

People Exploring Low Energy Homes

Ascham Road, CB4 2BD

Clare and Simon – Clare says:

We moved into this three-bedroomed semi in 1998. Built in 1929, it has solid brick walls so no cavity to fill with insulation. When we moved in it had a very old boiler and the windows at the front were all still single-glazed.

We have worked in fits and starts on improving energy efficiency; wanting to reduce our carbon footprint became a priority after I took Open University courses in climate change and green technology. Doing a Carbon Conversations course was added encouragement and besides, the house felt draughty and was expensive to heat.

The most far-reaching step was adding external insulation to the whole house (10cm thick in total) in September 2012. We were prompted to opt for external cladding over internal insulation as our neighbours also wanted to get it done.



At the same time, we decided to upgrade almost all the windows to wooden, double-glazed using a local joinery firm. Despite concerns about the change in external appearance and expense, we are now reaping the benefits; the house warms up quicker, retains heat and the heating is on less often.

Low Energy Measures

The first priority was replacing the very old inefficient boiler in 2003 with a **condensing boiler** (Vaillant Ecomax 835). We added thermostatic radiator valves at the same time. The gas radiant fire in the living room was also replaced with a **wood-burning stove**.

Whilst extending the kitchen at the rear of the house in Autumn 2011 the ground floor walls at the back were rebuilt to building regulation standards and **solar PV** panels were attached to the south-west facing roofs. A new wooden kitchen floor was laid with **reclaimed timber** and **Celotex 50 mm insulation** was added underfloor between the floor joists.

Several things made the decision to go **for external cladding insulation** easier. Firstly, our neighbours wanted it, so both sides of the semi would change together. Secondly, our deep eaves meant that no roof re-building would be needed. We knew our single-glazed windows needed replacing so it made sense to get new **double glazed windows** to fit in with the cladding at the same time. Two small windows were DIY fitted with **secondary double glazing**.

Overview

Age, Type: **1929, Semi-detached**

Wall type, Floor area: **Solid brick, 159sq m**

Project timescale: **External insulation and windows: 1 year. Overall measures: 9 years.**

Cost of external insulation: **£10,500 (inc scaffolding)**

Energy usage – 2 adults, 3 children

Before (April 2010 – April 2011):
23kWh per sq m pa electricity
122kWh per sq m pa gas

After (April 2012 – April 2013):
17 kWh per sq m pa electricity
90 kWh per sq m pa gas

Key features

- + external insulation around whole of house
- + PV solar 1.88 kW array
- + hardwood double glazing
- + reclaimed wood floor in kitchen
- + underfloor insulation in kitchen
- + condensing boiler
- + woodburning stove
- + natural light with full-length windows/patio doors



System Performance

The house has seemed warmer and less draughty since double glazing and external insulation was fitted and gas usage has decreased by 25%, compared to 2 years ago. The solar photovoltaic cells have produced 1439 kWh since Nov. 2011 and we have seen our electricity bills halved.

Window performance – generally better heat and sound insulation though some disappointment as we still get some condensation inside on cold mornings.

Savings

PV solar- electricity bills have been halved.

Gas bill down by 1/4 (this should improve even when fully insulated)

Future Plans

The area of wall between the upstairs and downstairs front bay window has not been insulated yet due to the hanging tiles so internal insulation will be easier in this area.

Thick curtains for all windows will improve comfort and reduce heating costs further.

We want to work on the garden, adding a pond to encourage wildlife, waterbutts to conserve water and grow more vegetables and fruit.

Professional Contacts

Extension Builder: Francis Durning Construction, fd.construction@hotmail.com

Green Hat Construction (External Insulation): www.greenhatco.co.uk

Boiler: Kelvin Webb Ltd, www.kelvinjwebb-cambridgeplumbers.co.uk

Magnaglaze: www.magnaglaze.co.uk

Products and Costs

Condensing boiler: £3,500 (in 2003), Vaillant Ecomax 835, www.evoenergy.co.uk

Wooden double-glazed windows: £28,000, Lawrence Smith Joinery Ltd, ls.jltd@virgin.net

Reclaimed timber: Markham Flooring and Timber www.markhamreclaimed.co.uk

Wood-burning stove: Dean Forge, www.deanforge.co.uk

External insulation: £10,500 (inc. installation) Wall Reform solid wall insulation render and 60mm Kingspam K5 EWB www.ce-solutions.org.uk/pdf/Wall_Reform.pdf

PV solar panels: £9,500, 1.92 kW array, Evo energy www.evoenergy.co.uk

Patio doors: Folding, sliding oak doors by Coach house Joinery www.coachhousejoinery.co.uk