

# Quality is Key

## Danish System Solution for High-Quality Cross-Laminated Timber



When planning the new LOC Holz CLT plant, flexibility and, above all, quality played central roles. Together with Kallesoe and System TM - two companies under the Homag "Construction Element Solutions" division - a production line was realized that has never been seen before in Central Europe.

📄 & 🗨️ Günther Jauk (Originally written in German, translated into English by Kallesoe)

On October 15, the time had finally come. One and a half years after signing the contracts, LOC produced its first cross-laminated timber panel - just as planned. This is the first CLT plant in Upper Austria too and one of the first large-scale mass timber projects. Back then no one knew that the first CLT plant in Upper Austria would also be one of the Homag Group's first large-scale mass timber projects.

But let's start from the beginning: The project began when Josef Lauss, Rudolf Ortner, and Jan-Walter Cappelen from the Cappelen Group in Arbing built a cross-laminated timber plant and named it LOC Holz (Lauss, Ortner, Cappelen). It was clear from the start that this wasn't going to be about quantities but much more about quality and tailor-made solutions. "We come from a medium-sized company and now we want to play to our strengths in the Cross-laminated timber and modular construction area. Just like in the sawmill, here too we will offer the highest possible quality products made from regional raw materials at reasonable prices," Ortner sums up the basic idea and adds that in the course of project planning when in doubt, decisions were always made in favor of the board quality - everything else was subordinate to this goal. With this in mind, LOC Holz contacted numerous machine suppliers and finally ended up with the Danish suppliers' System TM and Kallesoe.

"System TM has a lot of experience in the window and parquet industry. It's all about high quality and high cycle rates - and with relatively small cross-sections. That's exactly what we were looking for," Lauss recalls.

*"In the course of project planning when in doubt, decisions were always made in favor of the board quality."*

*Rudolf Ortner, CEO - LOC Holz*

LOC Holz consistently chooses to use 125 mm narrow lamellas in the production of cross-laminated timber, which is intended to largely prevent cracking. As a supreme product, they offer knot-free rift surfaces. "The raw material, which is rift-cut in our sawmills, enables perfect, crack-free surfaces - and at fair prices," Ortner emphasizes.

### Maximum Raw Material Yield

To ensure that these high qualities are also economical, LOC Holz relies on a separate sorting line including a finger-jointing line for the production of the cross-layer lamellas from 150 mm to 1000 mm long sticks.

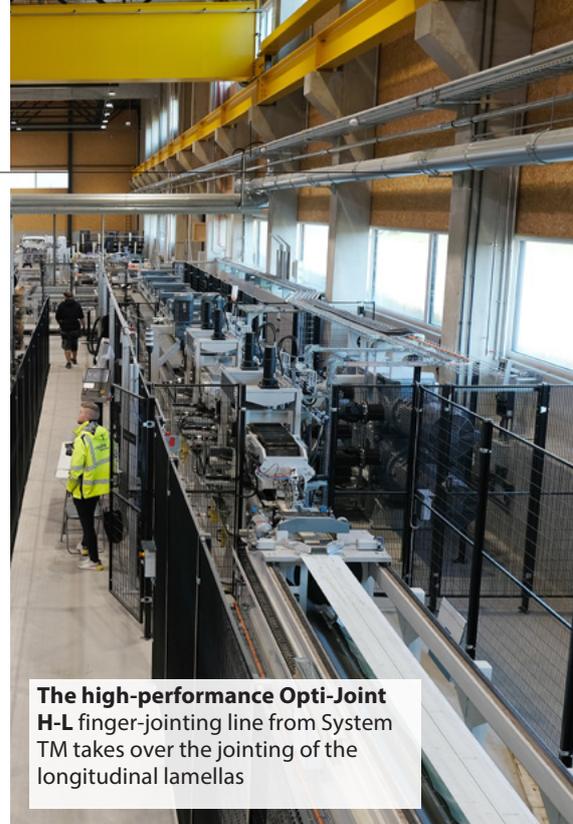
"With this short-length finger jointing line, we enable our customers to optimize the raw material yield", explains System TM's CSO Per Jørgensen and adds that this concept is still relatively unknown in Central Europe.

As a reference, he cites the Egoin Wood Group's CLT plant in Spain, where System TM and Kallesoe recently doubled the single-layer capacity to over 50,000m<sup>3</sup>/year. The sorting line implemented by System TM also includes a Rex planing system as well as several Microtec scanner systems. "We have often worked successfully with both companies and included their systems in the project planning," Jørgensen informs.

