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Introduction and Overview of different types of ventilation system

A presentation for
AECB Conference

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Date
16 July 2016

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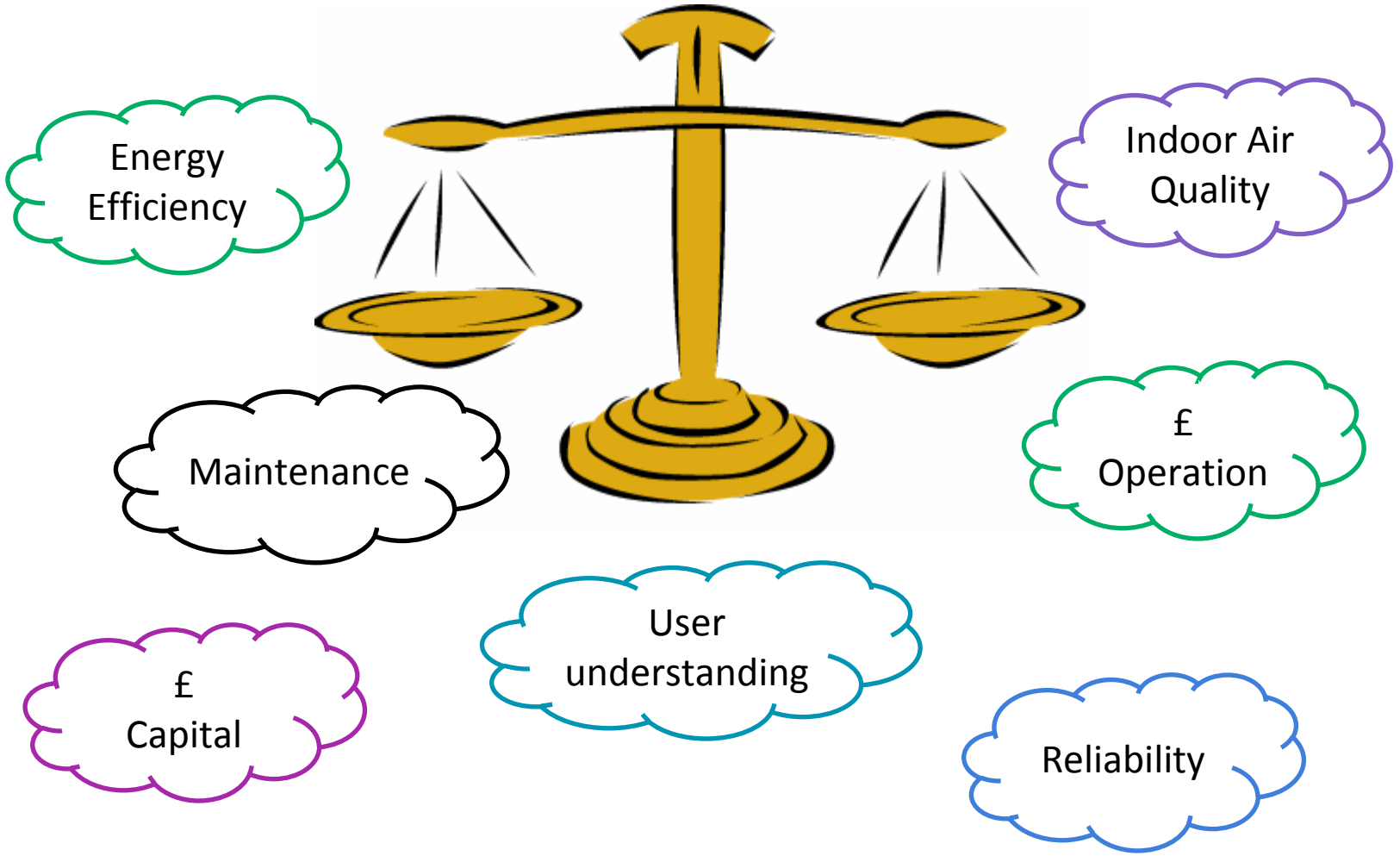
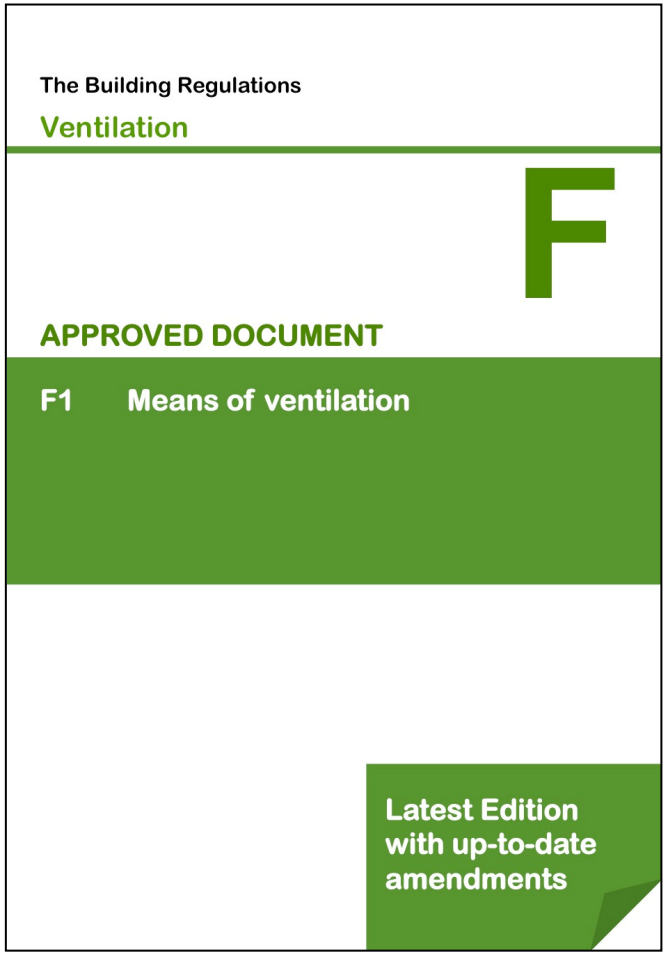
Which form of ventilation?

