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Looking at Timber and Seeing the Future of Home and Business

By LAURA LATHAM JUNE 9, 2016

Forté Tower, a 10-story apartment complex in Melbourne, Australia.

Building in wood is not unusual, though until recently it was widely considered unsuitable for high-rise or large-scale residential and commercial projects. This was predominantly because of the potential fire risk but also because of the higher sensitivity of wood, compared with concrete, to stresses such as wind and temperature changes.

Over the past 10 years, however, the emergence of an engineered product known as cross-laminated timber, or CLT, has made wood a viable option for wider-scale construction.

The production process involves gluing pieces of timber into panels, which are then cross laid to form larger sections, strong enough to withstand being used at greater heights and volume. CLT has significant fire retardant qualities and the potential to be a flexible, lower-cost option for the construction industry.

It may also be more sustainable. According to reports from environmental, timber industry and academic analysts, it is estimated that the production and use of CLT generates about half the carbon footprint of concrete.

“Cross-lamination establishes a new level of quality control and fire protection,” said Kevin Flanagan, a partner with PLP Architecture in London. “It brings a new structure and form.” Timber is now being used at increasing heights, from 10 to 20 stories, he said.

PLP recently presented the concept of Oakwood Tower, an 80-story building in timber and glass, to members of the London Assembly. The elegantly tapered structure was designed with capacity for 1,000 residences. Though not yet included in any definite construction plan, it forms part of a research project by the University of Cambridge into the potential scale and uses of timber in dense urban environments.

One benefit of CLT is that panels are made to the specifications needed at the factory, then assembled on site. It means the process of construction is quicker than using standard materials such as concrete and steel, industry experts say.

“Faster construction is less disruptive to the local neighborhood, and timber is also lighter, so could conceivably be used to extend existing concrete buildings upwards,” Mr. Flanagan said. “Plus, it puts less stress on underground infrastructure, such as transport tunnels.”

Mr. Flanagan also said that timber has a higher aesthetic appeal for humans than concrete and a softer visual impact on the landscape, encouraging a sense of well-being among residents.

Though CLT has existed for about 10 years, it use has widened only recently. One early adopter was Andrew Waugh, a London architect who lives in a seven-story timber apartment block he designed. His company, Waugh Thistleton, began using CLT in 2003 for small projects, scaling up in 2009 with Murray Grove, a 29-unit residential block in east London for Telford Homes. Since then, he has also designed timber office blocks and a large-scale residential site for the developer Regal Homes, currently under construction in east London, with 121 rental units.

Mr. Waugh said that CLT was less costly than concrete but that soundproofing and energy efficiency in the built product were comparable or better. “Wood is very underrated as a building material, but you have to understand how it works and design with timber in mind from the start,” he said.

The use of wood makes sense in locations that have access to large timber resources. The eight-story Carbon12 building was recently approved in Portland, Ore., a state that has significant forestry reserves. It will have commercial premises and 14 residential units, and is one of several timber projects of five stories or taller underway in the city.

The Hypérion, a project commissioned in Bordeaux, France. CreditJean-Paul Viguier et Associés

In Australia, Lendlease, a developer, has also explored options in wood. In 2012 it completed the Forté building, a 10-story apartment complex in Melbourne. At the time, the building was the world's tallest timber structure, with 23 residences. Since then, the firm has rolled out CLT projects in London and been appointed to a government-backed research program to explore the potential for the material in Singapore.

In France, too, wood is being introduced as an elegant, practical option for housing. This year, the authorities in Bordeaux commissioned Hypérion, a 183,000-square-foot, multi-use complex of residential and business units.

The design, by the architect Jean-Paul Viguier, has three towers, one of which will be in wood and reach 18 stories to become the world's tallest timber building when it is completed in 2020. Each floor will have five or six apartments or duplexes with glass balconies and a series of garden and outdoor areas.

Timber has also begun to make noticeable forays into the residential markets of Scandinavia. In Norway, the 14-story Treet tower in Bergen offers 62 apartments. Half of the units, priced from about 3.3 million kroners, or $404,000, were sold before the start of construction in 2014, though units are still available.

Cities in Sweden have also embraced the trend. Folkhem, a Stockholm developer, plans to build projects on 22 sites in the Swedish capital, with 6,000 apartments in total. One of these is Strandparken, a waterfront site where two eight-story timber blocks, with 64 apartments, have been completed and sold.

“Using wood makes sense in Scandinavia, where timber grows fast and is an endless natural resource,” said Martin Videgard, director of Tham & Videgard, a Swedish architect practice. “We see timber not as a trend but as a way of dealing with sustainability issues.”

The firm has submitted designs for a proposed mixed-use waterfront development in Stockholm, also for Folkhem. The project will have four 20-story timber towers with more than 200 residential units, as well as commercial space on the lower floors. The towers were designed to allow maximum light to pass around and through the structures.

Economies of scale may make CLT increasingly cost-effective, but at the moment it is still a niche material. “It’s early stages for the industry,” Mr. Videgard said. “A lot of firms are waiting to see how it works on the ground, but it’s nice that we are at the forefront.”