# How massive wood came to Britain

Oliver Lowenstein

We were looking up at the elegant half moon curving glulam beams which carry the three canopies of Transport for London's brand new West Ham garage, when Malcolm McGregor began telling me about his first job after joining Pringle Richards Sharratt or PRS Architects, the designers of the garages. Macgregor had begun working in boomtown Berlin in the early nineties, helping with a passive housing scheme which PRS were designing as part of the last of the IBA Berlin building waves, led by pioneer solar architect, Thomas Herzog. At one of the team meetings, one of Herzog's assistants sang the praises of this new solid panel material, developed by the German timber company, Merk. Curious, McGregor, called Merk to check out the material, LenoTec. He, too, was impressed and began using it on the housing until Berlin's authorities scuppered the project. By now, though, PRS, were enthused by this new engineered timber and transferred the knowledge to another timber project. Which is how, McGregor concluded, PRS's Shrewsbury School music auditorium became the first UK building to use solid timber.

At the time, in the late-nineties, massive, or cross-laminated, timber panel systems were just beginning to emerge as a central European material. LenoTec or 'Dickholz' (literally translated 'thick wood') as it was initially known, was first used on a three-storey house in the timber company's home town, Aichach, Bavaria in 1995. Soon, a small group of timber manufacturers, all relatively close to, or in the well forested sub-Alpine regions of Germany, Austria and Switzerland, joined in these pioneering years of solid timbers development. Vorarlberg's Kaufmann, for instance, with early cross-laminated timber projects focused on extensions and chalets. Within a few years solid timber systems were seeping into an increasing number of building projects throughout the three countries, as well as neighbouring European countries, from France to Holland and Spain, while further north, the Nordic countries also began developing their own and licensed cross-laminated panel systems.

*An imported success story*

In Britain, however, there was hardly any knowledge or use of the material, excluding PRS's early experiment. Fifteen years on though and there has been a veritable wave of solid timber designed buildings emerging across Britain over the last few years. During this time increasing numbers of articulated lorry loads of flat-packed solid timber systems have been heading from the three German speaking countries to sites across Britain. Yet if you trace the journey back one route takes you to McGregor's Merk tipoff. PRS have continued specifying solid and other engineered woods to a formidable portfolio of cultural buildings, including their recent Coventry Herbert Gallery dia-grid extension. Yet, compare that recent past to today, and to Sheppard Robson, one of Britain's ten largest architects, who in the last twelve months have completed three large schools and academies. Of these, the Open Academy in Norwich and Waingels College, near Reading, Berkshire, use around 12,000 square metres of cross-laminated panels.

Both the use by a mainstream architectural studio, and these kind of figures indicate how solid timber systems have been accepted in the last half decade by the British architectural and building sector. During the interim period, two key factors were critical in this collective turn to cross-laminated timber. First, the year-on-year tightening of Part L, the UK building regulations' sustainability element, was beginning to impress itself on architects, and second, the large-scale public sector building programmes, not least the then Labour Government's ambitious 'Building Schools for the Future (BSF)' programme started being implemented. Solid timber's sustainability credentials dovetailed perfectly with the new more rigorous requirements.

Beyond this, the acceptance of massive wood has been on the back of various high profile landmark buildings. Two of these in particular stand out. The first, and one which played a significant part in making some of the emerging architectural generation aware of cross-laminated

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1 West Ham Bus Garage, London
Pringle Richards Sharratt, London
2 John Hope Gateway, Royal Botanic Garden, Edinburgh
Edward Cullinan Architects, London
3 The Herbert Art Gallery & Museum, Coventry
Pringle Richards Sharratt, London
4 Open Academy, Norwich
SheppardRobson, London

timber, is dRMM's Kingsdale school sports and music hall, completed in 2007, to a shower of UK architectural media praise and pronouncements by its moving architectural spirit, Alex de Rijke, encapsulated in his catchy slogan that, just as concrete was the material of the twentieth century, so engineered timber would be that of the twenty-first. Solid timber's second media coup was when another young London practice, WaughThistleton, resolved how a solid wood high-rise could work structurally, and that UK building regulations, unlike those in many mainland European countries, would theoretically allow for timber towers. Murray Grove, their nine-storey North London mixed use high rise, first given a German name, Stadthaus, also sent a quiver of excitement, through engineers this time as much as architects.

