Silverwood Close - CB1 3HA

1930's renovation and extension for comfort and energy efficiency

Meet your host Patrick

Patrick moved into his 1930s end-of-terrace home in 2001. He had always been interested in eco renovations but he has become more aware about it through communications with Transition Cambridge.

The main reasons which spurred him on were that his house was very cold during the winter, even with the boiler running full blast; he also needed more space but wanted to add this without increasing the carbon emissions.

Insulation

The house has now been fitted with loft insulation and both cavity and external wall insulation for the original solid wall and cavity wall extension. Radiator reflectors have also been placed around the property as a cost-effective way to redirect heat back into the room.

Heating

Patrick has installed underfloor heating, along with a condensing boiler and a solar thermal panel to ensure that the heat he needs is available where and when he needs it. There are also two different types of MVHR (mechanical ventilation heat recovery) in two different rooms. These help to keep the air warm inside the home.

Other measures

Appliances, lighting and water: Low energy light bulbs have now been placed throughout the property along with the use of AAA rated small fridge. Patrick has also installed a rainwater harvesting system.

Performance

All of these changes appear to be working however it is too early to say for sure what the difference is, although it has been noticed. The solar thermal contributes 30% of the water heating requirement.

Unfortunately it was not easy to do a before/after comparison because of changing occupancy. But the most obvious effect is that the house is a lot warmer in winter (and the "most obvious contributor" is the insulation).

Future Plans

Thinking forward, Patrick would like to have internal insulation on the front wall which is the only wall left untouched and to have underfloor heating installed throughout the other rooms.

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Products

Rain water harvesting:
Rainwater Harvesting Ltd
http://www.rainwaterharvesting.co.uk

MHRV:
Vent Axia
http://www.vent-axia.com

Insulation:
Celotex
http://www.celotex.co.uk/

Render on external insulation:
Parex Ltd
www.parex.co.uk

Costings

Cost breakdown is not that easy but the following are approximate:

Insulation (floor, wall cavity, ceiling) in new build: £3000

External insulation and render, pre-existing walls: £6600

Rainwater harvesting system: £4700

MHRV (2 units): £500

Solar thermal panel: £3400

180 litre hot water tank (required for solar thermal): £1000

Age, Type: **Built in 1930's end of terrace.**

Wall type: **Original solid wall, 72m2**
Extension: insulated cavity, 18m2

Project timescale: 7 months

Cost of build: **£106,000**

	Energy kWh/m²/yr		**Carbon** $kgCO_2$/yr		**1 adult before/1.5 after**
	Elec	Gas	/m²	/person	
Before	1500	10800			
After	1450	8500			

Key features

- External insulation
- Cavity wall insulation in extension
- Roof insulation in extension
- Pre-existing double glazing
- Radiator reflectors
- Loft insulation
- Low energy bulbs
- Condensing boiler
- AAA rated small fridge
- Underfloor heating
- Solar thermal panel
- MVHR (Mechanical ventilation heat recovery)
- Rainwater harvesting

Key contacts

Architect: AC Architects, 01223 576 315, www.acarchitects.com

Builder: Dixon & Son, 01353 860 062, rwdbuild@aol.com, http://www.rwdbuildersltd.uk/

Structural engineer: Andrew Firebrace Partnership Ltd, 01223 811572, www.afpconsult.co.uk