Ventilation design & delivery

What makes MVHR in PH work (or not)

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Green Building Store

ukpassivhaus conference2015

Projects: Racecourse Estate

Client: Gentoo

Architects: Devereux Arch. Mark Siddall

M&E Consultant: Alan Clarke

MVHR design & delivery: GBS

Projects: Sampson Close

Client: Orbit Homes
Architect: Baily Garner
Contractor: Wates Living Space
Passivhaus consultants: Trecodome
MVHR supply & design: GBS

Projects: Halton Co-Housing

Architects: EcoArc (Andrew Yeats)
M&E Consultant: Alan Clarke
MVHR design & delivery: GBS
Cundall and Kent Design

Projects: Erneley Close
Longsight , Manchester

Large scale EnerPHit retrofit of 32 maisonettes

Architect: Edelmann & Ebling
Passivhaus designer/consultant: Eric Parks
M & E consultant designer: Alan Clarke
MVHR Design & delivery: GBS
Developer: R-Gen Developments
Main contractor: The Casey Group
Client: Eastlands Homes

Important criteria for PH

- Insulation: to achieve energy performance
- Glazing of quality to achieve insulation value and required solar gains
- Air tightness: To < 0.6 air changes/hr @ 50Pa
- Ventilation: MVHR 30 m^3/per person/hr or 1m^3/m^2/hr

If we achieve these criteria we will have built a Passivhaus?

Inhabitants perspective

- Not too warm, not too cold
- Nice and light (without being too warm)
- Not too dry, not too damp (definitely no mould)
- Good air quality: not smelly, not draughty
- Low energy bills
- Peaceful (no MVHR noise)

What people want is COMFORT, and COMFORT is the key word in Passivhaus!

Inhabitants perspective

- What are the most common issues when things go wrong?
  - Over heating: Incidental heat losses/gains (poor installation of communal heating, specification of DH / lighting) / PHPP design compromised due to architectural reasons (glass)
  - MVHR not fit for purpose: Too noisy / not enough air / some rooms with no air

Let's look at what the MVHR story is…

What should go into MVHR?

- Pressure loss & sound attenuation calculations
- Careful choice of products for their performance characteristics
- Detail design: location of air terminals, duct lengths/sizes, attenuator specification, intake & exhaust length / thermal values.
- Coordination with other building services

All of the above are part of the initial planning /design stage and feed into the PHPP calcs

To summarise

- Building professionals work together to design and specify a project on behalf of the client.
  - Then the project goes out to delivery…

What often happens in UK?

- To use an analogy:
  - Imagine you need a serious operation

Who are you?

This is very common in the UK building industry

The symptoms

- Green Building Store has been engaged by the architect/client to do detailed MVHR design, then all goes quiet…
- I've met main contractors who been quoted for MHVR delivery & installation on a project that we can't supply the Passivhaus certified MVHR unit for.
- I've given tools box talks to installers, arrive on site 3 weeks later to not recognise 1 of them

What are the results?