Weighing up the factors

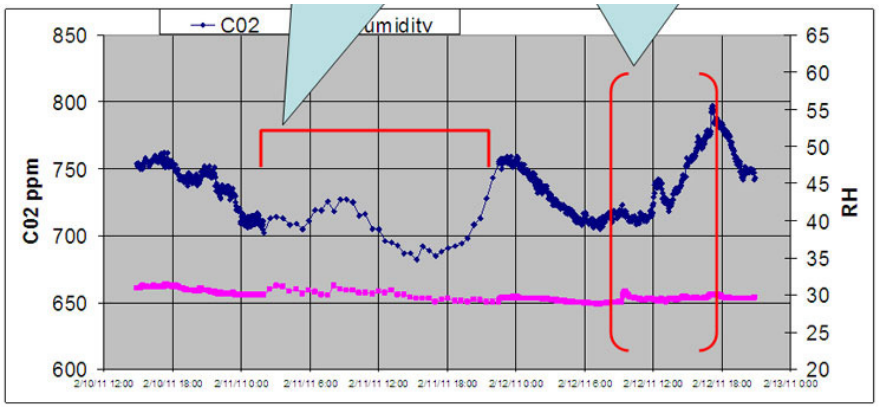


Statutory requirements



1. Adequate means of ventilation provided for the people in the building
2. Commissioning and adjustment requirement

Consequences of getting it wrong

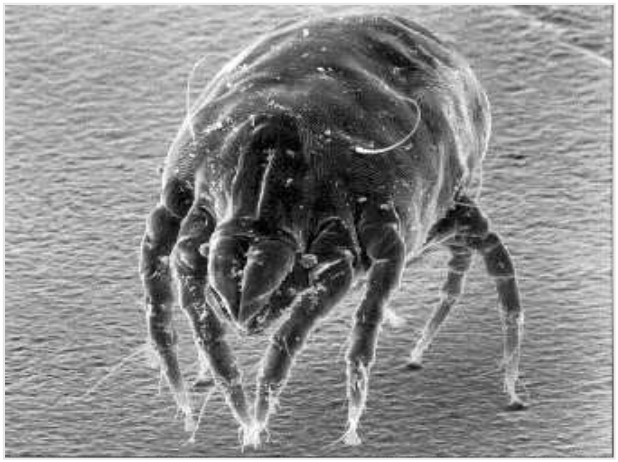


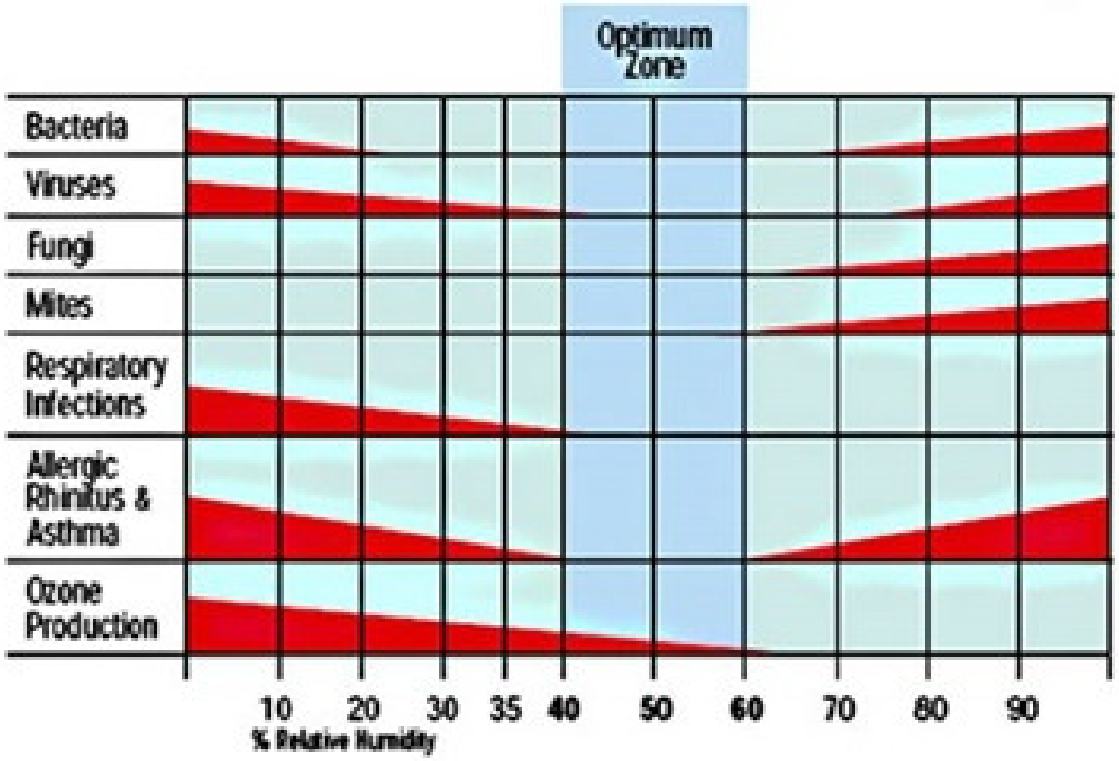
Indoor Pollutants

- Odour
- Particulates
- Pollen
- Ozone
- Moisture
- Bacteria and mites
- VOCs and Formaldehyde
- Tobacco smoke
- CO2

