



Words: Debbie Jeffery Photography: Nigel Rigden



PASSIVE PIONEERS

Richard and Rachel Stent replaced their old 1930s home with a contemporary PassivHaus — in just four months

Details PassivHaus self-build, Somerset, May – Sep 2010
Project Cost £400,000 (£1,600/m²)
Designer Hanse Haus

Richard and Rachel Stent will never forget the day they moved into their 1930s house in the Somerset village of West Quantoxhead: it was the day their eldest son, Michael, was born. Fifteen years later the family watched as their home was bulldozed to make way for a contemporary, energy-efficient successor. “We’d been paying a mortgage on the property for years and then just demolished it, which felt strange,” admits Richard.

House with a view
 The new house stands on a 330m² plot and enjoys views over Bristol Channel and towards Exmoor. The 300mm-thick external walls are finished in off-white render and the roof is clad in zinc. Large triple-glazed windows maximise solar gain and external blinds are standard to Hanse Haus homes





RICHARD AND RACHEL'S SELF-BUILD
Construction Structural insulated panels (SIPs), zinc roof
Size 250m²
Build Time Four months
Build Route Turnkey package
Plot Cost £160,000
Build Cost £400,000 (Hanse Haus package £320,000)
Value on Completion £600,000+

The couple, who now have two sons, had explored the idea of extending and refurbishing their previous draughty home, before deciding that it would actually be just as cost-effective to start again. A visit to the Homebuilding & Renovating Show in 2009 introduced them to Hanse Haus, and the company impressed them so much that they decided to build a Hanse Haus PassivHaus — the first in the UK.

“We were working full-time running our optometry business, and particularly liked the idea of a turnkey package for a fixed price, so that we wouldn’t need to worry about co-ordinating tradesmen and sticking to a budget,” says Richard. “After visiting

the factory and sample centre in Germany, the quality of the Hanse Haus product was obvious and the team’s can-do attitude shone through.”

Richard and Rachel worked with Hanse Haus to devise a design for their new home, which stands within an Area of Outstanding Natural Beauty (AONB). Despite certain planning constraints the resulting house is distinctly modern, with white rendered walls, a zinc-clad roof, large areas of glazing and externally fitted blinds to the patio doors.

“We did talk to the planners personally, and the planning officer visited us at home, but everything else was handled by Hanse Haus — often

Easy flow between rooms

Open plan spaces and a double-height hallway (1) mean that light is able to penetrate all areas of the new house. The oak staircase came pre-assembled from Germany and was craned into place during the build

via emails to Germany,” explains Rachel. “The actual footprint is not much bigger than our old 1930s house, but there were single storey extensions which are now two storey, making the first floor bedrooms far larger.”

With planning permission in place, two further trips to Germany were scheduled so that the couple could refine the drawings and specify internal finishes, including flooring and sanitaryware. “Our input with the actual build was minimal so it was important to get fully involved in the design process and pay attention to the details,” Rachel continues. “Making so many decisions can be daunting, but it’s also exciting.”

Factory prefabrication is key to the success of a PassivHaus, which is carefully detailed to prevent heat loss. Hanse Haus’ building system combines the

advantages of timber structural insulated panels (SIPs) with solid wall construction. Internal walls are 120mm thick and have a stud every 300mm. They are completely glued on both sides with OSB boards, making them load-bearing, so that fixing heavy wall units or shelving is possible everywhere.

The shell of the house was completed in just two days. This part of the project was marked by the traditional ‘topping out’ ceremony, where the head of the crew – known as the ‘Zimmermann’ – places a Christmas tree on the highest point of the house to symbolise the natural elements.

“The Zimmermann finished by smashing a glass against the side of the house in recognition of it being a strong building that would withstand all weathers, and we raised a toast with the crew, family and

Kitchen and living

The kitchen (2), which is open plan to the dining room and living area (3), features pale ceramic floor tiles which have been laid over underfloor heating throughout. Floor-to-ceiling south-facing windows stretch across the rear of the house, maximising solar gain

“The only work we did was giving the crane driver a lift home one evening”

Clean lines

The kitchen (4) has been fitted with locally sourced cabinets from Spillers of Chard, topped with striking lime green composite stone work surfaces



friends,” Richard explains. “Those two days were quite extraordinary in that we went from foundations to a two storey house. The only work we did was giving the crane driver a lift home one evening!”

Four months after work first began on site, the family were able to forgo caravan life and move into their new home. Living in the house has surpassed their expectations. Not only are their fuel bills far lower than before, but the building’s internal temperature remains constant, thanks to the triple glazing and high levels of insulation.

“The site is quite exposed and we used to hear the wind whistling through the window frames in our old house, but now it’s so quiet, and we don’t experience wild fluctuations in temperature,” says Richard. “We no longer have a gas bill landing on the doormat and our new home feels so much warmer and more comfortable — without having any heating on.”