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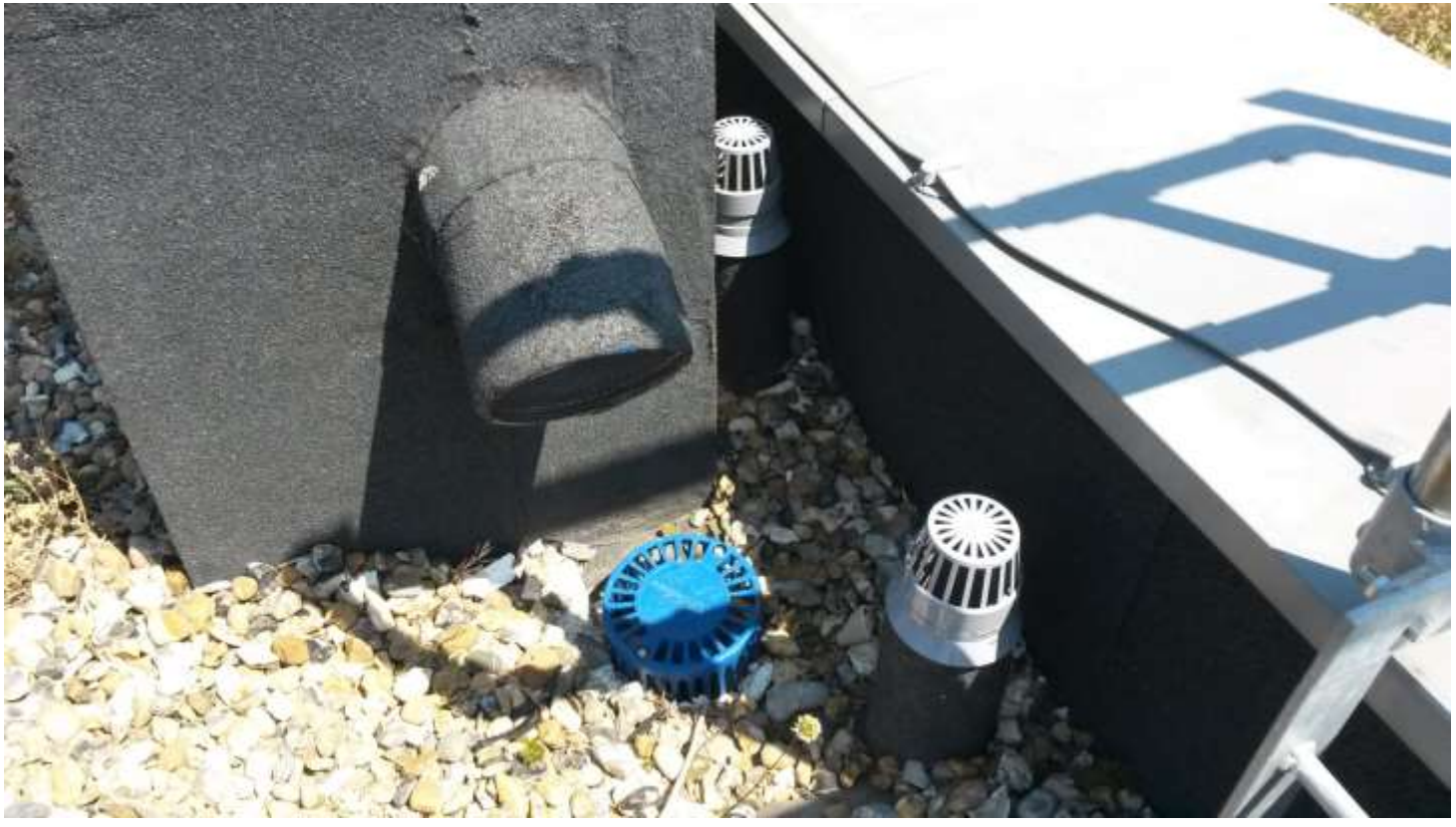

