

XLam FAQ

Cross Laminated Timber



DESIGN

Q: How far can CLT panels span?

A: CLT is a flexible and light-weight building system that allows for long spans in either floor or roof construction. CLT systems can generally achieve the spans typically found in apartment and commercial buildings.

Q: Can CLT be exposed for architectural reasons?

A: Yes. XLam CLT is available in Natural Appearance Grade (NAT) suitable for applications where one or both faces are left exposed and will be visible.

Q: How is condensation managed in a CLT Building?

A: The same way as a conventional building by incorporating appropriate moisture barriers and insulation.

Q: If a section of a CLT building is damaged by fire, does it mean that the entire building will need to be demolished?

A: CLT buildings are designed with high degrees of structural robustness which allows for damage without building collapse. Individual panels can then be repaired and/or replaced on site as required.

Q: How does a CLT building perform under earthquake loads?

A: CLT has a high strength to weight ratio which lends itself to seismic design. A well-engineered timber building should perform much better than a concrete building under earthquake loads. The recent Canterbury earthquakes in New Zealand have brought seismic design into sharp focus. A CLT structure is safe, and importantly, relatively easy and quick to remediate after an earthquake which is a huge benefit to building owners. CLT has a high strength to weight ratio which lends itself to seismic design. Performance is very dependent on connections. XLam has developed reference connection details to assist with structural engineering design

SUSTAINABILITY

Q. Is CLT a sustainable building product?

A. Yes. XLam makes an important contribution to improving environmental performance of the construction industry through the manufacture and supply of sustainable building products that create "greener" buildings.

Q. Is the timber PEFC Certified?

A. XLam CLT timber stock is sourced locally from renewable vertically integrated plantations and our change of custody is PEFC Certified.

Q: Where does the timber used to manufacture CLT come from? Is it sustainable?

A: The timber is sourced from sustainably managed forests in Australia or New Zealand. Timber is the only sustainable construction material as it stores carbon for its entire life cycle. Sustainable forests are managed in such a way that ensures that trees are planted to replace the trees that are harvested.

Q: Does the carbon generated by transport and shipping of CLT still make the process sustainable?

A: Even when you factor in the impact of transport and shipping the building still only generates half the carbon of an equivalent concrete building.

Q: What is the life span of CLT building?

A: The Building Research Establishment in the UK has certified the CLT product for a life span of 60 years and there are occupied timber buildings in Europe that are over 700 years old. The key factor in the longevity of a timber structure is the management of moisture during the design stage.

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CROSS LAMINATED TIMBER

Q: What is CLT?

A: Cross Laminated Timber (CLT) is a solid structural wood product made from a minimum of three bonded layers of timber laminated at right angles and is intended for roof, floor and wall applications. CLT is prefabricated and designed with minimal waste and to ensure safety and speed in construction.

Q: What are the benefits of CLT?

A: CLT is a more efficient and safer form of construction that is environmentally sustainable. The key benefits of CLT include:

- **Environmentally Sustainable:** Timber is a renewable resource, reduced carbon emissions, reduced carbon footprint through production, and high thermal performance. XLam timber is PEFC certified.
- **Lightweight Material:** Lightweight & strong, CLT reduces foundation loads and distribution requirements.
- **Faster Construction:** DfMA using CLT enables rapid construction. CLT is faster than traditional construction methods.
- **Reduced Labour Costs:** Less labour is required to construct the CLT system.
- **High Quality:** Durable building material that is equivalent to concrete. High precision manufacturing results in quality finishing.
- **Easily Modified:** CLT can be easily modified both during and after construction.
- **Safety:** Reducing the work performed on site & reducing headcount improves site safety.
- **Weather mitigation:** Offsite manufacturing mitigates the impact of weather and protects construction schedules.
- **Improved ROI :** Faster construction reduces capital & funding costs, provides direct operational cost savings, increases yield from labour resources, allows earlier handover, improves ROI.

PRODUCT PERFORMANCE

Q: What happens when CLT gets wet?

A: There isn't an issue with timber getting wet for short periods during construction. The CLT construction process is very quick and therefore the time in which the timber is exposed to wet conditions is negligible. However, any timber that does get wet during the construction process will dry out and return to suitable moisture content levels. The dimensional stability generated by CLT also significantly reduces the movement caused by moisture in comparison to traditional timber frame structures.

