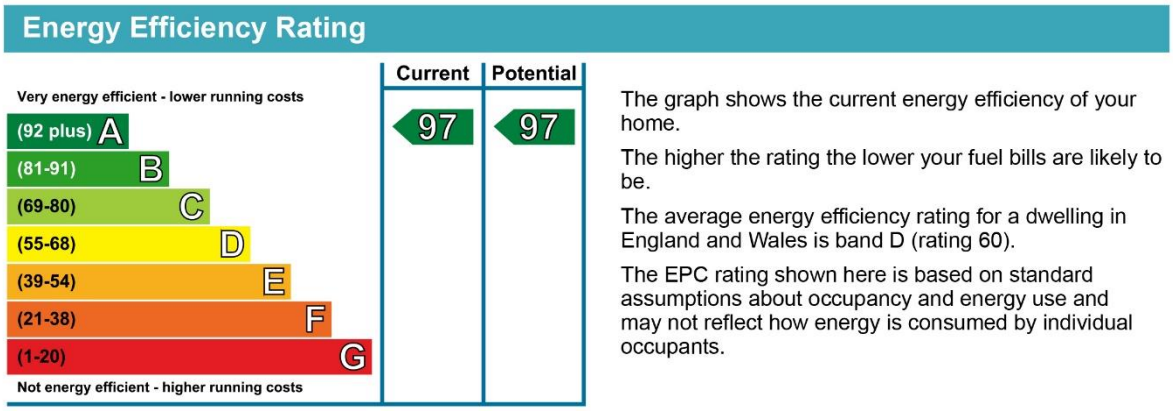
Sailcloth House, Rax Lane, Bridport

Near-Passive timber framed building

This was built on the site of a Christian Science building which had been disused for over 10 years. The site was acquired Jan 2018, planning permission given August 2018, CS building demolished Mar 2019, New building completed September 2020.



- **Architects**: Barefoot Architects Sam Goss and Rob Hankey https://barefootarchitects.co.uk/ (also architects of Bridport Co-housing and Chalk Wall House)
- **Building contractor**: Chris Millsted. Woodram Construction in Ilminster. https://www.woodramconstruction.co.uk/
- **Electrical, Heating, plumbing, ventilation**: Evergreen Energy in Lyme Regis https://www.evergreenenergy.co.uk/
- **Solar panels and Battery**: Stuart Houghton, www.currentenergysolutions.co.uk/
- **Building Frame** All Timber Frames in Crediton, Devon http://alltimberframes.co.uk/
- **Suppliers Materials** for timber frame and advice on wood products: Back to Earth www.backtoearth.co.uk in Tiverton
- **Insulation consultant**, EPC : John Butler https://www.sustainablebuildconsultancy.com/
- **M&E designer** Ryan Watts https://www.watt.design/

Construction:

The building is made of Structurally Insulated Panels (SIPs), which were built in Crediton, Devon. They are filled with 45mm Steicoflex wood fibre insulation, with an air-tight green Pro-Activ OSB board on the inside. These were then covered with 120mm of Pavatex Diffutherm wood fibre, Tyvek breathable membrane, then 7mm Baumit lime render or

WALL – Timber Frame - Render	**495mm**
15mm plasterboard board andk skim	
38mm batten to create service void - filled with SteicoFlex wood fibre insulation	
12mm ProActive OSB board taped for air-tightness	
235x45mm studs at 600c/c	**0.110 W/m2K**
Stud zone fully filled with SteicoFlex wood fibre insulation	
120mm Pavatex Difutherm wood fibre board	
Render (7mm Baumit render system)	

Source: Calculated by Back to Earth https://www.backtoearth.co.uk/ on 2018/12/10

Siberian larch. The flat roof is insulated with 120mm Celotex, the sloping roof is made of wood fibre SIPs similar to the walls

Heating:

Air source Heat Pump (ASHP)on roof: Mitsubishi Ecodan 11.2kW.This extracts heat from the air. The COP shows how much heat energy is produced from 1 unit of electricity. This has varied between 1.9 and 2.6.

Underfloor Heating: liquid, controlled by room stats in each room which can also be programmed for time of day

Ventilation

As the house is air-tight (0.12 W/m^{2}K at 50 Pa – not quite up to Passivhaus standard) The rooms are ventilated:

The Mechanical Ventilation with Heat Recovery (MVHR) system extracts stale air from bathrooms and kitchen. A heat pump transfers the heat to incoming fresh air which is then pumped to all the other room. Ventaxia Kingston system

PV solar Panels and Battery:

LG Neon2Black solar edge system, 14 panels, 4..76 kW system estimated annual output 4800kWh. The spare electricity goes to an LG Chem LU10 battery which can store 9.8 kWh

Any further excess goes to an EV charger, Zappi , which charges the car when there is spare PV generated electricity, or at night at low tariff (Octopus Go, 100% renewable).

Windows

Triple glazed velfac wood frames with Aluminium exteriors.

Projects for phase 2.

- Solar thermal panels on top roof
- Rainwater recovery
- Electricity divertor to heat water with spare PV generated electricity.

Appliances:

- A++ Panasonic fridge-freezer
- A++ Bosch dishwasher
- A AEG Double oven
- AEG induction hob
- <35 year old Miele washing machine!

Flooring: Engineered oak (4mm laminate) – UK flooring direct
Grespania porcelain tiles slate range
Marmoleum flooring in bathroom – a sustainable alternative to lino.