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CANADIAN FOREST SERVICE

SPOTLIGHT

JANUARY 2013

The Potential of Cross Laminated Timber in North American Construction

Cross laminated timber (CLT) is an engineered wood product that can directly benefit Canada's forest sector due to its significant market potential in the North American construction market.

What is cross laminated timber?

CLT is a multi-layer wooden panel made of lumber. Each layer of wood is stacked perpendicularly on the previous one and they are all glued together using hydraulic or vacuum presses.

Photo courtesy of FPInnovations

While cross laminated timber panels are produced in different sizes, they can be manufactured in thickness of up to 508 millimeters, lengths of up to 18 meters, and widths of up to 3 meters.

Many Advantages

CLT provides the construction industry with many advantages when used in light or heavy-frame structures. These include a smaller environmental footprint, faster construction at a lower cost, and enhanced strength properties.

Timber is an abundant and renewable resource. As a timber product, CLT outperforms other building materials in every environmental metric addressed by life cycle analysis. It thus provides an effective alternative to non-renewable materials when used in construction.

Panels made with cross laminated timber can also be prefabricated ahead of time and then delivered to a construction site ready to be installed. Their light weight generally means savings on foundation costs as well. These factors can result in faster building construction at lower cost.

Cross laminated timber has also been shown to be resistant to fire and earthquakes. This is due to the product's enhanced strength properties.

Market Potential

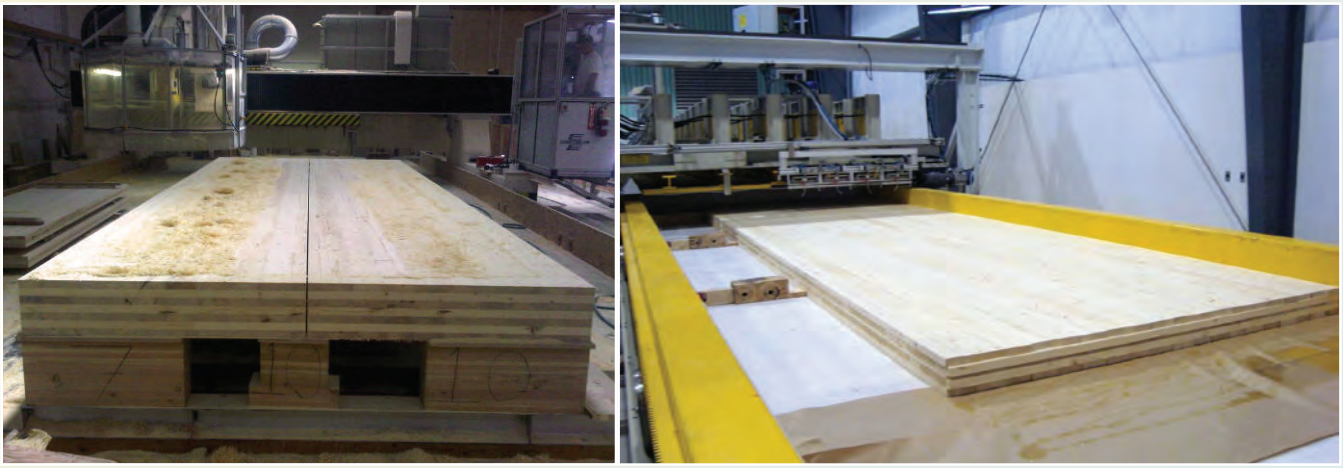
CLT has been widely used in European construction since the early 2000s. However, despite its many advantages, it is not yet well-established in North America. Its untapped potential on the continent provides Canada's lumber industry with significant market opportunities in both the non-residential and mid-rise construction segments. These opportunities can translate into jobs and new revenue streams for the sector. They can also enhance the sector's overall competiveness.

A 2008 McGraw-Hill study estimated CLT's market potential. The study, which focused on the U.S. market only, provided its estimates based on two different market penetration scenarios: one where CLT would capture 5% of the U.S. non-residential and mid-rise segments; the other where it would capture 15% of those segments. These scenarios revealed that the product's introduction in the United States market alone could increase lumber demand by 0.8 to 2.5 billion board feet. That's the equivalent of $1.5 billion to $4.5 billion in new wood sales.

While a comparable study of CLT's market potential in Canada is not yet available, this engineered wood product is becoming more popular and has already been used in more than 20 domestic construction projects.

Federal Support

Given its potential to generate significant revenue for Canada's wood products sector, the Government of Canada has, since 2007, financially supported research on the development and



CLT panels being produced at a Canadian wood manufacturing facility

market acceptance of CLT in the North American market. This funding has been delivered through four separate federal programs delivered by Natural Resources Canada: the Transformative Technologies Program, the Pilot Scale Demonstration Program, the Expanding Market Opportunities Program, and the Wood Demonstrations Initiative.

The Transformative Technologies Program supports the development of technical materials and research on how CLT can be used in construction. This research is being led by FPInnovations, Canada's not-for-profit forest research institute.

Examples of technical materials developed under this program include a Canadian edition of a CLT handbook, a multi-disciplinary design manual that is playing a key role in this engineered wood product's adoption. Its US edition, slated for release sometime in early 2013, is being finalized by experts that include FPInnovations, the US Forest Products Laboratory, the American Wood Council, the Engineered Wood Association, and WoodWorks USA.

The Pilot Scale Demonstration Program supported the pilot scale production of CLT panels at a wood manufacturing facility in British Columbia.

The Expanding Market Opportunities Program is working with regulatory bodies in Canada and the United States to support the development of standards that recognize the use of CLT in North American building codes. The focus of this work was previously delivered under the North American Wood First Initiative which no longer exists as a stand-alone program.

The Wood Demonstrations Initiative supported the construction of major structural elements of two University of British Columbia buildings that used cross laminated timber. This helped foster greater industry awareness of the versatility and market potential of this engineered wood product.

CLT panels used in the construction of the University of British Columbia's BioEnergy Research and Demonstration facility. Photo courtesy of KK Law Photography

Bringing cross-laminated timber to the North American construction market is another example of how federal investments are improving the overall competitiveness of Canada's forest sector and helping to expand the use of wood in new market segments.

ISSN 1929-9923