Humidity

A key factor in human and building health



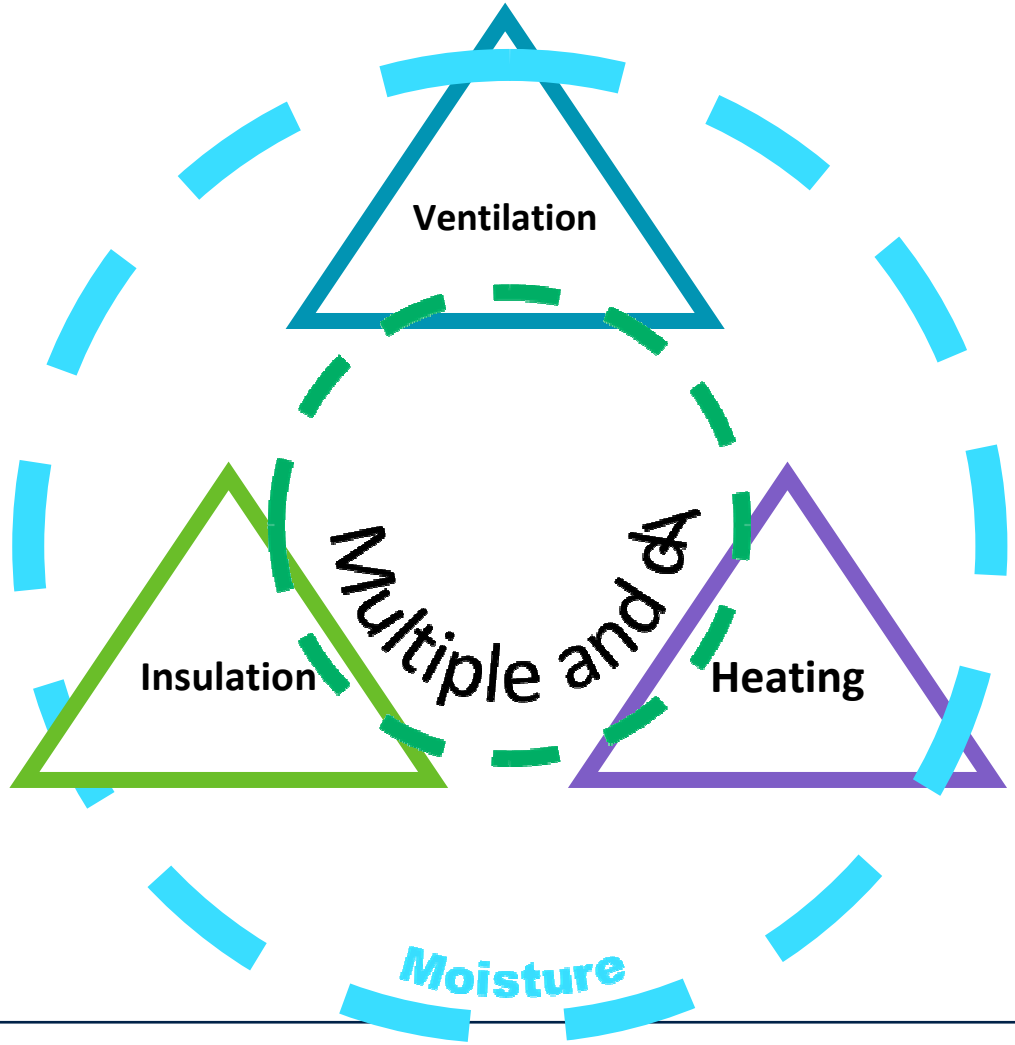


Indirect Health Effects of Relative Humidity in Indoor Environments.

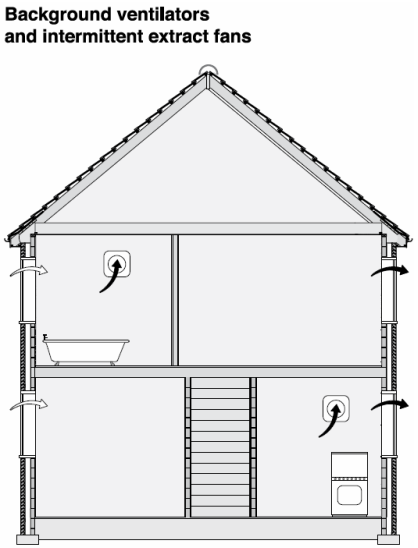
Environmental Health Perspectives, Vol. 65, p358. Sterling, etal.1986

