

GREEN inspiration

Steven Harris and Catherine Roberts designed a zero-carbon home that's both stylish and affordable

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HOME TRUTHS

THE PROPERTY A new-build, four-bedroom, detached house clad in oak and render

LOCATION Monmouthshire

ROOMS Hall, sitting room/kitchen-diner, sun room, study, four bedrooms, bathroom, two shower rooms

PURCHASED 2013

PREVIOUS PROPERTY

'We lived in a Victorian basement flat in east London,' says Steven.



SUN ROOM

This is separated from the downstairs area by inner glazed sliding doors that can be opened when it's warm to extend the space. For similar chairs try Ercol Originals, £260, Pink Apple Designs. The Globe White Paper Pendant lampshade, £4, Lyon Lighting, would look good here





SITTING ROOM

'I made the bespoke bookshelves, which run the length of the space, from birch plywood we had cut to size by a joinery workshop,' says Steven. Stratford stove, from £1,187, Stoves Online. Reclaimed Welsh oak slate, £25sq m, Gallop and Rivers. For similar shelves try Kallax shelving unit in birch, £55, Ikea



KITCHEN

'These units were great value for money,' says Steven. 'We designed the layout and I fitted it out myself.'

IT Kitchens Walnut Style doors and panels, from £14, B&Q, would suit this room. White Ekbacken laminate worktop, £50; for a similar curtain fabric, try Revivva, £4m, both Ikea. Welsh slate floor tiles, £42sq m, Merionethshire Granite Company



DINING AREA

Oak flooring is used throughout the whole ground floor, and the couple restored the pew, reclaimed from a Welsh chapel.

Character Oak flooring, £75sq m, ATC Flooring. Reproduction Arne Jacobsen 3107 chair, £39, Metro Furniture, would work here. Chelsea Church Chapel Oak Pew, £389, Antique Church Furnishings, is similar

LESSON LEARNT *'We thought we might lay the oak floor ourselves, but we're glad we didn't because the fitter was extremely skilful and did a brilliant job'*



SITTING AREA

'The line of sight flowing from front to back fools the eye into believing the house is bigger than it actually is,' says Catherine.

The 1920s sofa and chairs were inherited and re-covered, for a similar style try Alexander & Pearl, from £1,195. For a blanket like this one, try Plaid Grey Shetland wool throw by Melin Tregwynt, £80, Pure Luxuries. Ikea's Morum rug, £25, is a near match to the one pictured



LANDING
For the walls, the couple chose greens and greys inspired by the landscape. Feature wall painted in Trilby, other walls painted in Kiwi, both Earthborn Claypaint, £25 for 2.5 litres, Eco Home Centre



BATHROOM
Frosted slot windows draw in plenty of light but offer maximum privacy. Euro Trio basin, £199, Bathstore. For a similar tap try Hansgrohe Axor Uno 2 Single Lever, £406, UK Kitchens



MASTER BEDROOM
This room has a delightful outlook towards the orchard at the back of the house. For a similar throw try Klippan Othello wool blanket, £132, Northlight Homestore



Architects Steven Harris and Catherine Roberts were determined to build their home in Wales on a very small budget – and create a zero-carbon house in the process. ‘We see this as the way forward,’ says Steven, who helped to design and build the first zero-carbon homes in the UK. ‘A house that needs so little energy it can almost run on renewable sources alone is cheap to live in and environmentally sound.’

One of the property’s smartest features is the glazed rear elevation where inner glass sliding doors create a separate sun room. The extra ‘skin’ keeps the house warm during winter and allows light in but, in the warmer months, the doors can be drawn back and the extra space used. The south-facing aspect plays an essential part in heating the home. Warmth from the sun is absorbed by the thermal mass in the concrete inner walls, stored, and gradually emitted back into the rooms. ‘On a sunny day in winter the house holds onto the heat for nearly a week afterwards,’ says Steven.

The project was an eight-year journey for the couple, who bought the plot in 2005. They began work in 2006 and a year later moved into a caravan on site. Catherine admits it was tough going, especially as she and Steven were also busy setting up their own practice, CRSH Architects. ‘We knew progress would be slow because we wanted to project manage and do as much of the work as we could ourselves,’ she explains.

