

Bath Green Homes

Complete conversion of a 1960s house



Overview

Built:	1965, full conversion 2009
Type:	2 storey detached
Years in residence:	4
No. Bedrooms:	5
Area:	Lansdown

Key Features

- Insulation; floor, loft, cavity & external wall
- Solar water heating & thermal store
- Air source heat pump
- Solar PV panels
- Whole House Energy Management
- Mechanical Ventilation Heat Recovery
- Underfloor heating
- Woodburning stove
- Low Energy Appliances
- Low Energy Lighting
- Rainwater Harvesting

Introduction

Nick Sandy bought this 1960's semi-detached house with the intention of undertaking a complete conversion. Years of experience as a property developer meant that this build included a variety of techniques and technologies experienced through the trade to create an

energy efficient family home. The conversion incorporated the original structure, increasing the footprint of the building and creating a highly insulated, super-efficient and attractively finished home. The energy efficiency of the property has increased so much that it is now part of the Old Homes Super Homes network; homes that have been made at least 60% less reliant on fossil fuels. In 2011, it was nominated the Greenest House in Somerset.

“The key to any building is insulation and ventilation. We now have a great, comfortable home to live in, which meets all our needs for both work and family life”

Features

Insulation

The house has been encased in a blanket of insulation. In all rooms on the ground floor there is a minimum of 150mm of Celotex board under floor insulation and acoustic insulation has been used in the ceiling spaces to minimise noise transmission and reduce internal heat transfer.

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The original cavity walls have been filled with blown mineral wool and are further insulated by an 80mm covering of Drivit external insulation which has been colour matched to Bath stone. The extension, constructed of 215mm thermalite block, also benefits from Drivit external insulation. In the roof space, a combination of TLX Silver Foil and 300mm of mineral wool significantly reduce heat loss. Even the front door is a specially insulated model. This all creates a house that is easy and cheap to heat.

Glazing

Throughout the property the original windows have been replaced with custom made high performance oak framed models. These locally made windows are argon-filled double glazed units fitted with k glass.

Heating

At the heart of the heating system is a 1000 litre thermal store which is heated by 8m² of solar thermal panels mounted on the south facing roof, combined with a 17.5kW air source heat pump. An Atos high efficiency condensing gas boiler acts as a backup to the solar thermal and air source heat pump and only kicks in if the external temperature falls below -5°C. The thermal store supplies the downstairs under floor heating and upstairs oversized radiators with hot water at 45°C, while the hot water ring main is activated when the home automation system detects someone entering one of the bathrooms. An actuator ensures the hot water pressure is maintained constantly at 3 bar. There are wood burning stoves in the hall area and dining room which provide additional heating capacity.

Air tightness & ventilation

With an good air tightness test score of 6.4, a mechanical ventilation system was required to ensure removal of stale air and a steady flow of fresh air into the building. The Mechanical Ventilation with Heat Recovery system installed

consists of two fan units and heat exchangers which recover heat from the extracted air to pre-warm the incoming air.

Home Management System

An Idratek home automation system provides zoned control of heating and lighting, with infrared and contact sensors that detect room occupancy and adjust heating and lighting profiles accordingly. There are over 300 sensors throughout the house and the computerised management system ensures that all zones are maintained at a temperature above the dew point to avoid any problems with damp or mould.

Lighting & Appliances

Throughout the property lighting is provided by a combination of CFL and LED fixtures, all of which are linked to occupancy and light level sensors and are controlled via the home automation system. All appliances are new, A rated or better and an Economy 7 tariff is used to run some of the appliances through the night.

Water Use

All plumbing fixtures are low water use and water waste is further reduced by the grey water system which is used to flush toilets, feed the washing machine and water the garden. Two sedum green roofs filter rainwater into a 6,400 litre tank buried under the lawn where it is stored before being reused.

Contacts

ST8 (Building Matters) Limited,

Tel: 01225 446044

e-mail. nicksandy@st8buildingmatters.ltd.uk

Approved installers of DriVit External Insulation and Idratek Home Automation.



**Bath & North East
Somerset Council**