



Shaving mill energy costs

Ontario's Chisholm Lumber has installed a bio-energy system—which uses the sawmill's sawdust and wood shavings—that is helping to significantly shave the company's energy costs.

By Paul MacDonald

Chisholm Lumber's two Nardi kilns— with combined capacity of 100,000 board feet—are running 95 per cent off the company's bioenergy system. The system is from Grove Wood Heat Inc of Prince Edward Island, which designs and manufactures semi-automatic biomass heating systems

Like just about every other lumber producer these days, Ontario's Chisholm Lumber is expending a lot of people energy to stay on top of markets and deal with the current industry downturn. But one area where the company is using less outside energy is with its kilns. It has a relatively new bioenergy system—which uses the sawmill's sawdust and wood shavings—and it's helping to shave the company's energy costs. "It's been a very good project for us," says company co-owner Doug Chisholm. "In this industry, you rarely get to build from scratch. When you do upgrades or changes, you are usually trying to work around this building or that piece of equipment.

"But this was a great opportunity to design the energy system for the kilns from the ground up. We now have kiln capacity of 100,000 board feet, and it is basically running 95 per cent off our bioenergy system." The build—which included two new Nardi kilns—was made necessary after a fire destroyed the company's lumber drying operations.

The system is from Grove Wood Heat Inc of York, Prince Edward Island, which has been designing and manufacturing semi-automatic biomass heating systems since 1985. It consists of five main components: computer control panel; a main feed bin; small metering hopper; a combustion chamber, and the boiler.

The computer control panel monitors and regulates the daily functions of the entire system. The main feed bin has an automatic unloading system. The bin size at Chisholm Lumber is 10 feet long by six feet wide and five feet high. The bin is filled using a front-end loader, and the capacity of the bin is sufficient for 12 to 36 hours of operation, depending on the type of fuel being used. The small metering hopper is filled via the main feed bin as the sensors in the hopper detect a need for more fuel. This metered hopper has an auger (about 10 feet long) with a gear drive. This auger meters the proper amount of fuel into the combustion chamber.

The combustion chamber is a refractory lined component complete with combustion fans that are designed to introduce the precise air/fuel mixture to achieve an ultimate high temperature, clean, efficient burn. There is no visible smoke with the system and very low particulate emissions which meet or exceed the new B415.1 CSA standards for clean air, says Grove Wood Heat.



In the boiler, the hot gases coming from the combustion chamber heat a series of extraction tubes and plates, elevating the water temperature. Pipes and pumps transfer the hot water to the heat exchangers within the wood kilns. This heating system dries both hardwood and softwood lumber for Chisholm Lumber's wholesale division. The kilns are also certified for heat treating. Doug notes that the company realized significant savings right from the start. "The payback has been very quick on the heating system." Doug speaks highly of the Grove Wood Heat equipment.

But he also emphasizes that what added to its success was Chisholm Lumber's in-house ability to plan, build and tweak the energy system—all of this done by company co-owner, and cousin, Paul Chisholm. "If we had to hire out for all that, it would not have come together as well as it has—Paul has been able to do all that"

The bioenergy system consumes a small amount of residual wood. It runs on about 60 cubic yards of sawdust and shavings a week, or less than a tractor trailer load of material. Doug notes there is no precise formula for the fuel. "It can be some of this and some of that, depending on what is going on at the sawmill and the planer."

Paul notes that their energy system is a small part of a considerable change in the use of residual wood in the industry as a whole. "It really seems like this whole area of residual wood has gone 180 degrees. Years ago you could not give it away. Now it seems like every other week someone is looking at pelletizing wood residuals to send it to Europe or looking to put a new boiler system in to generate energy."

High energy prices, notably oil over the \$100-a-barrel mark, and natural gas prices, which are also rising, seem to be driving the increasing interest in bioenergy in the industry.



Keeping on top of their energy costs is one example of how Chisholm Lumber is weathering the industry downturn. Downturns are not new to the company—it has seen quite a few, considering that it has been in business for an extremely impressive 150 years.

Chisholm Lumber was originally started by Doug and Paul's great-great-grandfather and it now represents one of the oldest family-owned lumber companies in the entire country.

