



Smart Ventilation System Compared to Alternative Systems

How the LowCarbonLiving Ventilation System Compares to Alternative Systems

PIV (Positive Input Ventilation)

- Needs to be installed in a loft. Limiting its use to properties with a loft, and, with access to the loft.
- ***The LowCarbonLiving System does not have this requirement, and can be installed in a much wider range of properties.***
- Blows a set amount of air into the property (usually with a few fan speed options). There is no way of knowing if the amount of air being introduced is correct, resulting in a tendency for over ventilation, which wastes energy.
- ***The LowCarbonLiving System continuously assesses the air. Taking measurements of CO₂, temperature and Relative Humidity to adjust ventilation. Ensuring that ventilation is just right.***
- Introduces Positive Pressure Into the building enclosure. This can theoretically push moisture into the walls and other areas, possibly worsening energy efficiency (wet walls are better heat conductors) and causing other problems down the road. This is the reason why the RetrofitAcademy advises against PIV systems.
- ***The LowCarbonLiving System is an extract system, and does not create positive pressure within the building enclosure.***

Individual Mechanical Heat Recovery Ventilation (decentralised MVHR)

- Very Expensive. The most basic single unit will set you back £250 (up to £450 for a single unit with a humidistat). You would theoretically need one for every room of the house, not just bedrooms.
- ***The LowCarbonLiving System is significantly more affordable. A complete system for an average 3 bedroom house comes in under £400, and even less for smaller properties.***
- Inadequate Ventilation. A typical decentralised MVHR unit has an extract capacity of 15l/s . Given that the recommended fresh air requirement per person is about 37l/s, you would need 2.5 units per person.
- ***The LowCarbonLiving System requires one fan per person. Much more realistic to achieve. Additionally, the system is highly modular, and individual components (such as fans) can be swapped out in case of failure. This simplifies maintenance and reduces costs by allowing maximum reuse of components. This waste reductions is also more environmentally friendly.***
- Requires a separate expensive unit to synchronise the units.
- ***The heart of the LowCarbonLiving System is the Monitor, which not only synchronises the entire system but has extra functionality built in, such as the ability to record CO₂, temperature and Relative Humidity. It is also capable of controlling two fans directly and comes with an OLED display for instant feedback on the adequacy of ventilation.***

- Questionable airflow. The intake and exhaust vents are extremely close to each other, meaning areas of rooms far away from the units will be more poorly ventilated.
- ***The LowCarbonLiving System is designed to produce a current of air throughout the property, ensuring all areas are well ventilated.***

Centralised Mechanical Ventilation with Heat Recovery (MVHR)

- Requires a very high level of airtightness to work. Otherwise can actually make energy performance worse by pulling in fresh air via infiltration routes.
- ***The LowCarbonLiving System only recommends that airtightness be improved as much as possible, and that ventilation rules of PAS2035 are adhered to. It also automatically adjusts ventilation based on the amount of passive ventilation/infiltration.***
- Although considered the Gold Standard, it is prohibitively expensive for a retrofit. The average cost for a 3 bed house is upwards of £6500. Assuming no maintenance costs, this would bring the payback period for a retrofitted MVHR system upwards of 20 years.
- ***The LowCarbonLiving System comes in at under £400 for an average 3 bed house, and even less for smaller properties.***
- Is extremely disruptive to install. An MVHR system requires extensive ductwork, electrical work, calculations and balancing. Some properties will be outright unsuitable.
- ***The LowCarbonLiving System is meant to be DIY friendly and can be installed within a day. It also requires no ductwork, and plugs directly into mains sockets. It is also very safe as the system itself runs on 12 volts.***

