

# Mechanical ventilation with heat recovery

Mechanical ventilation with heat recovery (MVHR) is a whole-house ventilation system that extracts damp air and draws in fresh air from outside.

Having adequate ventilation in your home is important for good health. It removes moisture and stale air along with odours and pollutants and replaces them with fresh air.

Most of the time, ventilation is simply a matter of opening windows and doors and by using intermittent extractor fans in steamy rooms such as kitchens and bathrooms. This provides fairly effective ventilation, but of course it means that a lot of warm air is lost to the outside. An average home can lose one third of their heating this way.

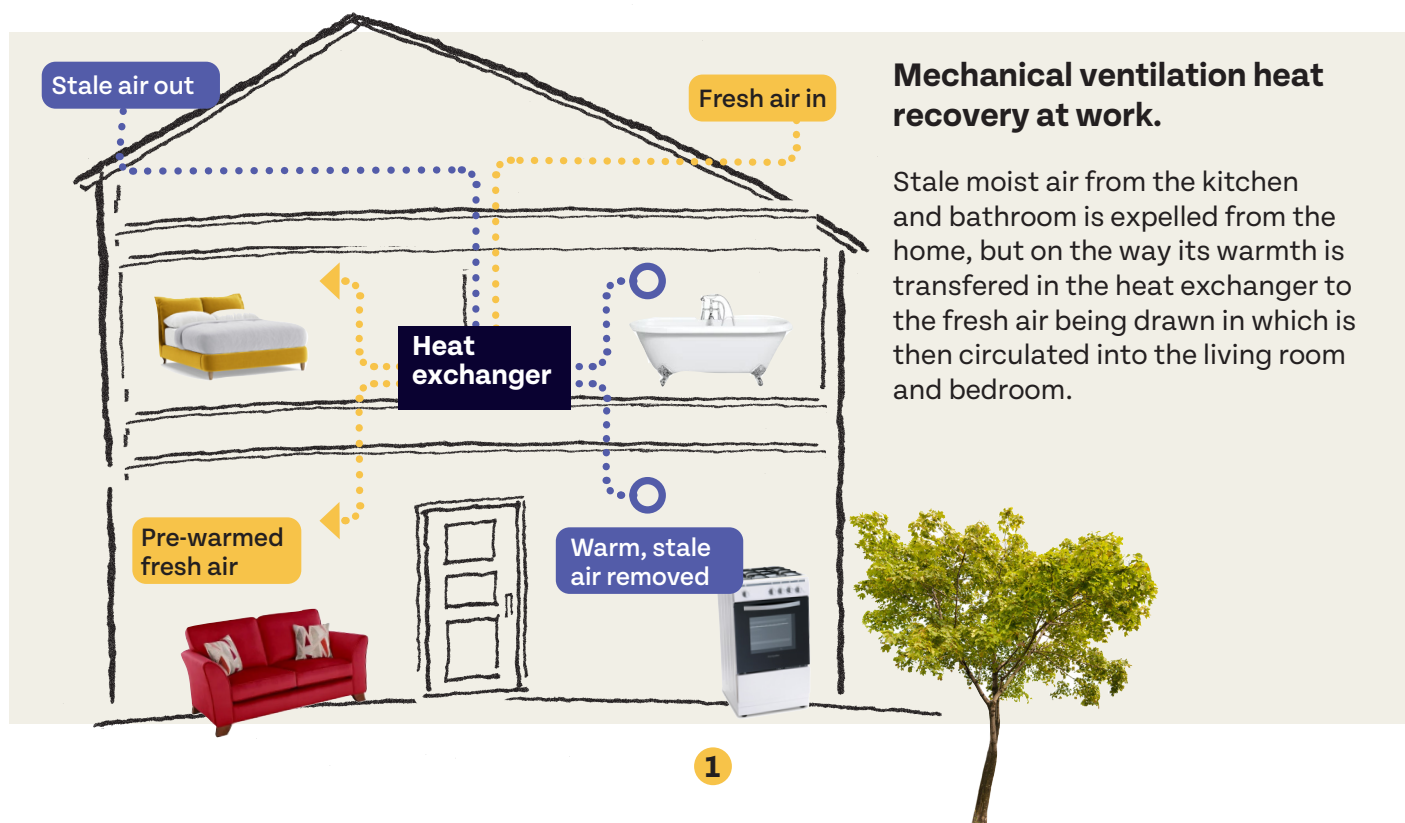
Draughts create a similar problem. While they serve to ventilate a home, they are a major

source of heat loss and can make rooms feel uncomfortably chilly.

Modern energy efficient homes are more less draughty than older buildings because they have to follow specifications for air-tightness, set out in Building Regulations. Because of this, some modern homes are fitted with MVHR systems.

## How does it work?

Whole-house MVHR systems extract warm, damp air from the home and draw in fresh air from the outside. Before being expelled outside the stale air passes through a heat exchanger to recover the heat. The fresh outside air is also passed through the heat exchanger, without coming into direct contact with the old air where it is pre-warmed before being pumped in to the property.





The outlets for MVHR are small and unobtrusive, and look like ordinary extractor fans

## Costs and savings

MVHR systems do require servicing as all equipment such as filters and fans must be kept clean to ensure effective operation. MVHR systems start from around £3,000 but could cost well over £10,000, depending on the size and type of the system. It can be difficult to retrofit MVHR because of the space needed for ducting and the unit, as well as the challenge of achieving the level of airtightness needed for MVHR to work effectively.

Because the fresh air is pre-warmed, heat loss from ventilation is largely avoided. This means the householder can spend less on heating their property, reducing heating costs by 10-30% therefore saving money and ensuring a healthy, well-ventilated home.

These systems tend to be made up of concealed ducting (piping) in ceiling cavities that lead to the heat exchanger unit in a cupboard, utility room or sometimes the loft. If the loft is cold, there may be reduced efficiency, and the ductwork and condensate pipe need to be well insulated to reduce condensation risk.

Some units have an automatic or manual boost setting which can be used when excessive moisture is being produced, such as when cooking or washing. Air filtration is commonly built into MVHR systems to filter out pollen and other particles, which is good for allergy sufferers. Systems typically run continually at 80% efficiency and are inaudible during normal use.

### Important things to note ...

- MVHR works best in buildings that are relatively airtight, such as new-build homes or older properties that are being fully refurbished.
- Retrofitting MVHR needs to follow a comprehensive airtightness strategy, including a series of airtightness tests.



For more technical information see: [www.beama.org.uk](http://www.beama.org.uk)

For approved installers, search for the Residential Ventilation Association at [www.feta.co.uk](http://www.feta.co.uk)

To go to our MVHR webpage, scan the QR code or click the button.



Go to  
webpage



We're a charity (298740) supporting people and organisations across the UK to tackle the climate emergency and end the suffering caused by cold homes.

St James Court, Bristol BS1 3LH  
[cse.org.uk](http://cse.org.uk)

We offer free advice on domestic energy use to people in central southern and southwest England.

### Contact us:

0800 082 2234

[home.energy@cse.org.uk](mailto:home.energy@cse.org.uk)

See all our energy advice pages at [www.cse.org.uk/advice](http://www.cse.org.uk/advice)