Skyhouse

Address: The Skyhouse, Cuilfail, Lewes

Owner: Amy Burgess?
Type: ?New build - Off site prefabrication
Ground floor 3 bed Bed and Breakfast, First floor 2 bed appartment
Age: ?1 year
Walls: ?Timber frame?

Book Tour

Saturday 15th October [1]

Sunday 16th October [2]

Features

Airtight construction
Biomass (pellet) boiler
LED lighting throughout
Low energy appliances?
MVHR
Natural materials?
Recycled wood shavings wall insulation?
Solar PV
Timber construction
Triple glazing
Zero Carbon/Carbon neutral ?

Summary

Amy Burgess came to Lewes 5 years ago, drawn by the beautiful setting within the downs and looking for a project to express her deep committment to sustainable, natural living. The position of Skyhouse at the top of Cuilfail seemed ideal, with its tranquility and stupendous views.

In her native Colorado, Amy was an early adopter of retrofit renovation and she carried these ideas, plus a passion for using natural, healthy materials into the Skyhouse project. In the process, it has become clear that sustainability goes beyond energy and has influenced her policies for sustainably sourced materials and food, as well as rainwater harvesting.

Having demolished an unsightly and poorly designed bungalow, she has created a comfortable and stylish B and B, with her own living quarters on the floor above.

Baufritz was chosen for their high quality of build which was prefabricated in Germany and quickly assembled on site; in this case in four and a half days. Baufritz were also chosen for their philosophy of low embodied energy construction, based mainly on timber, with minimal in life emissions via airtightness and superinsulation.

Coupled with a low carbon wood pellet heating system, and recycled solar panels to offset electricity use, the end result is a great showcase for Zero Carbon living.

Energy efficiency measures

Heating and hot water

From the outset, the aim has been try and achieve a zero carbon building, which has impacted on the choice of technologies. Although heat pumps would have been attractive, the current high carbon content of electricity meant that Biomass was the lowest carbon option.

A Greener Alternative have installed a highly efficient 15 kW Windhager pellet fired boiler which supplies heat via underfloor heating as well as hot water. Annual consumption is around 25,000 kWh, which is very modest for the accommodation. Although more costly than a conventional boiler, this boiler receives high RHI subsidies, which greatly discount the cost.

Two MVHR units, one for each level, ensure that outgoing air gives up its heat to the incoming, thereby increasing efficiency.

Insulation

Walls

Baufritz fills timber framed walls with 240mm of recycled woodshavings which achieve a far higher level of insulation than current building regulations. U value 0.19 W/m2/K.

Windows

Triple glazed units are standard, as double glazing is not considered sufficient in Gremany. Again, the u value far exceeds UK standards at 0.79W/m2/K overall (centre pane 0.5).

Roof

Insulation is carried through the roof, which is finished in zinc.

Floor

Floors are concrete with an overlying acreed containing underfloor heating. This concrete gives thermal mass to what would otherwise be a lightweight timber structure and helps stabilise temperatures.

Airtightness

Airtightness is extremely high, measured at a little over 1 m3/hr at 50Pa, compared to uk building regulations of a minimum figure of 10.

Renewables and Low carbon technology

Biomass boiler

The pellet boiler burns fuel with very low carbon emissions, as the fuel is produced from renewable woodland.

Solar PV

The original house on the site had a very large solar array of 8kWp output. This was preserved and relocated at the front of the site, cleverly landscaped out of sight on the ground, where it continues to generate 8000kWh per annum.

Electricity

Low energy lighting – All lighting in the house is from LEDs and as a result consumption is very low.
Appliances - As far as possible, allpiances with the lowest energy use have been chosen.

Carbon emissions

Energy Use: Electricity 5600 kWh pa, PV 8000 kWh pa., pellet 25,000 kWh pa.

Carbon emissions are effectively neutral as electrcicity consumed is more than balanced by Solar generation and the pellet boiler emissions are very low.

Other sustainable Measures/ Lifestyle decisions

Natural materials

As a company, Baufritz are committed to use of natural materials with as low embodied carbon as possible: hence the timber construction and insulation.

"Cradle to Cradle" recyclability - However, they go beyond that to aim for ultimate recyclability, i.e. they build insuch a way that materials can eventually be recycled or reused at the end of the building's life.

Amy has a passion for a healthy living environment, which drove her to choose the the most sustainable and natural construction materials and methods, fight down to the choice of finishes and paints made from natural sources, with minimal toxicity.

Professionals

Architectural design and Construction - Baufritz
Boimass consultancy - Stewart Boyle, SEWF.
Solar PV – Old array, inherited on purchase
Pellet boiler - Windhager boiler installed by A Greener Alternative.

Links:
[1] http://lewesecoopenhouses.org.uk/booking#SkyHouse15th
[2] http://lewesecoopenhouses.org.uk/booking#SkyHouse16th