Even now, Catherine says there are jobs to finish, like bathroom tiling and adding a green roof on the adjacent workshop. But the couple have achieved what they set out to do and the house is extremely energy efficient, with a design ethos that recognises affordable, sustainable solutions. Wood used to build the sun room balcony and Welsh slate tiles are just a few of the reclaimed materials, while lime-plastered walls and breathable, non-toxic eco paint keep the humidity stable. ‘This, more than anything, enhances our living as the air never feels dry or damp,’ explains Steven.

The couple are delighted with how the house has come together, and have proved it is possible to build an eco home on a relatively modest budget. ‘The result almost makes being zero-carbon secondary as that’s the way it should be,’ says Steven. ‘We hope one day zero-carbon living will be as normal as having an inside toilet, and people will wonder why they never did it before.’

INSIGHT

Planning a zero-carbon build

Keen to build a carbon neutral home as Steven Harris and Catherine Roberts have done? Consider these points first



The right site, excellent insulation, renewable energy sources and eco building materials are all key factors in creating an efficient build. With these elements in place, your home can approach low impact or carbon neutral status and save money in the long run.

FROM THE GROUND UP

A carbon-neutral design doesn't need to cost the earth, and neither does style have to be compromised. Materials and building technology have advanced at an amazing rate, with high-performance glazing letting homeowners create bright, contemporary spaces full of light, space and flexibility. Renewable energy and recycling options are available, too, including solar roof panels and ground-source heat pumps, which extract heat from the ground to create hot water and heating. Rainwater harvesting, which gathers and recycles rainwater for use in bathrooms, washing machines and gardens, is another option. You may still need to combine these with conventional energy sources but your home will be significantly more eco-friendly.

BEAR IN MIND

Keep your design simple. Steven and Catherine built their home using standard blockwork cavity walls – with a 300mm cavity rather than 75mm – stuffed with Rockwool cavity batt insulation. Outside, the blocks are lime rendered and internally the walls are lime plastered and clay-painted. Lime regulates humidity, which makes for a far more comfortable environment to live in and this approach is aesthetically pleasing, too. An oversized solar thermal array and woodburning stove connected to a thermal store meet all the hot water and space heating needs in Steve and Catherine's house, while Solar PVs deliver electricity. Being airtight is important in zero-carbon designs to stop draughts and keep warmth in, so a heat recovery ventilation system is important. Finally, consider thermal mass. Site your home in a south-facing position and use high-quality insulated walls and glazing. The passive solar gain from a south-facing elevation will be absorbed into the walls and glass, where it is stored and gradually released back into the home. There are initiatives to help offset the costs for these installations – find details at the Energy Saving Trust.

PROFESSIONAL ADVICE...



● 'Achieving zero carbon has a great deal to do with how the building is positioned. South-facing windows bring in the greatest amount of daylight to reduce the need for artificial lighting, while a south-facing roof is the best position for solar or PV panels to generate energy on site.'

● **Think beyond traditional construction methods. A prefabricated timber frame construction method can create a home with excellent thermal efficiency.**

● Insulation is key – use timber shavings to create exceptionally effective insulation that keeps houses warm in winter and cool in summer. Upgrading insulation is one of the first things to consider if you want to reduce the energy consumption of an existing house.

● **A vast array of sustainable technology is available to reduce energy consumption – from on-site power generation such as solar or PV panels, to heat recovery units that minimise wasted energy from ventilation systems, or highly efficient boilers. An architect will be able to advise you on what best suits your house, its location and your budget. Think about the smaller things, too – such as low-energy light fittings or low-water-use sanitaryware.**

● There's no need to compromise on appearance to achieve outstandingly low energy results. Consider 100% natural and sustainable materials, and choose an experienced team of architects and designers to produce a beautiful and sustainable home.'

OLIVER REHM, BAUFRTZ UK

ADDRESS BOOK

● **THE BUILDING CENTRE**
020 7692 4000,
buildingcentre.co.uk

An independent forum providing information on construction products and materials.

● **ASSOCIATION OF ENVIRONMENTALLY CONSCIOUS BUILDING**
0845 4569773, aecb.net

A network of individuals,

students, educational establishments and companies with a common aim of promoting sustainable building.

● **THE ENERGY SAVING TRUST**

0300 123 1234,
energysavingtrust.org.uk

Information on how to save energy in your home and how to generate your own energy.