

Renovation and ventilation: a personal perspective

Cambridge Carbon Footprint

Open Eco Homes / Cosy Cambridge

8th October 2016

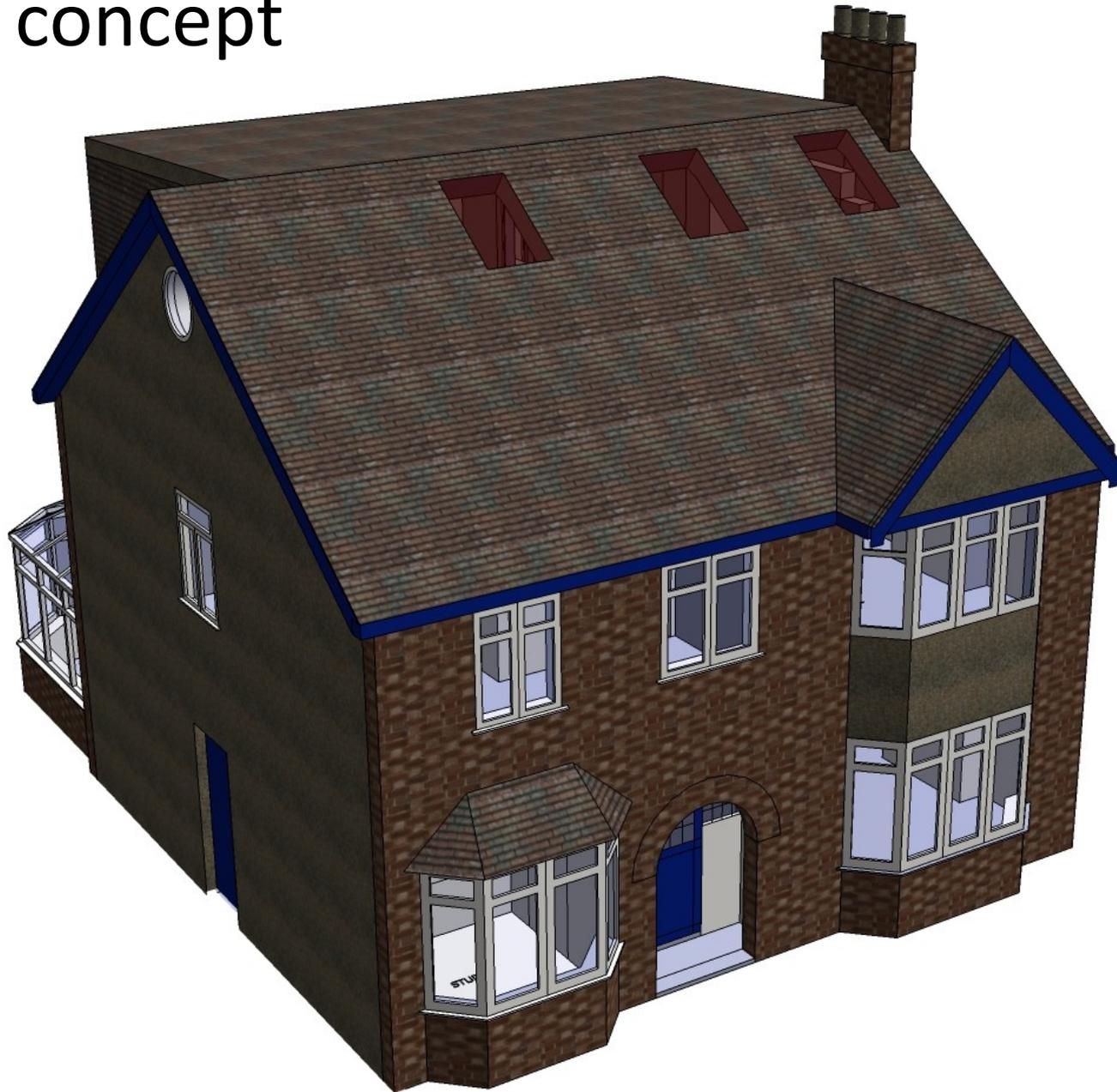
