

46 Beechwood Avenue Worthing, BN13 2HS

Overview

Owners: Alan and Pauline Cory

Type: semi-detached bungalow

Age: 1930's

Beds: 2 bedrooms

Walls: cavity

Area: 85 m² approx

Residents: 2

Key Features

Water efficiency

Solar PV

Innovative Waste Practices

Other Features

Cavity wall insulation

Combi boiler

Double glazing

Draught-proofing

Heating controls

Low energy appliances

Low energy lighting

Loft insulation

Underfloor heating

Wood-burning stove

Low waste household

Introduction and approach

As a director of Transition Town Worthing, Pauline spends a lot of her time at home organising projects and events (like this one) aimed at reducing impact on the environment. In an endless effort to be the change you wish to see in the world, Pauline and Alan's home is a living example of small achievable steps (rather than trying to be so perfect you set yourself up to fail!)

Their approach to water and energy conservation is impressive. It is a 2-bedroom bungalow with both Pauline & Alan at home most days, but their water consumption is



equivalent to less than one person in a one-bedroom property, so how do they do it?

Go along and see just how simple it is to achieve, through eco appliances and settings, water butts and a conscious choice to use mains water at a minimum.

They also have solar PV panels, which will be paid back after 7 years in 2021., allowing them the luxury of being guilt and carbon free as they power their home needs. What would you like to power without having to worry about the long-term costs?

And let's not forget their zero-cost built shed, and their home-made pond, costing them just the liner as the rest was created from materials left around the property, from other home improvements.

This is a cosy, comfortable and environmentally positive home that exudes efficiency and yet has come together from a make do and mend philosophy using and reusing everything. A family home anyone would want to visit and stay in!

Come and talk to Pauline and Alan... Be wowed by simplistic efficiency that's actually very easy to achieve

Energy and CO2 performance

Pauline and Alan switched to Ecotricity 6 years 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.

Energy efficiency measures

Heating and hot water

Heating, hot water and cooking is with gas. The bungalow has a new gas combi boiler, which in its first year has saved them a staggering amount on gas bills. When the hot water cylinder sprang a leak, a few years ago Alan replaced it with a twin-coil cylinder which has the potential to connect to a solar system later.

In summer, utilising the benefits from the solar panels, they use 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. Internal radiators have heat reflective panels behind them.

The 5kW wood-burning stove (fed purely with waste wood) 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, installed 10 years ago. In order to check it's still functioning properly, a friend recently went over the whole building using a thermal imaging camera to check any areas that might be a bit suspect. All appeared to be well, thankfully. You can ask to see the images if you wish, it was a fascinating exercise.

Windows - The entire building, including conservatory, is double glazed. The conservatory has 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

All lighting is low energy.

They have a low energy shower and their washing machine, which came from Freegle (<https://trashnothing.com/worthing-freegle>), is 10% better than energy efficient class A!

Carbon emissions

Energy Use: Electricity 1869kWh pa and Gas 8961kWh 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

Waste - Pauline is deeply concerned about the effects of climate change and is passionate about zero waste, local food and recycling, so they use shops like Larder and buy loose veg/fruit etc. as much as they can. Alan has built her a little recycling centre for all the items that can now be passed onto projects like Terracycle (via Recycling in Lancing for example) when plastic waste is hard to avoid.

Make do and Mend – Alan has always been an avid DIY enthusiast so make do and mend has always been a big part of his life. Transition Town Worthing now has a Repair Cafe once a month that Pauline helps to organise and Alan does some of the repairs, so their home is often housing half completed repairs or broken items waiting to be passed onto to a local STEM project. They believe in trying to conserve what they have, rather than replace something that still has plenty of life left in it, as long as it's not consuming extra energy. A great example of this is their kitchen, which still has 2 original 1930's cupboards - the rest were changed in the 1950's – still functions well and often gets remarks like "oh, it's just like my granny's kitchen used to be!"

Clothes drying - When they are able to, they line dry clothes outdoors, otherwise 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 7 water butts – 4 of them made from old mayonnaise/olive containers. Hardly any mains water has been used in the garden for the past 10 years, better for plants and the environment and saves on water bills.

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 at home and as part of a community food growing scheme.

Sedum Roof – a local green roof specialist advertised lots of free modules of sedum roofing on Freegle. Pauline had wanted a green roof on the garage for years, so off they went to Portslade to collect 10 of them – making a very good start to the dream green roof! More modules will be added hopefully as time goes on.

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.

They aim to use their car less and their bikes and public transport more and are contemplating buying a hybrid as their next car.

Professionals and projects related to this case study

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

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

Solar PV – Sussex Eco Solutions, Enterprise Units 1-5, Harwood Road, Littlehampton BN17 7AT – www.sussexkingsleyecosolutions.co.uk

All other work done by Alan Cory

Recycling in Lancing - <https://recyclinginlancing.org.uk/>

Larder - <https://zerowastelarder.co.uk/>

Transition Worthing Repair Cafe: <https://worthingrepaircafe.org/>

STEM project operating at a local school, where pupils are taught to strip down items that cannot be repaired to learn how to take things apart for repair or extract useful parts that can be re used/recycled. This is an offshoot of Worthing Repair Cafe.