Heating, insulation and ventilation

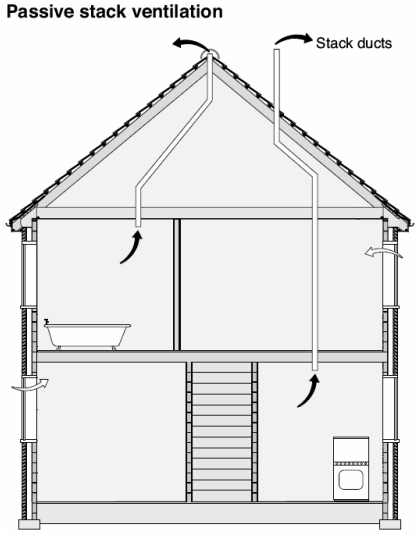
Holistic approach



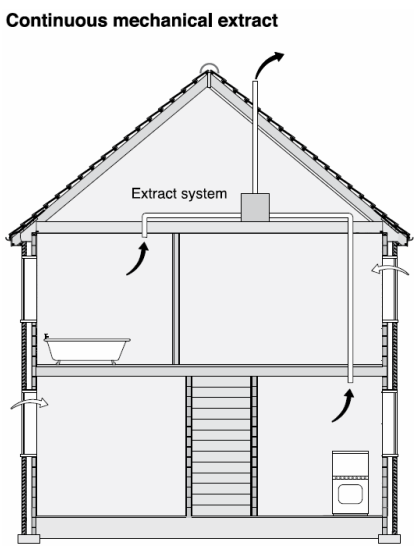
Basic options



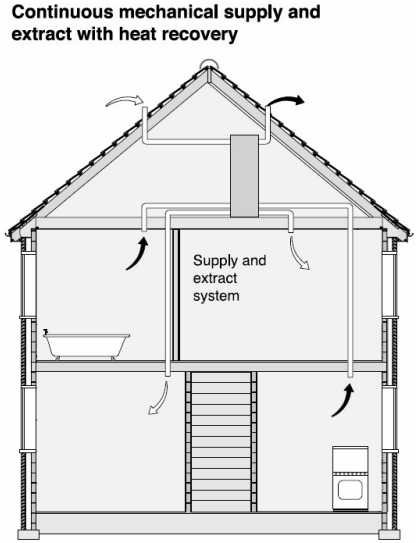
Natural



PSV



MEV

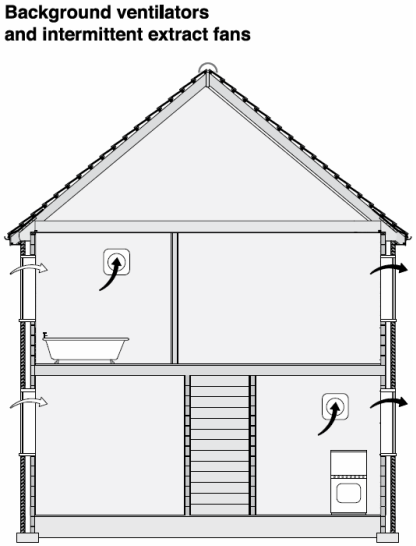


MVHR

Related options, either technically or with similar energy efficiency:

PIV from loft	PSV Heat Recovery PSV	PIV from outside	Balanced without heat recovery, Heat recovery room ventilators (HRRVs)

