



People Exploring Low Energy Homes

Nuttings Road, CB1 3HU

Suzie and Iain – Suzie says:

When looking for our first home, we wanted it to be south facing, with a big garden. A big lounge, for socialising, was also an important factor. In 2006 we moved into a home with aluminium framed double-glazed windows, minimal insulation and an old gas fire with boiler.

We are both very passionate about the environment and love that our home is now an expression of this. We sometimes put our ideology before our finances or convenience but are happy about this.

Now our utility bills are only £30 a month, yet our home is warm and snug, with a close connection between the house, garden and seasons.



We mainly use eco paint and minimal eco-cleaning products. We have only bought five new items of furniture or white goods, the rest was second hand. This has helped create a low toxin environment for us, our lodger and our five year old.

Low Energy Measures

As soon as we moved in we switched to Good Energy, who only 'provide' 100% renewable energy.

We drew up a **five-year plan**. The major work so far has been installing the hot water and heating system - adding **solar thermal hot water** and a **9 kW wood-burning stove** which supplies hot water for taps and central heating. We had ourselves cut off gas when this was installed. We are constantly improving our firewood processing making the most of all the wood and the 'waste', as well as improving storage.

At the same time, we installed a **highly insulated Akvaterm hot water tank**, designed to be heated by wood, the sun, or electricity if we are desperate.

We had the **cavity walls insulated**, and we did the **loft insulation ourselves with 150 mm of British sheep's wool**, on top of the 150mm of yellow itchy insulation already in situ. We also **insulated under the bath** (re-using coats and pillows) - so now we can have a good long soak in the bath because the water stays warm for ages!

Accessible pipes are insulated with grey foam coats, or Kingspan Tarec. We have a **thermally-lined curtain** which reduces the size of the sitting room in winter, making the stove more effective and the room more cosy. The **fireplace is rendered with lime**.

Overview

Age, Type: **1950's, Semi-detached**,

Wall type, Floor area: **Cavity, 88 sq m**

Project timescale: **8 yrs**

Cost of whole project, inc. measures: **£35,000 plus new works**

Energy usage – 3 adults, 1 child

After: **11 kWh** per sq m pa electricity (2011)
3500 kg logs pa (2011)
200 kg wood chip briquettes pa (2011)

Before: **25 kWh** per sq m pa electricity (2006)
2 kWh per sq m pa gas (2006)

Key features

- + insulation: cavity walls, loft, bath, water tank
- + air-sealed windows, doors, letterbox
- + curtains: triple-layered, thermal lined (black-out)
- + windows and external doors: double-glazed
- + heat recovery ventilation
- + solar thermal hot water system
- + wood-burning stove
- + solar photovoltaic (PV) system: funded by friend
- + sedum green roof (shed)
- + water: spray taps, toilet cistern 'hippo', water butts
- + lighting: low energy (house), solar (shed)
- + fridge: terracotta evaporation, non-electric
- + grow our own: fruit and vegetables
- + biodiversity: wild flower garden



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Our water use includes 5 water butts for the garden. And to reduce our mains water use we have a 'water hippo' in the toilet and a spray tap in the kitchen.

Other DIY measures include low-energy and LED lighting, draught-proofing and secondary glazing. The kitchen ceiling is painted white to reflect light.

We don't run a fridge but made a non-electric fridge, a 'terracotta evaporation fridge'

Outside we have a sedum green roof on one of the woodsheds. Another shed has a clear roof for extra growing space. In the garden we grow some of our own fruit, nuts and some vegetables. We have built our own hurdle fencing from local coppice.

The last time we flew was 9 years ago. We successfully share cars with a local friend. We try to use feet, bikes, buses, boats and trains for most of our travelling. This year we have been making our bikes more accessible and secure.

A friend invested in a solar photovoltaic (PV) system for our roof. When they have recouped their costs from the Feed-in-Tariff, we will get any future profits. Our electricity usage is a third of the national average so we are producing more electricity than we will use throughout the year. This year we have insulated and double glazed our extension.

Savings

Home energy use: reduced by 60% from initial use. Or 68% less than the national average.

CO₂ emissions: reduced by 60% and currently approximately 0.44 tonnes a year (from 1.05 tonnes). Because our electricity comes from Good Energy, which is 100% renewable, in theory our CO₂ emissions from home energy use are zero.

We have shown the reduction as if we were using the standard electricity mix. Overall we only expect, to use 1100 of the 1500 kWh electricity that our solar array produces per annum.

Future Plans

As for the future we want to create our next five year plan. Possible ventures include: an earth oven; a waterless toilet; improving ventilation in the winter, now that we have so few drafts; installing a massive rain water tank that feeds our hot and cold washing machine.

We get excited about these possible developments and would like other people's input - we love sharing our successes, mistakes and ideas.



Professional Contacts

Solar thermal system and wood-burning stove: Jonathan Cooke of Dragon Contracts www.dragonbc.co.uk - highly recommended

Solar photovoltaic (PV) system: Midsummer Energy www.midsummerenergy.co.uk - highly recommended

Products and Costs

Insulation: Thermafleece, from Earth and Reed, Needham Market www.earth-and-reed.co.uk

Green materials: NCT paints, Earth and Reed

Wood-burning stove: 9 Kw Woodwarm System, Metal Developments www.woodwarmstoves.co.uk

Solar thermal system: Gasokol www.gasokol.co.uk £2,900

Solar PV system: 1.85 kWp Romag panels www.romag.co.uk £9,500

Windows & external doors: wood-framed, double-glazed, from a company not recommended (£10,000)

Architectural salvage: Cambridge Woodworks www.cambridgewoodworks.org.uk £70

Extension Improvements: Polarglaze and Green Hat Construction Cost?