What is Whole Dwelling Ventilation?

The continuous or near-continuous provision of fresh air and removal of stale air throughout all habitable parts of a dwelling (and wet rooms), to dilute and remove moisture, pollutants, CO_2, odours, and other indoor emissions, while maintaining acceptable indoor air quality and controlling condensation risk.

In modern, airtight dwellings (especially those built or retrofitted to high thermal performance), natural infiltration alone is often insufficient for adequate ventilation. Thus, whole dwelling ventilation is achieved using mechanical or hybrid systems (mechanical extract, mechanical supply, or mechanical supply + extract with heat recovery) to maintain a baseline ventilation flow across the house at all times, supplemented by localized extraction (in wet rooms) and purge ventilation (occasional high flow). The intent is that even when occupancy or internal loads vary, or windows stay closed (e.g. during cold or windy days), the dwelling still receives a base level of ventilation that helps maintain humidity and pollutant concentrations within acceptable levels.

Approved Document F (Volume 1, England) requires that dwellings have “adequate means of ventilation,” and recognises that ventilation may be delivered via natural, mechanical, or combined means.

In practice, in a retrofit or extension scenario, one might combine **decentralised mechanical ventilation with heat recovery (dMVHR)** in habitable rooms with a **dedicated mechanical extract ventilation (dMEV)** in wet or polluting rooms (e.g. bathrooms, kitchens). The interaction of these subsystems must deliver a **whole dwelling ventilation rate** that meets the baseline ventilation requirement.

For example:

- A two-bedroom semi-detached retrofit might install a dMVHR unit in the two bedrooms and living room, supplying fresh air into those rooms, while a central dMEV handles extraction from bathroom, kitchen and utility. The combined effect is that when all systems are balanced and commissioned, each habitable room gets its share of fresh air (via supply or background ventilators), and stale air is drawn out via extract paths, achieving the desired whole dwelling ventilation flow.

- In a new-build, one might choose a full central MVHR (supply + extract with heat recovery) to ensure that all rooms (including circulation) are part of a continuous airflow circuit, ensuring that every room participates in the whole building ventilation loop.

To comply with UK Building Regulations, the ventilation strategy must satisfy the requirements of Part F (in England) or its equivalents elsewhere (e.g. in Wales, Scotland) and must be commissioned, tested, and documented.

Because the system is continuous, it helps control interior humidity (reducing condensation and mould risk), helps maintain consistent indoor air quality, and mitigates reliance on occupant behaviour (i.e. “open windows when required”). However, care must be taken to control noise, drafts, heat losses, and energy use — hence the popularity of heat recovery systems in colder climates.