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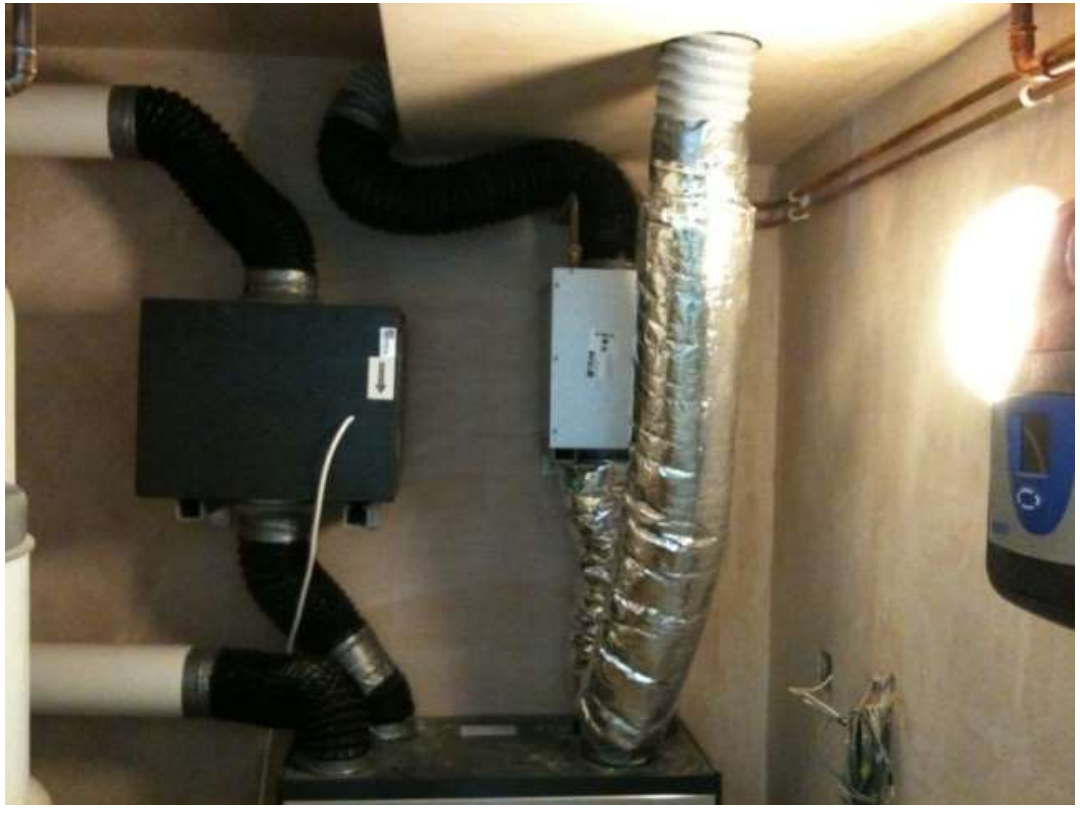