In 1857, William Fraser Chisholm bought the site on the banks of the Moira River and started a flour/feed mill and a sawmill. Since then, six generations of the Chisholm family have been

involved in the lumber business at the 25-acre mill site in Roslin, Ontario, just north of Belleville, and about three hours east of Toronto. A key part of their survival, and success, these days is the company's diversification. There is the sawmill and planer part of the company, a TimBr-Mart division, and a custom home design/building division.

The building division is receiving a good deal of attention, with a newly hired, full-time general manager. It is a relatively new member of the Chisholm Group. Operating as the general contractor on building projects and coupled with the building supply store, the building division provides a "one-stop shop" for customers. Using a lot of the lumber that is produced at the Chisholm sawmill, it offers full service, from initial home design to fully complete projects.

"The design build is such a natural part of our business," explains Doug. He puts the company's diversification strategy bluntly: "If we were only in the sawmilling business, we would not be here." Their production is now about five million board feet a year, which is down about 30 per cent from the heady days of good hardwood markets a few years back. On the sawmill side, their production approach is simple, says Paul. "We focus on quality, quality, and quality."

While Chisholm Lumber is a softwood/ hardwood multi-species mill, they cut about 75 to 80 per cent hardwood. "We're always looking for grade—for us, it's not volume, it's grade," says Paul. Hardwood species include ash, basswood, poplar, beech, birch, butternut, cherry, hard maple, soft maple, red oak, and white oak. Hardwood lumber orders can be customized to the grades and sizes required.

Paul notes that all of the production equipment they use is tried and true. At the front end is a Morbark 640 debarker, followed by a four-bunk T S Manufacturing headrig, a six-foot double-cut Forano bandmill, two-saw T S Manufacturing edger and two-man Canadian style trimmers. Further on is the mill's 58-inch, sixknife Morbark chipper and Westplain resaw.

The majority of their hardwood production makes its way to furniture companies, flooring plants and added-value facilities. This segment of the market has been hit hard by imports, principally from China.

They used to make significant hardwood sales—upwards of 40 per cent of production—to US customers, and that has been virtually wiped out by the high value of the Canadian dollar, as well as the flood of offshore furniture into the American market.

In softwood lumber, the sawmill manufactures white pine, red pine, spruce, cedar, and hemlock, in most sizes. Most of this production is sold through the company's TimBr-Mart retail division, and increasingly, being used by the custom building division.

They sell a good deal of white pine, though Paul notes they have to deal with competition from big box operations such as Rona and Home Depot.

"We get people coming from a ways away to buy their pine for construction of timber frame homes or log homes," Paul explains. "If someone is building around here, it's not long before people around them want to know where their wood came from, particularly if it is a unique product."

One of the company's big assets is that it can be nimble, unlike the larger sawmills, notes Doug. "When you look at the forest industry, the successful hardwood businesses have traditionally been smaller family businesses—we can turn things on a dime. If we decided earlier today to switch species, that species would be coming out of the mill right now." Any production meetings they have are brief—consisting of a discussion between Doug and Paul. "You can get too big, and if you have to actually schedule a production meeting to change direction in the mill, well, it can be too late."

While Doug has formal business training— he has an MBA—both he and Paul practice MBWA—management by walking around. There’s no micro-management going on at the company, but there is plenty of the hands-on variety. Chisholm Lumber, with its location in southeastern Ontario, is not in a prime timber area. Their timber comes primarily through being part of the Bancroft-Minden Sustainable Forest Licence, supplemented by some of their own timber and purchases of private timber. “There’s a large amount of timber in the SFL, but a lot of it is marginal timber—that’s the challenge,” says Doug.

He adds that there have been major changes in how both the public and private timberlands have been managed in the area, notably over the last couple of decades. “High grading on private land still happens, but not nearly as much,” he says. “Forest management has evolved in this region. You still have the guy with 100 acres in timber who is looking for fast cash in his pocket. But more often you are seeing that guy looking to put some cash in his pocket now, some in his son’s pocket later on, and some in his grandson’s pocket even further down the road. They’re managing the resource for the longer term.”

Having been in business for 150 years, Chisholm Lumber is also planning for the longer term. Doug and Paul, though still very active in the business, are planning the transition to the next generation: Paul’s son Brett; Doug’s son Peter; and two cousins, Jordan Chisholm and Pat Cassidy. They will be the sixth generation of Chisholms to run the company. “That will happen, but it will take a period of time to make the transition—in the meantime, there will be a good overlap between Paul and myself and the next generation,” says Doug.