Case study

22 Windlesham Road, Shoreham-by-Sea, BN43 5AE

Overview

Owners: Elizabeth and Kim Matthews

Type: Semi-detached with side and rear extension and new roof

Age: 1938

Beds: Four

Walls: Brick cavity

Area: 222 m^2

Residents: Two

Key features

SIPs (structural insulated panels) extension and pitch roof

Passenger lift to first floor floors

Introduction and approach

Age: Built by Gates Builders, Shoreham, in 1938. The owners bought house in Nov 2023 from family that had owned it since 1947. Renovations started in June 2024 and took a year to complete. They kept and sanded two floors in the bedrooms and kept a 1930s kitchen cabinet in the pantry and another fitted cabinet in the front bedroom.

They wanted an energy efficient renovation and extension using SIPs. Interested in natural and sustainable materials. Wheelchair access for Elizabeth was an important part of the brief and Art Deco style of original building to be continued and enhanced.

Art Deco - emphasis on the horizontal lines, Crittall-like windows, corner window on 1st floor bathroom, octagonal window (saved from the owners octagonal house in Colorado).

All interior wood doors are 96 cm wide for wheelchair access for Bessie to all rooms, and space for turning circle of wheelchair incorporated to all areas except the loft.

Energy efficiency measures

Heating and hot water

Airtight construction and high levels of insulation.

Floors - Ground floor suspended timber floor replaced with Geocell insulation and screed with under floor heating

Insulation

Walls - Existing - Insulated cavity filled with polystyrene bonded beads, 150mm external rendered insulation.

Extension - Kingspan TEK Building System 172 mm thick structural insulated panels (SIPs)

Windows - triple glazed, thermal breaks on window frames. Glazing blocks the UV. Two light tubes in loft.

Roof - Flat rear extension and dormer- 150mm Kingspan Thermaroof TR27 GRP finish

Pitch - Kingspan TEK Building System 172 mm thick structural insulated panels (SIPs), tiled.

Ventilation

Mechanical ventilation with heat recovery (MVHR) Airobot V3 Pro HRS. Can also reduce humidity and temperature by 10 degrees in summer.

Renewables and low carbon technology

PV Solar panels 3 kW array and GivEnergy battery

ASHP – Samsung

Electricity

Energy use - only been resident since June 2025. Electric use tiny in summer, house kept cool. Winter bills estimated to be £85 per month (based on only November)

Other sustainable measures/ lifestyle decisions

Water Conservation – 3000 litres rainwater harvesting tank buried in back garden, connected to electric pressure pump and garden tap. No worries in future heatwaves and hosepipe bans. Keeps run-off out of Southern Water drains. Supplied by Rainwaterharvesting.co.uk

Compost vegetable and garden waste – All shrub waste shredded and used as mulch. Garden waste leaving property is zero. Raised beds for vegetables. Bessie has recycled since late 1960s and religiously recycles (Adur DC collects fortnightly) and always tries to eliminate plastics from household items etc. One garden shed contains fishing nets - Kim is part-time, low impact fisherman and hopes to supply high protein, local and sustainable fish to their family and neighbours.

Lessons learned

Electric car point will be completed when they purchase a new all-electric SUV in the near future, electric motorbility scooter housed in small shed at rear of house.

Professionals/materials

Contractor:
Mistral Construction Ltd

Architect:
Sarah Kemp Eskay
Architects/Retrofit Sussex

Structural engineer:
Erigo Engineers Ltd

SIPs supplier and installer:
Bentley SIPs Systems

PV and battery installer:
The Electrical Company (Brighton)
www.tecbrighton.co.uk

External wall insulation installers:
Rendered Speechless

Installers for MVHR and ASHP:
MVHR.mu

Windows:
Benchmark Windows