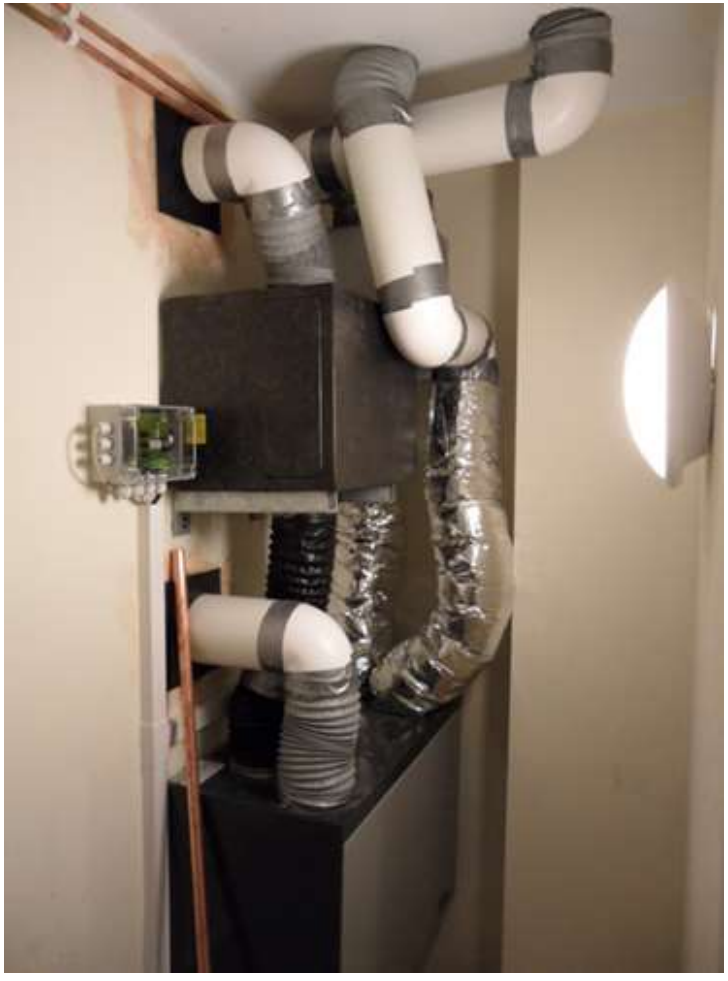

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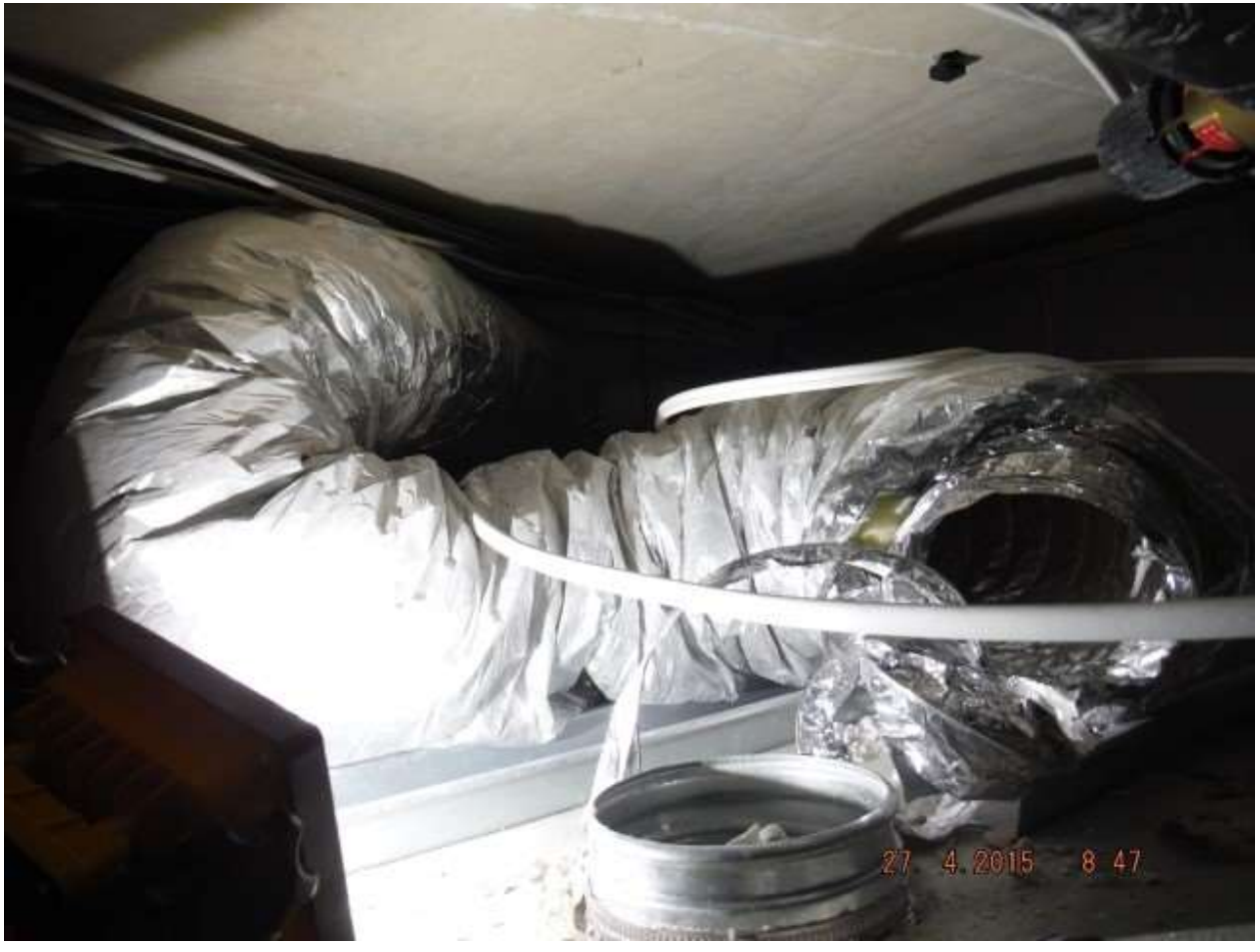

What are the results?

- This system was commissioned and balanced for PH certification.

The cure

- Communication both sideways and up and down the delivery line.
- Encouraging those at the bottom to feel valued and listened to.
- Continuity of the delivery line.

Contractual arrangements that promote the above.

Client needs ‘Passivhaus clerk of works’ onsite to represent them.

