

Passivhaus takes hold in Britain

Oliver Lowenstein

On a warm October day last year, Chris Huhne, the new coalition government's Energy and Environment Minister, strode purposefully towards the lectern to give a keynote speech in North London's Islington town hall. The hall was packed, and those attending the event, the first Passivhaus conference in Britain, waited to hear what the minister had to say. Later his words were analysed and deciphered for clues to 'the greenest Government ever' commitment to decarbonising the country's building stock. A key line referred to the event as "a watershed moment," in which he would "like to see every new home" reach the Passivhaus standard. It had been quite a journey for the continental Passivhaus approach to building, which just three and a half years before hardly anyone in Britain had heard of.

One year after the Passivhaus conference last year, what high hopes were held for the Government's commitment to decarbonise Britain's entire residential building stock have been fading by the month. Yet alongside this, with regard to strategies for realising zero energy buildings, the momentum of interest and practical take-

up, whether in training or actual live-projects, in the Passivhaus approach in the UK has been burgeoning. As with the UK take-up of massive cross laminated timber I wrote about in the last issue of Detail Green, this is once again a story of research, techniques, technologies and building expertise that have been developed abroad and, after a considerable time-lag, have begun to migrate to Britain. Different professionals have been involved, though also a very similar cultural dynamic, involving small networks of committed sustainable builders and architects, breakthrough moments and increasing acceptance. This was followed by curiosity, interest and take-up by the mainstream. What is markedly different is how recent the take-off has been, and in terms of certified Passivhaus buildings how – still – comparatively few there are. Germany has passed its 10,000th Passivhaus building, even if no-one seems to know how many are certified. Here, in Britain they can be counted in a few handfuls and even with the current wave of excitement, it is difficult to really envision the numbers catching up with the levels of central mainland Europe.

A Passivhaus prehistory

At the heart of those campaigning for the Passivhaus standard in England has been a sustainable building network, the relatively small Association of Environmentally Conscious Builders (AECB), founded in 1989. Though often described as a 'grassroots' organisation, the AECB includes members with a high level of specialist knowledge, skills and experience, albeit at odds with the prevailing UK architectural orthodoxy of the time; where sustainability wasn't an issue worth thinking about. One of these forerunners is David Olivier, who, through the eighties and nineties, acted as an independent consultant, conducting research which, although immensely detailed, did not receive the attention it merited from the mainstream, including Government research centres such as the Building Research Establishment (BRE). Through the nineties, Olivier's work found an audience among the 1500 or so members of AECB, a substantial part of whom were architects and others working closely with architects. This said, BRE started up a Passivhaus Unit in 2004, led by Gareth Hodgson, with the explicit intent of bringing its principles to the wider building sector. The unit has grown into the influential Passivhaus UK body, disseminating information and running certification courses to the mainstream.

It was only, however, in the around 2005 that Passivhaus really began to gain wider attention. Andy Simmonds, partner of the architectural practice Simmonds Mills, (and also AECB's current part time CEO), recalls that through 2005, this had coalesced into "three identifiable groupings: the AECB, BRE's Passivhaus Unit, and a small number of pioneer architects, including John Williamson, a west Wales architect, and the London-based, Justin Bere." Within two years, after following different, if at times intertwined, Passivhaus paths, together these groups would effectively springboard the launch of Passivhaus in England.





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Already, in around 2003/4, the AECB began receiving requests from its members for guidance concerning low energy building design and construction. The result was a set of energy standards. Subsequently discussions with BRE and the Energy Saving Trust (EST) to look at harmonising energy standards through 2006 and 2007, the AECB launched Carbon Lite, a major carbon literacy programme based around the AECB standards, led by Simmonds and Liz Reason, an energy marketing specialist working with AECB. Simmonds, converted to the Passivhaus approach, in his architectural capacity began to look at how he could apply what he was learning to first, refurbishing his own home, and then, Disability Essex, a Centre for Disability Studies through 2008/9. The latter building passed Passive certification last year. Simmonds and Olivier, together with a growing number of close AECB colleagues, used what they were learning from their own projects to provide technical and design understanding for those new to very low energy design. All this would filter through into the AECB community and beyond in different ways.

