Bath Green Homes

Victorian terrace: insulation, triple glazing & solar hot water

Overview

Age/period:	1900
Type:	Late Victorian mid-terrace
Years in residence:	3
No. bedrooms:	3
Wall type:	Solid wall
Area:	Widcombe

Key Features

- Solid wall insulation
- Under-floor insulation & heating
- Loft insulation
- Triple glazing
- Solar hot water
- Low energy lighting & appliances

Introduction

Officially designated a 'super-home' for its energy efficiency, this mid-terrace house has reduced its carbon emissions by more than 60 per cent due to focusing on insulation and making use of passive solar gain from its south facing extension. When the home owners bought their house it needed total refurbishment. Members of Energy Efficient Widcombe (a local network of people promoting energy efficiency in the Widcombe area), they decided to do a total eco-renovation of their home to make it as low energy as possible.

Once complete in 2010 the house was invited to join the national 'SuperHomes' network of extremely low energy refurbishments, and is one of only two homes in Bath to meet its standards. Solid wall insulation, under floor and loft insulation retain the heat while a triple-glazed south facing kitchen extension captures solar energy (passive solar gain). An efficient boiler with under floor heating is supplemented by solar thermal panels for hot water.

In 2010 the homeowners completed their retrofit and opened their home to the public, the first Green Home in Bath to do so. They had not moved in and were still putting the final touches to the renovations when the doors opened. In 2013, now resident for three years,

they are impressed with the warmth and comfort of their home.

Features

Insulation: solid wall, loft & under-floor
The solid external walls of the house were insulated internally with 110mm phenolic insulation, returned at the sides to minimise cold bridges. Insulating the bay windows and alcoves has only slightly reduced the room dimensions but has allowed for shelving and removed the need for radiators.

The loft conversion was fully insulated in line with current building regulations. Roof insulation was 110mm phenolic insulation applied between and over rafters with all joints taped. Downstairs, the original suspended timber ground floor was replaced throughout with concrete slab, insulated with 100mm of celotex. The under-floor heating, installed straight after the under-floor insulation provides a pleasant heat which rises through the house.

Glazing
Velux windows in the rear extension and loft conversion are triple glazed with a U-value of 1.0 W/m^{2}K. This makes the most of passive solar gain (capturing and storing solar energy). A local joiner was commissioned to produce the bespoke bi-fold patio doors in the kitchen extension, which incorporate triple glazing units supplied by Saint Gobain, with a whole door U-value of 1.1 W/m^{2}K. Original double glazing is retained in the rest of the house.

Solar water heating
Taking advantage of the house's south facing aspect, the roof is fitted with Kingspan Thermomax evacuated tube solar panels, total area 3m^2, supplying a 250 litre twin coil tank.

Energy efficient boiler & under floor heating
Gas heating is provided through an A-rated Vaillant ecoTEC plus 630 condensing gas boiler. The system has new controls and thermostatic radiator valves (TRVs) throughout. Gas powers the under-floor heating on the ground floor plus new radiators upstairs as well as the new efficient gas fire in the living room which provides secondary heating.

Appliances & lighting
The household uses low energy lighting throughout including 12 x5W compact fluorescent spotlights in the kitchen area. Other low energy appliances include an A++ rated fridge freezer.

Contacts

The SuperHomes Network
www.superhomes.org.uk