

PHOTO CREDIT: WILLMOTT DIXON

It may have taken a while to catch on in the UK but, as ROGER HUNT discovers, Passivhaus is becoming an increasingly popular building method as housebuilders discover the part it can play in the push to 2016



# PASSIV finds its VOICE

Chester Balmore, in Highgate, London

**BELOW** Chester Balmore in Highgate, London

**RIGHT** Chester Balmore, developed by Camden Council

**BOTTOM MIDDLE** CGI of Passivhaus homes around a central green at ArchiHaus scheme of 150 homes in Herefordshire



**We now know without doubt that a passive house does not have to be a white rendered cube whose owners have aspirations to be on Grand Designs. The winners of this year's UK Passivhaus Awards showed that passive buildings not only perform well and create comfortable environments for their occupants but, in the words of the Passivhaus Trust, "can represent a variety of styles, enhance their local context and be built at a reasonable cost".**

Passivhaus was born in Germany in the late 1980s with the first row of four houses constructed in 1990 by Dr Wolfgang Feist, the founder of the Passivhaus Institut. Compared with many other European countries, the UK has been a late adopter. The Passivhaus Trust is just four years old and Passivhaus as a building standard has slowly moved from single dwelling projects, often undertaken by self builders, to schemes of 30 to 50 homes and, more recently, full-scale developments of 100-plus units.

A leading proponent of the standard is architect Justin Bere. In his book, *An Introduction to Passive House*, he explains that passive building techniques enable the creation of very comfortable, light-filled buildings that operate with the minimum of energy: "Passive House is a standard and an advanced method of designing buildings using the precision of building physics to ensure comfortable conditions and to deeply reduce energy costs. It removes all guesswork from the design process. It does what national building regulations have tried to do."

Jon Bootland, chief executive of the Passivhaus Trust, explains that "Passivhaus is absolutely perfect for social housing providers and people who are investing in a home for life as, although, at the

moment, it may cost a bit more to deliver a home up front, there are considerable cost savings over time".

The UK's first accredited Passivhaus scheme of rural affordable housing consisted of 14 homes and was opened by Hastoe Housing Association in June 2011 at Wimbish, Essex. Kevin Hartnett, Hastoe's business development director, sees Passivhaus as the common-sense approach to delivering well-designed, green and energy-efficient homes. "Private rents and home ownership can often be out of reach for families in rural areas. Fuel poverty is also a big issue, so the homes meet an identified need. At Wimbish, we have had the energy bills independently monitored. The findings show huge savings against traditional housing – up to a 90% reduction. For a three-bedroom house we have seen bills around £105 for a full year, and just £62 for a two-bedroom flat."

Hastoe's emphasis is on making the houses fit the style of the area in which it is building. The Association's scheme of 14 Passivhaus homes within the Ditchingham conservation area of Norfolk, completed in 2012, was shortlisted in the Brick Development Association's Brick Awards. More recently, three homes at Burnham Overy Staithe won the architectural design category at this year's UK Passivhaus Awards. The scheme by Parsons + Whittle Architects is a block of three terraced houses and lies within the North Norfolk Area of Outstanding Natural Beauty, and is in a conservation area. It clearly reflects the local vernacular of traditional fisherman's cottages with the use of flint, local red brick and clay pantiles.

While Hastoe currently has a further seven Passivhaus schemes in the pipeline, totalling some 88 new homes, Circle Housing has just completed a

51-home Passivhaus scheme in Rainham, Essex. The homes were constructed by Climate Energy Homes using its ecoTECH Build System, which utilises a closed timber stud panel system manufactured off-site.

The London Borough of Camden has employed Passivhaus for the first new housing to be developed by Camden Council in over 20 years. The recently completed Chester Balmore scheme is located in the Highgate area and is a development of 53 new





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**ABOVE** Chester Balmore kitchen  
**RIGHT TOP** Hastoe's Burnham Overy Staithe development in Norfolk  
**RIGHT** Beattie Passive Build System is being used at Kelham Island, Sheffield, by Citu

homes, of which 23 units are for council rent, four are shared ownership and 26 are for market sale. All achieve Passivhaus certification and Code for Sustainable Homes Level 4.

Ivan Christmas, senior development manager, London Borough of Camden, says: "While Camden's planning policy makes no direct reference to the Passivhaus standard, passive design principles are encouraged. We wanted to do something distinctive and felt that if we're asking others to 'walk that walk'

perhaps we should take a look at it ourselves."