Before renovation



Before renovation



Our concept





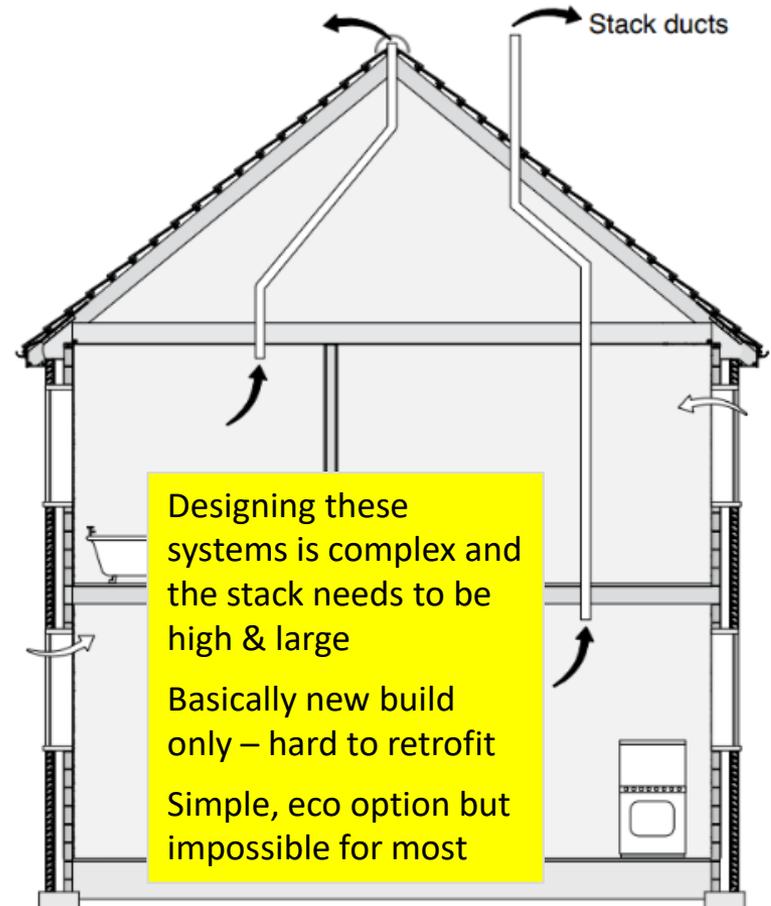
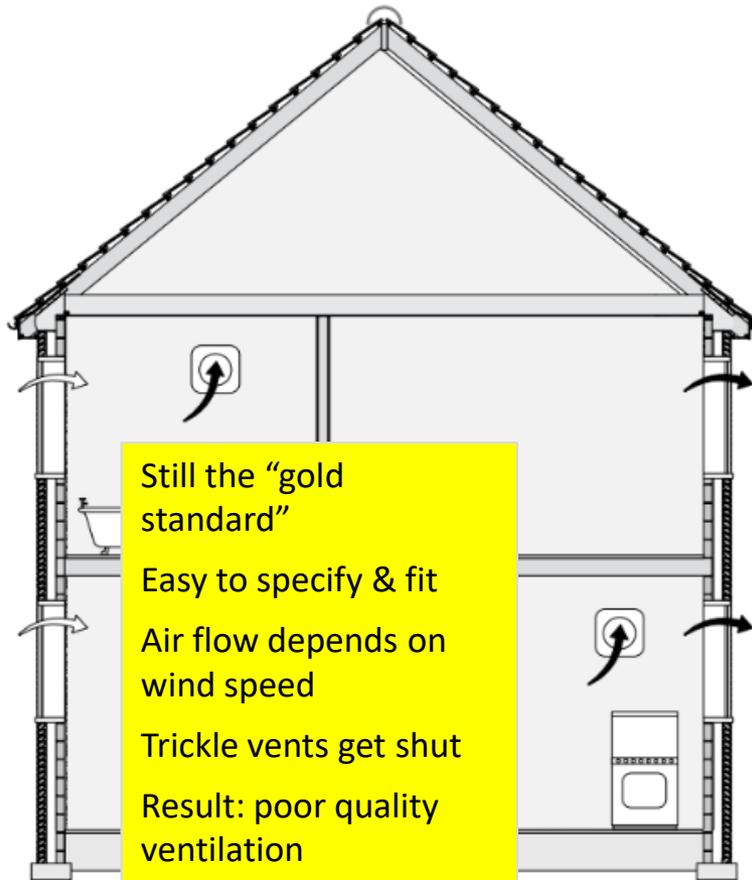
Complete ... apart from ventilation



