Energy Efficiency - Residential
Case Study 5

Project

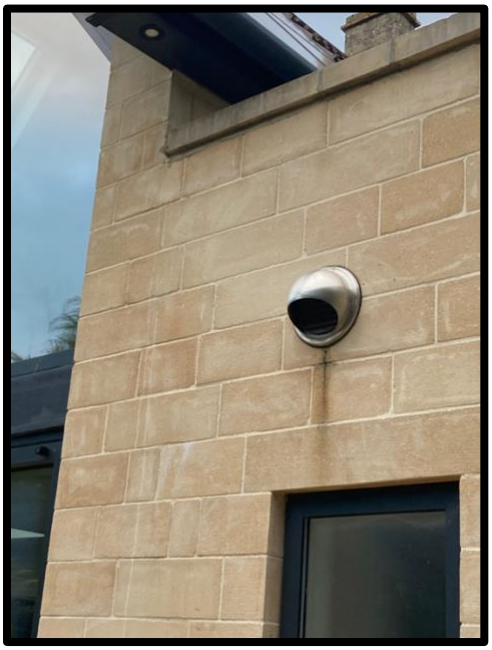
2015 – Started the design
2016 – Achieved planning permission
2016 - Appointed builder
2017 – Construction started
Wait for builder took one year

Solar Panels

22 x Solar panels**.** They are all PV.

4 South facing**.** You can put them east to west too, it gives a broader range of time to get energy. They would have had more panels but the costs were too much and grid limits wouldn't have allowed it. They would have liked more panels that also function as roof tiles but they would have gone over existing Velux. There are a mixed bag of installers. Gem in Bristol were used for this project. The company quoted for the Tesla battery which could have doubled the cost. If there is extra energy, it heats the water tank to 60 degrees. The house requires no gas usage in summer. The integrated roof has inset PV. Solar is rated at 5% VAT which softens the blow.

Glazing



Tripled glazed. The back garden west facing**.** Downside - does get very hot**.** Bi-fold doors and windows were on display at the self-build centre in Swindon. Bi-fold doors are from Folding sliding door company - 25 years warranty. Windows are from Velfac Aluminium on inside and wood on outside. Triple glazed doors**.** Doors okay. The client wishes he had gone to the National Self-Build-and Renovation in Swindon before the design stage**.** No incentives from government to do anything sustainable. Extra increased natural light from glazing, with bi-fold doors and skylights reduce artificial lighting even on dull days - used to use a lot more electric lighting with lights required in summer rooms even on the brightest sunny day.

Insulation

Better than building regulations at time of insulation. Wall cavity from Kingspan Insulation. 60mm. 50mm gap. Nightmare builder. No clue about installation. Needed constant reminding to join insulation at corners.

Heating

UFH with concrete screed. Water (no gas). Worcester Bosch condensing boiler.

Mechanical Ventilation Heat Recovery (MVHR)

Whole House mechanical ventilation heat recovery, requires big cupboard to house it. Notice in winter - rooms warmer. Takes 1-2 hours for fresh air. Ducts In new and existing part of the house. Vertical pipes in fitted wardrobes. Definitely makes a difference. Background constant trickle ventilation. Increases automatically at 70%+ humidity.

Water & Drainage

New drainage soak away. Considered grey water storage and rain water harvesting but budget wouldn't stretch to this.

References

Centre for Alternative Technology: https://www.cat.org.uk
Kingspan Insulation: https://www.kingspan.com/gb/en-gb
Worcester Bosch Combi Boiler: https://www.worcester-bosch.co.uk
The National Self-Build~~, Custom Build~~ and Renovation Centre: https://www.nsbrc.co.uk
Folding Sliding Door Company: https://www.foldingslidingdoors.com

If you have any questions, about this build, contact us at cfboaenergy@gmail.com and we will contact the owner on your behalf.