

NOVEMBER/DECEMBER 2011

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# Right-Size Mill Continues a PAPERMAKING LEGACY

Reliability and vendor relationships are critical for Rand-Whitney Containerboard as this just-in-time mill must consistently produce a high-quality product from OCC that competes with virgin linerboard

GLENN OSTLE

For nearly 150 years, paperboard for boxes has been produced continuously on a site in Montville, CT. While the original cylinder mill built in 1868 has been dismantled, the site is today home to Rand-Whitney Containerboard, a 100% recycled mill completed in 1994, and part of the Kraft Group (see sidebar).

Each year Rand-Whitney produces about 250,000 tpy of two board grades: 26# and 42# Kraft Linerboard, and 31#, 33#, and 35# High Performance Liner—all destined primarily for markets in the Northeastern U.S. and Canada.

Paper sales are managed by the Kraft Group's International Forest Products division. The majority of the tonnage from the mill is sold through long term contracts with

independent converters and through trades with integrated containerboard producers, as well as to supply the Rand-Whitney Container division plants.

"The beauty of this place is its location between large urban forests of raw material and a significant customer base, which allows us to turn inventory rapidly," says Richard (Rick) Hartman, who became general manager two years ago. Using OCC, the mill produces a consistently high quality sheet that is in great demand by customers within an easily-reachable regional area, which "is a business model that makes sense," according to Hartman.

"Eighty five percent of our customers are within 300 miles of the mill, and the same is true for our raw material, so we can get finished goods out and raw materials back



Jason Belding, ABB Senior Field Engineer (left); and Rick Hartman, General Manager, Rand-Whitney Containerboard.



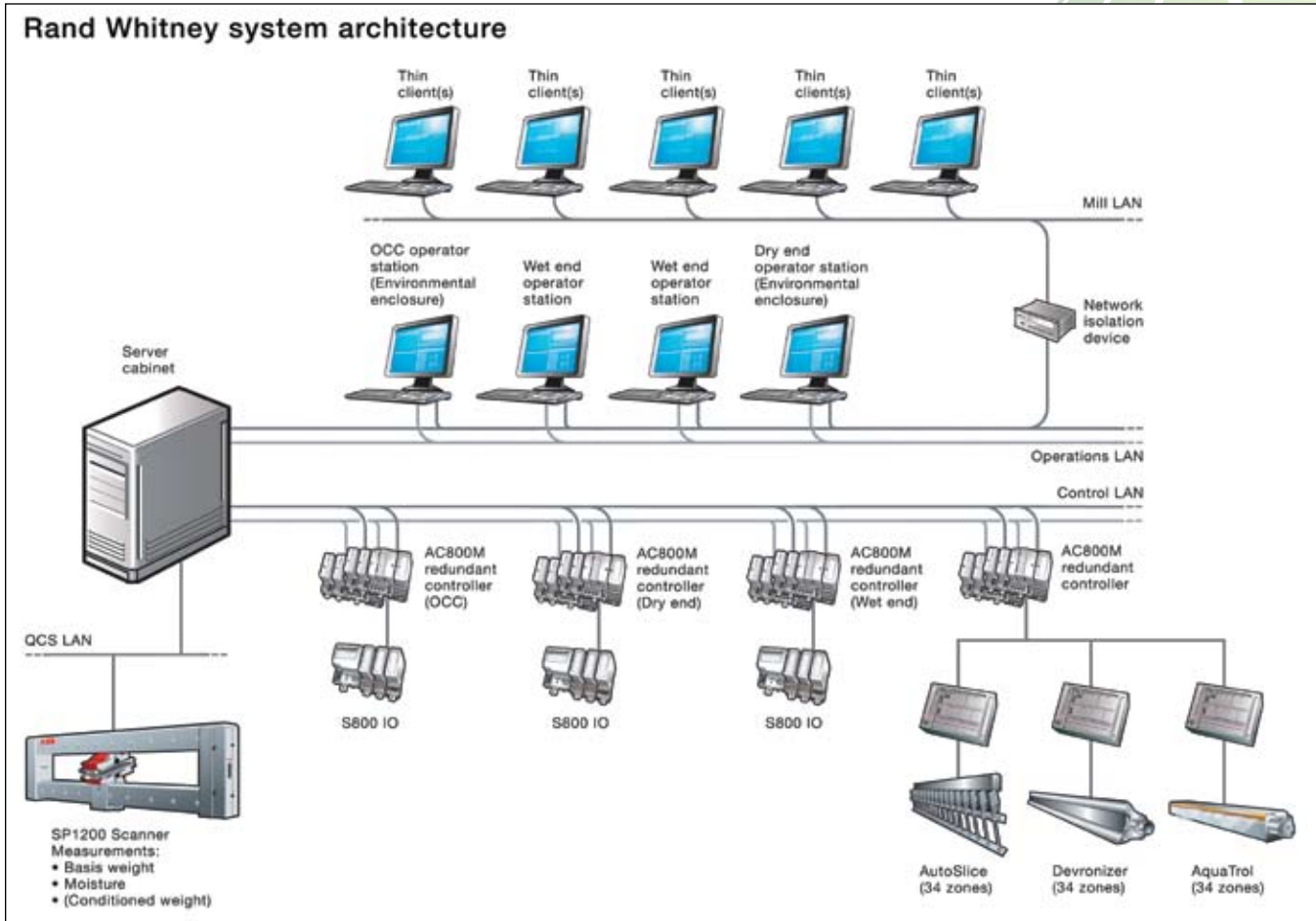
Left to right: Ron Chase, Strategic Planning and Projects Manager; Jason Belding, ABB Senior Field Engineer; Thomas Nunes, Jr., Production Superintendent; Guy Joseph, Production Manager.

