



Clean, green bio energy plant to be a cost-saver at Nechako Lumber sawmill

By GORDON HAMILTON, Vancouver Sun October 11, 2011



Italian manufacturer Turboden will be shipping a unit like this to the mill in Vanderhoof, northern B.C. It's the first of its kind to be installed in North America.

An old beehive burner still stands at the Nechako Lumber sawmill in Vanderhoof, a silent reminder of how far the forest industry has come in converting what was once considered waste into value.

The burner used to take all the bark, sawdust and other wood waste from the mill and burn it, sending clouds of smoke into the sky. It's been silent for 12 years. What was once waste is now used to produce wood pellets for export to Europe and heat for the mill's lumber-drying kilns.

Work is underway at the mill site on the next generation of energy systems, a \$7-million-plus high-efficiency generator creates electrical energy from the mill's bark-burning thermal system. The energy

produced can meet most of the needs at a pellet plant adjacent to the sawmill. After producing the energy, there will still be enough heat left over to operate the kilns.

Nechako Lumber's drive to squeeze every bit of revenue out of its waste stream is the kind of efficiency born from the race to remain above break-even in the face of the worst lumber downturn in memory.

The power system is the first of its kind to be installed in a sawmill in North America, said Alan Fitzpatrick, president of Nechako Green Energy, the company contracted to provide the sawmill with clean, carbon-neutral power. Pratt & Whitney, better known for its jet engines, is providing the machinery: a state-of-the-art system built by Italian subsidiary Turboden. At the heart of the new system is a technology that produces electricity by heating a silicone-based fluid that evaporates at a lower temperature than water, which creates the vapour to run a turbine with less heat than a conventional generator.

The system will produce 1.8 megawatts of electricity for the pellet plant, or enough power to supply 1,360 homes — roughly the number of homes in Vanderhoof.

The beauty of the system, said Nechako Lakes MLA John Rustad, is that it turns a waste product into a revenue stream. A more diverse revenue stream will help the company through the inevitable up-and-down cycles of the lumber sector, he said.

"This is relatively low-cost power," Rustad said in an interview. "The beauty here is that there is no cost to the fuel. No cost of transporting the fibre, no cost of handling the fibre. All of that is already done as part of the mill operation so you are just capturing what was considered waste and generating power from it."

Nechako Green Energy will sell the power to BC Hydro, which contributed \$4.7 million of the capital cost under its Power Smart program. The program targets Hydro's industrial customers who consume more than \$50,000 in energy annually and provides them with resources and funding for energy saving initiatives. The power saved reduces Hydro's need to build new generating facilities.

Ironically, the mountain pine beetle is responsible for the decision at Nechako to seek a more efficient use for the bark waste than just making heat, Fitzpatrick said in an interview. Vanderhoof is one of the first regions where timber was killed. That timber is now grey and dry. But it can still be used to make lumber. And since it's drier, it requires less time in the kiln.

"We have excess thermal heat in the energy system," Fitzpatrick said. "With the mountain pine beetle, basically, the amount of energy to dry the lumber is reduced."

"We wanted to find a way to be more energy-efficient and more cost-efficient in our operation. We try to utilize every bit of fibre we have on the site. It came down to 'how do we utilize a resource that's basically excess heat.'"

The Turboden system turned out to be the answer.

"It really captured our interest," Fitzpatrick said. "By capturing the waste heat we will be producing almost enough energy to power our pellet plant. The pellet plant takes 2.5 megawatts and we will be producing about 1.8."

Vanderhoof Mayor Gerry Thiessen said he is encouraged to see new technology being introduced in the resource town.

Lower costs for the sawmill improve its chances of continuing to operate; providing jobs and tax revenues to the community, he said.

“We have had the pine beetle here which has really affected a resource community like ours. So when these ideas like producing bioenergy come forward and are actually brought into being, that keeps our industry stable and a lot stronger. That helps keep people in the north at those good quality jobs.”

Alessandro Foresti, a Turboden director, said in an interview that the key to the system is that it is cogeneration, producing both heat and electricity from local biowaste. It’s a small-scale system, he said, and is in common use in Europe, where energy costs are higher. The small size is what makes it attractive.

Foresti said Turboden is in various stages of discussion with five other forest companies.

“The great majority of [interested companies] are in B.C.,” he said. “B.C. has this policy in place supporting small biomass plants.”

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