During this same period, architects John Williamson and Justin Bere developed their first Passivhaus designs – both supported by BRE and Hodgson – with Williamson completing a residential dwelling and an Adult Community centre for Powys County Council in Wales. These became the first UK Passivhaus buildings to gain certification in 2009. Bere, who has had a life-long passion for low energy building, was only alerted to the existence of Passivhaus when a German assistant, Tobias Schaffrin, pointed out how similar the detailing on Bere's 2005 Focus House project was to Passivhaus. Bere was amazed to find literally hundreds of architects across Europe developing similar, though more advanced, airtight buildings he'd spent years aspiring to. He began integrating Passiv principles into his design, and, in spring 2007, attended the European Passivhaus conference held that year in one of the epicentres of Passivhaus activism, Bregenz in Vorarlberg. The visit for Bere was nothing short of an architectural revelation, discovering there "beautifully designed low energy buildings of the sort that appealed to a designed architect."

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- 1 Terraced houses for the 2010 Scotland's Housing Expo, Inverness
HLM Architects
- 2 Underhill House, The Cotswolds, Gloucestershire
Seymour-Smith Architects
- 3 Tigh Na Cladach, Dunoon
Gokay Devעי

Another UK attendee, Nick Grant, who is closely connected to sustainability pioneers, Architype, had been unconvinced about Passivhaus prior to Bregenz but returned with a changed perspective. "I travelled to Bregenz with half a mind at debunking it, but came away pretty convinced. Part of it was seeing actual buildings, and the rationality of the process. I was impressed by how it was conceptually sophisticated, though also very simple and realised that actually there's something in this." Grant returned to Britain enthused, learning the Passivhaus Institute's PHPP computer-modelling software, and began showing others within Architype's west office, near Hereford, both how the programme worked and underlining the potential benefits. After a number of false starts, the practice used this knowledge on two primary schools in Wolverhampton, Bushbury and Oak Meadow. Opened in October this year, they are Architype's first built passive projects.

Meanwhile in Scotland, knowledge about Passivhaus concepts also began to circulate, albeit through an entirely different route. Research visits to Norway and Sweden by Scottish architects in the early 2000's, including Gokay Devעי and Edinburgh's Gaia Architects, introduced the Scots to the Nordic Passivhaus community, including one of its founders, Hans Eek. As the climate and geography of Scotland is closer to Scandinavia than to southern England, it is hardly surprising that a separate Scottish Passivhaus path has emerged, with Devעי's Tigh Na Cladach affordable housing in Dunoon on Scotland's east coast being the most significant project to have been realised so far. Interestingly, Devעי states that his intent was research focused. Frustrated in previous projects due to the difference between the claims of different energy approaches and their actual results, he wanted to see if Passivhaus would work in practice. So far post-occupancy testing is showing very good results.



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- 4 The Larch House, Ebbw Vale, Wales
bere:architects
5 Centre for Disability Studies, Essex
Simmonds.Mills Architects



