CASE STUDY

58 Upper Brighton Rd Worthing, BN14 9HT

Overview

Address: Owners: Mike and Heather Brayshaw
Type: Semi Detached
Age: 1934
Beds: 4
Walls: Brick, Cavity filled
Area: 160 m^2
Residents: 2 adults

Features

Cavity wall insulation
Condensing boiler
Low energy lighting
Low energy appliances
Natural materials
Solar gain
Solar PV (1.75 kWp)
Solar thermal
Triple glazing
Water conservation
Food cultivation

Introduction and approach

Mike and Heather have undertaken a pragmatic approach to energy saving and have invested in those proven measures which deliver good carbon savings and have maximum impact for the investment. This is not simply an economic exercise, but is driven by their Quaker principles to support sustainability, as well as Transition Town principles.

Their large semi has filled cavity walls, triple glazing, solar pv and solar hot water, plus solar gain from the lean-to conservatory. It maintains cosy living conditions, whilst using around half the energy of an unaltered conventional home, with input from renewables helping to reduce net emissions further by an impressive 70% versus the norm.

This commitment goes beyond energy, with their considerable fruit and vegetable cultivation and sympathetic support for wildlife; and the generous sharing of their house with visitors, often via the Servas movement www.servasbritain.org.

Energy efficiency measures

Heating and hot water

Heating and hot water is provided via a Worcester Bosch Greenstar condensing gas boiler, situated in the clothes drying area. This is controlled by a modern programmer, room stat and TRVs on radiators.

Space heating is boosted in winter by solar gain from the modern double glazed conservatory on the south-facing rear wall. This is separated from the lounge by double glazed doors, which can be opened on sunny winter days to let the harvested solar heat enter the house. Radiators have reflector sheets behind them.

The fireplace in the lounge is also functional and is used to burn logs and confidential correspondence.

Hot water in the summer months comes almost exclusively from solar hot water tubes, which also preheat in winter.

Insulation

Cavity wall insulation – This was installed as far back as 1981 and consists of urea formaldehyde foam. This technology has been since overtaken by more modern fillings, but is still functioning well.

Triple glazing – secondary double glazing was fitted in 1981, at the front and side of the house, which worked well because noise was an issue as the house is on a busy main road. The decision was therefore taken to leave this in situ when replacing the old windows in 1993 with new double glazed units, thereby creating triple glazing. This has proved astonishingly silent and very warm.

Loft insulation – there is just 100mm of glassfibre insulation between the 100mm ceiling joists, which have been overboarded for storage, and a new loft access installed.

Porches – porches have been built at the front and rear to preserve heat and cut out noise.

Renewables and low carbon technology

Solar Thermal – a 30 tube array was fitted in 1995 by a local contractor, Sunmaster (now Commercial kitchen contracts).This delivers heat to an insulated preheat cylinder in the loft, which in turn feeds the conventional hot water cylinder on the floor below within an efficient airing cupboard.

Solar PV – a 1.75kW array is on the south facing roof, and was installed in 2005 by Kent firm, Chelsfield Solar, and produces just under 2000 kWh pa. Many current panels claim to be more efficient, but apparently deteriorate whereas these Panasonic (rebranded from Sanyo) ones retain their capacity. To take advantage of this, high load electrical activity such as breadmaking, baking, dishwasher, washing machine is scheduled for use when the sun is shining.

Electricity

Low energy lighting – almost all lamps are now either CFL or LED. A few tungsten seldom used spotlamps still remain, but will be switched when they fail.

Appliances – All are now either A or A+ rated and the washing machine and dishwasher are only used on full loads. Freezer is set to Eco function.

Carbon emissions

Energy Use: Electricity 2600 kWh pa, Gas 12300 kWh pa, PV 2000 kWh pa.

Net CO^2 emissions: Total 3.0 tonnes (46% less than average UK dwelling), 17.6 kg/m^2 (72% less than UK average).

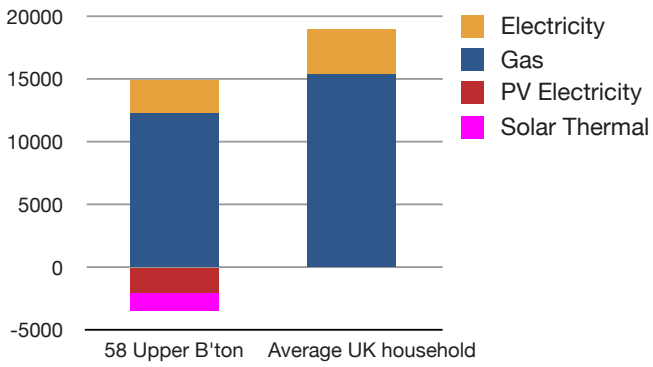
Other sustainable measures/ lifestyle decisions

Water conservation

Grey water recycling – bath and sink water is used to either flush the WC or to water the non food part of the garden.

Rainwater harvesting – rain is collected in 6 butts, and used to water the fruit and vegetables, as well as back up for flushing the WC.

Energy and generation (kWh)



Food cultivation / organic food box – A wide range of vegetables are grown, including leeks, broad beans, beans, tomatoes, peas, potatoes and sweet corn. Fruit trees were planted in the early 1980s, which now yield apples, pears and plums, in addition to bushes producing blackcurrants, raspberries and blackberries. This is topped up with an organic food box. All food and garden waste is composted.

Wildlife – Mike and Heather are enthusiastic bird watchers and feed and encourage birds to come to their garden. There is also a gap in the fence for hedgehogs, occasionally used by invading foxes, a small brushwood and also uncut grassy, wildlife area, and the outside log store provides further shelter for insects.

Housesharing – now that the children are grown the house is a bit large for a couple, but this is mitigated not only by family visits, but also by their membership of Servas, a long standing international organisation which promotes world peace by members welcoming families and visitors to stay as guests for two nights.

Natural materials – Marmoleum flooring, wool carpets, eco paints and an avoidance of synthetic materials demonstrate their respect for the environment.

Recycled goods – a lot of their furniture is second-hand or proudly retained since their marriage 45 years ago; they use charity shops extensively for clothes and other needs. Surplus items are offered on Freecycle or gifted (with Gift Aid) to charity shops.

Professionals

Solar PV – www.chelsfieldsolar.co.uk

Solar Thermal – Sunmaster: now Commercial Kitchen Contracts, but continuing solar installations as a side-line Tel 01903-231110, E info@commercialkitchencontracts.co.uk

Eco Open Houses Worthing is funded by Green Open Homes and Worthing County Local Committee's Community Initiative Fund, with sponsorship from Henry House Therapy Centre and Worthing Homes.