Four legal ways to ventilate (1, 2)

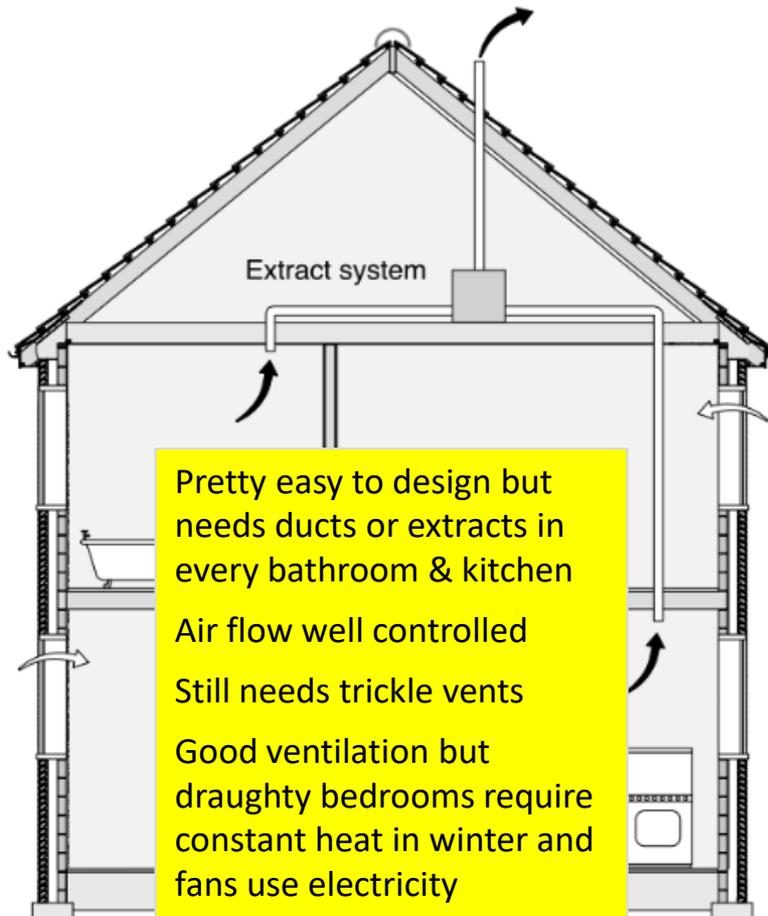
1. Trickle vents (“background ventilators”) with intermittent extractor fans

