

## 24 Cuthbert Rd, Brighton BN2 0EN



### OVERVIEW

Age: 1860
Type: Terraced
Beds: 4
Floors: 2
Walls: Solid rendered
Area: 116 m <sup>2</sup>
Residents: 2 adults



### FEATURES

- + Condensing boiler
- + Draughtproofing
- + Solid wall insulation (external front and back)
- + Flue gas heat recovery
- + Heating controls
- + LED lighting
- + Low energy lighting
- + Woodburning stove

### Introduction

Terry and his wife relocated from London to their terraced house in Brighton in 2008, with the intention of installing as many energy saving features as possible before impending retirement limited their funds. The prime motivation has been a commitment to sustainable living rather than financial savings.

The house already benefitted from some double glazing and they have added a woodburning stove, which has helped to reduce gas usage. However, the house still felt cold, particularly in the larger rooms and the loft conversion.

Following a Green Deal assessment, they have adopted a coordinated package of measures including external solid wall insulation and a new high efficiency condensing boiler, coupled with a flue gas heat recovery unit to further improve efficiency. The new system will have modern heating controls to tailor heating to their needs.

At the same time, draughtproofing and low energy lighting, further help to conserve energy.

All external work has been managed carefully to reinstate original features and preserve the house's appearance.

### Energy and CO<sub>2</sub> performance

As the work has only recently been completed, it is not yet possible to measure the impact of energy saving measures on consumption and CO<sub>2</sub> emissions. However it is estimated that these should be around 50% lower than a typical UK dwelling.

### Energy efficiency measures

The boiler is now a Baxi condensing unit with a separate GasSaver flue gas heat recovery unit. The condensing boiler is itself around 12% more efficient than the previous boiler and this is enhanced further by the GasSaver heat exchanger, which recovers waste heat from flue gases. This provides preheated water for the inlet of the combi and thereby reduces water heating consumption, to cut overall gas use by an additional 5–10%.

Despite having modern central heating, the house lacked a room thermostat and programmer, which have now been fitted. These simple controls greatly improve system efficiency and can reduce bills by as much as 5–10%.

### Insulation

Loft insulation is 270mm of mineral wool, previously installed under the old, subsidised CERT scheme.

Terry also has fitted uPVC double glazing in most of the house. This helps to reduce window losses by half to two thirds when compared to single glazing.

Solid wall insulation (SWI) has been fitted externally, in the form of Kingspan Kooltherm phenolic foam boards, using the Wetherby system. These 100mm thick boards have been fixed mechanically to the outside walls, front and back, using broad-headed plastic wall anchors. Over this has been fixed a reinforced mesh layer, bedded into a thin, resin-based render coat. The final finish is a self-coloured, textured render, to provide a durable decorated surface.

The effect of SWI has been to improve the wall u value from around 2.1W/m<sup>2</sup>K to 0.18. Solid walls are the biggest source of waste heat in a property such as this and SWI has cut those losses drastically, reducing energy bills by around one third.

Although the insulation projects beyond the surface of the terrace, it has been possible to retain features such as the corbels below the eaves by reproducing these and adding them to the final surface afterwards. These architectural mouldings were made by Sytex

and are extremely lightweight, consisting of a dense extruded polystyrene (EPS) foam core and a flexible stone shell, colour matched to the decorated finish.

### Renewables and Low carbon technology

18 months ago, Terry fitted a woodburning stove, which not only provides a very cosy living space, but also displaces gas heating and reduces carbon emissions. Most of his neighbours now have woodstoves too and Terry buys logs jointly with his neighbour from Dry Logs Ltd. His stove was installed by local specialist, Andy of Hanover Builder.

### Electricity

Low energy LED lighting has been installed where possible, cutting the lighting load to 10–20% of old halogen and incandescent lamps. However, it has been difficult to find low energy lamps for some of the fixed light fittings.

### Lessons learned

When planning solid wall insulation for a terraced house it is important to consult neighbours to agree the detailing at the boundaries.

Because this house has a projecting masonry bay, the fitting and detailing of SWI were more complicated.

Although the work was mostly external, it proved a little disruptive with so many tradesmen involved, and was also interrupted by the weather, taking longer than anticipated.

Some of the LED lamps proved to have a rather cold coloured light and Terry may shop around to find warmer replacements.

### Some costs of the energy efficiency measures

Please note that these do not include a Green Deal Assessment or project management of the works

External solid wall insulation	7,726
Re-instate architectural details on front	1,232
Install condensing boiler	2,953
Install flue gas heat recovery unit	762
Heating controls: programmer & room thermostat	294
Low energy lighting	1,398
<b>Total</b>	<b>14,365</b>

### Professional team on behalf of The Green Building Partnership

#### Project Management

Earthwise Construction:  
www.earthwiseconstruction.org

#### Contract Management

The Green Building Partnership:  
www.greenbuildingpartnership.co.uk

#### Design

Cityzen: www.cityzendesign.co.uk

#### Solid wall insulation

Beaumont Facades:  
www.beaumontfacades.co.uk

#### Carpentry

Minton Young:  
www.mintonyoung.com

#### Electrics & plumbing

Woodmans: www.woodmans.net

### Materials

Wetherby insulation system:  
www.wbs-ltd.co.uk

Architectural mouldings:  
www.sytextuk.co.uk

Condensing boiler with  
flue gas heat recovery: Baxi  
www.baxi.co.uk/products/gas\_boilers/

Woodburning stove  
installation: Hanover Builder  
www.hanoverbuilder.co.uk

Logs: Dry Logs Ltd  
www.drylogs.co.uk

This house was renovated as part of the Green Deal Pioneering Places project delivered by Brighton & Hove City Council, Brighton & Hove 10:10, The Green Building Partnership and Low Carbon Trust. The project was funded by the Department of Energy & Climate Change through the Local Authority Fund



Eco Open Houses is an annual collaborative project between Low Carbon Trust, Brighton Permaculture Trust and Brighton & Hove City Council. This year the event is run as part of the ECOFab 2 project and has been selected within the scope of the INTERREG IV A France (Channel): England cross-border European cooperation programme and is co-financed by the ERDF. The Green Deal strand of the project has been funded by the Department of Energy and Climate Change through the Local Authority Fund