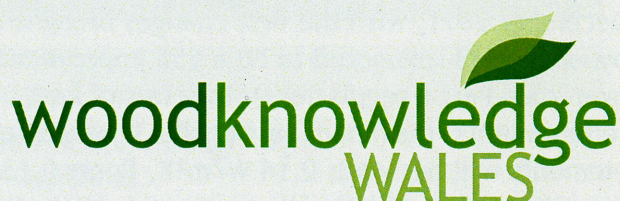


Workshop Report 5:2010

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Timber Frame in Wales

ECM2, Margam, Port Talbot

3rd December 2010

Dennis Jones

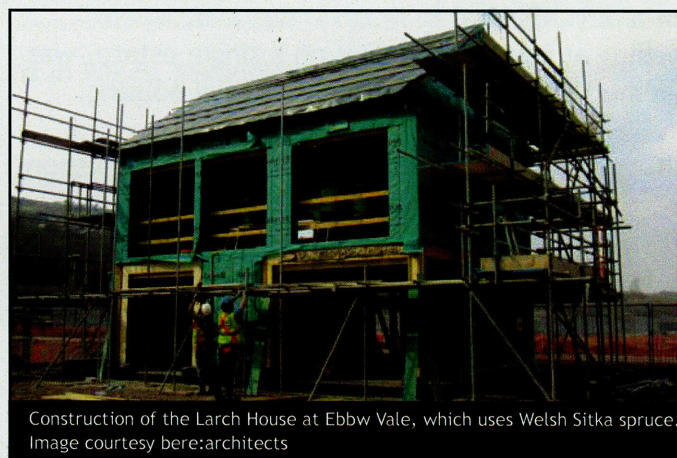
Project Officer, Woodknowledge Wales

The use of timber frame in Wales is increasing in popularity, though the majority of timber used is imported. Increasing the amount of locally sourced timber entering the construction sector could provide higher grade end uses and add value to the timber sector in Wales. Since the first WKW event on Timber Frame, the sector has moved from the concept of meeting Part L within Building Regulations to being able to deliver low energy building envelopes that can be used to meet the low energy PassivHaus standard.

The aim of this workshop was to showcase some of the recent activities where home-grown timber was used to deliver low energy housing. These examples were used to stimulate discussion on what needs to be done to further increase the use of timber frame in the construction industry in Wales and, more importantly, increase the use of Welsh timber in the delivery of low energy houses.

Presentations by Justin Bere (bere:architects) and Neil Smith (Holbrook Timber Frame) outlined some of the advances that have been achieved through the Welsh Future Homes project at The Works: Ebbw Vale. Two of the houses in this project were built to the PassivHaus standard, an area where there has been considerable expansion and development in the construction sector at this present time. However the main market for timber in construction is in meeting Code Levels 4 and 5.

Colin King (BRE Wales) indicated UK housing policies are changing, with new Part L regulations representing a 25% improvement over the 2006 standards. The Code for Sustainable Homes and Building Regulations are not linked. The Building Regulations set the building standards whilst the Code is part of national planning policy and in excess of Building Regulations.



Construction of the Larch House at Ebbw Vale, which uses Welsh Sitka spruce. Image courtesy bere:architects



The construction team at Holbrook Timber Frame with a closed panel for the Larch House. Image courtesy Holbrook Timber Frame



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Building Regulations will be devolved on 31 December 2011, with the first changes brought in by early 2013 (expected to be a 55% improvement over 2006 Part L regulations). In terms of Part L requirements, maximum permissible U values in elements will be: walls 0.14 W/m²K, floors 0.13 W/m²K, roofs 0.11 W/m²K, windows 1.4 W/m²K and thermal bridging of 0.04 W/mK or lower. An airtightness of 3 air changes per hour @ 50Pa or below will require mechanical ventilated heat recovery (MVHR) systems.

It is interesting to note that the six best performing buildings currently in the UK are all timber frame.

Haf Roberts (Coed Cymru) pointed out the benefits of the Ty Unnos system, capable of using local timbers with virtually no waste at the construction site (due to modular off-site construction). The Ty Unnos method of construction has been adapted for a development in North Wales and, when looking at several buildings on a single estate, was deemed as cost competitive for social housing.