After the sorting line, where the raw material is planed and assessed and imperfections are trimmed off, the timber goes to one of the two feeding stations for longitudinal and cross layers, each with several feed options. "The option of sending in several stacks with different lamella qualities increases the flexibility in the system - each lamella is recorded in the system and the master computer can, depending on the order, put together the wood for the corresponding boards" Jørgensen explains and adds: "Due to the separate transverse layer feed, there is also a significant increase of the performance in the finger jointing line for the long lamellas."



**There were high spirits in Arbing during the commissioning:** The two LOC Holz Managing Directors Rudolf Ortner and Josef Laus along with Quality Manager Krammleitner (from the left)



**The high-performance Opti-Joint H-L** finger-jointing line from System TM takes over the jointing of the longitudinal lamellas

For the longitudinal lamellas, System TM installed the newly developed high-performance -Opti Joint H-L type finger jointing line. According to the CSO, this horizontal line is characterized not only by high capacity but above all by high availability and service life: "With these properties, the line is ideally suited for use in CLT plants."

**Length-layer Gluing**

After the finger jointing line, Kallesoe takes over the further process. After curing, the length layer lamellas go through another Rex planing system to the first radio-frequency press. This presses three lamellas into a 37.5 cm wide plate, which will be placed at the edges of the longitudinal layers in the next step.

"This prevents individual lamellas from falling further down in the production, which significantly increases process reliability and thus system availability," reports Kallesoe's CEO Kristian Kallesøe. The already finger-jointed cross-layer lamellas are transported from the feeding station to a radio-frequency press via a lamella planer. This adjoins the wood into solid single-layer panels. A load-bearing MUF glue from the Norwegian manufacturer Dynea is used here – as with the longitudinal press and later on the flat surface (see page 3). "To produce the highest possible quality boards, a load-bearing edge gluing was essential for us. Here, as in many other areas, a MUF glue offers clear advantages," Ortner explains.

**A Massive Increase in Performance**

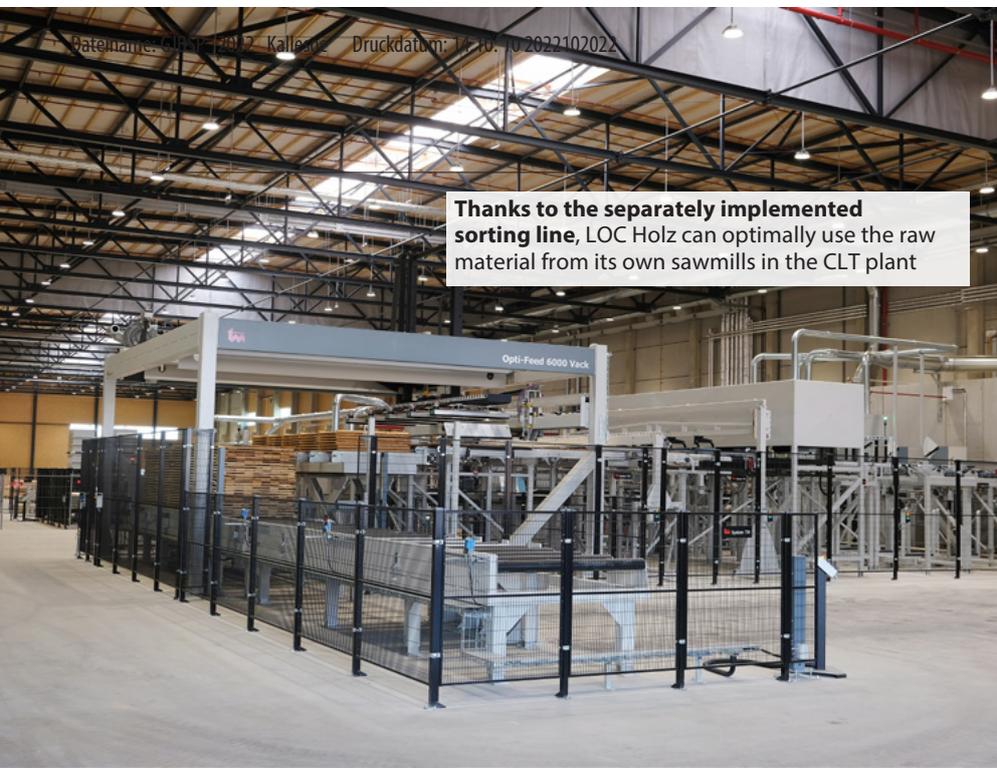
After the edge gluing process, the longitudinal and transverse layers are brought together from a buffer on the laying station. Here, Oest applies the two-component adhesive before the batch goes to the heart of the system, a 400-kW radio-frequency press.

