

***Finch, Pruyn's No. 4 PM is the largest of four paper machines producing more than 240,000 tpy of printing and writing papers at the company's Glens Falls, N.Y., fine paper mill. A new In.Site Continuous Support system installed on PM 4 has eliminated costly troubleshooting delays and shifted the mill's maintenance strategy to a more proactive, preventative approach.***



## **Finch, Pruyn Cuts Unscheduled Downtime With Remote Monitoring/Diagnosis System**

***Real-time, continuous support service helps fine paper mill in New York avoid \$200,000 in lost production during first six months of operation.***

— *By JOHN STROHMENGER*

At its fine papers mill in Glens Falls, N.Y., Finch, Pruyn recently installed a new proactive, real-time remote monitoring and diagnostics system that is dramatically reducing its unplanned downtime, to the tune of some \$200,000 during the first six months of operation. By identifying certain events before they happen, the new system allows the mill to diagnose emerging problems and take preventive actions well in advance of unplanned shutdowns and their related costs and lost production.

The new system builds on a platform that was already being used by the mill, called TeamSupport. In addition to providing the troubleshooting expertise of its predecessor program, the new system, known as In.Site Continuous Support, allows off-site process specialists at Rockwell Automation, supplier of both technologies, to continuously monitor the control system on the mill's No. 4 fourdrinier paper machine, proactively watching for signs of trouble that could lead to unplanned downtime.

Finch, Pruyn operates four fourdrinier paper machines at Glens Falls, producing more than 240,000 tpy of uncoated printing and writing papers. Rebuilt in the early 1990s at a cost of \$20 million, the 193-in.-wide No. 4 specialty paper machine is the mill's largest, accounting for 55% of its total paper output. With more than half of the company's revenue stream dependent on a single machine, maximizing the uptime on the No. 4 production line was obviously critical.

### **Leveraging Outside Expertise**

Finch, Pruyn had been using Rockwell Automation as its preferred automation equipment supplier for many years when it first installed TeamSupport on its four paper machines in 2001. Already familiar with the mill's processes and technology, a team of Rockwell Automation engineers visited the mill just prior to launching the service, which was designed to provide around-the-clock, direct telephone access to a designated group of process support specialists.

With this earlier system, plant managers could contact the support team any time process problems arose. The support team would immediately initiate troubleshooting routines to help resolve the problem as quickly as possible. According to the mill, this service did help solve

problems more quickly, reducing lost production and product damage-but only after the problems occurred.

Additionally, ultimate effectiveness of the service was dependent on the mill's ability to discover the problem, call the support team, and send its maintenance personnel to the down process line - a delay that could result in a half-hour to an hour or more of additional down time. These idle-time delays, and the time spent correcting the problem, were still costing up to \$10,000 or more in lost revenues every time they happened.

*The mill's objectives were two-fold: first, minimize or eliminate costly troubleshooting delays, and, second, shift the company's maintenance strategy to a more proactive, preventative approach.*

What Finch, Pruyn really needed was a solution that would help prevent problems before they occurred. According to John Zak, drive system specialist at the mill, "we were very pleased with the results of our TeamSupport agreement. It provided outstanding response to and troubleshooting assistance for unplanned downtime events.

"Unfortunately," he adds, "due to issues unrelated to TeamSupport, we still experienced enough events to significantly impact profitability. To resolve the situation, we needed a solution that could not only reduce the length of the downtime events, but prevent them from occurring in the first place."

The mill's objectives were two-fold-first, minimize or eliminate costly troubleshooting delays, and, second, shift the company's maintenance strategy to a more proactive, preventative approach. Rockwell Automation recommended that the mill switch from TeamSupport to In.Site Continuous Support.

### How it Works

With the help of Rockwell Automation's engineers, the mill erected a network communications kiosk on the machine floor, connecting each intelligent device (e. g., controller, drive) involved in the paper production

process to the In.Site service. The wide area network packets data collected from the plant floor and pulls it very quickly and securely to a data warehouse at the In.Site Continuous Support Command Center outside Cleveland, Ohio.

With this "live" connection, engineers at the support center continuously assess the mill's production status using proprietary software applications to compare real-time and historical process data (e.g., line speed, yield, mean) with a pre-determined optimal range. If a parameter deviates outside the range, the support staff notifies the machine operators - often before the mill realizes there is a problem - and then begins troubleshooting activities to diagnose the cause and determine corrective actions.



A network communications kiosk was installed on the machine floor to connect each intelligent device to the In.Site Continuous Support service.

### Results

In the first six months of the In.Site program, several potential unplanned downtime events at the mill have been prevented, improving overall profitability of the No. 4 specialty paper line. Four sample problems that have been identified and resolved before downtime occurred are summarized below.

#### Problem 1: Inconsistent speed control

- Time Discovered: 8:45 am
- Estimated potential downtime prevented: 10 - 24 hr
- Estimated potential cost savings: \$120,000

This problem was traced to a defective drive that would have failed. Engineers at the command center notified the mill of the problem and recommended replacing the drive, which was an older unit. The mill scheduled planned downtime to replace the drive, but

found it did not have a drive of the same size in its spare parts inventory. Further complicating the matter was the age of the faulty drive.

Another drive was in stock, but it was a newer, significantly larger model. Maintenance personnel were unsure if the available drive could be used. After performing an in-depth series of calculations, command center engineers determined that the larger drive could be used, although it would require a considerable amount of programming to function within No. 4 PM's normal operating parameters. Finch, Pruyn decided to use the larger drive and installed it on the machine floor. Rockwell Automation engineers then remotely configured it and restored normal operation.

### Problem 2: Communication network fault

- Time Discovered: 5:00 pm
- Estimated potential downtime prevented: 1 hr or longer
- Estimated potential cost savings: \$9,000

The support center detected a communication network fault that prevented distributed I/O inputs from being received by the main processor. Corrective actions were identified and provided to plant maintenance personnel. The problem was fixed during the next scheduled shutdown.

### Problem 3: Dandy Roll pulse tach fault

- Time Discovered: 9:45 am
- Estimated potential downtime prevented: 1 hr or longer
- Estimated potential cost savings: \$9,000

The In.Site center identified a pulse tach fault on the Dandy Roll Automax Chassis. After investigating the fault, support engineers determined that the problem was probably hardware-related. The operating floor was told to check connections on the resolver module, and in doing so discovered a high moisture situation. The resolver was replaced and operation was restored to normal.



With some 55% of the mill's total production dependent on a single, high-speed paper machine (No. 4 PM), ensuring maximum uptime was critical, which was the primary reason for converting to the In.Site technology.

### Problem 4: Clogged filter alarm

- Time Discovered: 2:30 am
- Estimated potential downtime prevented: 1 hr or longer
- Estimated potential cost savings: \$9,000

In.Site team informed machine operators of an alarm on a clogged hydraulic filter. Personnel at the mill performed corrective action and regular operation was restored within 15 min.

Altogether, the In.Site system has helped the mill avoid an estimated \$200,000 in lost production and manpower hours by reducing the number of unplanned downtime events nearly 50%. This increased productivity and reduced maintenance expenses have allowed Finch, Pruyn to focus on higher priorities.

"Our specialty paper line is critical to the success of our business," Zak says. "Before we had the In.Site system, unplanned downtime was a constant concern. Now we're confident the line will remain in operation, and if it does go down, the duration will be minimized. This has boosted profitability significantly. The program has already paid for itself three times over." ■

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