

Neville Road, CB1 3SW

Joanna and Michael

'We both work in the climate change and energy field, and therefore feel that it's incumbent on us to lead as low carbon a lifestyle as possible. We try to encourage our children to do the same ("turn off the lights!").

The renovation has come about because of our knowledge about the risks of climate change, along with recognition of the significant benefits in terms of reduced energy bills and greater comfort. We bought our home in 2002 and have made changes over a long period.'

Overview

Property age: Built c. 1936

Type: Semi-detached

Wall type: Solid

Project timescale: Ongoing every several years

Floor area: Not supplied

Cost of retrofit: Not supplied

Occupants: 2 adults, 2 children

Energy Use: Electricity bill down from £37 per month to £20 per month since solar panels. Gas bill down from £55 per month to £39 per month over the past few years.

Key features

Insulation and Glazing

- External solid wall
- Internal solid wall
- Sempatap flexible internal wall
- Side extension with cavity
- Storm porch

Heating/energy

- Solar PV
- Passive solar sun room
- Natural daylighting
- Thermostatic radiator valves
- LED lighting

Materials

- Bamboo kitchen floor and surfaces
- Carpet made of 80% recycled bottles



Insulation

'We have tried several methods to insulate our solid walls and other parts of the house. This was particularly important, as we had large patches of black mould that would develop on those cold walls. Some parts of our house, notably the bay windows and alongside the porch, were constructed from a single layer of brick.

We eradicated the black mould on the cold internal walls using a thin (10mm) flexible lining called Sempatap. We couldn't install anything thicker, as we would have lost too much space. We insulated inside and out around the bay window areas, using low-cost solutions.

We tackled our large north-facing solid wall through a rather unorthodox method, that is, we decided to build a small (80cm) sideways extension with cavity insulation. We then built a storm porch with an external door and finally took advantage of the Green Deal (now defunct) to add external wall



People Exploring Low Energy Homes

insulation on the rest of the house.'

Heating and renewable energy

'We use our conservatory for effective low tech passive heating, opening the doors to let the heat through the house when the conservatory has heated up (and of course keeping the doors closed otherwise). Our glass-roofed dining area provides free natural daylight, and also passive heating. We reduce heat loss at night through internal blinds over the glass roof.

'Because our house roof is east/west/north facing we decided to use the garage roof for PV, adding a small wooden frame to the back to increase the number of panels that could be installed to 10. The panels are angled at just under 5 degrees (because of planning rules), which has its disadvantages (less generation, and dust accumulates).



However, we still generated 2100 kWh last year. To maximize the benefits of the solar PV panels, we use timers so that our appliances (dishwasher, washing machine) come on during the day, when the panels are generating the most electricity. This has made a real difference to our electricity bills.'

Rainwater

We have four water butts to collect rainwater for the garden but also use it as much as possible for uses that don't require purified water (eg mopping the floors, rinsing out milk bottles). We keep a large container of rainwater (a beer barrel!) by the kitchen sink for internal use (we just refill it from the outside water butts whenever necessary).

Lifestyle changes

We repair, reuse, recycle or give away our waste/unwanted goods as much as possible, filling about one quarter of a small black wheelie bin every 2 weeks. We re-fill our laundry liquid, washing up liquid and toilet cleaner containers at Daily Bread (Kings Hedges), and bulk buy liquid

soap in a five-litre container to also reduce plastic waste. We buy our milk from a traditional milkman who delivers milk and juice in reusable glass bottles, use travel mugs to avoid disposable coffee cups, and fill up our metal water bottles here at home, to avoid buying water in plastic bottles.



We car share with a local family, and use the car as little as possible (clocking up less than 3,500 miles a year for the past 4 years). We cycle as much as we can, and avoid flying for leisure, taking the train instead, including for European trips.

Performance

As noted above, the solar panels do suffer from not being at the recommended 45-degree angle.

Future plans

We still have a long way to go. When finances allow, we would like to install solar hot water heating, and a more formal rainwater harvesting system. When our car packs up, we will buy an electric vehicle (finances permitting).

Advice

We based our decisions on thermal imaging provided by Cambridge Carbon Footprint, which was really useful in highlighting areas of heat loss. The Centre for Alternative Technology also provide very good neutral information www.cat.org.uk

What would you have done differently?

Coordinated different improvements better. We would have considered more seriously a ground source heat pump when extending our house. We would also have installed solar hot water heating when getting a new boiler a few years ago.

What is your top energy-saving tip for householders?

Get an energy meter, to find out which appliances are really guzzling up electricity, and which hardly register. You may be surprised. Ask Cambridge Carbon Footprint to thermally image your home, to find out where the heat is escaping.