"It is the most powerful press we've ever built. Compared to the previous model, we were able to create a 75% output increase," Kallesøe proudly reports. The press is designed for panels that are 2.5 to 3.5 m wide and up to 18 m long.



**Kallesoe implemented three high-frequency presses at LOC Holz:** The press on the right with 400 kW is the most powerful that the Danes have ever built. The press on the left takes over the edge gluing of three longitudinal lamellas. The third press takes over the load-bearing edge gluing of the transverse layer lamellas (see next page).

Thanks to the separately implemented sorting line, LOC Holz can optimally use the raw material from its own sawmills in the CLT plant



"We are still independent companies and we have already worked very well with Kallesøe before that," emphasizes Jørgensen and Kallesøe adds: "Being a part of the Homag Group, we are now much more broadly positioned and much closer to the customer." While Homag is primarily responsible for the initial contact and the extensive services provided by the worldwide branches, Kallesøe and System TM take on the project planning, detailed planning, and implementation. "Every customer comes to us with their own, very different ideas. Together we work out a customized solution from basic components that have been tried and tested many times over," the team emphasizes. In addition to LOC Holz, CES is currently finalizing two more CLT turnkey projects: One for Egoi Wood Group in Spain and another for Timberlink in Australia. In addition, numerous other mass timber projects are in the planning stage.

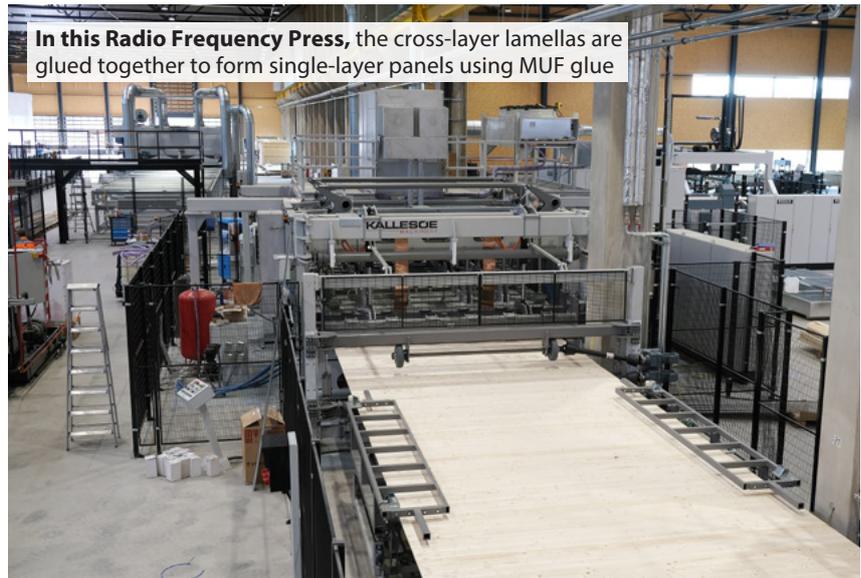
However, the flexibility of the press was much more important to the LOC team than the maximum length: "With the radio-frequency press, it is possible to produce smaller panels without a loss of capacity. This allows us to make optimum use of the raw material and serve our customers in the best possible way," informs Lauss. After the press, the raw panels pass through a grinding machine and onto a Hundegger PBA panel processing center. LOC Holz is not worried about the challenges of radio-frequency technology.

**Combining Strengths**

Unlike a year and a half ago, Kallesøe and System TM now belong to the Construction Element Solutions (CES) division of the Homag Group. A circumstance that hardly had any influence on the project in Arbing.

"We are of course aware that we opted for the most complex technology with the RF presses. However, our claim has always been to take the best and never the easiest way. Besides, we are in the best hands with the market leader in this area," Ortner emphasizes and adds that a photovoltaic system is currently in the works to be installed to be able to produce energy self-sufficiently in the future.

In this Radio Frequency Press, the cross-layer lamellas are glued together to form single-layer panels using MUF glue



The Finger Jointing Line for the cross layers processes 150 to 1000 mm long lamellas into double lengths



The final panels are formed in the laying station