## THE KRAFT GROUP OF COMPANIES

The Kraft Group is a privately owned, family-operated player in the world of business. As a holding company with the network and capital resources of a large global corporation, their interests are diverse and concentrated in: paper/packaging manufacturing and forest products distribution, sports and entertainment, real estate development, private equity investing, and philanthropy. Doing business in over 80 countries with tens of thousands of customers, The Kraft Group consists of more than 5,000 employees, manufacturing and distribution facilities, executive office buildings and sports stadiums located on four continents.

### FOREST PRODUCTS AND PACKAGING

- International Forest Products (IFP) is one of the world's largest physical traders of forest products commodities. With a focus on linerboard, pulp and solid wood products, IFP has consistently ranked among the top 50 exporters in the U.S.
- Rand-Whitney is the parent brand for The Kraft Group's paper and packaging manufacturing business and includes: Rand-Whitney Container, Rand-Whitney Containerboard and Rand-Whitney Recycling.



Rand-Whitney system architecture.

within a few hours. We don't make as much profit if we have to ship long distances," says Hartman. "We are in the second quartile in cost compared to other recycled linerboard mills, and from a total linerboard perspective, we are very competitive."

Rand-Whitney faces a lot of competition from both regional recycled manufacturers as well as larger virgin kraft linerboard mills. But Hartman feels confident that the mill has a number of other advantages—besides cost management—that have allowed them to remain competitive for 15 years. "When running to STFI stiffness specifications, our customers tell us recycled paper will often run better," he says. "In fact, some box manufacturers prefer recycled containerboard as it tends to 'hug' their corrugators. Also, the mill was recently certified under the Forest Stewardship Council (FSC-C107542) chain-of-custody standard which is important to many end use customers."

### RUNNING LEAN

OCC (Post-Consumer Old Corrugated Containers) is trucked to the Montville mill from major New England cities including New York and Boston, and conveyed continuously into the mill's fiber handling system which processes between 800–950 tpd with a fiber yield between 93–95%.

A single 185"-trim fourdrinier board machine with top former—one of the last built by Beloit—runs between 1500–2350 fpm and features a straight through blind drilled press, an ENP C shoe press, 35 dryers and a controlled crown calender. The top layer of the sheet is cleaned and dyed as it forms the outside of boxes.

All power for the mill comes from a modern cogeneration facility featuring a dual-fueled turbine, steam boiler and pollution controls, that started up in 2005. Excess electrical power is sold to the grid. The facility will also soon add a waste heat recovery system to the stack.

In order to survive and prosper, the Rand-Whitney mill must be able to consistently produce a high quality product that competes with virgin linerboard specifications, while at the same time improving its efficiency and reducing costs; easier said than done in this mini-mill that operates on a just-in-time basis. At any one time there is only about two days of OCC waiting to be processed, and two days worth of finished product ready to ship. That means any interruption in the supply chain can quickly create issues for the mill and its customers.

"Reliability is very important to us, and we are trying to take it to a higher level," says Hartman. "When we tell folks that we are running at 94% uptime, that's great, but top competitors are running at 96%." Cutting costs is also an important element of the mill's strategy, but as Hartman says, "you can fall in love with cost reduction, but it is not sustainable if that is the only



MILL WISE



The mill's fiber handling system processes between 800–950 tpd with a fiber yield between 93–95%.



The single 185"-trim fourdrinier board machine with top former—one of the last built by Beloit.

lever you have to pull. Vendor relationships are important to us, and they can't be adversarial. We are highly dependent on good service."

**THE NEW DCS**

When the mill's former DCS system became obsolete and difficult to support, the mill team evaluated a lot of solutions and chose ABB's System 800xA. The system includes a new Quality Control scanner, paper machine optimization controls, and ABB's best practices implementation with about 1,600 I/O connections and about 500 process control components. "There are very complex flows in the mill, so the only way to run it is with a systems approach, and that's what ABB provides," says Hartman.

