

GREAT NORTHERN PAPER REVITALIZES MILLINOCKET MILL

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*NEW OWNERSHIP, NEW STRATEGY, AND NEW CAPITAL PROJECTS
HIGHLIGHT THE CHANGES OCCURRING AT GREAT NORTHERN PAPER IN MAINE.*

MAJOR CHANGES ARE OCCURRING AT GREAT NORTHERN Paper these days. There is new ownership, a new strategy, and several capital projects, including a major rebuild of the No. 11 paper machine, to support the new strategy. In August 1999, two Canadian businessmen, Joe Kass and Lambert Bedard, formed Inexcon Maine, Inc., to purchase from Bowater, Inc. the Great Northern Paper mills at Millinocket and East Millinocket, approximately 400,000 acres of woodlands, and the hydro-electric system. Bedard and Kass have between them more than 60 years of paper industry manufacturing and financial experience. This article looks at changes going on at the Millinocket mill.



Great Northern Paper mill in Millinocket, Maine

FIBER SOURCES

The Millinocket mill has been producing pulp and paper since 1900, when a 40 tons/day groundwood mill and two newsprint paper machines totaling 50 tons/day went into production. At that time, the fiber source was 20 ft softwood logs coming down the West Branch of the Penobscot River. Today, all virgin wood arrives at the mill in the form of chips, mostly from sawmills. The mix is approximately 65% spruce, 30% hemlock, and 5% fir. These chips are converted to sulfite pulp using the magnesium bisulfite process and mechanical pulp using a refiner mechanical pulp (RMP) process. The sulfite pulp mill uses a Great Northern Paper patented process, and the product is now referred to as Improved Regular Yield Sulfite

(IRYS). This pulp exhibits significant improvements in tensile and tear, allowing the mill to reduce its use of purchased kraft. Tensile strength is now better than that of northern softwood kraft (NSWK). The sulfite mill was designed for 600 tons/day but runs at less than 400. The RMP plant has two lines of pressure disc refiners, each with three refiners, and runs at about 125 tons/day.

Other fiber sources include recycled fiber and groundwood, both in wet lap form, from the East Millinocket mill, and a small amount of purchased softwood kraft.

PAPER MACHINES

The Millinocket mill operates four paper machines, Nos. 7, 8, 10, and 11. Paper machines 7 and 8 produce 200 tons/day of groundwood printing grades, which are sent to an off-

machine coater. In addition, PM 8 produces 40 tons/day of uncoated groundwood specialty grades. Both machines trim at 144 in. and run at 1850 ft/min (564 m/min).

No. 10 machine produces 170 tons/day of matte-coated grades. Machine speed is 2000 ft/min (610 m/min) and the trim is 142 in. As with Nos. 7 and 8, No. 10 machine is a fourdrinier machine. It was installed in 1980 and is equipped with an on-machine coater.

Machine 11 is a Black Clawson Verti-Forma (one of only a few still in operation) that was installed in 1972. It produces 320 tons/day of directory grades. The trim is 296 in. (7.5 m), and speed is 3100 ft/min (944 m/min). This machine will undergo a major rebuild, described below, during the next year.

UTILITIES

The electrical power system load for both mills is approximately 137 MW. This total is made up of 82 MW of 40 and 60 cycle hydro generation and 55 MW from turbine generators. A tieline with Bangor Hydroelectric is used if either of these sources is running at partial capacity. The Millinocket mill consumes approximately 75 MW. Most of the 40 cycle hydroelectric power is used in the East Millinocket ground-wood mill.

The hydroelectric system includes six power stations. Originally, the total output was 40 cycle, but some of this has been converted to 60 cycle as required by capital projects. The system is licensed by the Federal Energy Regulatory Commission. In addition to the power generated, the control of this watershed area by Great Northern Paper reduces the possibility of flooding during periods of high runoff. This also has enhanced the public use of the West Branch of the Penobscot River below the Ripogenus Dam for such activities as whitewater rafting, boating, and fishing.

Steam to operate the turbine generators is sourced from the sulfite mill recovery boiler and four oil-fired boilers. In addition, a waste fuel boiler and two oil-fired boilers are located at the East Millinocket mill.

EFFLUENT TREATMENT

The Millinocket mill wastewater treatment system processes approximately 20 million gal, or 77,000 m³/day. It employs a primary clarifier and an extended aeration lagoon. Sludge is dewatered and sent to a company-owned State of Maine licensed landfill site. BOD levels to the Penobscot River average less than one-half the allowable limit of 15,000 lb/day.

CAPITAL PROJECTS

"The purpose of capital projects has changed," says Brian Stetson, manager of environmental and government affairs. "Previous owners emphasized the need to reduce the cost of producing basically commodity products. The current ownership, while interested in reducing costs, is focused on capital projects that make the necessary changes to produce those grades that are higher in value added." This is the thrust of the recently announced rebuild of PM 11, which will shift from directory to groundwood specialty grades.