*From early pioneers to the mass market*

Yet this simple narrative of the British finally picking up on solid cross-laminated timber, misses a more interesting, hidden side to the story. Not only were the first two outfits supplying solid timber, Eurban and KLH UK, both closely linked to the Southern German and Alpine regions, but they were both offspring of the same sustainable materials company, Construction Resources (CR). Construction Resources was established in 1998 by Richard Handyside, with Liam Dewar, Eurban's founder, arriving soon thereafter. Back in Britain, Dewar introduced CR to LenoTec though quite soon the limits of only supplying the material became evident.
KLH UK's founder, Karl-Heinz Weiss, also came across the Austrian company while researching solid timber systems at CR. With CR not bringing in work, and apparently uninterested in installation, Weiss took on launching KLH's UK branch in spring 2005. With office space in engineers Techniker, – who were to become the engineers on many early projects – the first job was an interior renovation of a north London nursery by another London based, German ex-pat architect, Kay Hartmann. Installation and engineering only began for Eurban in early 2004 with their third project, a nursery. Word was beginning to get around though. White Design's Craig White came away from a 2003 CPD seminar, "thinking I'd seen the future of sustainable building." The next project for Eurban was John Pringle from PRS Architects' own home. It was followed by the first larger scale five-storey mixed-use office and residential building, Waterson Street, by the arts-design-architecture ensemble, Quay2c, for which Eurban supplied the Schillinger product Crosslam. "Merk had too much work, they couldn't keep up with what was going on across the continent", recalls Dewar. Not only this, but Eurban saw a sustainable rationale in going directly to the sawmill; no extra materials miles transporting raw wood from mill to engineered wood manufacturer. This has since been taken a step further, with Eurban deciding to only work with integrated suppliers, including the largest European factory, Stora Enso. "Waterson Street started the growth," recalls Dewar. In 2005 they looked at 25 projects. Five years later in 2010, 1300 projects had been through Eurban's enquiries books, including Sheppard Robson's Waingels College.
Meanwhile by 2007 KLH UK was only beginning to make inroads into the British architectural world. Initially, the target, Weiss recalls, "was wanting to survive." They may well have been lucky, as, though a second job was on the books, it was at this point that dRMM's Alex de Rijke walked in through the door wanting to complete the second phase of a south London secondary school with cross-laminated timber. De Rijke, a restless and curious person and self-confessed materials obsessive, knew all about Construction Resources, having come across another material, Steko blocks, there, in 2001. "I wasn't aware of CLT before and started investigating it." He recalls that he was "impressed with its reliability and dimensional stability compared with timber frame. I'd always loved plywood, and solid timber panels appealed to me. It was like a larger version of plywood." By then dRMM was one of the rising stars of London's turn of millennium new architectural scene. Their radical reworking of Kingsdale, the fifties secondary school, where

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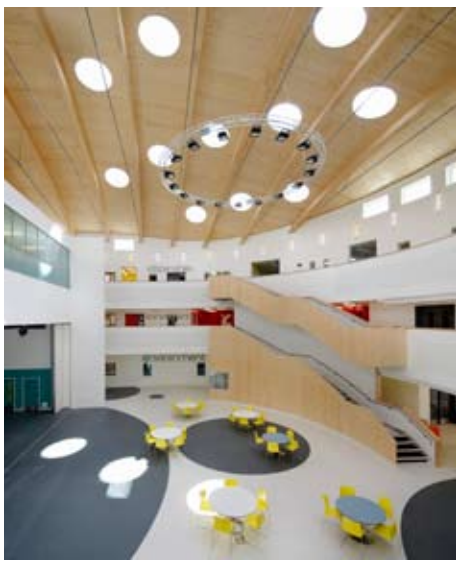

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5 Waingels College, Woodley
SheppardRobson, London
6 "Stadthaus" at Murray Grove, London
Waugh Thistleton Architects, London
7 Kingsdale School extension (music room), London
deRijke Marsh Morgan, London

[1] ■■■ For more information on Sarah Wigglesworth Architects' Sandal Magna School in Wakefield, UK, see the article "■■■" on p. ■ of this issue of Detail Green.