2. Passive stack ventilation

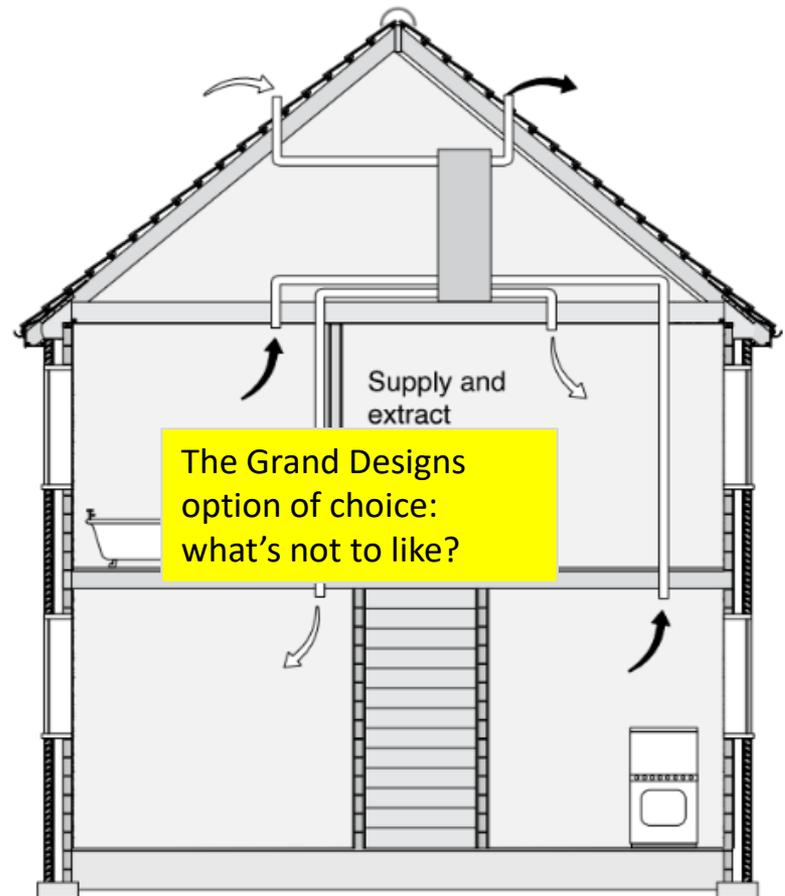


Four legal ways to ventilate (3, 4)

