

A REVIEW OF STRUCTURES OF INDUSTRY OPINION: CONTEXTUAL PARADIGMS SURROUNDING THE EMERGENCE OF PASSIVHAUS DESIGN IN THE UK

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Summary

The Passivhaus low energy building design standard which is currently emerging in the UK appears to offer a viable solution for significant reductions in energy use and CO₂ emissions from both new and retrofit buildings. The evolution and development of any new technology or innovation sits within the context of an existing paradigm or paradigms. This is the case when looking at the Passivhaus design standard in the UK. This paper briefly outlines six key paradigms into which Passivhaus is currently emerging in the UK.

Keywords: Passivhaus, Industry Opinion, Policy, Legislation, Paradigm

1 UK Policy Context

Since final ratification of the Kyoto Protocol in 2002, the UK government has developed many different legislative tools to meet energy and greenhouse gas reduction targets. 2002 also saw the launch of the European Commission Directive 2002/91/EC, known in the UK as The Energy Performance of Buildings Directive (EPBD). In the UK, the EPBD impacted on the introduction of the new revision to Part L (The Conservation of Fuel and Power) of the Building Regulations in 2002 and directly informed the further revisions to Part L in 2006. Additional revisions to Part L are due this year 2010 these will also be accompanied by revisions to the Building Regulations Part F (Means of Ventilation). More revisions are planned for in 2013. The aim of these Part L revisions is to lead the construction industry towards the eventual delivery of 'zero-carbon' buildings.

In conjunction to the Building Regulations revisions, the UK government together with BRE (Building Research Establishment) introduced revisions to the BREEAM (Building Research Establishment Environmental Assessment Method) suite of environmental standards for the assessment of buildings. As part of these assessment tools, the Code for Sustainable Homes (CSH) was launched on 13 December 2006 and finally introduced as an operational standard in April 2007. The CSH has six levels of achievement with level six being the highest or 'zero-carbon' level. To coincide with the launch of the CSH, the government announced targets that all new housing built in England should be 'zero-carbon' by 2016(Government 2007), with all new non-domestic buildings to be built to 'zero-carbon' standards by 2019(Government 2008).

2 UK Paradigms

The rapid introduction of all the above legislation and standards has worked to stimulate debate in the UK construction industry as it seeks to understand the route to ‘zero-carbon’ compliance. This has led to many government consultations which have and are being undertaken to try and establish the final definition of ‘zero-carbon’, ways to meet targets and the evolution of targets.

These debates can in part be described through a variety of paradigms that represent a set of existing approaches and opinions towards achieving ‘zero-carbon’ buildings. Observation of the debates exposes six key paradigms that can currently easily be identified. These paradigms are briefly summarised below –

2.1 The Status Quo - Part L 2006, BRE and CSH

All buildings must currently be built to comply with the requirements of the mandatory Building Regulations Part L. Developments that currently require mandatory CSH compliance are government and social housing schemes which must meet CSH Level 3 as a minimum standard. The BRE which is the organisation that co-developed, hosts and manages the CSH is also one of the four organisations that represent the Passivhaus standard in the UK.

2.2 The Merton Rule

Planning Policy Statement 22 (PPS22), known as ‘The Merton Rule’ was initially adopted by the London Borough of Merton followed by the Greater London Authority (GLA) and a large number of Local Authorities (LAs) across England. The ‘Merton Rule’ requires that developments of non-domestic and domestic buildings of a certain size should make 10% CO₂ reductions against designed CO₂ emissions from on-site renewable energy technologies (Merton 2009). Compliance is often a requirement of (LAs) for planning permission. It operates alongside Part L, BREEAM and the CSH. In some cases this can lead to duplication of design work and or conflicts in demands for compliance of other standards or regulations.

2.3 Passivhaus Carbonlite

The Carbonlite programme run by the AECB has developed a set of three standards, Silver, Passivhaus UK and Gold all based on the core principles of Passivhaus design. The Carbonlite standards are currently known to members of the AECB which is a private not-for-profit organisation, they are however beginning to gain attention within the wider construction industry it moves towards achieving ‘zero-carbon’ targets and starts to understand the benefits of the Passivhaus standard in terms of energy and building fabric performance.

2.4 MVHR Sceptics

Many construction industry professionals in the UK believe that ‘zero-carbon’ buildings should be achieved without the use of Mechanical Ventilation with Heat Recovery (MVHR) because they think that MVHR leads to excess energy use and poor indoor air-

quality. This group tend to be supporters of the introduction of the CSH and the legislative status quo.

2.5 UK Passivhaus Mavericks

The development of new innovations usually includes for evolutionary processes. In the case of Passivhaus in the UK, the standard has been taken and modified by some designers, either due to a lack of understanding of the principles or because individuals believe that they can improve upon the standard and make it their own. This leads to some confusion about the definition of the term Passivhaus.

2.6 Strategic Infrastructure

Some in the UK argue that the evolution of low or ‘zero-carbon’ building design should be part of a greater UK energy strategy and not an apparent fragmentation of approaches within and across different industry sectors. They would argue for approaches that form part of a consistent and energy literate policy structure. This is an argument favoured by the Energy Strategist David Mackay in his recent Book ‘Sustainable Energy without the Hot Air’ (Mackay 2009)

3 The Zero Carbon Hub (ZCH)

The Zero Carbon Hub was established after The Callcut Review of Housebuilding Delivery(Callcut 2007) identified the need for an independent body to help manage the process for the delivery of ‘zero-carbon’ buildings in the UK. The ZCH is a private-public partnership formed from a body of industry stakeholders with a specific knowledge about low energy building design.

4 Conclusions

The existence of the ZCH is testament to the fact that the UK construction industry understands it requires managed change towards ‘zero-carbon’ targets. Passivhaus currently exists both outside of and within the legislative status quo. Progression towards the/an agreed ‘zero-carbon’ target may see Passivhaus rising to greater prominence especially as the UK construction industry learns to understand its strengths and weaknesses. This may lead to a shift away from many paradigms towards a common solution that works as part of an holistic UK and European energy strategy.

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