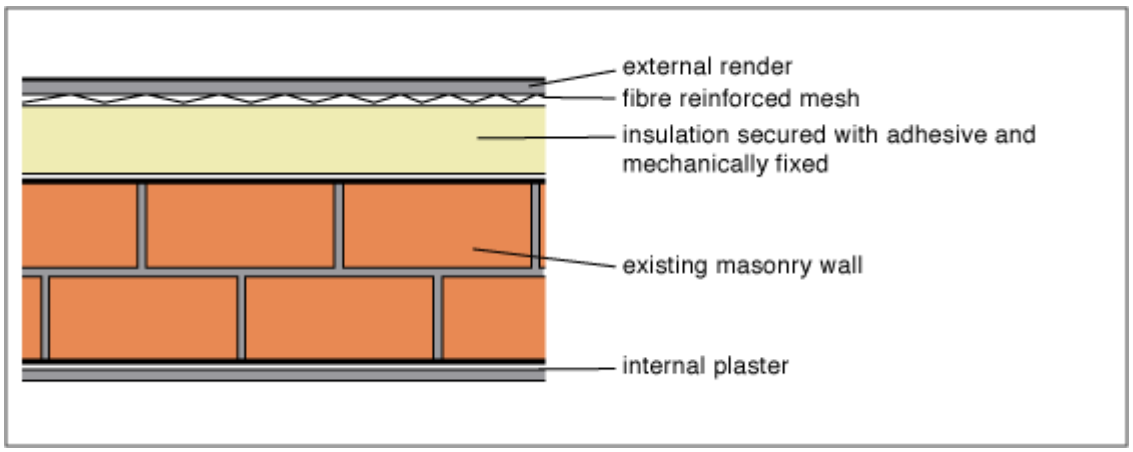
What's been going on here?

We have had insulation put up on the outside of our house.

It is a Victorian solid brick semi-detached house.

We have had wood fibre insulation boards attached to the outside of the bricks and then a base coat, including mesh and a top coat of render.

↑ *Insulation boards attached to brickwork before base coat or top coat*



Insulation material: 100mm Diffutherm wood fibre boards are non-toxic, contain 99.5% waste wood from sustainable forests. They are carbon negative and lock up 1.2 tonnes of CO2 for every tonne of boards produced. They are BREEAM Green Guide, and WRAP assessed. They are biodegradable in landfill. Other options for insulation material are those made from minerals (e.g. Rockwool) or those made from plastics (e.g. Phenolic).

Render: Silicate (made from recycled glass) A ready-mixed, paste-like silicate resin thin-layer top coat plaster. It is highly vapour-permeable and water-deflecting. Other options for render material are those made from lime or those made from acrylics (e.g. Silicone).

The system: comes from **Natural Building Technologies (NBT)**
www.natural-building.co.uk

NBT Masonry Systems use Pavatex Woodfibre boards over the outside of new or existing masonry. The system is particularly suitable for older buildings where the breathability of the structure is essential, but can also be used on existing cavity walling and on new build masonry construction. The woodfibre boards have the same vapour openness as old brickwork, and are hygroscopic, thereby assisting the passage of moisture through walls.

The boards form a continuous layer over the outside of the building, providing a high performance, unbridged thermal shell, with good acoustic properties, in a fully breathing construction.

U-value is a measure of heat loss. It is expressed in W/m^2K, and shows the amount of heat lost in watts (W) per square metre of material when the temperature (K) is one degree lower outside. The lower the u-value, the better the insulation provided by the material.

	Building Regs requirement for new-build	**Solid brick + 100mm Diffutherm**	**Solid brick without insulation**
U-value [W/m^2K]	0.3	0.37	2.0

Detail of soffit on top of insulation board before base coat and top coat applied. Gutters sit either on top or underneath soffit.

Costs: These systems cost between £10,000 and £20,000 (not including replacing windows with double-glazed and all the preparation, which we did ourselves, or the scaffolding). Stroud District Council gave us a grant of £1,000.

