

Layer stabilization system – A real alternative to edge gluing

Improving Process Reliability in Cross-Laminated Timber Production

The production of cross-laminated timber (CLT) sets high standards on process reliability and cost-effectiveness. At the same time, more pressure is put on manufacturers to use materials efficiently and reduce production costs. MINDA has been developing and manufacturing complete systems for CLT production for many years and is constantly working on innovative solutions to optimize production processes and adapt them to the needs of modern timber construction manufacturers.

With its newly developed and patented layer stabilization system, MINDA now offers an alternative to traditional edge gluing, with the goal of significantly improving stability during the laying and gluing process and all this with minimal space and maximum cost efficiency.

Challenges Related to Shape Tolerances

While manufacturing cross-laminated timber, length and cross layers of planed solid wood lamellas are laid crosswise on top of one another and glued together. When the press package is formed, gaps between the individual lamellas arise by the natural shape tolerances of the wood. This causes the individual layers of the press package to be wider or longer than they will be in the pressed panel later on. Particularly with narrow lamellas and large panel dimensions, the gaps add up to such an extent that lamellas in the edge areas can fall down.

Such disruptions can be very critical during the laying process. For economic reasons, the open time of the glue is always kept very short, and once it has expired, the panel is ruined.

For the cross layers, MINDA developed and patented a solution years ago that involves pulling individual lamellas slightly out of the length layer to support the outermost cross-layer lamella. The pulled-out lamella is then pressed back into place by the front pressure. The system has proven itself over the years, but it cannot be reliably used to stabilize the length lamellas. In those cases, falling lamellas are significantly less common due to their smaller quantity. However, CLT panels with two outer length layers are being produced with increasing frequency. Here, the length layers are offset by half a lamella width, similar to a brick bond, resulting in a particularly narrow lamella in the edge area.

Another source of disruption during the laying process are excessively twisted lamellas, as these cannot be securely picked up by the vacuum laying gantry and may fall down under certain circumstances.

Edge Gluing: Effective, but Time-consuming

Another way to improve process reliability is to use edge gluing machines. These machines glue the lamellas along the narrow edge, thereby eliminating the problems described above.

However, such machines require a significant investment, additional space, and increase production costs. This creates a need for alternative solutions, especially for manufacturers seeking a more cost-effective option.

The MINDA Layer Stabilization System

With its layer stabilization system, MINDA has developed an innovative solution that does not require traditional edge gluing. The centerpiece is a cord being sewn into the edge of the lamellas.

This connection ensures that the individual lamellas are fixed to one another under pressure during the laying and gluing process. The result is a stable “carpet of lamellas” with virtually no gaps between the lamellas.

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As a result, the length layers maintain dimensionally accurate to the cross layers. Lateral overhangs are minimized, and individual edge lamellas are prevented from falling off. Thus, the automated production process runs much more stably and reliably.

Economic and Practical Benefits

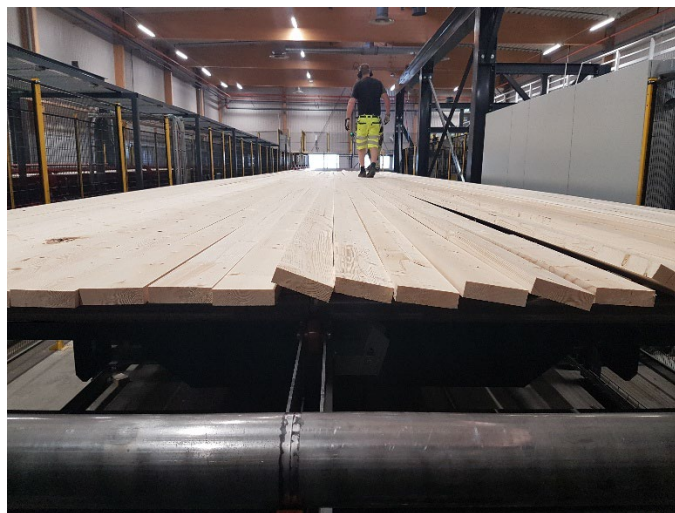
The layer stabilization system offers manufacturers of cross-laminated timber several key advantages:

- greater process reliability in the fully automated laying and gluing process
- significantly lower risk of production interruptions
- no need for a complex edge gluing machine
- reduced investment and operating costs
- easy integration into existing production lines with minimal space requirements

With its layer stabilization system, MINDA demonstrates how innovative design details can directly impact the efficiency and stability of modern CLT productions, thereby creating a practical alternative to traditional edge gluing.

The layer stabilization system is being installed at HM Timber, a joint venture between the owner families Holz Meissnitzer GmbH, Baier Verwaltungs KG, and Hermann & Müller Holz GmbH.

The new production facility is currently under construction in Bruck am Großglockner. Starting in August 2027, the first panel is scheduled to be produced there on MINDA's new CLT line. The line also enables the production of KVH and GLT in limited cross-sectional dimensions. In addition to the layer stabilization system, numerous new innovations will be integrated.



Shape tolerances of lamellas

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Pulled-out length lamellas to stabilize the cross layer



Length layer with layer stabilization system in preparation for the pressing process