

46 Beechwood Avenue, Worthing, BN13 2HS

Overview

Type: semi-detached bungalow

Age: 1930's

Beds: 2 bedrooms

Walls: cavity

Area: 85 m2 approx

Residents: 2

Key Features

Rainwater harvesting

Solar PV

Lifestyle

Other Features

Cavity wall insulation

Condensing boiler

Double glazing

Draught-proofing

Heating controls

Low energy appliances

Low energy lighting

Loft insulation

Underfloor heating

Wood-burning stove

Introduction and approach

In this world of trying to live a better life, what does that mean exactly? What does that really look like for the general person trying to find their way through all the righteousness that exists everywhere.

Most of us want to save money, have a guilt free conscience, and enjoy ourselves as much as possible. Is it really possible? Here at no 46 there seems to be the right balance of living at one with the environment but also living at this time in life.

There is a great **rainwater harvesting** system that consists of 5 water butts strategically placed around the property collecting the rain water from various points of advantage so



water is captured and used as needed, with plenty left over.

Solar PV sits proudly on the front roof and has encouraged several neighbours to join the free electricity movement and using all their appliances during the day to maximise the return.

And the **lifestyle** Pauline and Alan live is normal, hardworking, but conscious. They have a great food growing garden that's not only practical but beautiful to be in. If you are looking to move into this world of working with nature, then come here and see how it can be achieved in today's full on culture.

Energy and CO2 performance

Pauline and Alan switched to Ecotricity 18 months ago for gas and electricity to help promote the development of renewables.

Prior to installation of the solar PV system in March 2014, their carbon emissions were already less than half the UK average. This is in part because Pauline and Alan spend 12 weeks of the year in Brittany.

The solar PV helps reduce carbon emissions still further to an estimated 63% of the UK average. This resulted in exceptionally low bills, but now a new meter has been fitted it will be interesting to see what this year

brings. Cost of gas was comparable to the previous year, despite the increase in price.

Energy efficiency measures

Heating and hot water

Heating, hot water and cooking is with gas. The bungalow already had a relatively new gas condensing boiler. When the hot water cylinder sprang a leak, Alan replaced it with a twin-coil cylinder which has the potential to connect to a solar system later.

Last summer, utilising the benefits from the solar panels, Alan placed a timer on the immersion heater to heat the hot water at periods of maximum generation (to try to save on gas).

The heating has a programmer, whole house thermostat and thermostatic radiator valves (TRV's) on all radiators, all of which have been replaced as each room has been decorated.

The 5kW wood-burning stove gives additional top-up heating as required.

The conservatory has underfloor heating connected to the gas heating system.

Insulation

Walls - cavity wall insulation is blown loose fill.

Windows - The entire building, including conservatory, is doubled glazed with high performance heat reflective units. The porch has a double glazed outer door/window. The inner porch door has draught excluding tape around it.

Loft - 100mm of fibreglass quilt is laid under the floor and 100mm of fibreglass quilt above the plasterboard ceiling. In the section of loft which is used for storage, the roof has been insulated with 100mm quilt with a membrane stapled to the underside of the rafters to reduce draughts. Insulation has been topped up to a full 300mm of mineral wool, sharply cutting roof losses.

Airtightness & ventilation - Where floorboards have been stripped, gaps have been sealed with mastic. Inlet air for the wood-burner is ducted to a floor grille adjacent to the unit.

Renewables and Low carbon technology

Solar PV – A 3kWp system, comprising 12 Solarworld PV panels using one Power One inverter, DC and AC isolators, Generation Meter and Wireless Monitor, was fitted in March 2014

Woodburning stove – installed by Alan and uses scrap wood from his renovation work. When in use, the central heating thermostat can be turned down by 2 degrees.

Electricity

Alan and Pauline have gradually replaced old lamps, as they ceased working, with new low energy miniature fluorescent and LED ones.

Appliances such as eco kettle, low energy shower are used. Their washing machine came from Freegle (<https://trashnothing.com/worthing-freegle>) and it's 10% better than energy efficient class A!

Carbon emissions

Energy Use: Electricity 1650 kWh pa, Gas 9476 kWh pa, Wood 550 kWh pa, PV 1818 kWh pa.

Net CO2 emissions: Total 2.0 tonnes (63% less than average UK dwelling), 24.0 kg/m2 (62% less than UK average).

Other sustainable Measures/ Lifestyle decisions

Clothes drying - This is done on washing lines in the conservatory, thus utilising the heat from the underfloor heating and the sun.

Water conservation - Savings on hot water are achieved by showering and washing up by hand (not using running water) once or twice a day. There are 5 water butts – 4 of them made from old mayonnaise/olive containers. No mains water has been used in the garden for the past 5 years.

Cooking methods - 2 day's meals can be cooked at once, using stainless steel saucepans with the lids on and turning them off about 5 minutes before the end of cooking time.

Food cultivation - Pauline grows her own vegetables and fruit.



Lessons learned/ Further improvements

Pauline and Alan's hot water use is minimal. They don't think it would be economically viable at present to have solar hot water.

When installing/repairing underfloor pipework it would have been sensible to insulate under the floorboards at the same time.

Professionals

Double glazing and conservatory –
www.anglianhome.co.uk/

Cavity wall insulation –
www.downsenergy.co.uk/

Solar PV - Kingsley Eco Solutions, 50 Ferring Street, Ferring BN12 5JP, 01903 227726 –
www.kingsleyecosolutions.co.uk

All other work done by Alan Cory

