable for apartments and houses. Like the rest of the Kinetic range, it has an automatic summer bypass, built-in condensation drain and integral humidity sensor.

**Heat exchange efficiency up to 90%***

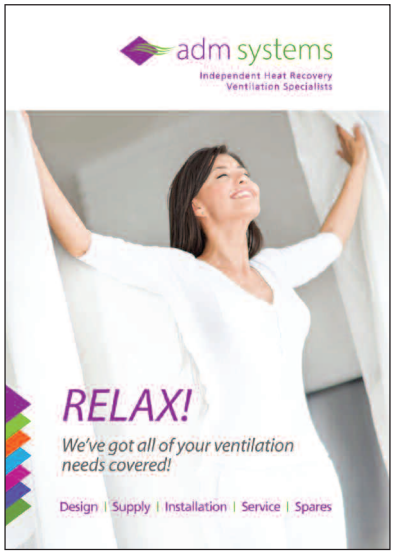
**Dimensions: H550mm, W55mm, D350mm including filter flap hinge protrusion**

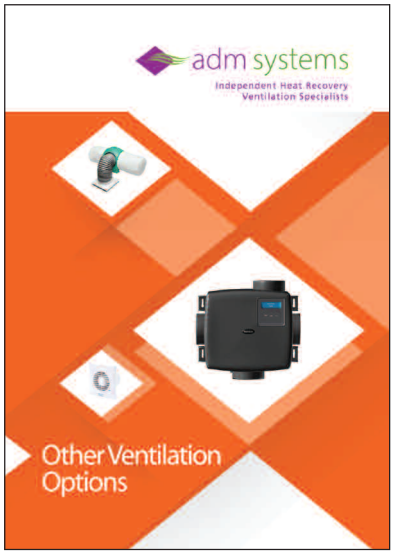
**Weight: 19kg**

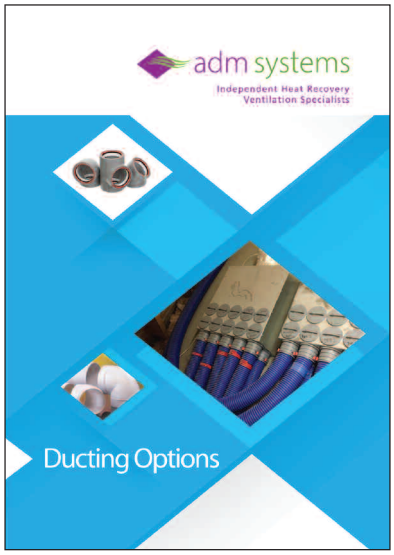
# Why choose ADM?

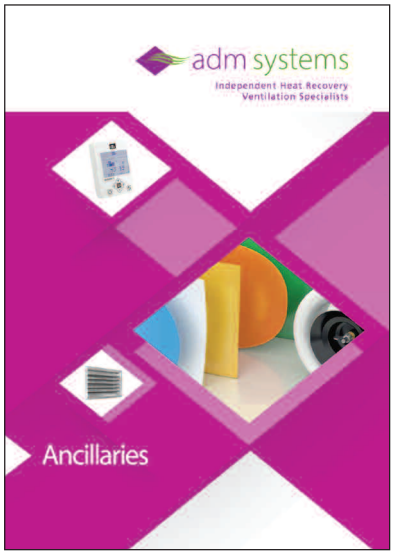
- ADM's independence provides access to a wider product range
- We will help de-mystify domestic ventilation regulations to ensure compliance
- Our extensive knowledge and years of experience at the cutting edge of technology (ADM were pioneers in MVHR in the early 90s)
- All our MVHR systems are completely bespoke, designed to suit your needs and your budget
- Unlike others, we don't provide indicative designs (unless you ask) our bespoke systems are designed to work
- Flexible service options including our "Buddy Service" to help support you on site
- We will guide and support you at every project milestone

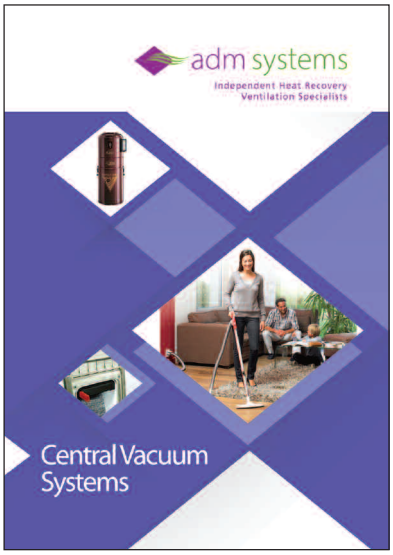
Check out the downloads section of our website
for more information concerning all our products and services.
**www.admsystems.co.uk/downloads**





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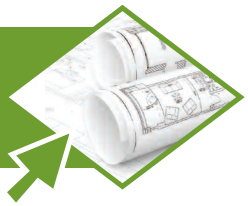

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