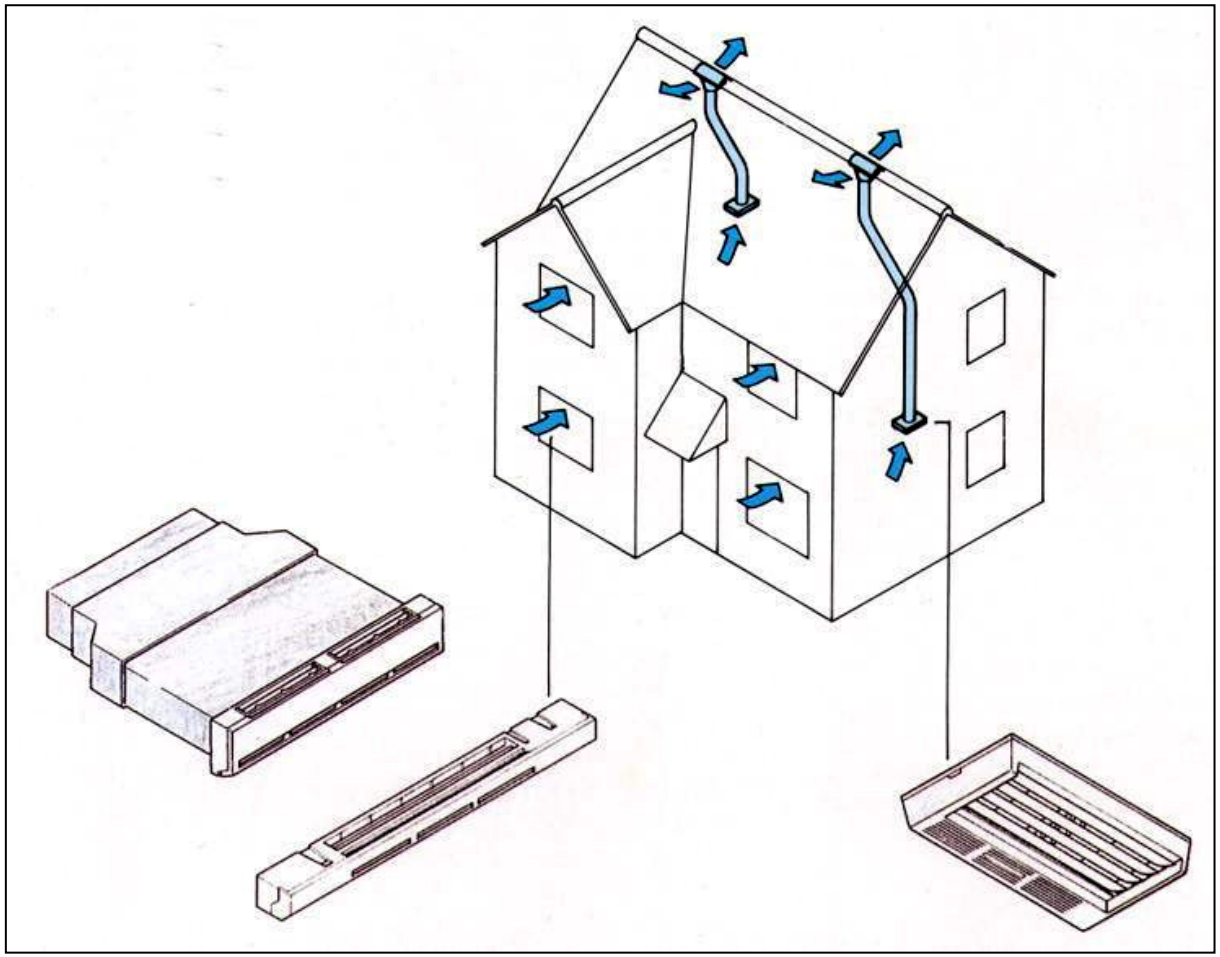
Intermittent Extract Fans



Natural

Advantages	Disadvantages
Easy to install	Noise
Provides rapid extraction of pollutants	Manual control
Operation is easy to understand	

Passive Stack Ventilation



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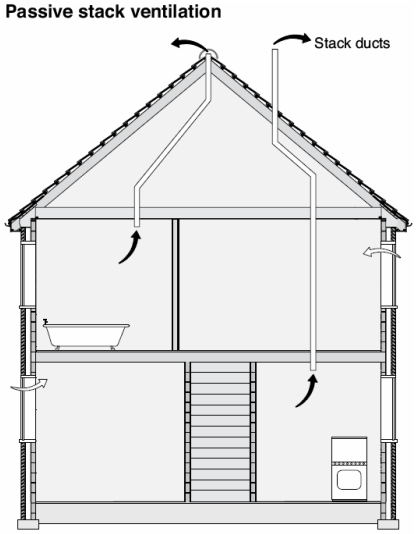
Passive Stack Ventilation

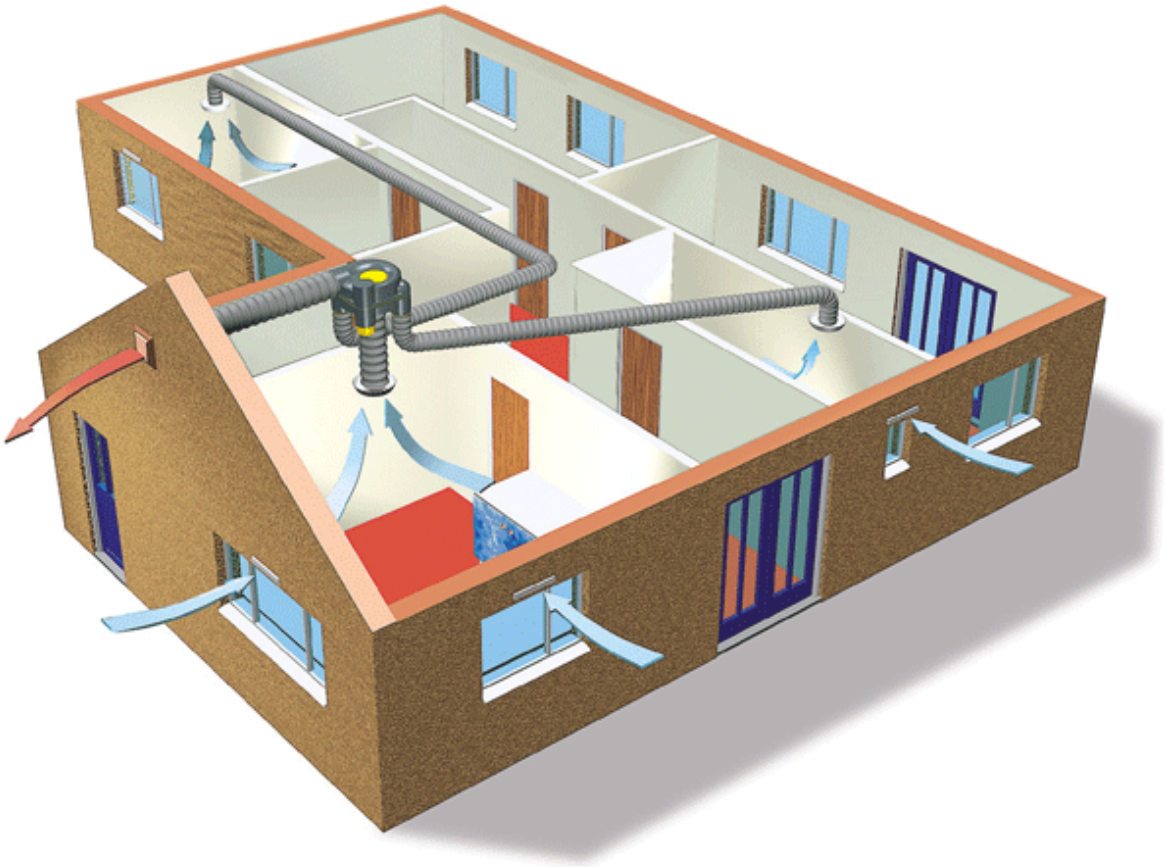


PSV

Advantages	Disadvantages
No direct running costs associated with the system No electrical connection required Silent in operation Provides continuous extract ventilation	Very sensitive to poor installation Ductwork needs be accommodated in design

