










Inspiring Victorian terrace home with ecological insulation creating a great ambient feel and 70% energy reductions



Overview

Age/Period:	1890/1926
Type:	2 storey double mid terrace
Years in residence:	7
No. Bedrooms:	5
Wall type:	Ashlar stone and cavity
Area:	Combe Down
Status:	Conservation Area

Key Features

-  Internal wall insulation
-  Loft insulation
-  Floor insulation
-  Draughtproofing
-  Triple glazing, secondary glazing
-  Grey water recycling
-  Perennial garden
-  Wood burner
-  Energy efficient lighting

Introduction

Rosie was looking for an eco-renovation project, and in 2016 found a suitable property. The home had originally been 2 terraced properties, one built around 1890 and the second as a shop in 1926. They had historically been joined to make a larger shop downstairs with a flat above. Rosie was particularly attracted to its south facing aspect, and the large, glazed shopfront which would allow passive heat gain from the sun to be trapped. With the addition of an inner glazed wall to create a

sunspace, this heat can now be transferred into the main house in a controlled way to reduce the need to heat the home.

Rosie is a psychologist who has been adapting her skills to contribute to building the foundations of a life-sustaining society. She offers workshops on eco-grief, living systems and deep ecology, empowerment, communication, and conflict, and is involved in various community food growing and land restoration projects. She has trained in permaculture and wanted to use her home as a way of demonstrating low-cost ecological approaches to making a house more sustainable.

Features

Internal wall insulation

Considerable thought was put into the choice of Hempcrete (hemp and lime) to insulate the main walls of the property. The choice of Hempcrete was inspired by Simon James Lewis of Neighbourhood Construction in Bristol and was installed with the help of [Hawkland Ecological Construction](#).

Hempcrete is very sustainable, hemp locks in carbon and it has good thermal mass and hygroscopic properties which provides a nice ambience to the building. Hemp and lime creates a hygroscopic reservoir, buffering peaks in humidity and preventing damp. Moisture vapour doesn't change state from gas to liquid, it's captured without condensing. When the humidity lowers, moisture is released as vapour without using energy to evaporate condensed liquid back into gas resulting in loss of energy.

As a result, the property feels warm and dry, and the walls, unlike many properties of this age aren't damp. The bathroom for example has no condensation or mould despite not having an extractor fan. The 150mm of hempcrete has been finished with various kinds of lime plaster (horsehair, hemp, and plain lime) and Auro natural paints.

Rosie has more recently experimented with the use of cork blocks to insulate walls at the rear of the building and a solid floor. The cork is easier to install from a DIY perspective and sustains the traditional growing of cork oak trees in Portugal counteracting their loss following the shift from cork to plastic wine bottle stops.

Windows

Some windows have been replaced with triple-glazed timber sash and casement windows, aiming to respect the building's original style. Other older double-glazed units have not been replaced yet, after weighing up the embodied energy of producing new units against energy savings. In one room, DIY plexiglass magnetic secondary glazing has been added to provide further insulation and reduce road noise.

Floor insulation

Elsewhere a solid floor has had its concrete pad removed which was causing rising damp in adjacent walls due to the concrete's vapour impermeability. This has been replaced with foam glass aggregate for insulation, and a breathable limecrete surface. Suspended floors have been insulated with natural wood fibre insulation, and sheep wool insulation.

Draughtproofing

The gaps between the planks of the timber floors were draught-proofed with Bona gap sealant.

Heating

The house is heated by solar gain, gas, and wood, which is sourced locally from Wellow. The heating is zoned, with 3 separate programmers, so the heating of different parts of the house can be controlled separately. The gas central heating is not used regularly, and upstairs is rarely heated. The whole

house remains at around 15C in winter, the living area raised to 21C downstairs when the woodburner is lit, mainly in the evenings.

Structural wood bookcase



Rather than using steel to support a wall Rosie asked her structural engineer to design something from wood which could be incorporated as vertical dividers in a bookcase. A window lintel has also been replaced with oak rather than concrete. In both cases the incorporation of oak locks carbon into the fabric of the building and avoids the high carbon emissions associated with steel and concrete production.

LED lighting

Rosie spent time researching LED lighting and has selected more expensive wide-spectrum LED lighting for the living rooms as it creates a more natural feel.

Impact

The combination of the insulation and behaviour change has led to a home which consumes only 30% of the heating energy and emits only 20% of the CO2 of a home of a similar age, construction, and floor area.

Reuse

When furnishing the home Rosie has tried to reuse as much as possible. Almost all the furniture is second hand. The main table is made out of an old door and the solid wood kitchen and worktops were bought on eBay.

The rear garden is a perennial edible garden, low maintenance and drought tolerant. It is watered in the summer by grey water, diverted from sinks, showers, and baths.