

People Exploring Low Energy Homes

Chesterton Road, CB4 1DA

Nicola and Arthur – Nicola says:

We moved into our three storey Victorian house in 1997. It's an excellent location and a good shape and size for us. However we rapidly discovered it was cold and draughty and cost a fortune to heat.

Ten years later having replaced all the windows with modern glazing and also the lounge and dining room fireplaces, the coldest part of the house was the enormous old shop-front window.

It wasn't practical, or particularly desirable, to keep it, so we commissioned an architect to design something more cosy. One thing led to another and our house is now warmer and uses considerably less energy (and will hopefully retain its value better than it would have done).

Low Energy Measures

In our first year we replaced the sash windows with **double-glazed units (not sash)** and later most of the external doors. Also we upgraded the lounge fireplace to a wood/coal stove with convector fan.



In 2009 the shop front was replaced with a new two-storey bay with highly **insulated internal shutters** and we put lots of **insulation in floors, walls and loft** to treat the 'envelope' of the house.

Part of the front wall was replaced with a modern two-storey bay, mainly glass and aluminium and a new glass dormer was added above.

The top floor loft conversion was gutted and remodelled, with more **roof windows and lots of insulation**.

The new bay window and the solid walls in the other front bedroom were also **internally insulated with 100mm of Celotex**. All the floors in those rooms were insulated.

We were really pleased with the way the builders managed to reinstate the Victorian cornices in the bedrooms and the addition of a picture rail, making it possible to hang pictures without having to find the battens to bang nails in.

Two new shower rooms and a new **condensing boiler with weather compensating controls and solar thermal hot water panels** were plumbed in.

Heat recovery ventilation was installed in all the renovated rooms as well as a **sunpipe to help light** the back of the library.

Since then we have had the last two bedrooms, the dining room and rear sitting room walls **internally insulated**, and the main bathroom remodelled with **internal insulation**. Plus **external insulation round the kitchen**, including the roof, new **roof windows for day-lighting** and **solar photovoltaic (PV) panels** for electricity supply.

Overview

Age, Type: **1896 Victorian, Detached**

Wall type, Floor area: **Solid brick, 230 sq m**

Project timescale: **Planning 3 yrs, Building 2 yrs**

Cost of whole project, inc. measures: **£250,000**

Energy useage – 2 adults

After: **14 kWh** per sq m pa electricity (2011)
93 kWh per sq m pa gas (2011)

Before: **21 kWh** per sq m pa electricity (2008)
142 kWh per sq m pa gas (2008)

Key features

+ insulation: internal and external walls, floors, roof

+ insulated internal shutters

+ windows: double glazed (not sash), roof, sunpipe

+ day-lighting: roof windows, sun-pipe

+ condensing boiler, weather compensating controls

+ natural light: full length windows and doors

+ solar thermal hot water plates

+ solar photovoltaic (PV) cells

+ heat recovery ventilation

People Exploring Low Energy Homes



Professional Contacts

Architect: AC Architects Cambridge Ltd
www.acarchitects.com

Builder: Richard Dixon & Son www.rwdbuilders.com

Products

Insulation

Walls (internally & externally), loft, between & below ground floor joists: Celotex
www.celotex.co.uk

Other floors: Rockwool www.rockwool.co.uk

Insulated shutters: Custom made for bay window by Richard Dixon www.rwdbuilders.com

Windows

Dormer: double-glazed aluminium framed) and bay window (2-storey. Custom-built by Beaufort Secure Design www.blyweertbeaufort.com

Glass: dormer and bay and new shower room window with integral venetian blind.
N & C Glass www.nandcglass.co.uk

Roof windows: roof and kitchen. Velux
www.velux.co.uk

Lightpipe: Monodraught SunPipe
www.monodraught.com

Light and Heat

Lighting: In the library. EXERGI LEDs
www.exerji.co.uk

Whole house heat recovery: ADM Systems
www.admsystems.co.uk

Condensing boiler: Vaillant Ecotec-plus 624

Solar thermal hot water tubes: Thermomax, Solarworks <http://www.solarworks.co.uk/>

Woodburning stove: Bodart & Gonay In-fire from Anglia Fireplaces www.fireplaces.co.uk

Solar photovoltaic (PV) system: Midsummer Energy www.midsummerenergy.co.uk
1.665 kW system costing £7900.

9 Powerglaz 185W solar panels and 3 Mastervolt Soladin Inverters (3 strings of 3 to minimise performance loss due to shading).