Mechanical Extract Ventilation

Whole house extract systems



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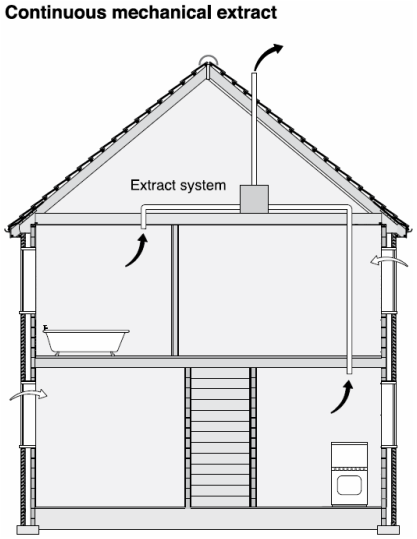
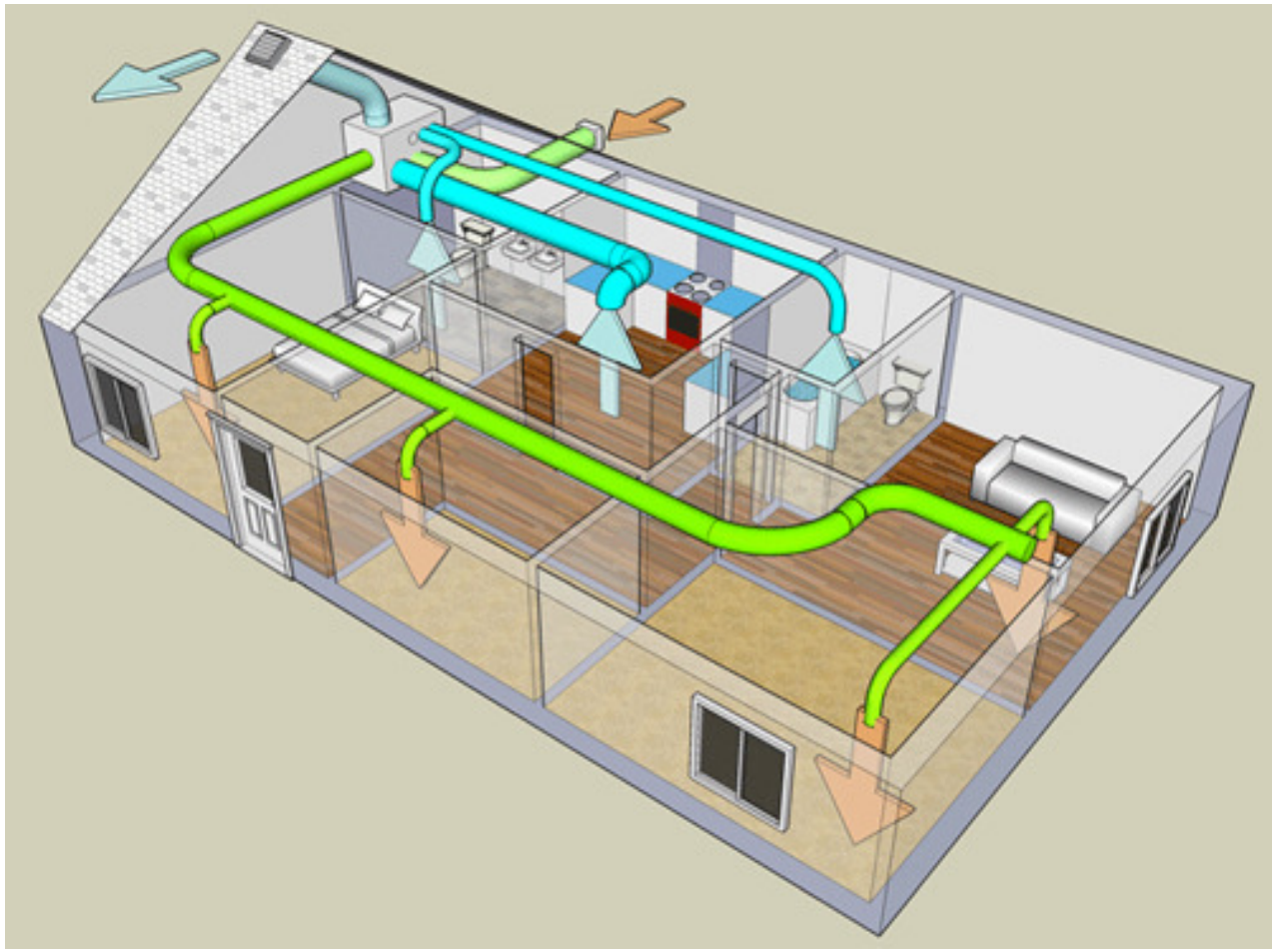
Mechanical Extract Ventilation



MEV

Advantages	Disadvantages
Provides continuous background ventilation	Ductwork needs be accommodated in house design
Operation can be easy to understand	Requires commissioning and annual maintenance
	Reliance on trickle vents

