



## Turning slash into fuel

With the start-up of a new \$84 million biomass power plant at the AbitibiBowater pulp and paper mill in Fort Frances, Ontario, forest slash that had been previously burned in the bush is now being ground up by local contractors and transported to the power plant.

*By Tony Kryzanowski*

One prevailing theory about taking a stronger stand toward generating green energy and protecting the environment is that it will actually create jobs. That scenario is being played out in Fort Frances, Ontario, where AbitibiBowater has brought a new biomass power generator on stream, creating at least 50 new jobs in their forest operations.

That's because about 25 per cent of the biomass going into the 47 megawatt power generator is forest slash, and two contractors will be required to grind the slash in the harvest blocks and deliver it to the pulp and paper mill.

The \$84 million biomass power plant will consume between 600,000 and 700,000 tonnes of wood residues such as bark and forest slash annually. Part of the funding for the biomass power plant was provided by the Ontario government's Forest Sector Prosperity Fund.

According to Jim Krag, woodlands production manager for AbitibiBowater, bark from the pulp mill's own operations will provide 35 per cent of the fuel, regional sawmills will provide about 40 per cent, with the remaining 25 per cent coming from forest slash. The mill has been contacted by a variety of forestry businesses, some as far away as Manitoba and Minnesota, inquiring about the possibility of also sending their wood residuals.

Switching to biomass from natural gas will reduce the mill's costs significantly, Krag says. "It's an important investment not only for the mill but the whole community because it's going to provide additional security for existing jobs in forestry and will help to ensure the mill remains economically viable for years to come."

This project is delivering a double environmental dividend, as it will also reduce air pollution. Typically, the slash being diverted to the biomass power generator would have been piled and burned. The pulp mill will continue to operate a burning program, but not within the planned biomass recovery zone in any year.

Following an extensive Request for Proposals process, AbitibiBowater will eventually be using two contractors, explains Scott Booth, the company's operators forester for biomass.

Mine Centre Resort, a company owned by Fred, Murray, and Lyle Dennis, has been hired as one of the biomass processing and delivery contractors. The family-owned business has been building roads and bridges as well as piling forest slash for AbitibiBowater on a seasonal basis for about 15 years. Mine Centre is a community located in the middle of the forest where the pulp company sources its wood fibre.

"We've pushed up slash piles a lot and it has always bothered me that they were being burned for nothing, without getting any energy value out of the slash," says Fred Dennis. Recognizing its potential value, he says he approached AbitibiBowater a couple of years ago about possibly chipping this material. That's when he became aware of the company's plans to



construct a biomass power generator due to fluctuating natural gas prices, and when Mine Centre Resort started to plan to make a bid for a grinding contract, once it became available.

In addition to finding a better use for this under-utilized resource, winning the three year contract to deliver 60,000 green metric tonnes of processed forest slash per year is helping Mine Centre Resort develop into a year-round operation. Rather than laying off staff in the fall, the company will now offer its seven seasonal employees year round employment in its forest slash grinding and delivery operation, and expects to hire at last four more people.

Each contractor is required to provide a horizontal or tub grinder as well as the transportation capability to deliver eight to ten truckloads of processed slash to the pulp mill each day. The material needs to be six inches in size or smaller.

Mine Centre Resort has opted for a Rotochopper MC266 grinder. It comes equipped with a 425 horsepower, Caterpillar C15 diesel engine, and weighs 42,000 lbs. It is 50' 3" long and 102" wide. The opening where slash is fed is 18" high by 66" wide.

"I like the simplicity of the Rotochopper and it being lightweight," says Dennis. "What I was looking for was something that was light and mobile. Everyone has looked at high horsepower machines. I may be way off, but I think you can have something that is smaller horsepower and lighter weight because we are dealing with slash. We're not grinding a large whole tree."

The Rotochopper is road legal, and the grinder manufacturer claims that it will grind, color and load a 100 yard truck in as little as 40 minutes, or 15 minutes when processing bark.

Transporting the grinder from place to place and fuel consumption were two of Dennis' main concerns going into this venture because the slash is spread over a vast area right now — which also explains why he has opted for a lighter weight, smaller horsepower grinder. This was after conducting extensive research of various grinder products operating in Canada and the United States, working in similar situations.

Once fully operational, the new power plant will provide about 58 per cent of the pulp mill's energy needs. The mill has also tapped into local small hydroelectric dams, which together with the biomass operation, will provide 86 per cent of its energy needs. To burn at an optimal rate, the biomass must have between 40 and 50 per cent moisture content, so there will be some mixing of inputs to maintain that percentage.

The processed slash will be about 55 per cent conifer and 45 per cent hardwood. The supply radius may be reduced to a 100 kilometres, based upon how much slash is actually generated in each harvest block. The woodlands group is expecting only 70 per cent slash recovery from each harvest block due to timing of slash collection and access issues. Some slash will likely be rejected due to contamination with rocks, metal or plastic. This is something AbitibiBowater wants to avoid because of the harm it can do to both the grinders and the power plant.

According to Booth, preparations have been ongoing in harvesting operations for a couple of years, anticipating the switch to recovering the forest slash for fuel. The first action was a directive to company operations foresters not to pile or burn the slash within 140 kilometres of the mill, unless it was a winter access-only site. That way, if the grinder contractors couldn't get to a site before access was restricted, the company would still have the option of burning the piles. AbitibiBowater has not burned slash piles within 140 kilometres of the mill since 2005 in anticipation of the biomass power plant.

Dennis says Mine Centre Resort is currently on a fairly steep learning curve and is working on developing a better under-



standing of slash moisture content based on how long the slash has been sitting in the forest. Based on the grinding demonstrations the company has conducted so far, he says they have acquired a greater understanding of moisture content based on the age of the slash. He was quite surprised to learn that after three years, it actually gains in moisture content because of decomposition.

“To utilize all the slash that is out there, it may have to be a mixture of older and fresher slash so we can optimize our weight and efficiency for the biomass burner,” says Dennis.

The slash is not spread throughout the harvest blocks. It generally should be at roadside where harvesting contractors have conducted their delimiting and processing activities. The woodlands group is currently discussing slash management with its harvesting contractors so that the grinding operation works as efficiently as possible.

“The idea is that the piles will be flat for the grinding contractor,” says Booth. “The reason behind that is the less you touch the grinding piles, the less chance for contaminants.”

Once the grinder contractor arrives on site, Booth says it makes sense to locate the grinder in one spot for a period of time and use a forwarder or grapple skidder to accumulate and deliver the forest slash within a reasonable distance for processing through the grinder.

That is exactly what Mine Centre Resort intends to do, with its purchase of a used Timberjack 1110 forwarder. To bulk up its delivery fleet, it has also purchased two trucks, a used unit and a new Peterbilt 367. The company has also purchased three 53’ straight truck trailers.

In terms of delivery, a couple of scenarios are being considered by the grinding contractors. One is to load directly into trucks and deliver. A second is to operate the grinding and loading/transportation functions separately. This would involve downpiling by the grinder about a week ahead of delivery.

“That way, if there are any issues with the grinder breaking down, it doesn’t stop the hauling,” says Booth. “The trucks always have material ahead of them.”

The contractors began grinding material in January. The power generator came on stream in November 2008. AbitibiBo-water had stockpiled a large amount of residual material from its wood room anticipating the start-up of the power plant. Using this stockpile will give the grinding contractors an opportunity to become familiar with their equipment and the work routine.