

13 Hurst Road

Details

Address: Hillcrest, 13 Hurst Rd, Hassocks, BN6 9NJ

Owners: Chris and Hilary Handel

Type: Detached

Age: 1930's

Beds: 4

Walls: GF cavity filled, FF timber frame

Area: 200m²

Residents: 2 adults, 1 child

Eco Features

Condensing boiler

Cavity wall insulation

LED lighting

Solar PV (3kWp)

Solar thermal (East/West)

Triple glazing

Underfloor insulation

Woodburning stove

Summary

Chris and Hilary Handel have totally transformed this former 1920's chalet bungalow by removing the roof gutting the interior and building up a new timber framed first floor. At the same time, they have used the opportunity to improve the environmental credentials by superinsulating the new storey and installing both solar PV and solar thermal panels. On the ground floor, underfloor insulation was also fitted between the floor joists. Much of the original uPVC double glazing was retained and triple glazed skylights were used on the top floor, which is particularly energy efficient.

In the lounge there is now a woodburning stove, which helps keep gas consumption down and create a cosy space.

Outside, the garden is also managed sustainably, with extensive vegetable and fruit growing areas, as well as chickens running free.

The house now performs so well it has been accepted as a 'Superhome' demonstrating at least 60% energy reduction.

Energy efficiency measures

Heating and hot water

Heating and hot water is provided via a condensing gas boiler. From spring to autumn most hot water is provided by solar thermal panels, reducing gas use.

A 6kW Morso woodburning stove is used to heat the open plan ground floor living area, which delivers heat where it is needed and again reduces gas. About four loads of wood a year are used, which is seasoned to a very low water content in a south facing shelter in the garden.

Insulation

The new upper floor was particularly well insulated, with 160mm PIR foam boards in roof and 130mm PIR inserted between the wall studs. Rooflight windows on this floor have triple glazing.

The ground floor has existing cavity wall insulation, and the suspended wood floor has 110mm PIR underfloor insulation. Ground floor windows are uPVC double glazing, some unchanged and some new ones with low e coating and argon filled. The house was designed to have around 40% double glazing at the rear to maximise solar heat gain from the low winter sun.

Renewables and Low carbon technology

Because of the gabled roof design, there was little south facing flat roof for solar panels. This has been overcome by having solar thermal panels on the east and west facing pitches, which provide morning and evening hot water, feeding into a 300 litre store in the garage. East and West panels are still a good option, as they still gather 80% of the heat of south facing panels.

Solar PV required a more ingenious solution. Chris has created a useful timber shelter next to his vegetable garden with a large south facing pitched roof, which accommodates 3kWp of high performance Panasonic HIT panels, each with its own inverter to maximise total output in case of any shading. The inverters are monitored remotely by the manufacturers so that any malfunction can be identified during the long 20 year warranty.

Electricity

Low energy LED lighting has been installed throughout, cutting the lighting load to 10/20% of old halogen and incandescent lamps.

Other sustainable Measures

The rear half of the garden is given over to a large vegetable growing area, and a fruit area with cherries, apples, pears, blueberries, and more. Chickens have a run and can roam freely in their half of the garden. The rest is grassed, but a large area has been set aside for a mini wild flower meadow.

All waste is composted, for going back into the ground.

Water conservation

Rainwater is collected from the roof and stored in 1000 litre storage in the garage for watering the garden.

Lessons learned

This house's achille's heel is the old cavity wall insulation, which is urea formaldehyde foam, which is notorious for degrading and crumbling over time. This means that the cavity wall insulation is not quite as effective as it might be, but removal would be troublesome and very expensive. If any further work were done, internal wall insulation might be a solution.

Professionals

Architect: George Baxter Associates, Steyning: www.georgebaxterassociates.co.uk [1]
Builder: Richard Knight.

Gallery

- [2] [3] [4] [5]
 - [6] [7] [8] [9]
 - [10] [11]
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Links:

- [1] <http://www.georgebaxterassociates.co.uk>
- [2] http://www.lewesecoopenhouses.org.uk/sites/lewesecoopenhouses.org.uk/files/images/11july2013_426.jpg
- [3] http://www.lewesecoopenhouses.org.uk/sites/lewesecoopenhouses.org.uk/files/images/11july2013_428.jpg
- [4] http://www.lewesecoopenhouses.org.uk/sites/lewesecoopenhouses.org.uk/files/images/11july2013_435.jpg
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