Spring 1999: In an upgrade to their Titusville, PA lumber processing yard and grading station, Weyerhaeuser decided to install technology that would pay immediate dividends as well as give them a foundation to build upon for future needs. Ultimately, they wanted to install a system that would help them stay at the forefront of their industry for many years to come.

Understanding that streamlining was an important step in staying ahead of the competition, Weyerhaeuser embarked on a review of their process that indicated their grading operation was a choke point in their overall system. Improving the capacity through the lumber grading station was the most logical way to increase overall productivity and profitability of the entire system.

Weyerhaeuser turned to a local systems integrator to recommend control and data acquisition products, as well as an overall system approach to improve the grading station. Given the needs and goals of the Weyerhaeuser system, the integrator designed and implemented an open architecture control system utilizing a SoftPLC in Tealware™ PLC, coupled with RSVIEW32 as the operator interface.

The control system was designed to provide maximum reliability, ease of maintenance, and connectivity to the plant's data collection system. At the heart of the system is a SoftPLC In Tealware controller from SoftPLC Corporation, which provides control and tracking information for all lumber that passes through the system. This controller is a PC/PLC hybrid that offers the user the power and flexibility of a PC while retaining the familiar feel and reliability of a PLC.

Three racks of local SoftPLC In Tealware I/O are used for control of the majority of discrete field devices in the system. In addition to the local I/O, the SoftPLC controls a DeviceNet network. DeviceNet was selected for communication to some specialty I/O included in the system. (One unique feature of SoftPLC In Tealware is a mounting base that includes not only slots for the Tealware CPU and I/O, but also up to 5 PC/104 add-on cards, such as the DeviceNet card used in this application.)

"When implementing leading edge technologies in facilities that require 98%+ uptime, 24 hours a day, 7 days a week, it is important to ensure the reliability of the system, and thus the profitability of the customer." Connectivity requirements of the system indicated that a PC based solution might be the ideal design while recognizing that reliability and vendor reputation was key. "SoftPLC was chosen because of its high MTBF, flexibility, speed, and use of ethernet communication"
-- VP of integrator

"DeviceNet was used for its diagnostic capabilities," explains the project engineer. "Replacing the standard limit switch/whisker combination for measurement are DeviceNet photo eye units, which were chosen because of their ability to judge when they are becoming dirty. This is important as they are used as part of the board quality calculation. A non-functioning photo eye could cost the customer thousands of dollars." DeviceNet was also utilized for communication to a Bar Code Scanner and an encoder used to provide system timing as well as measurement calculations.

Operator interface stations are located throughout the plant. These O/Is provide the Weyerhaeuser employees access to control the operation and enter data not already automatically processed.

A key feature of SoftPLC that was utilized for the system was the embedded real-time web server. This allows the control system developer to place HTML documents on-board the SoftPLC CPU, which can access real time information directly from the SoftPLC data table, and embed the live data into the web page without adding communications overhead. The on-board "web site" can then be accessed by anyone given clearance through any web browser on the intranet.

The project manager for Weyerhaeuser explains "We chose the critical information we wanted to see and put it on a web page. Now any leader on the plant's network can see the critical metrics of the grade station - in real time, with no special software required!"

Another item of primary importance to Weyerhaeuser was the retention of their data collection system. The new automated grading system provides Weyerhaeuser a means to track inventory into the grading system without any manual translation of data. Previously, this task was accomplished through the use of proprietary data collection software, which while functional, afforded a more complicated means of connection to MS Access than offered by the data collection capabilities within the new operator interface.

Bar-code scanners were added to input pertinent data to the system prior to any processing in the plant.

"RSVIEW was used to perform the data collection -- and communications to SoftPLC over ethernet were easily established using standard available drivers from A-B"

"Bar-coding permitted us to enter the data one time and maintain visibility of the material through all of our value added steps. Bar coding also removed multiple opportunities for error, which existed in the manual ticketing system. Further, it has reduced manual reconciliation."

Overall, by combining products from multiple vendors -- SoftPLC In Tealware CPU and I/O, DeviceNet I/O, a web browser, and RSVIEW32 --Weyerhaeuser has been given the stability of a traditional grading control system while providing immediate improvements and a platform on which to build in the future. Most importantly, the company effectively doubled the throughput of the grading station, the original goal of the project.

"The improved throughput of the grade station reduces the need to use the air dry yard as a buffer. Another way to say that is, the technology solution allowed us to reduce inventory. We now recognize inventory as an indication of bad information."

UPDATE: Due to the success of this project, and Weyerhaeuser's satisfaction with SoftPLC, the plant has since retrofitted their dry kilns with SoftPLC in Tealware controls as well.

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