

On-demand Ventilation

On-demand ventilation refers to a ventilation system that operates based on the immediate needs of the indoor environment, primarily influenced by factors such as humidity levels, occupancy, or the presence of indoor pollutants. This type of system is particularly relevant in residential buildings where maintaining indoor air quality is essential for occupant health and comfort.

On-demand ventilation systems automatically adjust their operation according to real-time measurements of indoor air quality parameters. These systems ensure that fresh air is supplied when needed, thereby preventing the build-up of indoor pollutants and excess moisture, which can lead to issues like mould growth and health problems.

In practice, on-demand ventilation systems are equipped with sensors that monitor conditions such as humidity and carbon dioxide (CO₂) levels. When these levels exceed predefined thresholds, the system activates to increase airflow, providing fresh air while reducing stale air. This functionality not only enhances indoor air quality but also improves energy efficiency by minimising unnecessary ventilation when air quality is acceptable.

For instance, in a kitchen during cooking, the humidity and cooking fumes may trigger the on-demand ventilation system to increase airflow. The system could be designed to run at a higher speed for a specific duration after cooking has finished to ensure that any remaining pollutants are effectively cleared from the space. Similarly, in a bathroom, the system may boost airflow during and after a shower to quickly remove excess moisture, thus preventing damp issues.

In the UK, many new builds and retrofitted homes are incorporating on-demand ventilation systems as part of their design to comply with Building Regulations, particularly Approved Document F, which outlines requirements for ventilation in dwellings. These systems are increasingly popular in energy-efficient homes, where maintaining a balance between energy conservation and indoor air quality is crucial. By using on-demand ventilation, homeowners can achieve better control over their indoor environment, leading to improved health outcomes and increased comfort.