

Woodworking: Modular controls architecture simplifies production line installation and operation

## Fully automated production of glued boards

Palletizing station with the stacked glued boards

Obel-P Automation A/S in Herning, Denmark, manufactures large-scale machine systems for the wood industry. For example, the company produces continuous press lines for non-stop gluing, pressing and cutting of glued boards for the furniture industry. The line is 41.2 m (135.2-ft) long and consists of a portal in-feeder, sorting line, gluing station, continuous high-frequency press, board-trimming saw and palletizing station. The control system is based on a Beckhoff Industrial PC with TwinCAT PLC, AX5000 EtherCAT Drives and EtherCAT I/O Terminals.

Founded in 1986 under the name of Uffe Sass A/S, Obel-P Automation has been a member of the Obel-P group since 2003. "We develop machines primarily for the wood industry and are known throughout the world as a major supplier of machines and production lines, for example for manufacturing doors, windows, glued boards and particle boards," Morten Pipper, Managing Director of Obel-P Automation, explains. The company has extensive experience, above all in developing and applying high-frequency solutions for curing or hardening the glue faster. The

high-frequency generators Obel-P Automation installs into its machines are made by the company itself.

### **Effective use of raw materials and energy**

Producing glued boards at a speed of approx. seven meters per minute (23-ft/min) poses a particular challenge in the wood industry. To meet it, Obel-P has developed the specially-designed continuous press line for gluing, pressing and cutting glued boards non-stop. Feeding in wood bars



Sales engineer Søren Mørk, Beckhoff Automation ApS, (left) and project manager Ivan Madsen, Obel-P Automation A/S, (right) in front of the pressing line during its construction.



Continuous press line for the non-stop gluing, pressing and cutting of the glued boards for the furniture industry. The machine is 41.2 m (135.2-ft) long and consists of a portal in-feeder, sorting line, gluing station, continuous high-frequency press, board-trimming saw and palletizing station.



Morten Pipper, Managing Director of Obel-P Automation A/S, at the control cabinet of the pressing line

of different widths optimizes the use of the raw material and prevents cutting too close to the glued joint when cutting the finished boards to size. The pressing line is controlled centrally via a Beckhoff control cabinet Industrial PC C69xx with TwinCAT PLC. An EtherCAT network connects the PC to the control cabinets and the individual components throughout the process. "The modular structure of the control system simplifies the installation and operation of our lines," Morten Pipper comments. "The decentralized control cabinets enable us to construct and check the components of the process individually before connecting them to the central TwinCAT PLC later on when we finally install them on-site. "Using TwinCAT PLC software gives us a great advantage over a conventional PLC since we do not need a separate PC for optimizing the thickness of the wood bars, for example," says Morten Pipper. The PC control system is so powerful that it can display the optimization of the bar thickness for reducing waste in the cutting process and produce a 3D picture of the machine for ordering replacement parts on the control monitor at the same time.

### Three times as fast

"Moreover, by using the very fast EtherCAT network to communicate between the decentralized control cabinets and the central controller, we have been able to make the pressing line at least three times as fast compared to a conventional PLC solution," Morten Pipper emphasizes. By now Obel-P has invested in the Beckhoff automation platform including the Beckhoff servomotors and EtherCAT Servo Drives from the AX5000 series in all its machines and lines. "Customer response is extremely positive," the Managing Director explains. "For us as manufacturers this is an advantage to work with just one platform which we can program ourselves and which our technicians know inside out," Morten Pipper declares with satisfaction.

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