Christmas believes Passivhaus is an effective means of tackling fuel poverty and reducing carbon without the need for complex energy systems with high lifetime costs. "The standard provides thermal comfort and air quality in a way which conventional approaches don't match. The simplicity of the concept, low maintenance requirements and low fuel costs for residents are the driving forces behind this approach. Although Passivhaus buildings can

increase the initial capital costs, we believe that as both developer and landlord we will see the benefits of this approach."

The £10.5m scheme was designed by Rick Mather Architects and was constructed by Willmott Dixon. Chester Balmore was Willmott Dixon's first Passivhaus project, despite it having its own team of Passivhaus designers and being involved in a number of low-energy buildings.

Ben Shuster, Passivhaus consultant for Willmott Dixon, points out that, while the scheme posed problems such as over shading and privacy, its size had some advantages. "As you start to scale up a building you start to improve the surface area to volume ratio so, on the face of it, larger buildings lend themselves better to Passivhaus because they are inherently more energy efficient."

Willmott Dixon had an airtightness 'champion' based on-site permanently. "The trick is getting contractors and subcontractors to understand right from the beginning that the project is different," believes Shuster.

Camden is now looking towards its Agar Grove scheme, which will include 345 new homes built to Passivhaus standard and, as with Chester Balmore, is part of Camden's Community Investment Programme.

Passivhaus is also being embraced at Kelham Island, in the heart of Sheffield, where the first of 107 Passive Houses are available from Citu. The scheme is being built using the innovative Beattie Passive Build System, a patented construction method that provides a continuous insulation seal around the core of a timber-framed structure. This system was used for the construction of the Coventry Eco House for ▶



**THIS PIC** Hastoe's scheme within the Ditchingham conservation area of Norfolk

**BELOW** Circle Housing's Passivhaus scheme in Rainham, Essex. The homes were constructed by Climate Energy Homes using its ecoTECH Build System

**BOTTOM** Hastoe's Wimbish scheme in Essex



Orbit Homes and Forum for Constructing Excellence, which was the winner in the Cost & Build-ability category at the UK Passivhaus Awards.

Innovative design and construction techniques are at the core of ArchiHaus, a company that has been formed by Jonathan Hines and Lars Carlsson, in partnership with sustainable architects, Architype. ArchiHaus is investing in the first Passivhaus house factory to be established in the UK and is planning a scheme of 150 homes at Kingstone, Herefordshire.

"We're building in a high degree of tangible quality in terms of space and light and flexibility of use within a very simple form, rather than relying just on add-on features on the outside, which is what many developers tend to do," says Hines.

"As architects we've specialised in sustainable design for 35 years and our approach has always been to design the building to do all the hard work in saving energy rather than relying on 'eco bling' add-ons and renewables to offset carbon. What we like about Passivhaus is that it's a quality assurance system where, if you go for certified Passivhaus, you have to demonstrate that your design and construction comply with the standard and, by doing that, you can be confident that your building will perform as it says on the tin."

With 2016 around the corner, many see Passivhaus as a way of delivering the standards that will be required and, at Willmott Dixon, Shuster believes the latest iterations of building regulations are starting to align with the requirements of the standard. "There's more dovetailing than there was five or six years ago

when Passivhaus projects were in their infancy in the UK. I'm genuinely thinking that Passivhaus is a really interesting proposition and now maybe it's more mainstream."

Jon Bootland believes the often-quoted figure of 10% in extra capital costs for Passivhaus is likely to shrink as building regulations tighten. He suggests that some of the top 10 housebuilders are actively looking at the possibility of building to the standard. "Now is a good time to think about Passivhaus and being ready for 2016 when the new regulations come in and buyers start to say 'Yes, we will pay a little bit more for a better quality, low-energy home'." <sup>sh</sup>

## CONTACTS

**ArchiHaus** [www.archihaus.co.uk](http://www.archihaus.co.uk)

**Beattie Passive** [www.beattiepassive.com](http://www.beattiepassive.com)

**Climate Energy Homes**

[www.climateenergyhomes.com](http://www.climateenergyhomes.com)

**Passivhaus Trust** [www.passivhaustrust.org.uk](http://www.passivhaustrust.org.uk)

**Willmott Dixon** [www.willmottdixongroup.co.uk](http://www.willmottdixongroup.co.uk)

**An Introduction to Passive House by Justin Bere is published by RIBA Publishing at £27.99. Readers of Show House receive a 10% discount to the UK Passivhaus Conference 2014. Simply contact [info@passivhaustrust.org.uk](mailto:info@passivhaustrust.org.uk) to obtain a discount code.**

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