PassivHaus Explained

A PassivHaus (or Passive House) is a structure that loses almost no heat through its walls, roof or windows, thanks to extremely high levels of thermal insulation. Sunlight provides nearly all the heating the house requires, with the rest coming from the people who live there (a human being emits around 80W of energy every hour) and the heat released within the house by equipment such as hairdryers and appliances

like the oven and hob.

A PassivHaus can be aired and windows opened to circulate fresh air and make for comfortable indoor temperatures in spring and summer, just like

“We no longer have a gas bill landing on the doormat”

any other house. During the winter and on cooler days, however, an air circulation and heat recovery system takes over the job and heat from extracted air is transferred to fresh air to prevent heat loss.

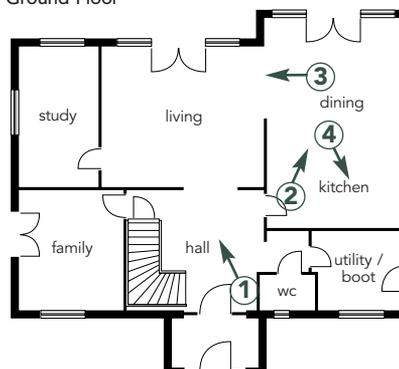
The Stents’ super-insulated shell and windows, together with a highly efficient mechanical ventilation and heat-recovery system, takes their annual heating consumption down to 13kWh/m². Solar panels and an air-source heat pump supply hot water — ensuring low running costs and immunity against rising prices. There is underfloor heating to the ground floor, which may be used as back-up, but in reality has rarely been switched on. The house has no boiler and first floor rooms rely on rising heat from the ground floor.

Energy efficiency and low running costs weren’t a prime objective when the couple first set out, but it

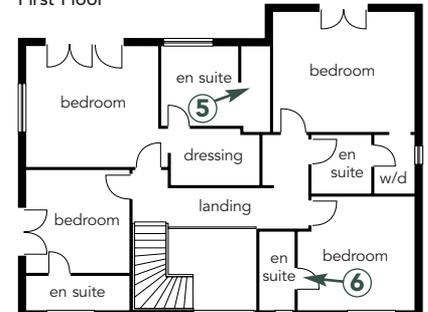
Simple, Airy Layout

Access to the house is via an enclosed porch, which acts as an air-lock to prevent external air from entering the main part of the house. In addition to open plan living/dining/kitchen areas on the ground floor there is a study, a separate family room, a practical utility/plant/boot room and a WC. Upstairs, four spacious double bedrooms all have en suite bathrooms, and the master bedroom also has a separate dressing area.

Ground Floor



First Floor





became apparent that these factors would make long-term economic sense. “In the end we built the house we wanted — the fact that it’s also a PassivHaus is the icing on the cake,” says Richard.

A Fast Build Time

One of the factors which impressed Richard and Rachel about building with Hanse Haus was the speed

“The fact that it’s a PassivHaus is the icing on the cake”

of the builds, due to the factory prefabrication which takes place in Germany. The couple signed the company’s contract in December 2009 and their old house was demolished

in May 2010. UK groundworkers then laid drains, water and other services as well as the concrete slab, ready for the delivery of the house. Richard and Rachel were on site to witness their new home being unloaded from the first lorry, which arrived from Germany at 6.30am on 16th June 2010.

“The erection crew prepared the site with a vapour membrane on top of the concrete slab, ready for the

walls to be secured in place,” says Richard. “Watching the crew manoeuvre the crane to arrange the walls with precision measurements was particularly impressive. By lunchtime all exterior walls were up – each with pre-fitted triple-glazed windows and patio doors – as well as many of the interior walls, and we could start to get a feel for the individual rooms.”

By the end of day one, the ground floor and ceiling cassettes were in place, and by the following day the first floor and interior walls were complete. On 11th July the Stents agreed to an open day, by which time the first fix plumbing and electrics were finished. Plasterboard was fixed, baths and shower trays fitted, screed was down and the coloured external render had been applied. Everything else was completed in the following few weeks and – eager to move out of their caravan – the Stents spent their first night in the house on 1st September 2010. 🏠

Contemporary bathrooms

All the first floor en suite bathrooms have been fitted with large-format wall and floor tiles (5 & 6) from Porcelanosa. Each also features crisp, contemporary sanitaryware but has its own distinctive look

USEFUL CONTACTS: Design and build package Hanse Haus: hanse-haus.co.uk Groundworks P&P Groundworks Ltd: 01208 869273 Plant hire Bussell Plant: 01823 663859 Kitchen Spillers of Chard: 01460 67878 Light fittings The Lighting Company: 01643 707505 Rainwater harvester Rewatec: 0843 658 1006 Garden design Wibble Farm Nurseries: 01984 632303 Tiles Porcelanosa: porcelanosa.com Site insurance and warranty Self-Build Zone: 0845 230 9874