The centre becomes interested

It is apparent that those picking up on Passivhaus have not at first been metropolitan, London-based architects – AECB is a predominantly West Country, West Midlands and Welsh congregated network. It was only with the link-in with Bere (as well as John Bootland of the Good Homes Trust) that interest in Passivhaus, both from architects and the media, began to gain momentum in the capital. By 2008 Bere had committed his new projects to Passivhaus standards, which, along with lectures, workshops, and conferences, helped build momentum and raised Passivhaus's profile in London. The projects include a residential home (looking not unlike a Vorarlberg building) in a leafy, affluent part of North London, a North London community centre rebuild, and finally a competition win to design two experimental houses in a large South Wales building programme on the edge of ex-coal mining town, Ebbw Vale. The latter two, Larch and Lime house, have been designed specifically to affordable housing budgets, and with the different South Wales climate in mind. Although all of these early projects have required established passive product companies from across Europe, Ebbw Vale and South Wales are attempting to change this, with a few British companies beginning to manufacture products. At Future Works, a group of Welsh joinery companies have come together under the name, Company Precision Joinery, to produce a first UK standardised Passivhaus window. The result has been a first wave of genuine, accredited Passivhaus projects across a broad geographical range. Bere's residential projects, as well as a small number of private homes, including Underhill House by Helen Seymour Smith, Denby Dale house by ex-AECB chair and Green Building Store founder, Chris Herring, and SimmondsMills' Disability Essex were all accredited in 2010. The housing projects ought to be seen in the context of the British Government's 2006 an-

nouncement that every residential building, including existing stock, would be legally required to attain zero carbon energy levels by 2016, precipitating the AECB's CarbonLite programme, and in 2009 the major government funded 'Retrofit for the Future' research. This research is now being concluded, and includes practices that have committed to Passivhaus, researching how to refit a cross section of older, primarily urban housing typologies. Among them are PrewettBizley Architects, another young London practice. Rob Prewett notes that many of these Retrofit research projects are informed by Passivhaus concerns and ideas, including cold-bridging, heavy insulation and walls, even if they were not technically, passiv-projects.

What the critics have to say

The passive rush, as a few have called it, has not been without critics. Within the British sustainable building environment the most high profile comes from BedZED's Bill Dunster, who in a 2010 Building Design magazine article commented that, "It's not so clever to insist on expensive levels of air-tightness in the temperate south. But it is even stranger to demand electricity-hungry, fan-driven, heat-ventilation when passive techniques work fine. The UK has to combine Mediterranean passive cooling techniques with the northern European need to conserve heat." Chris Morgan, from Scotland's Locate Architects, a passiv-advocate hoping to complete the first passive self build, notes how some "fail to see the drawbacks". Morgan also points out how divisive the take up of Passivhaus has been in Britain across the wider sustainable architecture community, in this respect mimicking its central European reception. Aesthetics, and the vexed question of how far Passivhaus allows architectural expression, is given an ecological perspective by Mole Architects' Meredith Bowles, in underlining how Passivhaus's continental development has done so

within "part performance, part product" parameters. While Bere argues that Passivhaus is more process than product, it is widely acknowledged that EU funding for the early experimental Passivhaus R&D was partially premised on developing such 'products.' Bere feels vindicated in that passive is an approach, which works: "What is clear is that the tests are showing the Passivhaus buildings built so far are performing 'spot-on.'"

There seems to be consensus that the Passivhaus rush is set to continue for a while yet. There may be dark mutterings as to where exactly the Government's zero carbon housing is heading, as well as concerns at the lack of skills of UK builders, and specialist contractors, and whether they are up to delivering passive-standard insulation, even if training packages are now emerging. Places on BRE PHPP training courses for architects are also over-subscribed and last year's first UK Passivhaus conference saw both the ministerial keynote and the launch of the Passivhaus Trust. New Passivhaus projects regularly crop up in the British architectural media. 4Orm's Arbark Park, is the first passive multi-dwelling for five households. The mainstream are also getting in on the act: two large-scale residential Passivhaus schemes, a 28 dwelling project in Houghton-le-Spring by Devereux, and b3 architects' 66 housing development in Portland on the South coast, are nearing completion, while Rick Mather Architects have teamed up with Architype for a housing block in London. While this isn't central Europe; there is no regional municipality legislation that all public funded housing be to Passivstandards, as in Vorarlberg, nor a municipality requiring public buildings to attain similar standards, as on Frankfurt. Neither has there been any sort of iconic passive statements, as in Arno Lederer's Ravensburg passiv-museum. But what is certain is that Passivhaus, although relatively small in scale, has arrived in Britain, and is set to stay.