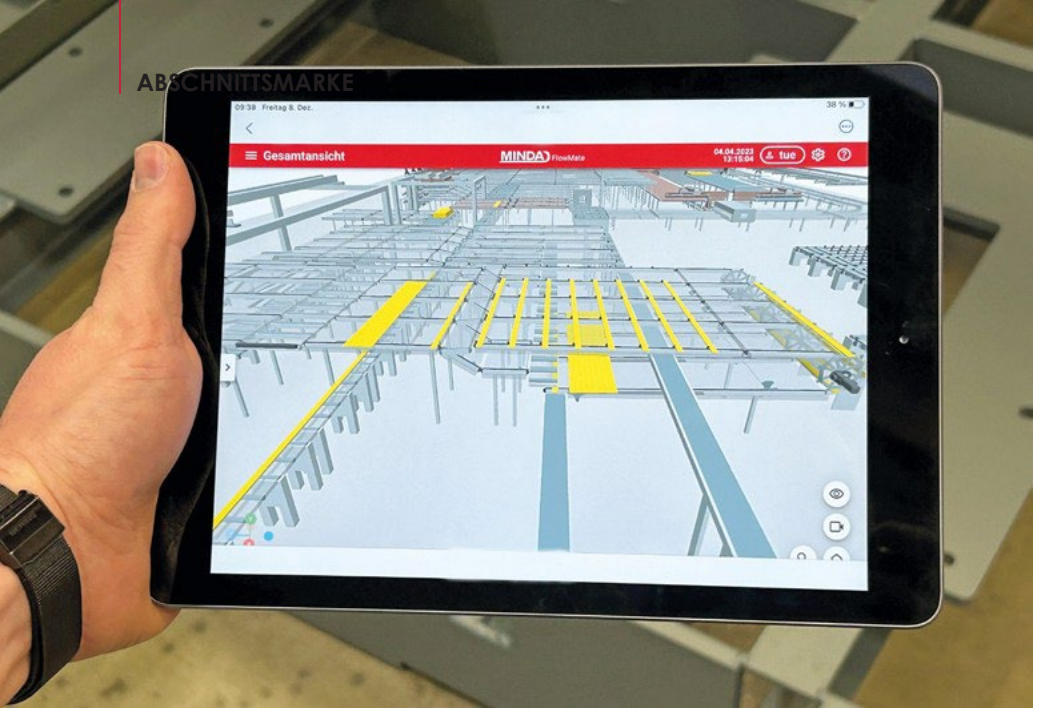


MINDA has set a milestone in intelligent production control with FlowMate. The solution for the solid wood industry is more than a classic control system.

The brain of *modern* production facilities

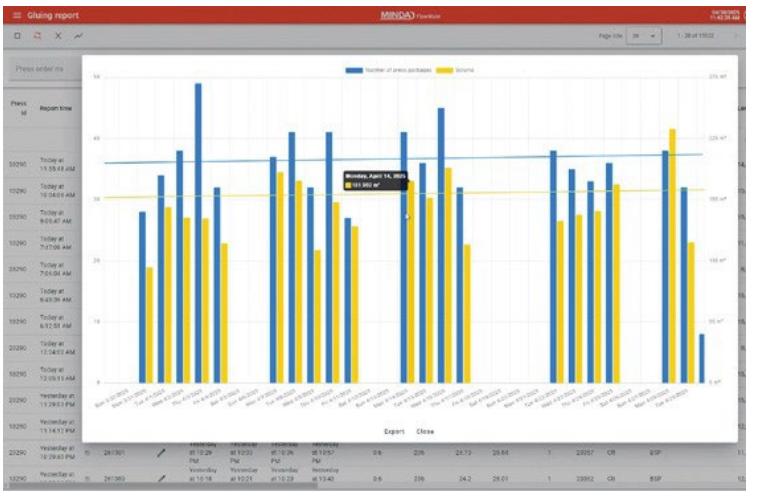
Production control technology and process visualization for the solid wood industry

With the FlowMate system, the plant specialist MINDA is setting new standards in the GLT and CLT production. This system is MINDA's answer to the increased requirements in production. It serves as a central control and visualization platform for the entire material flow in the solid wood industry.

Even before the turn of the millennium, the focus was on seamless data tracking in the glulam production. To produce glued laminated timber efficiently, the unsorted stacks of wood first had to be sorted into grades after being fed in. MINDA, Minden/DE, first set standards back in 1999 when the company equipped a quality sorting system with digital data collection. Then the sorted boards were buffered and fed into the finger-jointing lines in a variable sequence and in different qualities. This was the foundation stone for the first control and visualization software MINDA MoveIT.

Another milestone was the integration of complete data tracking along the gluing line. In addition to evaluating the raw wood stacks in terms of quality and residual moisture, different gluing programs could also be digitally mapped for the first time. The collection of temperature and pressure curves in the presses opened new possibilities for process and quality control. This increasing complexity goes beyond the range of

FlowMate can be used in greenfield projects but can also be integrated into system upgrades.



Bildquelle:

FlowMate can be individually expanded with various modules, such as statistical functions or warehouse connection.

functions for classic PLC controls. A higher-level production control system was needed that intelligently links all processes - the "brain" of modern production facilities.

