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Ready for the Recovery

A multi-million dollar upgrade at Nova Scotia's Freeman Lumber—reinforcing the operation's product and market diversification—has positioned the sawmill well for the industry turnaround.

By George Fullerton

Logs entering the new saw line (below right). The upgrade meant combining new transfer and conveying equipment with both existing and new mill equipment .

The Freeman family has witnessed many changes through its 170-year history in the sawmilling business in the town of Greenfield, in southwestern Nova Scotia. Adapting to change has been key to their success, profitability and growth. Continuing on that path, the Freemans recently completed a significant mill upgrade, which will position the operation to take advantage of the industry recovery.

The Freemans have been in the mill business since the 1830s when Gorham Freeman built a mill that produced lumber for local settlers. During the 1800s, the Freemans also built grist and shingle mills on the banks of the Medway River.

In the mid 1950s, the sawmilling operation was destroyed by a flood, and Harry Freeman Jr rebuilt the mill some distance from the river, initially powering it with gasoline engines, then diesel, and eventually electricity.

The current mill was built following a devastating fire in 1990.

Through the past two decades, Harry Jr's sons—Charlie and Richard—have assumed management responsibilities and led technical modernization of the operation, as well as achieving ISO 9001:2000 certification in 2002. The Freeman family remains committed to their community and to changes that will ensure their sawmill operation remains a major economic driver in western Nova Scotia.

Today the mill operation directly employs 100 people, in addition to harvesting contractors, and

log and lumber truckers. Since the Freeman operation obtains over 98 per cent of its log supply from private woodlands, they indirectly employ a vast number of independent forestry contractors and individual wood producers.

In addition to SPF construction lumber for domestic and export markets, Freeman produces specialty lumber products including hemlock, white pine, square stock and various value-added products. Richard Freeman says that product and market diversification are key strategies that have allowed Freeman Lumber to weather the industry downturn better than many other mills that have taken extended shutdowns or closed altogether.

Richard Freeman on the upgrade: "We continue to work hard fine-tuning the new systems, but the bottom line is that the results have exceeded our expectations."

Richard points to a number of larger mills—which rely on commodity lumber products—that have experienced serious financial circumstances because their US markets virtually shut down. He challenges the wisdom of the business model of relying entirely on simple commodity products to a single market. He suggests that having the flexibility to cut a wide variety of species for a variety of markets has merit, especially for surviving unusual market vagaries.

Prior to the recent upgrade, the Freeman mill had two saw lines. A Tronco Stepfeeder fed logs to a 26-inch Forano and an EM16 Morbark debarker, with small diameter logs processed through a Valley Machine Works circular twin saw with centring rolls and servo positioning. Larger logs were broken down on a Cardinal linear carriage with "on board" log turning, mated with a Sawquip/Key Knife chipping slabber and a PHL B72 double cut band saw.

Cants from both lines proceeded to a 12-inch capacity USNR guided bull edger. Reman was

handled by an old Sanborn edger which had survived the 1990 fire and a McDonough horizontal band. The tail end consisted of a Canadian style trimmer and a Carbotech 45-bin sorter with Autolog control.

Richard explains that the decision for the upgrade was based on the need to gain greater efficiencies and productivity. “The old mill was a good conventional mill, but it did not take advantage of the optimization technologies currently available,” he says. “The kerfs and log centring at the circular twin left room for improvement, and there were other opportunities for improved productivity.”

Forintek, now FPInnovations, completed a study of the Freeman operation in 2004 that recommended extensive upgrades to gain significant production goals. Implementing the FPInnovations recommendations on a full-blown basis would have been cost prohibitive, so the Freemans focused first on the addition of an optimized board edger for the small log line.

Logs entering the new saw line (below right). The upgrade meant combining new transfer and conveying equipment with both existing and new mill equipment

This interim solution left Freeman with a modern one-line stud mill consisting of two 17-inch Nicholson A5B debarkers, Comact C2 true shape log sorting systems, a Comact DDM6 curve sawing line and a Comact optimized board edger. Optimized trimming and sorting were by Carbotech with Autolog controls. The much larger challenge of modernizing the random sawmill was left for another day.

