

MILLAR WESTERN'S WHITECOURT MILL: FIRST IN NORTH AMERICA

PATRICIA M. PAUKSTA

THE MANAGEMENT OF THE FIRST MILL IN NORTH AMERICA TO EARN BOTH BS 7750 AND ISO 14001 CERTIFICATIONS SUCCEEDS AT IDENTIFYING INDUSTRY FORCES AND RESPONDING WITH INNOVATIVE PROCESSES AND PRODUCTS.

NESTLED AT THE FOOT OF THE CANADIAN ROCKIES, 180 km north of Edmonton, AB, Millar Western Pulp at Whitecourt opened in July 1988 as Alberta's first bleached chemi-thermomechanical (BCTMP) pulp mill. The mill produces high-yield, alkaline peroxide pulp from softwood and hardwood. The pulp is used to produce printing and writing papers, tissues, and toweling. Once the site of a Millar Western stationary sawmill, the operation has expanded to include pulp, lumber, and shake facilities.

A sister pulp mill opened in 1992 at Meadow Lake in Saskatchewan and became renowned as the world's first successful zero-effluent pulp mill. (See the January 1996 *TAPPI JOURNAL*, p. 63).

Both mills are owned by the Millar family, which has interests in the forest products, forest management, construction, and chemicals industries. Founder James William Millar was an entrepreneur whose interests crisscrossed into railway and road construction, logging, and sawmilling during the early 1900s.

In a recent visit to Whitecourt, it was apparent that the company founder's strong pioneering spirit was neither lost in the generations that followed nor on the mill's management. Both are intent on keeping Whitecourt a top-flight competitor in the pulp products business.

Technical Service Manager Tim Evans talked about the challenges and opportunities in the pulp market. In the mill's analytical testing lab, research was proceeding on the Mutek PCD Titrator Guard. This device measures the cationic demand of Whitecourt's pulp. It's the key to



The biobasin at Whitecourt

Whitecourt's success in assuring its customers that the charge demand in its pulp is consistent. The charge demand affects the paper machine's wet-end chemistry, where even minor factors can disrupt paper manufacturing.

Other research initiatives have focused on finding uses for the sludge, or biomass, that is a by-product of the mill's effluent treatment process. Much of the biomass is already used as fuel for an electrical generating station located just outside Whitecourt. Mill staff are working with other companies and research agencies to develop an additional use for the biomass as a soil enhancer. According to Evans, success in making another useful product of the biomass waste will be a real bonus for the industry.



Mill Manager John Eccleston believes that camaraderie and opportunity in the workforce improve the bottom line.

Within the scope of daily operations, the Whitecourt mill strives to keep abreast of the forces affecting the industry. In its relatively short time of operation, the mill has taken first place in obtaining dual certification and has won the *Financial Post* Award of Distinction for Business and Environment for its effluent system. Management views a long-term commitment to the environment as an asset, and this has led Millar Western into the use of processes and the development of products that ultimately benefit both the customer and the environment.

DUAL CERTIFICATION: A FIRST IN NORTH AMERICA

Environmental Coordinator Wendy E. Lyka took charge of going after BS 7750 certification for the mill's environmental systems. Quality Assurance Supervisor Brenda Langshared in the preparation for the SGS Yarsley International Certification Services Ltd. audit, which to date had been uncharted territory for a North American mill. The audit took four days of intense questioning in which nothing escaped scrutiny. At the end of the audit, management received thumbs up from the SGS board. Certification was awarded in February 1995.

In the spring of 1996, management asked Lyka if she was willing to go after the ISO 14001 certification. Since BS 7750 is more stringent, Lyka felt that Whitecourt was ready to proceed. Consequently, Whitecourt glided into the position of being the only mill in North America to achieve both certifications.

Lyka views obtaining certification as a bonus. "Having something to follow to put a functional system in place is what motivated me. Maintaining it is tough, though!"



Technical Service Manager Tim Evans (white hard hat) with Whitecourt's control room crew Myron Prokipchuk (front center), Dave Cartwright, Kelly Wilson (rear), and Rick Manysiak (behind Evans). Whitecourt's recently upgraded process controls include an expanded program through the Bailey system.

assures Lyka. "The Environmental Management System has helped a lot," according to Lyka, "and it serves as a road map to the whole system."

A WINNING WASTEWATER TREATMENT

In 1991, Whitecourt's effluent treatment system was recognized with the *Financial Post* Award of Distinction for Business and the Environment.

A primary clarifier at the mill uses a mechanical means of settling out solids, so any dirt, grit, and fiber is taken out. Overflowing wastewater enters a contact or selector tank where an anoxic zone deprives filamentous microorganisms (bad bugs) of oxygen. The facultative bacteria (good bugs) survive to move into the front end of the biobasin, a back mix zone. Wastewater is treated in the biobasin by a biological system that breaks down the resin and fatty acids and any residual chemicals that come out of the process. Treatment takes approximately seven days.

In the biobasin, subsurface jet aeration produced by three air compressors blows air in at the bottom of the pond and the air mixes with the recirculating wastewater. Called an "extended aeration activated sludge process," it ensures that the microorganisms are in constant contact with the wastewater to break down solids, which are settled out in the secondary clarifier. Some solids are put back in the system for reuse and some are brought back to the mill for sludge dewatering.