"With DCS systems being what they are today, many had basically the same capabilities," according to Guy Joseph, Production Manager. "So, the decision came down to who we wanted riding in the passenger seat with us. We ultimately felt that ABB had the best package of people, equipment, and software and offered us the best partnership."

In addition to equipment installation, Rand-Whitney also relied on ABB



Rand-Whitney's machine and related equipment include about 1,600 I/O connections and about 500 process control components.

Cutover to the new system was accomplished in seven days by four teams working consecutive 12 hour shifts. Left to right: Jason Belding, ABB Senior Field Engineer, and Ron Chase, Strategic Planning and Projects Manager.



Machine control is accomplished using an ABB 800xA DCS and Smart Platform scanner installed three years ago to replace an aging system.

to provide engineering support that they didn't have in-house, which resulted in the assignment of Jason Belding as dedicated Field Engineer at the mill. "Service contracts often depend heavily on the quality of the in-house contact," explains Rhett Cavanaugh, ABB Account Manager. "Jason has really become part of the mill's engineering team."

According to Hartman, "Prior to the new DCS installation we used to have some variation in operations between shift crews, but with the new system, shift-to-shift variation is non-existent."

### SYSTEM INSTALLATION

Installing the 800xA system began with development of functional descriptions, sequences and graphics for production, after which a 2-week Factory Acceptance Test (FAT), attended by eight operators from the mill, tested and confirmed everything.

The system was set up in the mill for training, prior to the outage. This was extremely valuable according to Jim Wood, Chief Administrative Officer who cited the human element. "When the guys came back from the FAT, they helped train the folks who didn't go, which created teamwork

within the group and with other groups in the mill."

Cutover to the new system, from removing all cabinets and wires to testing each loop, was accomplished by four teams working consecutive 12 hour shifts during the mill's annual outage. Operator involvement during design and testing, resulted in acceptance during the initial shakedown period.

According to Ron Chase, Strategic Planning and Projects Manager, ownership and trust have been the main benefits of the new system. "The operators have everything in front of them with eight or nine monitors, plus cameras," he says. "They have embraced the system where before they had little faith in instrumentation. Now they are coming up with new ideas about what to do with it. In addition, we can access the system remotely, even from home, and every morning the system generates reports and sends them to our smart phones."

### RESULTS

According to Chase, the CFO of the Kraft Group, Mike Quattromani, was very involved in the purchase decision and challenged the team to do everything ABB said the system

could do. Quality gains achieved include a 20% weight profile improvement, 22% moisture profile improvement using 39% less water from a remoisturizing actuator, and 18% fewer quality losses. “We have several customers that now prefer our board over all others,” says Tom Nunes, Production Superintendent.

Sequencing and Group Starts especially are important features on the system. The ability to start up a sequence of actions from presets and automatic settings is especially valuable as it is not inconceivable for a machine tender to go as long as 100 days without having to start up the machine.

“Group Starts give us better control as we can do more on the fly,” says Joseph. “With the old system it used to take weeks as we had to make a change at an outage, download it, delete the old program, and reboot. We can now do it immediately.” This has resulted in 35% faster grade and product type changes, and 35% faster recovery from sheet breaks.


The mill is also taking advantage of the speed optimization feature. “I was skeptical

at first, but now we use it all the time,” says Joseph. “We are still going after incremental tons, as long as the cost to produce them doesn’t outweigh the benefits. Today we can sustain 36 tons per hour whereas a few years ago our average was less than 31 tons.”

Using the system, the mill team can quickly access the P&I diagrams and engineering documentation that defines how the process is supposed to work. “This information, coupled with information provided by the 450 smart devices we have in the field, helps identify problem zones, either tuning-wise or process related,” says Belding. To help manage the improvement process, Belding configured an action plan to document activities, prioritize and check off completed tasks, and connected the mill team to the plan with the 800xA system.

The mill wants to take full advantage of the capability of the system, according to Keith Masters, ABB Business Manager, Pulp and Paper, and according to Chase, “We’re still utilizing only 60–70% of the system’s capability, so we are still learning.”

Hartman feels that the gains to the mill have probably exceeded what the planners thought they would get at the beginning of this project. “This system lets us connect our people with all sorts of information they didn’t have access to as easily before and has been integral to us achieving a 3% improvement in overall machine effectiveness and a 1.2-year return on investment,” he says.

“We are a quiet but an important part of this community and we want to continue the papermaking legacy here,” says Hartman. “We need the most modern tools and expertise to do that. Our experience with ABB has become a model for how we’d like our vendor relationships to work. As a result, we are looking to do more with them and especially take advantage of their recent acquisitions of L&W and Baldor.” 

*Glenn Ostle is Editorial Director/Associate Publisher of Paper360° Magazine, and can be contacted at [gostle@tappi.org](mailto:gostle@tappi.org).*



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