

People Exploring Low Energy Homes

Green House Project, St Audrey Lane, St Ives PE27 3XF

HDC, Chris Jablonski – Chris says:

Huntingdonshire District Council (HDC) aims to demonstrate how properties can be refurbished affordably and easily, not only to reduce carbon emissions but to provide happier, healthier, more comfortable homes that are cheaper to run.

The Green House Project, St Ives is **sustainably refitted** and is a demonstration and educational resource for **home owners, housing providers, tradesmen and local suppliers**. We promote the importance of sustainable refitting and provide easy access to **advice, products, technologies and information** for those planning similar upgrades.

We partnered with the BRE who undertook before and after monitoring and drew up the specification, and found that following improvements we achieved a **75% reduction in carbon emissions**.



Overview

Age, Type: **1960s, Detached**

Wall type, Floor area: **Brick cavity, 81 sq m**

Project timescale: **Planning 18 mths, Build 6 mths**

Cost of low energy measures: **£50,000 approx.**

Energy usage – 2 adults, 2 children

After: **87kWh** per sq m pa electricity (total energy)

Before: **30 kWh** per sq m pa electricity
395 kWh per sq m pa gas

Key features

- + carbon emissions: 75% reduction / energy saving
- + whole house approach, 4 areas: energy efficiency, renewables, water conservation, biodiversity
- + insulation: wall cavities, loft, floors
- + external walls: external render, internal dry-lining
- + windows: triple glazed, trickle vents
- + air source heat pump, 'smart-rads'
- + solar thermal, immersion back-up
- + solar photovoltaic (PV) cells
- + energy management system, efficient appliances
- + lighting: LEDs throughout
- + water: low flow/aerated taps, dual flush toilets
- + rainwater harvesting, sedum roof, 'pocket habitats'

Low Energy Measures

We took a **whole-house approach**, concentrating initially on improving the building fabric, focussing on four main areas: **energy efficiency; renewable; water conservation; biodiversity**.

Foam insulation material to fill cavity walls, plus a combination of **internal insulating dry-lining** and **external insulating render**. **Loft insulation** topped up to 270mm, **loft hatch insulated**.

Inefficient old double glazing replaced with new **triple glazed windows** and **trickle vents**. External and internal **doors replaced**.

Replaced single storey garage and rear extension with double storey extension, increasing living space downstairs. Construction method used was **beyond building regulations** requirements.

Inefficient gas boiler with radiators replaced with **air source heat pump** and **'smart-rads'**. **Solar thermal hot water** and **back-up immersion**.

Domestic **energy management system** fitted to ensure **optimal use of heating and hot water**. **Solar PV system** fitted to front porch roof.

New kitchen and bathroom, **efficient appliances** and **water conservation measures** such as **low flow/aerated taps** and **dual flush toilets**.

Rainwater harvesting system serves downstairs toilet – backed up by the mains. Downstairs facilities include a **wet room**.

LED lighting used throughout the house.

Downstairs the single storey extension roof has a **sedum blanket** and **'pocket habitats'** for water attenuation.

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Future Plans

The Green House Project will continue until 2014, with the St Ives house being open for bookings on Tuesdays, Thursdays and alternate Saturdays.

Specialist information days are being held throughout 2012 focussing on different areas and technologies used within the house.

The project will be a major demonstration tool when the Green Deal is introduced in 2012.

Visitors will be able to see low energy measures 'in situ' which will help them when considering options for improving the energy efficiency of their homes and businesses.

Professional Contacts

Our website: The Green House Project
www.greenhouseproject.co.uk

Architect: Mark Houston, Huntingdonshire District Council (HDC) www.Huntingdonshire.gov.uk

Builder: Apollo Group www.theapollogroup.co.uk

Monitoring: Building Research Establishment (BRE) www.bre.co.uk

Products

Paving: on driveway and path, Brett SUDS permeable, www.brett.co.uk/landscaping

Paintwork: internal, Akzonobel - Duluxe EcoSure, www.akzonobel.com

Insulation

Cavity walls: BASF Polyurethanes WALLTITE www.walltite.basf.co.uk

Internal: Ecotherm dry lining www.ecotherm.co.uk

External: Weber External wall insulation system www.netweber.co.uk

Sedum roof: Sky-Garden sedum blanket with waterproof membrane (PDT) and pocket habitats, www.sky-garden.co.uk www.pdt-group.com www.pockethabitat.co.uk

Light

Windows: Triple glazed, www.eurocell.co.uk

LED lighting: Illuminaire Displays, Tritotechnology LEDs, www.illuminaredisplays.co.uk

Energy

Air Source Heat Pump: Walls Dimplex 7kw with SmartRads and solar thermal flat plate collector, www.dimplexrenewables.co.uk

Solar PV cells: 0.75kwp system, Aran Services www.aranservices.co.uk

Energy Management: System, HeatingSave www.heatingsave.co.uk

Water

Bathroom suite: Twyfords Alcona with Flushwise 4/2.6 litre dual flush WCs and low flow taps, www.twyfordbathrooms.com

Rainwater harvesting: Halsted Rain system with SuperSlim Wall Tanks, www.halstedrain.com