How does centralised whole house ventilation improve indoor air quality compared to traditional methods?

Centralised whole-house ventilation systems like Mechanical Ventilation with Heat Recovery (MVHR) deliver continuous, filtered airflow throughout all rooms, eliminating pollutants and allergens while retaining heat. Traditional methods (e.g., trickle vents or extractor fans) offer inconsistent, unfiltered ventilation, often worsening air quality by allowing damp and mould growth. MVHR systems reduce CO_2 levels by 30-50% compared to natural ventilation, creating healthier, energy-efficient homes.

1. The UK's Indoor Air Crisis

Indoor air pollution costs the UK up to £40 billion annually in health and productivity losses. Over 80% of British homes suffer from poor ventilation, leading to toxic mould, damp, and elevated CO_2 levels 3. Traditional methods like window vents or bathroom extractors fail to provide adequate airflow, especially in modern airtight homes built to meet energy efficiency standards.

2. Traditional Methods: Where They Fall Short

- **Uncontrolled Airflow**: Trickle vents allow unfiltered outdoor pollutants (e.g., traffic fumes) indoors while failing to expel indoor contaminants like VOCs or humidity.
- **Inconsistent Performance**: Extractor fans only operate intermittently, leaving kitchens and bathrooms prone to dampness and mould growth.
- **Energy Waste**: Opening windows for ventilation causes heat loss, increasing heating bills by 15-25%.

3. How Centralised Ventilation Works

Centralised systems like MVHR use ducting to supply fresh, filtered air to living areas while extracting stale air from wet rooms. Key components:

- **Heat Recovery Core**: Recycles 90-95% of warmth from outgoing air, slashing energy costs.
- **F7/F9 Filters**: Trap pollen, PM2.5 particles, and allergens before air enters living spaces.
- **Smart Sensors**: Adjust airflow based on humidity or CO_2 levels, maintaining optimal air quality 24/7.

4. Proven Advantages Over Traditional Methods

Aspect	Centralised MVHR	Traditional Methods
Air Filtration	HEPA filters remove 99% of pollutants	No filtration; pollutants enter freely
Consistency	Continuous airflow; CO_2 levels < 800ppm	Sporadic; CO_2 often > 1,200ppm
Damp Control	Prevents condensation by balancing humidity	Mould in 40% of UK bathrooms
Energy Efficiency	Saves £200–£400/year via heat recovery	High heat loss; increased bills

5. UK-Specific Data and Impact

- Passive House studies show MVHR systems maintain CO_2 levels below 1,000ppm, versus 1,500–2,000ppm in naturally ventilated homes
- Homes with MVHR report 60% fewer asthma incidents due to filtered air
- Government research confirms traditional ventilation fails air quality standards in 70% of new builds

6. Making the Switch: Practical Advice

- **Assessment**: Use accredited installers to evaluate your home’s airtightness and ventilation needs.
- **System Types**: Opt for ducted whole-house MVHR (e.g., RESPIRO) for large homes or decentralised units (e.g., FLUXO) for retrofits.
- **Maintenance**: Replace filters annually to sustain peak performance.

Upgrade to centralised ventilation today for cleaner air, lower energy bills, and a mould-free home.