Building with wood

Timber is often undervalued as a construction material for permanent structures. In fact, the material is an eminently sustainable, safe and practical alternative to steel and brick. *LEAF Review* talks to Martin Bender, **Blumer Lehmann**'s sales leader for international projects, about how the firm's specialisation in building with wood has led to the realisation of inspirational modular and free-form structures around the world.

The Hotel Kulm grandstand: as a building material, wood offers almost limitless design possibilities.

How extensive is Blumer Lehmann's expertise in modular and temporary construction?

Martin Bender: Blumer Lehmann is a pioneer in the field of wooden modular construction. We have been working in this sector for 13 years now, with 500 modules leaving our factory annually on average. Our modular buildings are often used for temporary school, sales or office buildings, but are getting interest for urban densification or tiny houses. They're appreciated by our clients for their pleasant room climate and the individual design possibilities. And honestly, qualitatively, they can easily keep up with a 'normal' construction.

What clients have you served in the past in this area?

Our clients in modular construction are almost 100% in the public sector, and include school communities, municipalities or cantonal administrations. We also have customers from public transport authorities, and we are planning a temporary construction in cooperation with private investors right now. Those rentable rooms should be an inspirational and networking place for small businesses in urban areas.

What inherent advantages does timber offer as a construction material, over and above brick or steel?

Thanks to a high level of prefabrication, most of the wooden buildings that we produce can be prefabricated in the factory, including walls and ceilings with all the requisite connections and installations. The construction site times are therefore shorter, which is especially advantageous in urban areas.

In the timber construction field, planning in 3D has been a reality for many years. During that time, Blumer Lehmann has executed a number of projects with BIM models. In addition, wood is the only naturally renewable building material that can be sourced regionally, and therefore enjoys shorter transport routes and little grey energy. Lastly, wood as a building material offers almost unlimited design possibilities. Our free-form constructions are proof of that.

How safe are timber buildings compared with structures built using steel or brick?

Wooden buildings are as safe as steel or brick buildings. They are also very durable. Admittedly wood is flammable, and the safety of the structure is also contingent on the professionalism of the planning and production processes behind its construction, but the carrying behaviour during a fire in such a structure is well known and calculable, contrary to other building materials. In particular, large-sized wooden components almost retain their strength at high temperatures. In a fire, an insulating layer

of carbon is formed and water vapour emerges. As a result, the thermal conductivity remains low. Furthermore, the fire behaviour of wooden constructions has been proven with extensive tests. With proper dimensioning or in combination with other building materials, fire resistance can be achieved up to 240 minutes.

How have advances in digital design and production made timber construction a more attractive proposition?

Digitisation brings various interesting competitive advantages to timber construction. This includes planning in 3D, which makes planning processes more participative, earlier and more direct. Digitisation also enables the optimisation of production processes, and therefore the journey from design concept to the production of the structure becomes more relevant as a process. This also affects the costs and the design options. The client profits from lower costs and the architect yields new possibilities in the expression of form in buildings, which can be produced with new tools.

Temporary school building: the temporary and modular buildings that Blumer Lehman produces can be prefabricated in the factory, resulting in short construction site times, which is a huge advantage when building in urban areas.

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Can you describe Blumer Lehmann’s work in assembling free-form structures?

From the beginning, the team has to guarantee that every element is producable, transportable and installable. The number of unique elements within free-form projects and complex timber projects often comes to more than 3,000 single pieces, and no one piece is exactly the same as another. The only way to handle such large quantities is through parametric design.

Furthermore, we try to handle the complexity of a project during the planning and production phases, keeping assembly as easy as possible. For the overall success of a project, logistics and installation are just as important as the other phases, and need accurate organisation and an improved quality management system.

Which structures are you particularly proud of building in this regard?

We have quite a few. The most important for the development of our company was certainly the first free-form structure designed by Shigeru Ban for the Haesley Nine Bridges Golf Club. This was followed by some beautiful buildings in collaboration with Foster + Partners; for example, the grandstand for the Hotel Kulm or Manchester’s Maggie’s Centre. Incidentally, we are currently back in Korea, assembling four new projects in Yeoju, also designed by Shigeru Ban. This isn’t forgetting our projects in England, like the new Maggie’s Centre being built in Leeds and designed by Heatherwick Studio, or the Cambridge Mosque by Marks Barfield Architects. We are looking forward to every construction – big and small. ●

Further information
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