

# CLT | Special

Vienna, 2020

HOLZKURIER holzbauaustria



**rothoblaas**

Solutions for Building Technology

CLT | SPECIAL

Market, products,  
innovations

ANALYSIS

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on the CLT map

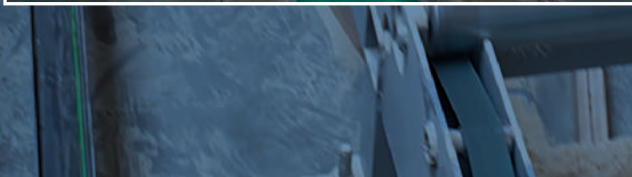
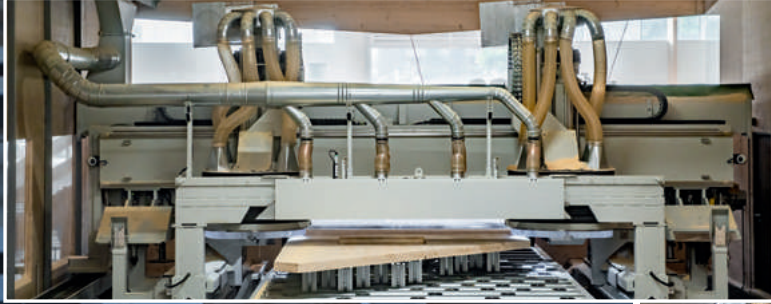
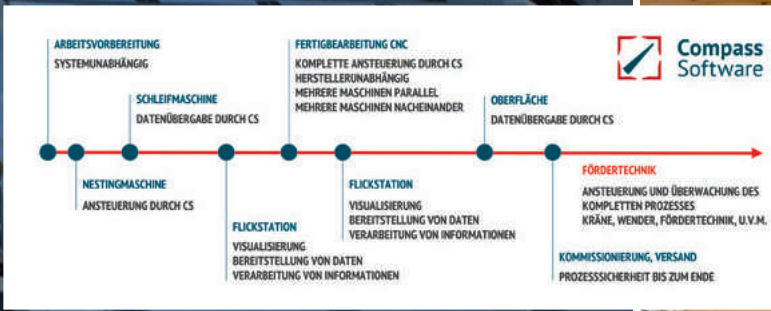
PRODUCERS

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CLT advanced

**HANDL**  
Engineering

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Handl Maschinen

# Increased efficiency in CLT joining

## Reorganizing processes by means of an innovative pin table

Everyone is milling at the same speed. This observation started a thought process at Handl Engineering in Wels/AT that was aimed at improving the efficiency of CNC processing of cross-laminated timber. In the following discussions with customers, in particular with the experts of the Hasslacher Group, entire processes have been scrutinized and, in some cases, reorganized. The idea was to achieve more efficient processes with minimal work-

piece changeover times while reducing staff at the same time. At the beginning of 2020, the Hasslacher Group implemented the resulting solution at its site in Stall im Mölltal.

### Flexible pin table

The Uniteam milling portal from the Biesse Group, tried-and-tested in the CLT industry, offered a solid foundation: A stable, highly dynamic milling portal with two powerful

five-axis spindles with 65 kW each and the corresponding tool changers represent the current state of the art. However, the standard tables with wood supports, roller transport and mechanical panel alignment did not offer enough flexibility. In consultation with Uniteam, Handl therefore developed a highly flexible pin table solution in collaboration with local special machine manufacturer Berger-Automation. More than 200 individually controlled pins with a lifting force of 100 kg each on heavy linear guides provide a high degree of flexibility, as the workpieces can be processed up to the bottom edge even when the milling spindle is lying down. The integra-

- 1: The machines are housed in a dedicated CLT building
- 2: Milling with an internally ventilated tool and the NC-controlled suction hood
- 3: A flexible pin table solution is installed at the Hasslacher site in Stall im Mölltal
- 4: A chip deflector guides the chips into the NC-controlled suction hood
- 5: Milling with a horizontal five-axis spindle at the bottom edge





ted vacuum suction cups reliably hold lightweight workpieces in place. The special design of the system prevents or compensates for any loss of vacuum. Furthermore, the use of pins eliminates the usual wear parts and their regular replacement. In order to save the time usually used for mechanical referencing and manual optical calibration, the position and rotation of the parts are measured automatically. This also accounts for the inevitable skewing during roller transport. By eliminating mechanical referencing with chains, also damages to the already sanded surfaces are avoided.

The CNC program from software specialist Compass is created during the workpiece infeed, and any tool changes are performed before the program starts. The CLT element reaches a virtual stopper on the roller conveyor (zero point) and is precisely calibrated and measured. Compass also calculates the table configuration and activates the corresponding pins. As soon as the panels are lifted and the vacuum is established, processing starts immediately. Due to all these processes running in parallel, tool changing times of under one minute can be achieved, depending on the length of the workpiece. This significantly improves the efficiency of such systems, i.e., the ratio between processing time and changeover time (transport, tool change, calibration).

**Reliable chip suction**

A special idea was realized on the machines: Since milling chips often remain in deep pockets and cause problems later on (secondary



cutting, temperature, etc.), the milling spindles are equipped with internal ventilation. Air is blown in through the HSK 100A tool carrier and the tool via the hollow motor shaft. The resulting overpressure in the pocket reliably carries the chips up to the height-adjustable suction hood.

Great importance was attached to chip disposal: By using deflectors, the large chip volumes that accumulate during rebate machining can be transferred directly into the NC-controlled suction hood. Then, the integrated height-controlled suction beam at discharge removes any remaining chips on the panel surface. All chips on the table itself are blown off with cleaners that are integrated into the pins, and underneath the tables, a conveyor removes all chips that fall through the table.

**Saving time with simultaneous machining**

Andreas Weichsler, plant manager of the Hasslacher factory in Stall, points out a special

feature of the machine: „We were intrigued by the machine’s ability to perform simultaneous machining on both sides of the longitudinal edges using two tools. Since the milling units work on a y-axis, we can achieve a level of precision equal to that of a double-end tenoner. And on top of that, we are saving time.“ This can be done either with identical tools, as with formatting, or with different processing options, as with shiplap edges.

**Nesting processing is possible**

There is already one significant further development of the table concept. If the number of pins on the table is increased, e.g., to a 400 mm grid, full nesting capability is achieved. First, the mother board is split; machining of the individual parts is then performed in the same setup without releasing the vacuum by lifting the individual parts out of the nest. Machining up to the bottom edge of the workpiece is also possible with a horizontal five-axis spindle. Small parts or cut-outs are chipped or later discharged with the complete panel. The narrow roller layout facilitates this process. Nesting is calculated by means of the integrated software solution from Compass where pre-defined nesting patterns can be adopted.

**Perfect capacity balancing**

With this method, several identical machines can work in parallel without upstream CNC. This automatically results in a perfect capacity balance between splitting and finishing. On top of that, the perfect two-stage redundancy achieves a very high level of failure safety: Every machine can replace all other machines. What is more, every machine has two identical five-axis units: In the event of failure, the machines can continue working simply by activating single-spindle operation with reduced capacity.