The major themes that arose from the workshop were;

- New designs require more attention to detail, to ensure airtightness and to eliminate thermal bridging. Ideally the development of ways to use smaller timber, as demonstrated with the Ty Unnos beam, can help increase the amount of local timber used in construction. Products such as glulam and cross laminated timber can use small diameter lower grade timber and would be ideal for low grade Welsh timbers. However, the cost of the machinery to develop the products was seen as prohibitive.
- Most timber frame manufacturers in Wales use open frame systems. Closed panel frame systems require a different manufacturing set-up (made easier with the use of butterfly tables for turning the panels during construction, which is a considerable investment for companies). A debate was raised as to whether this was the future for timber framing in Wales. The advantages are that you can deliver a

sealed wall element to site with insulation, windows etc. that have all been fitted in the factory, thus reducing the amount of work required on site. The disadvantages are the cost of the equipment required to undertake this and that it does not really provide financial or time savings. The feeling from the event is that the 'jury is still out'. However, many timber frame companies are investigating this methodology and most European timber frames are closed panel.

- In order to increase the amount of Welsh/UK timber used, timber framers must start to use C16 instead of C24. C16 is available from Welsh forests. However, it is rarely used due to its perceived lower quality and increased cost. However, BSW believe they can supply C16 CLS timber cheaper than imported C24 timber. As most timber framers are happy with their suppliers of imported timber, it was recognised that the best way to increase the use of Welsh C16 timber was to encourage clients and architects to specify Welsh C16.
- There needs to be a major step change in the construction sector, with more skills on site and planners understanding the design concepts being put forward. Training in Scotland is being undertaken by the Scottish PassivHaus Centre and BRE Wales are looking at ways of creating similar training courses for contractors in Wales, so helping deliver buildings meeting the required airtightness and thermal bridging standards, etc.
- The issue of fire safety has become more important, especially during the construction phase. The key difference appears to be the behavioural problems in parts of Britain, leading to arson attacks on building sites. Any risks may be limited by following the UK Timber Frame Association 16-point plan for preventing fire on site.

The workshop session centred on the following questions:

How can we increase timber in construction?

- Improving the quality of the timber-based envelope in construction through higher technical skills based on improved regulations and higher standards.
- Establish a Welsh body to represent the timber industry and successfully market the produce (which represents key roles for Woodknowledge Wales and Woodsource Wales)
- Have a central knowledge depository on timber frame designs capable of guaranteeing airtightness
- Suggestion of tax breaks/ incentives for home grown materials (though this is very unlikely as it would be seen as anti competitive)
- Lobby WAG to include a requirement to only use Welsh timber in any timber frame constructions, especially for centrally funded projects
- Increase use of Welsh sourced timber, through continual education and investment

What products should be developed?

- Consider setting up glulam/ massive timber operations in Wales. Immediate start-up potential seen for glulam
- The development of easy to manufacture, low technology systems
- Develop engineered products to overcome lower quality from fast growing species
- Review what is being produced by R&D (BRE, TRADA, etc.)
- Fibre-boards possibly an option for future development.

How can we promote Welsh products

- Develop a register of the supply of timber (from sawmills) and demand of timber (from specifiers)
- Raise awareness with Local Authority officers on the importance of the timber industry in Wales (e.g. jobs)
- Need continuous supply and competitive pricing in all standard sizes of timber
- There needs to be a guaranteed market with committed orders. Without this there will be no investment.
- Market research required on the current usage of engineered timber and the potential for usage

Other issues

- Fire during construction making industry nervous. Need to retain fire consultant throughout the build process
- Look at educational system abroad e.g. Austria has Timber Technology Diploma for 19 year olds. NVQ training is not working
- There needs to be an education and training provision within the industry
- Energy efficient houses have shorter payback periods. People more able to repay a mortgage with the reduced fuel costs, producing an overall financial saving over extended period of time (i.e. life of mortgage)
- Need more collaboration with groups such as Welsh Materials Network (based in Swansea University)

WKW will follow up these points by:

- Developing a register of the supply of timber (from sawmills) and demand of timber (from specifiers)
- Developing a wood studio similar to ones in Scandinavian countries that develops new timber products. This will form part of the International Sustainable Energy Centre planned for Ebbw Vale
- Developing engineered products to overcome lower quality from fast growing species
- Run events to encourage clients, such as housing associations, to specify C16 Welsh timber on their projects
- Develop a series of training/CPD courses for University graduates and professionals on specifying and constructing with Welsh timber
- Training for the framers so they know how to build an airtight, insulated timber frame house at the right price.