When it has gone right

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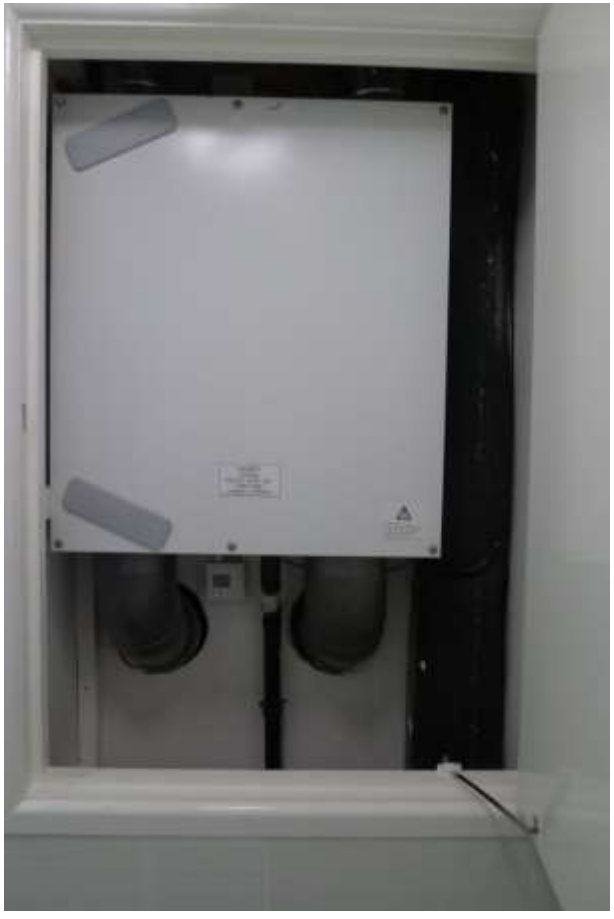
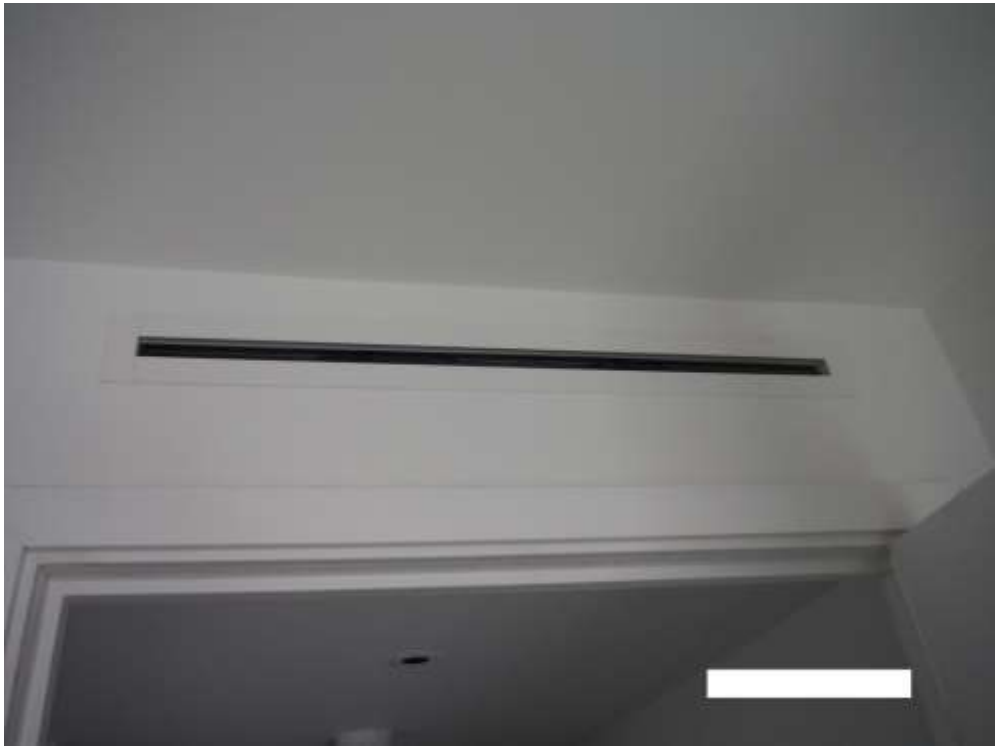


When it has gone right

Which is the good MVHR system?

This one or This one



Open discussion

Thank you for your time

Andrew Farr
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