5 Hollingbury Copse, Brighton BN1 6XD

OVERVIEW

Age: Main house 1940, plus modern extension

Type: Detached

No of years in residence: 4.5

No of residents: 4

No of bedrooms: 5

No of other rooms: 9

No of floors: 5

Wall type: Main house; cavity. Extension; steel & timber frame

FEATURES

+ Air source heat pump
+ Green Roof
+ Induction hob
+ Natural materials
+ Photovoltaic (PV) panels
+ Solar thermal panels
+ Sun tube
+ Sweet chestnut cladding
+ Underfloor heating
+ Wood burning stove

Introduction and approach

Kevin and family moved in five years ago and began its transformation by meshing a 1940s house with a substantial modern extension. The aspiration was to make the most energy efficient house they could on a moderate budget. The remodelling included extensive insulation, the introduction of renewable energy systems and the creation of larger living space to house the growing family.

The final design was arrived at after three planning applications with three very different schemes submitted over a nine month period. Once planning consent was granted all of the building work and installation of the various technologies was undertaken by Kevin`s building company Southern Living.

Natural materials have been used extensively on the extension, including wood fibre insulation, lime render, clay tiles on the roof, galvanised steel gutters and a recycled oak floor.

There is a range of renewable technologies in the house to demonstrate what is possible; photovoltaic panels, air source heat pump, wood burning stoves and solar thermal panels. A decision was made to take the property 'off gas' to protect it from future rises in energy prices.

Thermal improvements

Main house: cavity walls have been filled. Roof is insulated internally with 80 mm Celotex between the rafters and a high performance thermal blanket on top of the rafters.

Extension: walls are timber frame infilled with 150 mm wood fibre batts and clad in 80 mm Steico fibreboard insulation on the outside finished with a mix of sweet chestnut rain screen and Lime render.

Heating system

Heating system: heating is primarily via a 14 kW air source heat pump supplying underfloor heating on the ground floor, with radiators elsewhere and backed up by woodburning stoves in the living room and kitchen. To help offset the heat pump's electricity use there are 2.1 kWp of solar PV panels. A conscious decision was made to avoid using gas. Water heating is supported by solar thermal panels comprising 3 no. 2m x 1m panels which serve a dual coil 300 litre tank.

Use of materials

The new extension has a steel frame, but walls are timber stud. A sustainable approach was adopted, using natural materials such as timber, breathable fibreboard insulation (Steico), lime render, clay roof tiles and recycled oak flooring. The rear of the house is clad is in sustainable sweet chestnut.

Water efficiency

There are plans in the near future to install a 3,000 litre rain harvesting tank to supply toilets.

Further improvements planned

Lighting is intended to be converted to LEDs.

There are plans to install a rainwater harvesting system in the future.

Lessons learnt

Planning proved far more difficult than expected and took around two years.

Professionals/websites

Design and management – Southern Living Ltd: www.southernliving.co.uk

Renewable technology – Southern Living Ltd: www.southernliving.co.uk

Eco Open Houses is an annual collaborative project between Low Carbon Trust, Brighton Permaculture Trust and Brighton & Hove City Council. This year the event is run as part of the ECOFab 2 project and has been selected within the scope of the INTERREG IV A France (Channel): England cross-border European cooperation programme and is co-financed by the ERDF. The Green Deal strand of the project has been funded by the Department of Energy and Climate Change through the Local Authority Fund

Brighton & Hove City Council

Low Carbon Trust

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