Mechanical Ventilation with Heat Recovery



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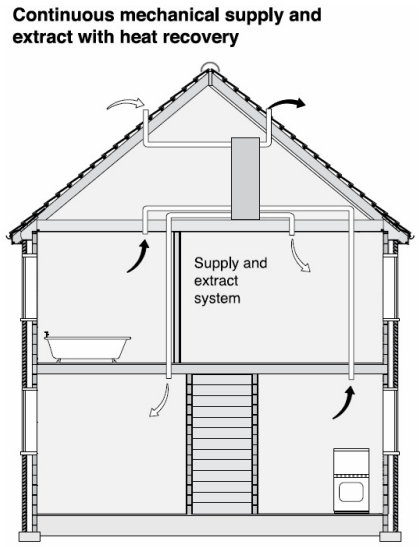
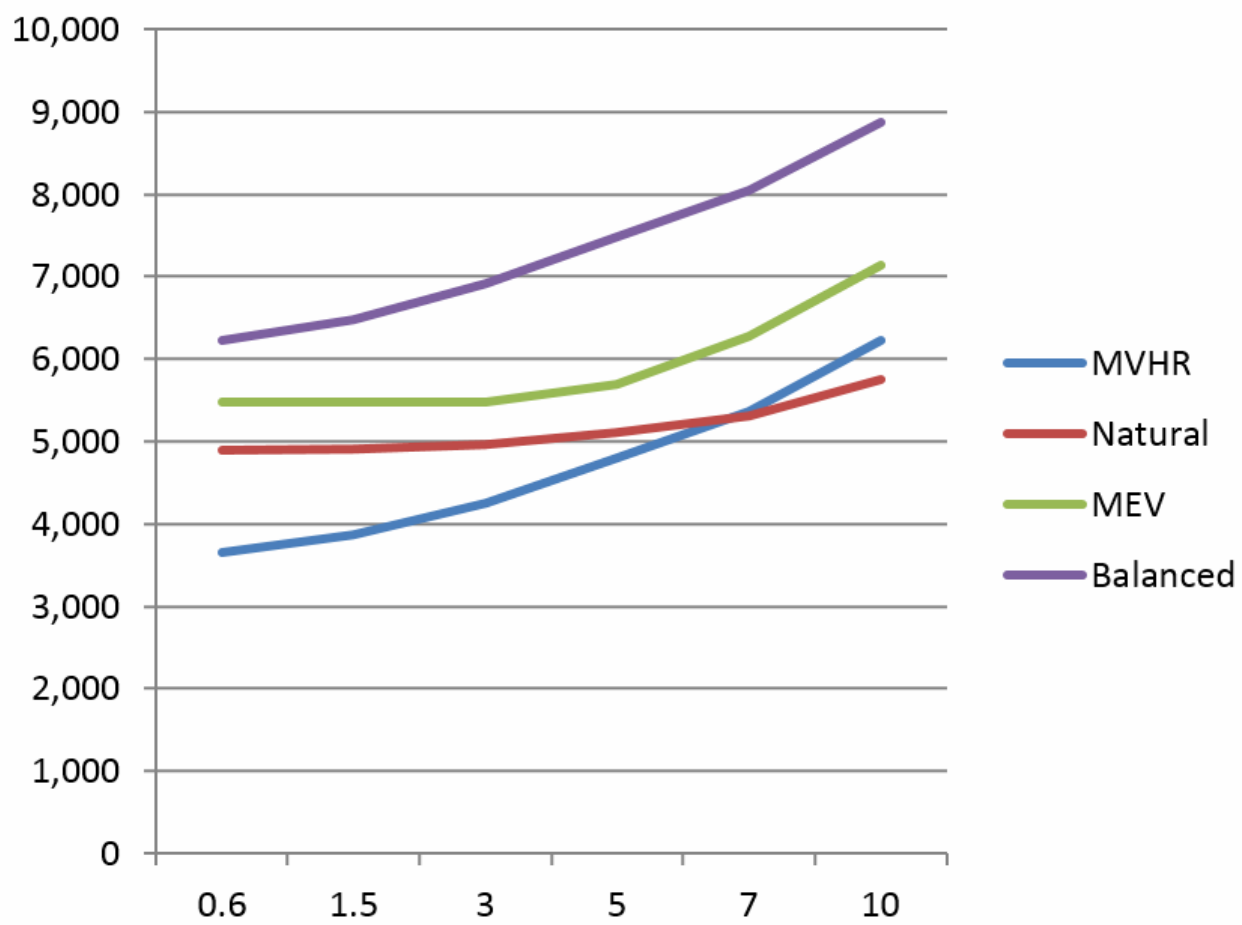
Mechanical Ventilation with Heat Recovery



MVHR

Advantages	Disadvantages
Provides continuous background ventilation Energy efficient	Ductwork and unit needs be accommodated in house design Requires commissioning and biannual maintenance Good design and installation is demanding