The formation of the project team is unique in its concept. Great Northern Paper did the initial conceptual engineering, including the development of a capital budget, and then selected an engineer, Genival BPR of Montreal. Great Northern Paper and the engineer then selected the paper machine vendor. The decision was to go with Valmet and their line of Opti equipment, including the OptiFormer, Optiload supercalender, OptiReel, and the WinBelt model L



Don McNeil, president of Great Northern Paper, holding the Southwestern Bell Award for excellence as a supplier.



Eldon Doody, mill manager at Millinocket

winder. The expanded team of Great Northern Paper, BPR, and Valmet together selected the general contractor, Cianbro Corp. of Pittsfield, ME. Dick Saucier, project manager for Great Northern Paper, explains, "By approaching the team building in this manner, it will be possible to get the best possible input on constructability and scheduling from all concerned parties as the detail design phase is being executed."

Adds Great Northern Paper president Don McNeil, "The major equipment ordered from Valmet is leading-edge technology that has been proven in installations in Europe and North America."

The supercalender will be the third Optiload online calender to be placed in operation in North America and Valmet's first 10-roll online unit in North America. The calender stack, including the rolls, is a massive piece of equipment, weighing more than 500 tons.

The OptiReel will produce rolls up to 112 in. diameter with a weight of approximately 70 tons. This exceeds the current overhead crane capacity. For this reason, Great Northern Paper decided to utilize a rail arrangement to provide roll storage for three rolls and conveyance to the unwind stand.

In addition to these major components, the rebuilt machine will employ a new disc saveall, a five-stage cleaning system, and a three-stage screening system. A new General Electric AC variable frequency drive will replace all portions being rebuilt, and the existing variable speed drive will be upgraded for the press and dryer sections.

The No. 11 rebuild resulted in several other projects being funded, including:

- Increase bleached sulfite capacity to 380 a.d. tons/day
- Conversion of McKay hydro station from 40 cycle to 60 cycle



Bernard Lambert, GNP's chief operating officer



Dick Saucier, PM 11 project manager at Millinocket



A view of the old Vertiformer—to be replaced with a Valmet Optiformer—on PM 11

- New 60 cycle 115 KV substation
- New Dublin dryer drainage siphons, bars, and doctors for machines 7, 8, and 11
- New dryer doctors and blow boxes for PM 11
- New Voith Twister wrapping line with new lowerator.

The increase in sulfite production is still less than the licensed level of 450 a.d. tons/day. However, Great Northern Paper still must apply for permitting from the State of Maine to allow for the increased emissions of NO_x, VOC, and particulates as compared to the emissions of the last two years. Another project also calls for the addition of in-line pulp testing for brightness, consistency, and freeness. Kajaani is the selected instrument vendor.

OTHER CAPITAL PROJECTS

Great Northern also recently announced that they have contracted with Specialty Minerals, Inc. for the construction of an onsite “over-the-fence” precipitated calcium carbonate (PCC) facility to be owned and operated by Specialty Minerals. The plant will be capable of producing 60,000 tons/year. The plant will utilize about 24,000 ft³/min, or 11.3 m³/s, of power boiler flue gas, resulting in an annual reduction of 20,000 tons/year of air emissions. The plant will be designed to readily increase production to 75,000 tons/year.

While the location of the plant will be at Millinocket, it will serve the East Millinocket mill as well. The goal is to replace most of the current kaolin clay usage as well as supply the necessary additional fillers for the grade change for PM 11. Startup is expected in June 2001.

MILLINOCKET MILL MANAGER

Millinocket mill manager Eldon Doody has spent his entire paper industry career with Great Northern Paper. His management philosophy is evident in every aspect of mill operations. He says he believes in “challenging historical practices to make procedural and technical changes. Risk taking and trust in employees is necessary.” This is evidenced in the recent record-setting production rates on PM 11 and achieving Southwestern Bell's highest supplier award two years in a row. The award is based on quality, on-time delivery without damage, and responsiveness. Paper for Southwestern Bell is supplied from PM 11 at Millinocket and PM 6 at East Millinocket.

Another area Doody feels strongly about is safety: “Safety must be given priority by management. Employees are expected to be accountable for their safety performance.” In January 1999, after reviewing several safety programs in and out of the paper industry, Great Northern Paper settled on one that is behavioral based and employee driven. The DSD program (the employees' acronym for designated safety driver) is carried out by volunteers trained to observe the work habits of individuals as well as crews. This and other safety programs have been so successful that all safety practices now have been incorporated into the mill's ISO 9002 plan. Thus, safety gets the same amount of review and attention as quality. TJ

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