Single Room Flow Optimised Heat Recovery (srAFHR)

Single Room Flow Optimised Heat Recovery (srAFHR) is a decentralised mechanical ventilation system designed for **individual rooms** in residential buildings. It uses **alternating airflow technology** to extract stale air while supplying fresh air, recovering heat from the outgoing airstream to preheat incoming air. This process minimises energy loss and maintains indoor air quality without complex ductwork, making it ideal for retrofits or new builds in the UK.

Key Features & Working Principle

1. **Alternating Flow Mechanism**:
    - The system operates via **two cyclic phases**:
        - **Phase 1 (Extract)**: Stale, warm air is drawn from the room through a heat-exchange core (e.g., ceramic material), transferring heat to the core.
        - **Phase 2 (Supply)**: Fresh outdoor air passes through the same core, absorbing stored heat before entering the room.
    - This creates a **balanced ventilation loop** with up to ~90% heat recovery efficiency.
2. **Duct-Free Design**:
    - Unlike whole-house systems, srAFHR requires **no ductwork**, reducing installation complexity and structural disruption. Units are typically wall-mounted, fitting cavities from 305–700 mm thick.
3. **Optimised Airflow Control**:
    - Advanced sensors adjust fan speed based on humidity, CO_2, or occupancy, ensuring **energy-efficient operation** (e.g., reducing heating demand by 20–30% in UK climates)

Why This Matters for UK Housing

srAFHR such as FLUXO or AUREN addresses **two critical UK challenges**: **fuel poverty** (via energy savings) and **indoor air quality** (reducing dampness in 37% of UK homes). Its duct-free design makes it a pragmatic solution for the UK’s ageing housing stock, supporting net-zero retrofit goals