"In the biobasin, we get 99%-plus BOD removal, and that's good," says Lyka. "As a consequence we generate more sludge because of efficiency. Our goal is to increase the consistency of the sludge. We can achieve approximately 15% with the sludge presses, but the problem is trapped water within the cell walls. We've been trying to incinerate 15% solids—that's 85% water—so we've been looking at all kinds of different ways of increasing the



Lab Technician Graeme Davidson (L) and Process Engineer Grant McFarlane

solids content. A centrifugal trial process in use now is giving us 20-25%," Lyka explained.

The mill generates about 40-70 moisture-free metric tons of sludge a day. None of it is landfilled. Sludge is either incinerated in a beehive burner or incinerated in a power boiler to generate electricity or land spread for soil enhancement on local farms. So, removing the excess water will generate cost savings in transportation. Whitecourt management sees incineration in the beehive burner as a temporary situation; the goal is to get rid of the beehive burner for sludge incineration altogether. Making sludge a desirable by-product is the long-term goal.

SLUDGE SUCCEEDS AS A SOIL MIX

"We discharge about 60 [moisture-free] metric tons/day of sludge, which is about 80% secondary and about 20% primary sludge," says John Eccleston, Whitecourt's mill manager. An electrical generating plant is located down the road where it combusts the sludge with bark and other wood waste from the sawmill to produce about 20 MW of energy, which is put into the local grid. Currently, the mill is also spreading sludge on farmland and on reclaimed logging roads.

Whitecourt is working with a horticultural company to mix sludge with their peat. "Trials with marigolds and beans and different plants have shown that it is better than most professional growing mixes on the market. With a 25% add-rate of our sludge to their professional growing mix, the beans are 200% larger."

Millar Western is involved in a consortium with the Slave Lake Pulp Corp., Alberta Newsprint Co., and the Alberta Research Council to prove to the government and to the public that sludge as a growing mix is a great idea. They have five years of good data.

"Last summer, we tilled about four inches of sludge into the soil and planted grass. We know from our own experience in planting grass that sludge is an excellent soil conditioner. We're very proud of our sludge, and the



Environmental Coordinator Wendy E. Lyka led the dual certification effort.

day will come when people will be lined up waiting for our sludge to spread it on the land themselves. Right now we are introducing it to the market," Eccleston relates.

"There are a lot of good NPK (nitrogen, phosphorus, and potassium) nutrients; it's biological. We don't have any adverse materials in this sludge such as heavy metals or dioxins, since our mill uses no chlorine products to bleach. We're working to overcome a negative perception ... just because it's pulp mill sludge," he adds.

CAMARADERIE AND OPPORTUNITY

Eccleston sees operations as part of a time continuum of day-to-day jobs that keep Whitecourt in optimum condition and ahead of the forces that are driving the Canadian industry today. His management style is slanted toward camaraderie and opportunity, which leads to a stable and productive workforce that contributes to a healthy bottom line.

He started at Whitecourt as maintenance and engineering manager and then five years ago was sent to Meadow Lake to manage the startup. He stayed there as mill manager for 2-1/2 years. He's been back at Whitecourt as mill manager for three years now.

Eccleston takes pride in running a clean, safe mill. The housekeeping is impressive and the mill looks as new today as it did back in 1988. Probably better than in 1988 because, as Eccleston puts it, "once you've gone through the start-up phase, you realize there are a lot of deficiencies." According to Eccleston, changes need to be made as necessary. "The older the mill gets, the more we have to work at it, because generally things are going to become run down. That's just part of the day-to-day operations." A prime example of staying on top of mainte-



A tour of the mill included a stop at the refiner.

nance concerned a troubling episode of scale, which was recently resolved by joint efforts that involved a two-year collaboration with National Silicates Ltd. and neighboring mills. (See *TAPPI JOURNAL*, November 1996, p. 77.)

Absenteeism in the mill is only 1.1%, and a spirit of camaraderie abounds. According to Eccleston, "It's a good environment for people to work." Whitecourt's safety record is remarkable, and Eccleston sees housekeeping as one of the main supports to safety. Whitecourt developed its own safety program, which is based on a review of repetitive tasks that have been broken down by elements and analyzed as to potential consequences if something goes wrong. Ultimately, says Eccleston, "it's standing back and watching how someone does the job and talking about it afterwards." Obviously, the system works at Whitecourt.

A millwide objectives program is what fuels management's philosophy. Key results such as safety, quality, production, environment, customer service, and cost control form the backbone of the program. Each department is then responsible for its impact on each of the key result areas as they pertain to the overall performance of the mill. Each quarter they are reviewed and updated as needed so that it is a vibrant working system.

Overall efficiency of the mill boils down to the value placed on people. The bottom line ends up being directly related to good human relations. According to Eccleston, "listening, talking, and understanding people and their ideas goes a long ways towards solving problems and, more importantly, preventing them from occurring in the first place."

Process problems are handled at the mill by individuals and groups of individuals who are experts in the area. They may involve people from several departments or several different disciplines working together to come up with the best solution.

During the summer, Whitecourt offers employment to university students attending a secondary institution. It's a willingness to impart experience. Last summer, 10 students—four men and six women, some the offspring of mill employees—interned at Whitecourt. At the end of the summer, the students receive an appraisal, which is the basis for an invitation to return next summer. "Some of them will concentrate on yard maintenance. Some of them work on shift and rotate with the crews, or as pulp testers in the lab. We have a couple of students working with the maintenance folks making sure the parts are ordered and stocked properly. They'll work four days on and four days off and gain very valuable experience," Eccleston adds.

Somehow, it's all intertwined: the certifications, the sludge solution, the newcomer training—all tied up in delivering value. **TJ**

Pauksta is TAPPI JOURNAL news coordinator.