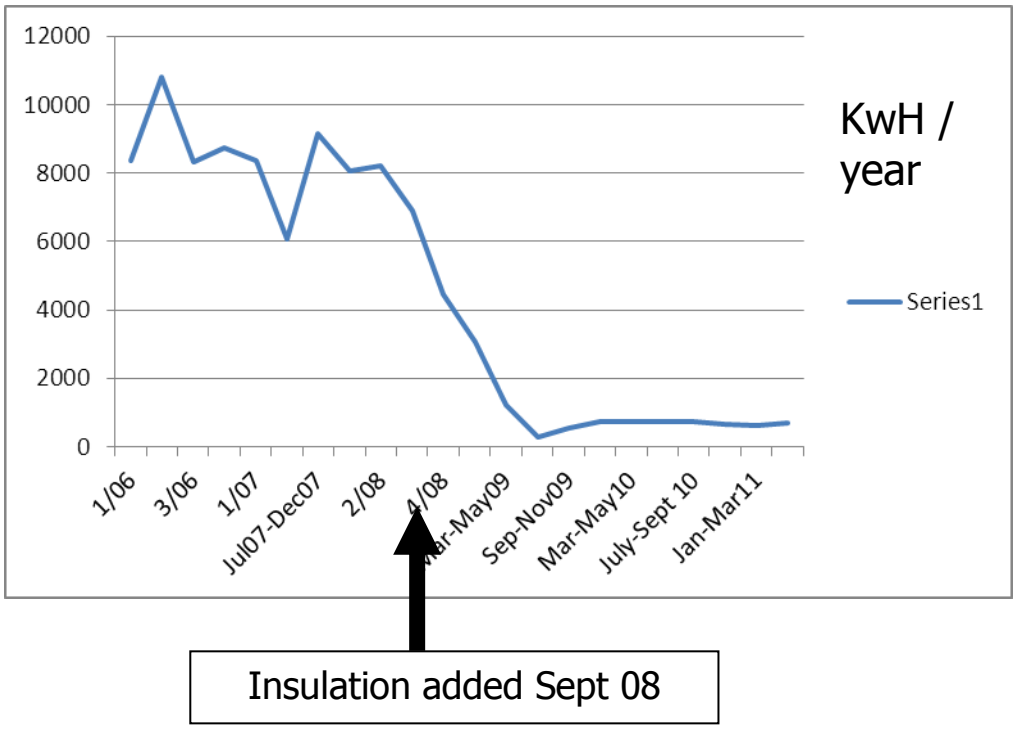
Savings: We expect to save about 90% of our gas bills, which equates to 1440kgs of CO_2 per year = a 26% reduction in our total household CO_2 emissions from home and transport.

For further information:

www.greenspec.co.uk

Three years on……..

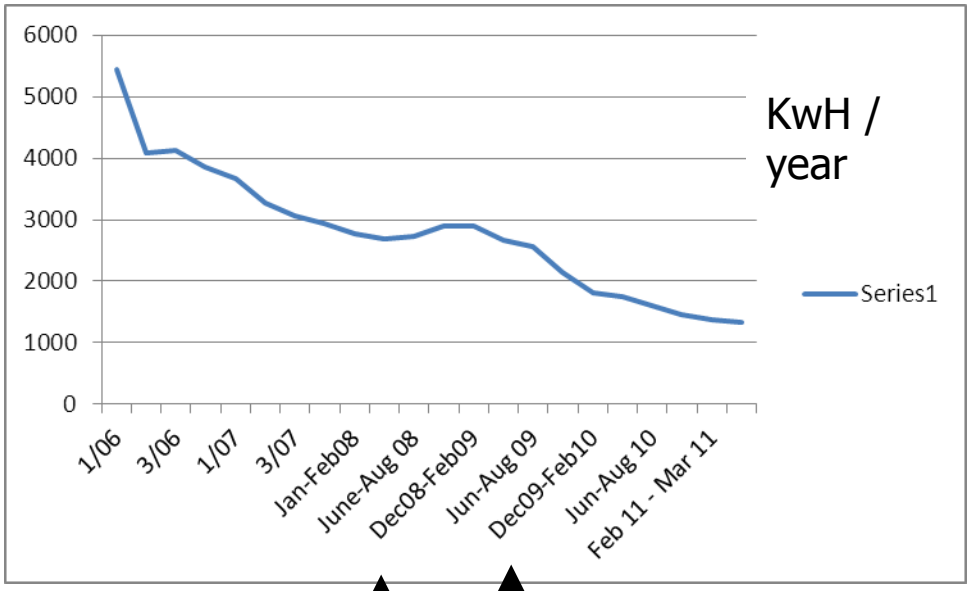
Gas This graph shows how our gas usage has gone down since the insulation was put on. We have not used our gas central heating at all since the house was insulated and have now had our gas boiler disconnected, so that we could connect the woodstove back boiler instead.



Insulation added Sept 08

We are now spending an average of less than £3 per month on our gas bill (approx. 700kWH/year).

Electricity This graph shows how our electricity usage has changed since the insulation was put on. The first winter we increased our usage, as we were heating all our water with electricity. Since September 2009, we have had a wood stove to heat our water in the winter and our electricity usage has dropped as well.



Insulation added Sept 08

Wood stove with back boiler installed September 09

We are now using an average of less than £17 per month on our electricity bill (approx. 1330kWH/year

Since May 2010, we have PV panels installed on the roof which are generating a little more than the electricity that we use, on average over the whole year (latest figure = 1463 kWh/year). This means that the FIT payments for the electricity generated pay for all our electricity bills as well as the repayments for the PAYS loan that we got for the installation, plus a net income of about £100/year.