Impact on energy consumption



Annual energy consumption vs air permeability, low energy 3 bedroom semi

MVHR

Most energy efficient for airtight houses

Natural

Best for less airtight buildings

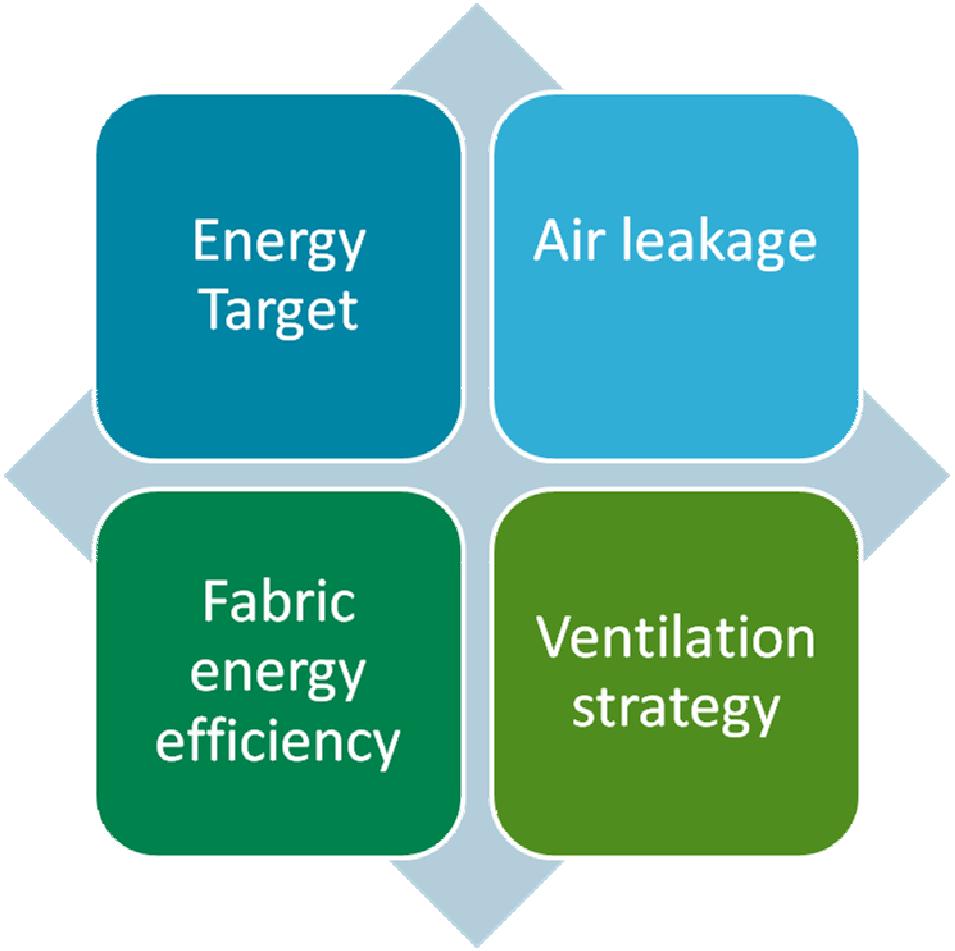
MEV

Provides positive ventilation

Balanced ventilation

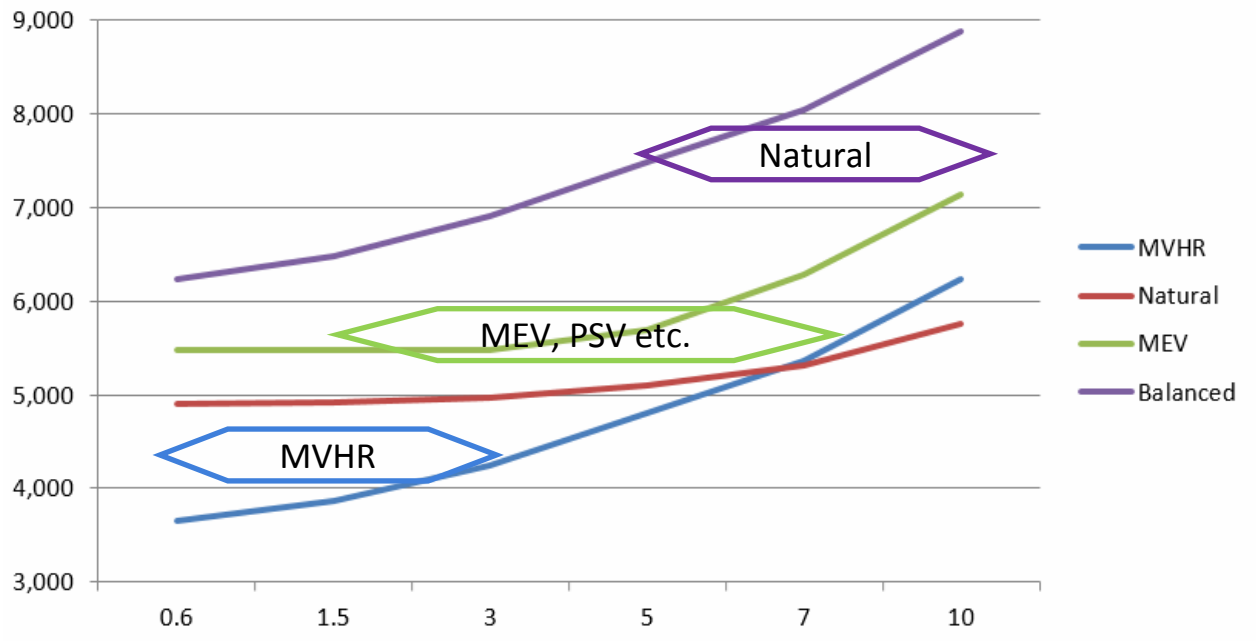
Greatest heat loss through ventilation and fan consumption

Integrated ventilation design



The ventilation strategy, airtightness and fabric energy efficiency need to align and support the energy target

Make an informed choice



Choose ventilation strategy to align with overall design.

Good design, installation and user understanding/engagement is necessary for MVHR to be successful.