Freeman asked Carbotech to conduct preliminary engineering based on the FPInnovations recommendations in 2006. Carbotech’s Steve Fecteau identified four potential layouts. A decision was made to refine the concept that best integrated the existing carriage with fully optimized breakdown, edging and trimming systems.

“This was an extremely challenging project,” says Richard. “Log conveyors, lumber handling conveyors, reman transfers, waste conveyors, sawdust conveyors, chip conveyors, control, electrical, and pneumatic systems all had to integrate with our existing mill. There were many equipment manufacturers involved in the project, and they all worked very well with us, and with each other.”

Construction began in February 2007, with a plan to continue with lumber production in the old mill. However, due to the industry downturn, only the small log sawmill remained in operation while construction continued.

The new line can process logs eight to 16 feet long, and six to 22 inches in diameter. New equipment includes an additional 10-foot and two 16-foot Comact Wavefeeders as well as a Nicholson A5A 27-inch debarker. Logs proceed to a Comact OLI system consisting of a C1 full profile scanner, log rotation correction and five “final solution” scanners. These re-optimize logs for final positioning ahead of a Comact canter/twin which can make up to three cants from one log.

“We found this ‘like new’ system through Comact,” says Richard. “It was precisely the set-up that FPInnovations had recommended to us. Comact completely updated the optimization and control systems. It was very cost-effective.”

A PHL infeed system accurately positions cants from both the canter/twin and carriage for the existing USNR bull edger. The Autolog cant optimizer can identify species (and solutions) based on thickness at primary breakdown. The system is extremely flexible. For example, the bull can optimize and saw 5/4-inch, two-inch, 4x4 and 6x6 at the same time.

The optimized edger is a three-saw unit from PHL and Carbotech supplied the trimmer. Optimization and control for the edger, reman, trimming, sorting and balsam fir detection are all by Autolog. Most transfers and conveyors for the mill upgrade were supplied by Carbotech.

Production trials commenced in August 2007, but construction was not finalized until this past December. The new design is extremely flexible in terms of raw material and product mix. “We continue to work hard fine-tuning the new systems, but the bottom line is that the results have exceeded our expectations,” says Richard.

“We can saw pine in the big mill and spruce in the small mill at the same time. Larger spruce logs can be diverted from the small mill to the big mill where higher recovery solutions are available. The six- to 10-foot spruce lumber can then be diverted back to the trimmer and bin sorter for the small mill so that no sorts are wasted.”

The Freeman operation also has one million board feet of kiln space. Heat for the Coe, Wellons FEI and Cathild kilns is supplied entirely from sawmill biomass. The primary boiler is a Wellons FEI 500 horsepower, low pressure unit. During winter months, a 150 horsepower Coe boiler helps carry the load. Surplus residue is marketed to a nearby energy plant and to pellet manufacturers.

One key to Freeman’s versatility and success in tough markets is its value-added centre. A Leadermac Thundermac eight-head, high speed moulder supplied by Akhurst Machinery produces a broad range of lumber products. These range from interior panelling and mouldings to decking and other products for exterior use.

A separate high speed planing mill centres around a Guerette A20/12 planer, running up to 1,500 fpm. The planer operation includes an Autolog Linear Optimizer, Carbotech positioning and trimming and a 20-bin sorter. Stacking, packaging and wrapping systems are controlled by Autolog technology.

“With the modernization, our total annual production will reach 75 to 80 million board feet on a one-shift basis,” says Richard. “We have complete flexibility among products and markets.” The new mill can process underutilized (lower cost) raw materials and produce almost any higher value lumber product. “We combine the flexibility of a small sawmill with benchmark recovery, productivity and quality control normally found in much larger operations—this is our niche,” he adds.

“We will continue to de-commoditize our business though specialty products that many other mills cannot produce efficiently. The many changes we have made to our business in recent years position us well for the recovery.”