3. Continuous mechanical extract

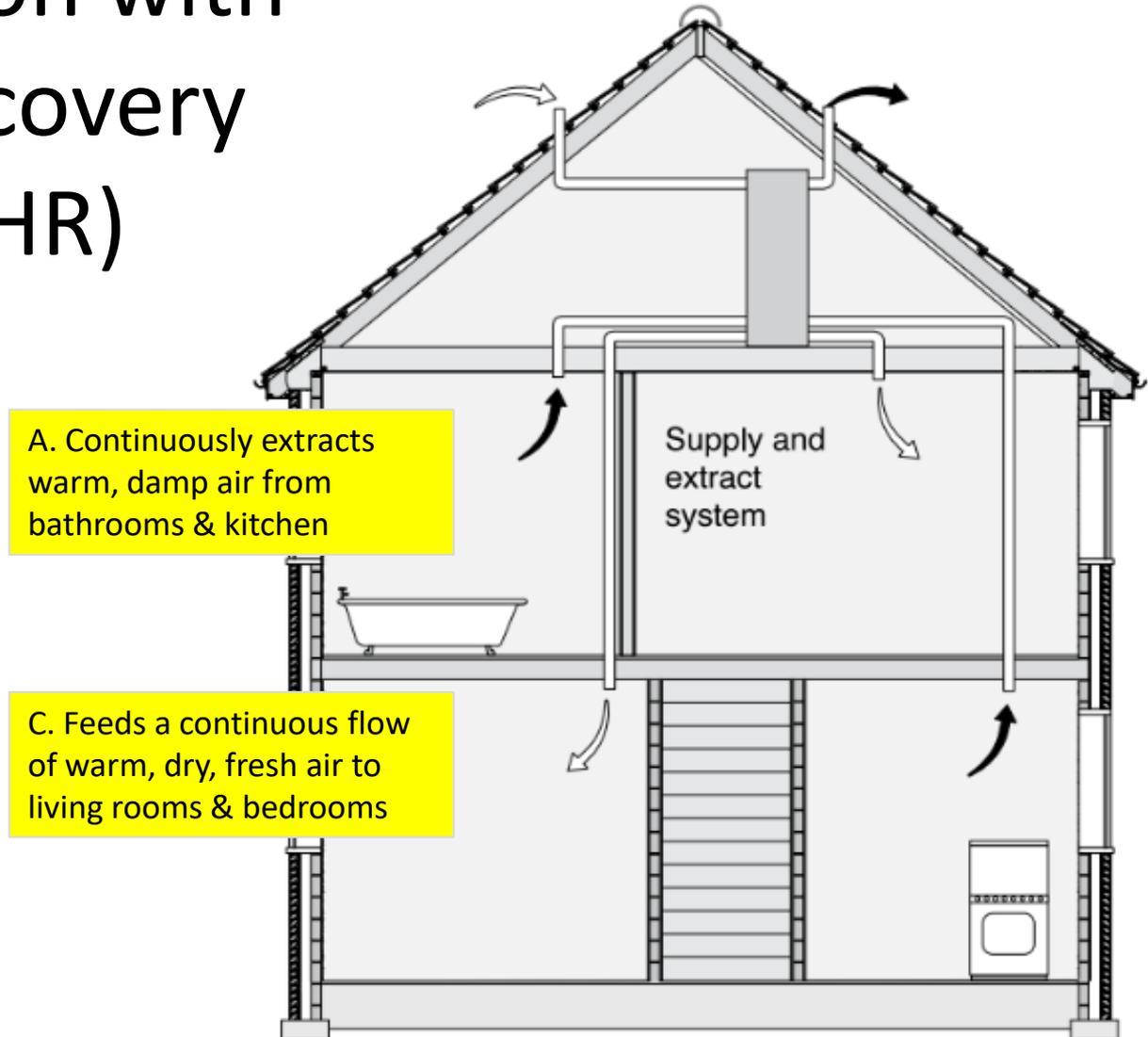


4. Continuous mechanical balanced system with heat recovery



4. Mechanical ventilation with heat recovery (MVHR)

B. Passes stale air through a heat exchanger and uses it to warm fresh incoming air with about 90% efficiency



Pros and cons of MVHR

Good

- Constant ventilation is wonderful
- Air filter reduces pollen & pollutants
- Much dryer atmosphere
- Cuts noise as windows almost always shut
- Helps equalise temperature throughout house (though not perfect)
- Summer bypass provides automatic cooling overnight
- Mandatory boost mode effectively clears whole house
- No more moths or mould!
- Eco friendly: low electricity consumption easily offsets the gas needed to heat the air

Bad

- Fitted cost ~£8,000 for a large house
- We spent £4,000 DIY but recommend you use a professional!
- It's quite easy to get the design wrong, and hard to fix if so
- Some noise, especially in boost mode
- Need vents/inlets in every room, fed by ducting, which is complex to install and in retrofit will probably have to run through some rooms
- Filters need to be changed yearly
- Around £100/year to run including electricity & filters



Tips for MVHR success

- Oversize your system. We used a unit rated for almost twice our m² area – and it only just meets Building Regulations in boost mode. Larger units also run quieter at a given flow rate and use less electricity
- We used 76mm radial ducting, which is fairly easy to route, but found we needed a pair of these ducts to almost every room as one of these narrow ducts doesn't give enough flow
- Make sure system is well designed as pipes can't pass through joists, and to minimise boxed in pipes in living space
- Make sure you've got space to fit the unit, allow access to maintain it and change filters, and route all the ducts and condensate – this requires detailed design
- Inlets are not the same as extracts
- Vents and inlets need to be well away from doors & where they won't cause draughts
- Make sure that the system is properly designed, installed, inspected & commissioned
 - Go through the installation checklists and Domestic Ventilation Compliance Guide repeatedly during design & installation
- See our case study in 2016 Open Eco Homes <http://openecohomes.org/>