Q: Will a CLT building rot?

A: Timber has the potential to rot when exposed to high levels of moisture over extended periods of time. CLT buildings are designed to effectively manage moisture exposure and therefore mitigate the risk of rot. This is done by designing a CLT with a rain screen façade associated with appropriate moisture controls.

Q: Is deformation and shrinkage of timber a problem?

A: No. The perpendicular cross lamination of CLT provides a very dimensionally stable product, which negates any significant deformation or shrinkage in the panel. This is the major difference between mass timber panels and traditional timber framed systems.

Q: Does a CLT building creak and move?

A: No. The performance of a CLT building is reflective of a conventional concrete building. All buildings experience movements caused by many long and short term factors all of which can be controlled through design.

Q: How are termites treated in a CLT building?

A: Incorporating a physical separation from the ground using a concrete structure in conjunction with a physical termite barrier is considered the best approach in dealing with termites. However, chemical treatments can be utilised if necessary. Termites need a moist and dark environment to both colonise and migrate in large numbers, which is generally when they do the most damage. Airborne termites therefore need to find a consistently moist environment to land and in turn colonise, which is generally not available on the façade of a building.

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Q: What is the fire risk of a CLT building?

A: Timber has good thermal insulation properties and when it burns, a layer of char is created that helps to protect and maintain the strength and structural integrity of the wood inside. This is why timber in large sections such as CLT can often be used in unprotected situations where non-combustible materials such as steel would require special fire protection. CLT when completely exposed has excellent fire resistance, however installing fire resistant lining materials such as plasterboard to either flooring or walling CLT systems can provide further fire protection. Additional fire protection measures like sprinkler systems may also be used in CLT buildings.

Q: How does CLT perform in relation to Acoustics?

A: The acoustic performance of CLT is excellent and is equivalent to other construction methods. The solid cross section of CLT makes it possible to achieve very good acoustic performance for both ceilings and walls. As with other forms of construction, CLT is not entirely reliant on the base material to deliver the required acoustic performance.

Q: Does a CLT building perform better thermally than a steel or concrete building?

A: Yes. Wood is a poor conductor which means that it is a good insulator of heat. Steel and concrete on the other hand are good conductors which mean that they more transmit heat. CLT buildings offer an additional thermal benefit in that the precise nature of the manufacturing process means that there is very little air leakage within the building envelope. Therefore air at the preferred temperature is kept within the building and not lost to the outside environment, which is equally relevant to cooling as it is to heating.

Q: Can CLT be used for buildings other than residential?

A: Yes. CLT has been used to construct a number of different types of buildings including schools, offices, shopping centres, health and government facilities.

Q: Can CLT be used to build houses?

A: Yes. The construction of single dwelling houses using CLT is extremely popular in Europe and is considered the premium product in the market.

Q: How does using CLT improve the quality of your building?

A: The highly precise nature of the CLT manufacturing process allows for a tighter sealing of the building envelope which results in a better overall thermal performance. Higher quality fit-out is also achieved as the base structure is easy to connect to and very precise. CLT construction also generates an increased building density compared to framed construction, which provides a degree of thermal mass and can be associated with heating and cooling energy reductions.

Q: Is designing a CLT building before construction a slower process?

A: Completing the design of a building prior to construction allows for a more efficient construction process

Q: How are the CLT panels connected?

A: CLT panels are connected with large engineered screws brackets or custom steel fixings. The design of connections is among the most important aspects of CLT construction to ensure all forces are transferred into the foundations.

Q: Can CLT panels be repaired on site if required?

A: As the CLT manufacturing process is extremely precise the need to repair a CLT panel on site should be a rare occurrence. However if an error does occur then the CLT panel can be repaired or altered very easily on site due to the workable nature of timber.

Q: Is CLT cheaper than concrete?

A: CLT projects are currently cost comparable to conventional concrete construction methods with the majority of the cost savings being achieved through reduced construction time.

Q: What happens if a CLT building catches on fire during construction?

A: A site specific fire safety plan has to be prepared to address the potential issue of fire during construction.

Q: Can CLT be used in bushfire prone areas?

A: Yes. The Construction in Bushfire Prone Areas Standard places restrictions on exterior building elements only with no limitations on the interior structure. As CLT is predominately used in interior applications there will be no limitation on its use.