RISE | Retrofit information, support & expertise

Ventilation

Quick guide

November 2024

Funded by:

Department for Energy Security & Net Zero

www.riseretrofit.org.uk

Contents

Contents 2
Summary 3
Busting common misconceptions 4
Tips and best practices 5

Summary

This quick guide aims to address some common misconceptions in domestic retrofit regarding ventilation. The document has been designed to help local authority (LA) officers and registered providers advise residents about ventilation best practices.

What is ventilation?

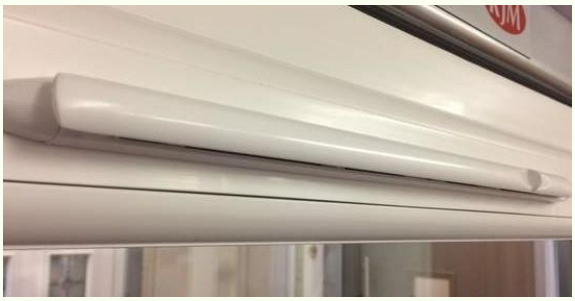
Ventilation is the exchange and flow of air into and out of a space. It is the interaction of the air inside the home with the air outside. There are 6 different types of ventilation:

Natural ventilation

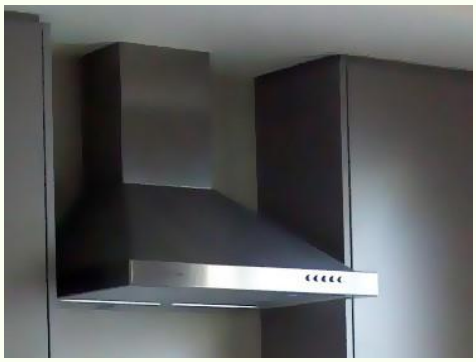
The simplest type of ventilation can be done by opening windows to exchange the air in the property. However, the weather may not always be conducive to opening windows, in the rain or cold weather. Additionally, it can impact on security, and excessive heat can be lost in winter, or gained in summer.

Passive ventilation

This type of ventilation does not need any electricity. It relies on differences in pressure between the air inside and outside the home. Passive ventilation types include trickle vents, which can be found built into windows. If the air pressure differential drops, then a passive system will be unable to adequately replace air.



Trickle vent in the window.



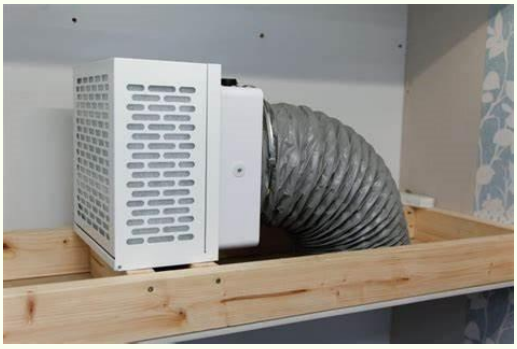
Kitchen hood extractor fan

Intermittent ventilation

These consist of extractor fans that are commonly found in kitchens and bathrooms. They are usually wired up to the light fitting or set to run at a certain rate for 10-15 minutes to extract moisture. They are cheap to install and simple to use, but are usually not enough to tackle damp issues on their own. They are also easy for residents to turn off.

Positive input ventilation

This ventilation uses a fan placed in the loft to continuously draw outside air into the home and force old inside air out through other ventilation means such as trickle vents in the window or through the building. They can be expensive to run and may also draw cold air into the home, increasing draughts and making the home feel colder.



Positive input ventilation unit.

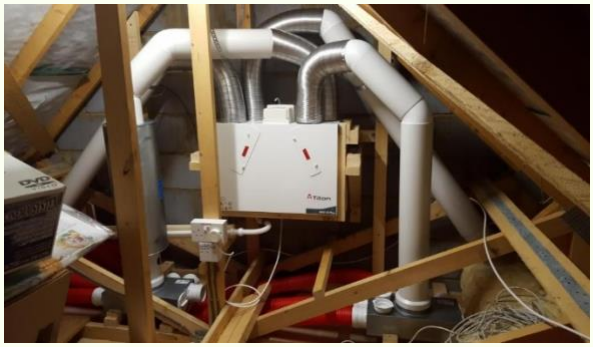
Mechanical extraction ventilation in an office

Mechanical extraction ventilation

There are 2 types: centralised and decentralised. Centralised systems rely on one fan to extract air from all rooms within the home and are controlled using humidity sensors. However, they are expensive to install and require a lot of space for pipes. Decentralised systems have fans in each room that run continuously.

Mechanical extraction ventilation with heat recovery

These systems work similarly to a mechanical extract ventilation system, but they have an additional stage where heat can be recovered from the outgoing air and transferred to incoming fresh air through a heat exchanger. This increases energy efficiency, but such systems are not cheap to maintain or install.



Heat recovery system installed in the loft.

Busting common misconceptions

Warm air is lost through ventilation

The greatest amount of heat loss in a home is due to a lack of insulation. In comparison, very little heat is lost through ventilation.

Old air is recycled in ventilation

This is only partially true. A ventilation system will freshen the air in the property by mixing new outside air with old inside air. This improves the air quality and removes moisture from the property.

Venting the property via draughts

Draughts are known as 'uncontrolled ventilation'. It can lead to large amounts of heat loss and may not be very effective in removing moisture from the property. Relying on draughts to ventilate can cause discomfort and will not lead to a healthy home. Instead think about draught-proofing the property and installing appropriate ventilation.

Consider using the term 'controlled ventilation'. This means we know ventilation is needed, how much is needed, and that it is improving indoor air quality.

Tips and best practices

Ventilating your home will improve health

Day-to-day household activities like cooking, showering, drying clothes indoors and even breathing, all create moisture in the air. A family of four will produce around 11 litres of moisture a day. If the property has pets, they also generate moisture and need to be considered.

All air carries moisture, until it reaches its saturation point. At this point you get moisture drop-out or condensation. Moisture in the air will travel throughout the house and condense on the coldest surface. This can lead to common issues such as condensation and mould, which in turn can damage the building fabric (e.g. insulation).

Ventilation is not just about removing moisture build-up. Controlled ventilation can improve indoor air quality through reducing the build-up of carbon monoxide, dust mites, and other pollutants. Poor indoor air quality can exacerbate existing health conditions (primarily respiratory) and cause new ones.

Controlled ventilation is part of the solution to remove moisture laden air without excessive heat loss. For more information, please see our condensation, damp and mould quick guide.

Install ventilation where it is needed. The key rooms to consider are termed 'high moisture' areas, such as bathrooms, shower rooms and kitchens. Remember to seek advice from a professional to choose the most suitable ventilation for the property. A property survey may be helpful.