The answer to new requirements

MINDA set another milestone in the evolution of intelligent production control with the introduction of the new user interface FlowMate in 2021. "The system is much more than a classic control system - it serves as a central control and visualization platform for the entire material flow in the solid wood industry," MINDA Managing Director Robert Falch explains. FlowMate addresses to different user groups: from line operators to shift supervisors and production managers. Every user receives targeted information being relevant to him - clearly and comprehensibly presented. Operation and display are not only possible via the operating terminals distributed throughout the plant, but also from mobile devices or PCs. Remote access is available from anywhere with an internet connection.

A special feature of FlowMate is the 3D-based user interface. The complete line structure is displayed as a digital twin and can be explored interactively by the user - just like in a computer game. This facilitates the orientation, shortens response times in the event of a fault and increases transparency about ongoing operations.

Modular functions for every requirement

FlowMate can be individually expanded with various modules:

- Statistical function: This provides well-founded evaluations of unit numbers, runtimes, reasons for rejects and other relevant key production figures, which can be consolidated over any period of time such as day, week, month or year. All data can be downloaded for further analysis.
- Alarming: The system notifies you automatically in the event of unusual system conditions or longer downtimes - if required, also via push notification to a smartphone or control center to increase the system availability.
- Warehouse connection: This enables the direct integration of automated warehouses, such as high-bay warehouses or buffer zones. In this way, the system can be operated with fewer staff while increasing the process quality at the same time.
- TimeFlow: The module allows you to manually "jump back" to past system states to analyze the causes of errors or production interruptions and to optimize production processes.

High operational reliability

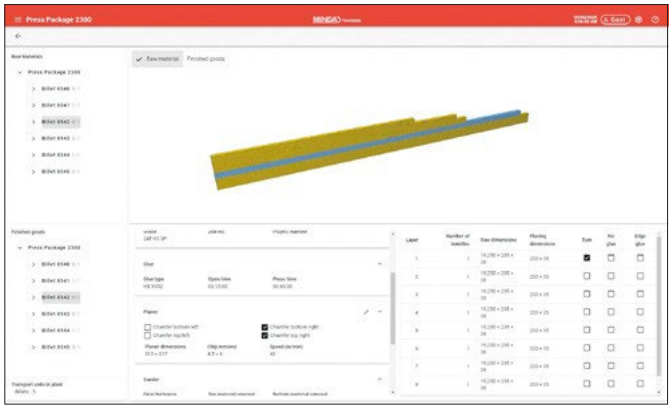
Another advantage is the storage of all system states on a central server. Thus it is possible to restart production quickly and in a controlled manner after an unexpected standstill - for example due to a power failure. Time-consuming manual restorations are no longer necessary, which reduce downtimes and significantly increases availability.

Smooth integration into existing systems

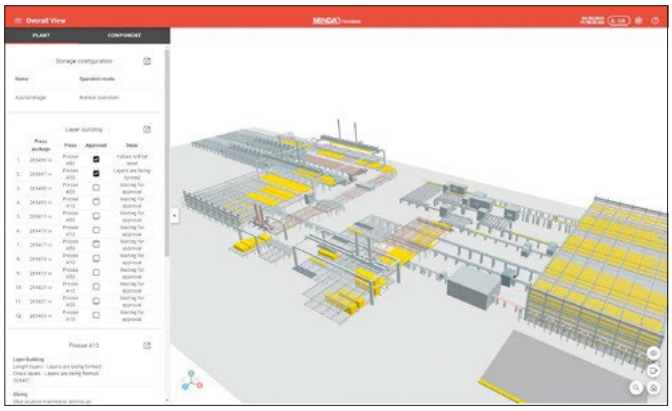
FlowMate has got standardized interfaces to all common ERP systems. Individual connections are also possible. This means that the system can be efficiently integrated into both greenfield projects and existing line structures - a real advantage for retrofit projects or as part of gradual digitalization, as Minda emphasizes.

Proven in practice: Hybrid production in the USA

An impressive practical example can be found in a US plant that produces both GLT and CLT on one line.



According to MINDA, FlowMate is intuitive to use, thus training times remain short



A special feature of the FlowMate system is the 3D-based user interface.

Both production areas are supplied by a finger-jointing line. This makes the material flow particularly challenging. The coordination of two finger-jointing lines, supplying a production line in a parallel way, has also been successfully implemented with FlowMate.

The future: from diagnosis to a learning system

The next development steps at MINDA aim at an even more intelligent system behavior. An integrated diagnostics system is currently being developed that does not only recognize errors but can also predict them in the future.

The first elements of artificial intelligence are already in use: For example, algorithms calculate the optimum sequence of shuttle trolleys to minimize waiting times and increase the throughput.

Intuitive operation - training included

Despite its technical depth, FlowMate is designed for an easy operation. The user interface is based on common IT standards, so that training times for users remain short. MINDA also offers practical training directly on the system by in-house trainers during operation - a plus point for a rapid commissioning and sustainable use.

Conclusion: Digitization with understanding

With FlowMate, MINDA provides a future-proof, modular and proven in practice production control system that meets the requirements of modern solid wood processing. "Whether batch size 1, hybrid production or retrofitting - FlowMate combines control, visualization and process data analysis into a powerful overall solution," Falch emphasizes. //