

Rhinelanders finds success in supercalendered papers

DONALD G. MEADOWS

Quality is a big concern for mill serving niche markets.

In Rhinelanders, WI, a paper machine is more than just a number. To the workers at Wausau Paper's Rhinelanders mill, the machines still go by names: The Big Swede (No. 6), Ripoo Maid (No. 7), Hodag (No. 8), and North Star (No. 9).

But that's not to say they're old fashioned. In the last few years, Wausau Papers has invested several million dollars rebuilding, improving, and adding machinery at the technical specialty papers mill. Some of the improvements made during the past five years include:

- A US\$ 6.4 million central stock preparation system to supply the four paper machines.
- Two new laboratories costing US\$ 2.2 million: one devoted to quality assurance, the other to R&D.
- A new 20,000 ft² finishing room equipped with new supercalender, rewinder, and material handling equipment representing a US\$ 18 million investment.
- Conversion and modernization of 14,000 ft² of unused space to serve as a pulp warehouse.
- A new machine calender for the No. 6 paper machine.
- A new electrical and dryer control system for the No. 6 paper machine.
- A US\$ 27 million rebuild of the No. 7 paper machine, doubling its capacity to 50,000 tons/year. Improvements included a new stock preparation system, refining capacity, cleaning system, headbox, modified fourdrinier table, press section, extended dryer sections, pocket ventilation system, size mixing, machine calender, reel and winder.
- A flotation saveall system for the No. 7 paper machine.
- A US\$ 1.4 million, computer-controlled winder installation as part of an ongoing rebuild of the No. 8 machine.
- A pocket ventilation system on the No. 9 paper machine.
- Process control and monitoring system for the No. 19 supercalender.

Mel Davidson and John Katchko in Rhinelanders' quality assurance laboratory



- A US\$ 1.5 million stack and electrostatic precipitator system to remove particulates from boiler combustion.

Those investments were made as part of an ongoing continuous improvement effort at the mill to enhance productivity, improve product quality, increase capacity, and position the mill for future growth opportunities.

Most of that growth has been in the pressure-sensitive labeling and release liner markets. For fiscal 1992, 60% of the mill's total product was geared to those markets, up from 42% in 1989, according to the company's annual report. About 30% of the mill's production was aimed at food packaging and the rest went to healthcare applications.

Two grades introduced in 1991—RHI-Liner 20 and RHI-Lease—led sales growth in 1992. RHI-Liner 20 is a pressure-sensitive backing paper for converters. RHI-Lease is a platinum catalyzed, silicone-coated release paper.

Refocus began a decade ago

Rhineland's current success goes back to a management change in 1983. During 1983 and 1984, the new management team put a lot of work into product and market research, explained Mel Davidson, vice president and general manager.

In mid-1984, various business teams were set up to gather information about who the customers and competitors were for specific products, such as pressure-sensitive labels. Each team, headed by a marketing/industry manager, determined customer needs, product likes and dislikes, and market dynamics. The teams then went on to develop plans for improving mill operations and product quality and gaining market share.

Several other types of teams now operate at the mill. Some may be management led; others are organized as the result of an hourly employee identifying something that needed to be done. In the latter case, the employee writes up the project objectives and submits the plan to a subcommittee of the Quality Steering Team for review. If approved, a facilitator and project management sponsor are assigned to the team.

The early stages of a total quality program appeared in 1984, but it was not formalized until the end of the 1980s. During that period management identified and evaluated various reigning TQM philosophies, and concluded that 3M had pulled it all together. Fortunately, 3M had already set up a business consulting service that helped Rhineland launch its own formalized total quality process (TQP).

Quality assurance as a function and as a culture is very important, Davidson said. "We try to get all of our people on the floor to understand the criticality of each operation," he said. To build that corporate culture, hourly employees visit customers. The mill produces a video each quarter about one of its customer's plants and shows it during employee meetings so mill workers know how their paper is being used. Quarterly meetings also give mill employees an opportunity to learn how the company did in the preceding quarter and how things look for the next quarter.

Adapting to customer needs

Built along the Wisconsin River in 1903, the Rhineland mill started out as a newsprint mill. The oldest paper machine still in use is No. 6, built in 1941. That and the No. 7 and No. 9 machines trim at 165- to 167-in.; No. 8 trims at about 114-in. Wausau Paper bought the mill in 1980.

In earlier days, the Rhineland facility included a sulfite pulp mill. The management team decided sulfite pulp wasn't right for the markets it saw the mill moving into. The pulp was inconsistent and lacked the strength and physical properties of the specialty grades the mill would produce. The pulping facility was shut down and sat idle until it was demolished in 1992.

"In my view it's a disadvantage for anybody who's committed to technical specialty papers to make their own pulp," Davidson said. "You're going to be committed to running your pulp mill and it will drive everything else," he explained. Being able to buy the very best pulps to blend for the grades you're making is essential, he said. Rhineland buys about 21 different pulps, mostly softwood.

Moving machine-width rolls in the 20,000 ft² finishing room



The "North Star" (No. 9) paper machine



Part of Rhineland's strength is its willingness and ability to customize and produce the kinds of customer-specific grades it does. "We are a market-driven, customer-driven organization," Davidson said.

"Unlike the broad commodity market segments, our products serve niches that are more recession-resistant," Davidson noted. However, those niches are very demanding, with high expectations for quality and performance.

Pressure-sensitive label liners must have good silicone holdout and uniform caliper. Rhineland produces an extremely dense supercalendered sheet of paper with both those qualities. It requires only a thin layer of silicone coating to provide the desired release properties.

The mill also produces food packaging papers and can do some converting. Examples of papers it produces for such uses include paper/foil laminations for high sugar content cereals; smooth, dense papers waxed on one or both sides for cracker boxes; and grease-proofed inner linings for microwaveable popcorn, french fries, and other convenience food packaging.

Technical papers are made to satisfy specific customer requirements, Davidson explained. Sterilizable paper used in packaging medical supplies, for example, must conform to tight porosity, fiber peel, and strength standards. In use, the packaging may be subjected to one of three sterilization processes: steam, ethylene oxide, or gamma radiation. Qualifying to be a supplier can take three or four years and products must comply with U. S. Food and Drug Administration protocols.

Paper used for food packaging must also comply with customer and FDA requirements. Barrier and functional properties such as

Mel Davidson and Rhinelander's rebuilt No. 7 paper machine



porosity and moisture resistance are custom-designed into each packaging paper grade.

Quality control obviously plays a critical role in the whole process. All four paper machines are equipped with scanners and process control systems to monitor basis weight and moisture. All four winders have microprocessing controls and supercalendered paper is scanned for caliper, gloss, basis weight, and moisture.

A new, carefully designed laboratory also plays an important role in quality control. The lab incorporates employees' ideas into work space design, explained John Katchko. Chemicals are stored in a grounded, explosion-proof room.

A "TAPPI" room built by Environmental Growth Chambers of Chagrin Falls, OH, allows for uniform testing of samples in a controlled environment. Temperature is maintained within half a degree and relative humidity within half a percent.

In place of mercury densitometers, the lab uses Hagerty Technologies air permeability testers. A Nicolet 510P FT-IR, a spectrometer with a microscope attachment, is used to check paper surface characteristics and chemistry.

A unique feature of the R&D area is a window to the mill. It imparts a sense of connectedness. The mill employees are reminded that important work is being done in the lab; lab technicians are reminded of the practical applications of their work.

In addition to the Rhinelander mill, Wausau operates mills in Brokaw, WI, and Groveton, NH. The company produces printing, writing and specialty papers. **[I]**

Meadows is editor of Tappi Journal.