

Caraustar Increases Up-time, Product Quality with Emerson's PlantWeb™ Architecture

RESULTS

- Reduced startup times in stock-preparation by up to 12x
- Reduced paper machine speed variability by 75%
- Improved product quality
- Contributed to 40% decrease in unplanned shutdowns



APPLICATION

Pulping, paper mill

CUSTOMER

Caraustar Industries, Sprague, Connecticut, is the top supplier of recycled boxboard in the United States.

CHALLENGE

Producing 525 tons of recycled paper per day, Caraustar had been operating with a Honeywell® TDC 3000® distributed control system (DCS), which in 1990 had replaced the original pneumatic controls dating back to 1962. The mill wanted to advance from mostly manual remote control to fully automatic control and to implement one-button startup and shutdown sequences.

SOLUTION

Caraustar Industries entered into its third generation of process-control technology with the PlantWeb digital plant architecture from Emerson Process Management.

The PlantWeb architecture is based primarily on intelligent field instruments (transmitters and digital valve controllers) linked with Emerson's DeltaV™ digital automation system by efficient digital means such as FOUNDATION fieldbus and HART communication. Maximum use is made of open communication and operating systems, including Windows, Ethernet, and TCP/IP protocol. At the Sprague mill, PlantWeb software includes Emerson's AMS predictive maintenance software that works with intelligent field instruments to enable remote instrument configuration, calibration, diagnostics, and preventive maintenance. Intelligent instruments at Sprague include Rosemount® pressure transmitters and magnetic flow meters and Fisher® valves with FIELDVUE™ digital valve controllers. PlantWeb technology has enabled the mill to advance from mostly manual remote control to fully

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Engineering Manager, Caraustar Industries



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automatic control and to implement one-button startup and shutdown sequences. “With PlantWeb, we’ve cut startup times in the stock-preparation processes from six hours to as little as 30 minutes,” asserted Engineering Manager Carl Holte. “With more tightly controlled stock consistency, we’ve cut the speed variability of the paper machine by 75% and that improves our final product quality. And instead of having to run the equipment minute by minute, the operators are free to refine and improve it.”

DeltaV operator stations in the stock preparation control room have almost entirely superseded consoles of the legacy distributed control system.

Operator Frank Santarchangelo offered a simpler description: “It’s almost like going from manual to automatic shift in a car. Just press a button with the mouse, and it takes off. Also, DeltaV shows us a better picture of all the processes, and we can react quicker.”

The changeover to PlantWeb architecture began during conversion of stock preparation equipment for the “filler” layers of the paperboard, from the original steam disperser process to a more efficient screening and cleaning process. It entailed 90 smart transmitters and valves with digital valve controllers on eight FOUNDATION fieldbus segments. The scalability of PlantWeb architecture later allowed easy incorporation of all existing conventional instruments in the stock prep processes for the top layer and back layer. The PlantWeb solution was also extended to the lower loop controls in the paper machine, integrated by means of OPC (object linking and embedding for process control) with a new computer controlling the machine. At this writing, the only substantial area remaining on the dwindling DCS was the powerhouse, which was planned to soon join the PlantWeb network.

“Now, the visibility of all our process controls is a thousand times better than what we used to have,” said paper mill superintendent Mike Lovin. “And due to the PlantWeb architecture and the filler stock prep improvements we made at the same time it was introduced, our up-time in terms of fewer machine sheet breaks has increased about 40%.”

For the most part, existing field instruments were switched over from the DCS to PlantWeb architecture on a “hot” basis, without shutting down a process. Mill personnel accomplished nearly all the work themselves, with support by the local Emerson representative and several days training on the part of the project engineer, Ardie Harrison. “This level of automation technology has allowed us to make probably twice as many tons per day, per man-hour,” concluded vice president and general manager David Briere. “Humans just cannot control the process to the level of speed and quality that this automation is bringing. Emerson has provided us with an infrastructure to build on and grow with our plant, and the technical support we need to back it up.”

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