

Building with timber - nine storeys and beyond



Stadthaus - Murray Grove Tower by Waugh Thiselton Architects
Image courtesy of Will Pryce



Interior during construction of the Murray Grove Tower
Image courtesy of Will Pryce.

Cross Laminated Timber (CLT) is the engineered wood of the future, making the construction of entire buildings from timber a reality for an industry that is turning its focus to sustainable building practices.

First developed in Switzerland in the 1970s, CLT has evolved as one of the most exciting and innovative engineered wood panels available. Its potential as a sustainable building material is only just being realised around the globe. CLT is an extension of the technology that began with plywood, and the recognition that cross-laminating layers of wood veneer improves the inherent structural properties of wood by distributing the along-the-grain strength of wood in both directions. CLT panels can be used to form complete floors, walls and roofs, among many other things.

In combination with other engineered wood products, such as I-Beams, Laminated Veneer Lumber and Structural Plywood, CLT has the potential to be a crucial element in the construction of buildings made entirely from timber, with all the positive attributes of reduced carbon emissions and carbon storage that sustainably-sourced timber products represent.

Vision splendid

In 2008, architect Andrew Waugh saw his vision of a multi-storey residential timber building come to fruition with the completion of the Stadthaus - Murray Grove Tower in the London suburb of Hackney. At 30 metres high (nine storeys) and constructed almost entirely from CLT panels, Waugh's creation is the tallest modern residential timber building in the world and represents the potential for this new breed of engineered wood products to be utilised in a wide range of building applications. The building's shell took only nine weeks to construct from the huge CLT panels, with five people working on site three days a week. The costs saved from reduced construction time and labour are significant enough.

Add to this the savings in carbon emissions from not using traditional construction techniques (estimated at 125 tonnes), the effect of the timber building's carbon sequestration (estimated at more than 181 tonnes of carbon) and the implications of Waugh's achievement for a sustainable building industry are enormous.

The future is now

CLT has so many short and long-term benefits for the Australian design, architecture and building industry, not to mention the environment, it's hard to know where to begin. One of the obvious advantages of the product is its strength and uniformity of properties. Each panel is made up of five layers of timber crossing each other, making a panel that could be compared to precast concrete. In Australia, the concept of CLT is referred to as 'tilt up timber' or 'pre-cast timber panels'.

As a prefabricated product that arrives on site with windows, doors and service passageways already cut out, CLT means huge reductions in assembly time and labour, as only cordless drills are required to put a structure together. CLT also has the fire resistance, sound absorption and insulating properties of all timber products, with the addition of a high aesthetic quality that appeals to architects and designers.

While CLT clearly has huge potential for single- and multi-storey residential buildings, its applications are limited only by the imagination. As the market for and manufacture of CLT increases with the global demand for fast-to-erect, low-cost, sustainable and attractive residential and non-residential buildings, CLT's many possible applications will be revealed.

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