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they had draped ETFE plastic over the old open courtyard while dropping a larch geodesic auditorium into the courtyard centre, had ignited excitement in the media, and now they wanted to follow through with two fully cross-laminated buildings, a sports hall and music centre. Kingsdale phase II provided a good opportunity to begin testing this new direction. "It was a period of research and construction, experimenting with the limits of cross-laminated timber." This included spanning, thermal air-tightness and whether curvature could be achieved from flat-packed panelling in the sports buildings roof. The music block's cellular design also allowed for considerable playful experiment.
When Kingsdale's phase II finally opened late in 2006, there was considerable interest. Although clad in steel, for UK insurance reasons, the timber building caught the imagination of a whole segment of architects. "Alex is a good PR machine" says Weiss, "and this has really helped so much." Many architects, including Sheppard Robson and Sarah Wigglesworth, noticed and were converted to using massive wood through Kingsdale [1]. Though


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a few questioned the eco-transport footprint of both engineered wood and the carpentry installation coming from central Europe, for almost all architects, this was outweighed by the buildings total 'embodied' footprint, which could be demonstrated as carbon positive, outperforming both concrete and steel.
The 2007 surge in interest was also spurred by building regulations, by the increase in BSF projects coming on-line, and by the cost of steel versus wood, particularly the demand in steel from China. Both Eurban and KLH's order books swelled, with each taking on further Sheppard Robson projects. KLH's St John Fishers Academy in Peterborough, was completed in March 2008, swiftly followed by Murray Grove, the North London nine storey timber high-rise, together signalling a second threshold for the company, though also arguably, that the first experimental chapter of British cross-laminated timber was over.

*Timber, the new concrete?*
Although Murray Grove would be presented with UK Wood Award's the following year, and although it spurred on its engineers Techniker and other European engineers in their quest for yet taller timber towers, there was some disappointment among those who saw it as timberbuild by default, among them de Rijke: "At Murray Grove massive wood is simply a substitute for concrete. As an example of what it's trying to say, it's disappointing in that it's a hidden achievement, and for whatever reason it feels it needs to apologise for being timber. We go to great lengths to reveal and express the material." De Rijke may feel frustrated as, despite having designed several fascinating experimental structures, including a remarkable origami Olympic stadium runner up, since Kingsdale phase II, dRMM have had limited opportunities to build new projects. Still de Rijke's solid timber proselytising has had various other surprising consequences, such as inspiring the Stavanger practice, Helen & Hard, into using solid timber. HHA's Mountain Lodge, one of Norway's most interesting buildings using solid timber, can be directly attributed to de Rijke's timber fetish.
In the intervening years a swelter of other UK practices have taken up massive timber. These include Edward Cullinan Architects integrating cross-laminated timber into one of their more interesting recent buildings, the John Hope Gateway visitor centre at Edinburgh Botanic Gardens. FCB Studio's are also using the material in two healthcare projects, while a phalanx of new school buildings, from White Design, Sarah Wigglesworth Architects to BDP, make considerable use of the material. Along with Eurban and KLH UK, various Central European solid cross-lam timber manufacturers are increasingly present in projects across Britain. As of this autumn KLH UK, shipped 25 000 square metres this year (representing nearly 15% of KLH's total manufacture) and the projects become ever larger. They are preparing for the next higher high-rise venture, while Eurban are involved in an eight storey social housing block, also beginning on site shortly. Britain's architects have fallen for massive wood, with the wider construction industry in tow, and are carving out a new, somewhat different story of its material application in buildings across the country from that of the continent.
Of course, this remains a very small part of total building, but if you were to ask how massive wood came to this country, one can see this is not a story of big industry knowledge transfer. Rather it can be traced back to a handful of committed sustainability types, who founded a small avant-garde materials store, and an equally minimal number of adventurous and experimental architects, who proselytised on behalf of the material. It was these mission-driven or simply, driven individuals, who were the early luminaries in the hidden history of bringing massive wood to Britain.