What Would J.M. Huber Do?

J.M. Huber is a privately held global company founded in 1883 that is active in the oil, gas, mineral, specialty chemicals, and engineered wood industries. Its Huber Engineered Woods group creates high-performance specialty wood products—called oriented strand board, or OSB—that improve productivity in the construction and furniture industries. The OSB lines of flooring, sheathing, and panels are high-quality, economical, and environmentally friendly substitutes for lumber and plywood in construction, repair, and remodeling.

J.M. Huber’s own productivity is...
Enhanced by the deployment of Wonderware’s FactorySuite line of software products. At its OSB facility in the rolling hills and pine forests of northern Georgia, InTouch human-machine interface (HMI) software facilitates operator visualization of the wood process and optimal production control. J.M. Huber also uses the IndustrialSQL Server™ real-time database for historical archiving of production data. Wonderware’s ActiveFactory™ software manipulates and trends historical data to streamline process operations, yielding higher volumes of high-quality wood products. J.M. Huber is also an early adopter of Wonderware’s new Terminal Services for InTouch thin-client technology.

The Huber Engineered Woods plant in Commerce, Ga., northeast of Atlanta, is one of the most efficient in the J.M. Huber organization. The plant has increased its annual production every year since its inception.

**Efficient But Complex Process**

The Huber Engineered Woods plant receives approximately 65 truckloads of tree-length logs every day. A huge crane piles the logs into massive stacks, providing a three-week buffer of raw material inventory. The crane feeds the logs into the debarking machine, which initiates the production process. After most of the bark has been removed, the logs are fed into twin “waferizer” machines, where they’re literally chopped into wood chips, or wafers. The wafers are conveyed into three large dryers, where they’re dried to specific moisture levels. The wafers must retain different moisture levels, depending on whether they will go into the core or outer surfaces of the OSBs.

This is essential to achieving the desired structural strength.

The bulk wafers are treated with waxes and resins that cause them to adhere to each other and form the mat that is the first stage of board production. The treated wafers enter forming machines and are shaped into continuous eight-foot-wide mats that run almost the length of the production building. Each mat starts as a loose mass of treated wafers. As they progress down the line, the mats are saw-cut into 24-foot lengths.

Each mat is transferred to a special heat-resistant screen base for loading into a large heat press. Here, they’re compressed, 12 mats at a time, under high temperature and pressure to form the oriented strand boards. To make an OSB that’s seven-sixteenths of an inch thick, the mat must be 5 inches thick. To make a quarter-inch-thick board takes a 3-inch-high wafer mat.

Once they leave the press, the compressed mats are cooled as they proceed down the line. Then they’re finish-cut into four-by-eight-foot wood panels. The panels are edge-sanded, the Huber logo is spray-painted onto one side, and the panels are strapped together for bulk loading onto railroad freight cars or tractor-trailer trucks.

The result is a broad array of products for the building industry, including the PerformMAX line of sub-flooring, the AdvanTech line of flooring and sheathing panels, the CedarStran line of cedar panels for closets and storage areas, and the “Huber Blue” line of OSB flooring and sheathing panels used to frame houses. All of these products possess strength and wear characteristics that far exceed those offered by standard plywood or particleboard products. The OSB process produces more finished lumber than simply sawing the incoming trees into boards could create.

**High Demand for High Volume**

Huber Engineered Wood Products are so popular that the company was struggling to make them fast enough, until the company began using Wonderware® software. The plant’s first InTouch HMI system was installed in 1997—and it still provides the process visualization screens that operators use to run much of the production equipment. In the case of the dryer operators, the InTouch HMI provides visualization and control of operations they cannot physically see, because the operators are located approximately 300 feet from the massive dryer equipment.

When it came time to upgrade and expand the system, J.M. Huber’s staff decided to take advantage of the latest Wonderware technology—Terminal Services for InTouch. This allowed them to upgrade three existing HMI workstations and add another three systems for new functionality. Instead of buying new PCs to replace the old workstations—at roughly $2,000 each—J.M. Huber bought ACP Thin Client stations loaded with Terminal Services for InTouch software, saving the company approximately $1,000 per user. In addition, the three new stations the company added were cost-justified by the replacement of chart recorders that incurred high expenses for consumable supplies.
Server database and trending it with ActiveFactory software now empowers the staff to “see” where they can eliminate dead time and speed up the line. After installing the Wonderware software, Huber Engineered Woods has been able to enhance production by increasing line speeds by 8 to 10 percent within a few months.

Production efficiencies aren’t the only benefits that have been generated by the J.M. Huber staff. Extensive studies of the archived data in the real-time database has also improved maintenance for complex systems like the regenerative thermal oxide (RTO) units that treat the exhaust gases from the dryers. The RTO units filter and incinerate gases so that the Commerce plant expels stack emissions that are nearly 100-percent clean.

Previously, the plant staff had difficulty taking RTO units out of service for routine maintenance inspection and service because this equipment must run virtually nonstop. However, now that they can monitor and trend differential pressures across the RTO units and compare them to valve cycles, J.M. Huber employees can identify unusual trends right away and fix the offending equipment if necessary. The information in the IndustrialSQL Server database is essential to staff members who must decide whether to immediately shut down a unit for repairs or do so during a routine maintenance cycle.

More to Come

OF COURSE, THE EFFICIENCIES HUBER ENGINEERED WOODS HAVE MADE ARE SIGNIFICANT, BUT THEY REPRESENT JUST THE BEGINNING. J.M. Huber will continue to strive to increase productivity in its Commerce plant by using Wonderware’s InTouch, IndustrialSQL Server, ActiveFactory, and Terminal Services for InTouch software to identify more time-saving opportunities.

CASE STUDY

ACP Thin Client stations loaded with Terminal Services for InTouch software (below) saved Huber nearly $1,000 per user, while the InTouch HMI allows operators to visualize and control operations they cannot physically see.

The InTouch application now runs on a Dell server. Users log on and run sessions on the server. The IndustrialSQL Server database runs on another Dell server (adjacent to the InTouch server) and maintains all archival data on production. Consequently, there is a complete genealogy file and production history for every OSB that leaves the plant.

The IndustrialSQL Server database’s real-time and historical data storage provided a fast payback because the J.M. Huber staff could review details and data trends on every step in the OSB production process. By streamlining the entire production line—saving mere milliseconds of production process time—the staff was able to eliminate up to nine seconds from each production run. Because Huber Engineered Wood was now saving hundreds of dollars per minute, the IndustrialSQL Server software paid for itself very quickly.

Improving Efficiency

THE NEXT CHALLENGE WONDERWARE SOFTWARE MET WAS IMPROVING THE EFFICIENCY OF J.M. HUBER’S FORMING LINE AND PRESS EQUIPMENT, A VERY COMPLEX MECHANISM THAT WAS DESIGNED AND BUILT IN GERMANY. The equipment contains thousands of limit switches and, as in any continuous process line, the timing is critical between one step and the next. The forming line and press move so fast and go through so many interlocks and timing events that the J.M. Huber staff could not determine whether their line was truly optimized. Empirical tweaking didn’t work because if operators changed one element in the line they would inevitably, yet unintentionally, change others. Each task is measured in milliseconds, and there are hundreds of timers in the PLC. Consequently, it was difficult to assess where they could save time between steps. But those days are over. Capturing data in the IndustrialSQL Server database and trending it with ActiveFactory software now empowers the staff to “see” where they can eliminate dead time and speed up the line. After installing the Wonderware software, Huber Engineered Woods has been able to enhance production by increasing line speeds by 8 to 10 percent within a few months.

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