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On-site Gasification Plant Helps Clear the Air—and Saves Energy Costs

Converting wood residue into Syngas not only reduces dependency on fossil fuels, along with greenhouse gas emissions, but contributes to improvements in air quality as well.



Nexterra's president and CEO Jonathan Rhone (left) and Tolko's regional manager Jim Baskerville at the new gasification plant.



ate their own fuel while lowering greenhouse gas emissions.

Gasification Defined

Gasification is a starved air process that uses heat to convert carbon-containing fuel into a biofuel called “syngas” or “producer gas”. Syngas is a clean burning fuel that can be used as a substitute for natural gas, fuel oil or propane to produce process heat, steam, hot water and/or electricity for the forest products, pulp and paper, and other industries. Syngas is composed primarily of carbon monoxide, hydrogen and methane, as well as vaporized pyrolysis liquids, hydrocarbons, nitrogen and water. Unlike energy derived from the direct incineration of many waste fuels, syngas is a clean burning fuel that can be used as a direct substitute for natural gas, fuel oil or propane.

Compared to conventional wood combustion equipment, Nexterra's gasification systems are simpler in design, less expensive to build, operate and maintain, and produce much lower emissions.

The principles of gasification have been well understood for over 200 years. Coal gasification was widespread during the late 1800s, providing fuel for urban lighting and power generation.

Today, gasification is recognized as one of the most versatile, efficient and cleanest ways to convert low cost solid fuels, such as wood waste, into heat and/or power.

For more information and a description of how Nexterra's gasification technology works, go to www.nexterra.ca ■

Tolko Industries Ltd. and Nexterra Energy Corp. have successfully completed their new gasification project at Tolko's Heffley Creek plywood mill near Kamloops BC. The new “syngas” plant converts wood residue into low-cost, clean, thermal energy, replacing high-cost natural gas and moving the mill closer to energy self-sufficiency. The system will not only save more than \$1.5 million in annual fuel costs, but will also improve local air quality and reduce Tolko's greenhouse gas emissions by 12,000 tonnes per year. This is equivalent to taking almost 3,000 cars off the road.

The mill produces 3/8” to 1” structural grade plywood. In 2004, it produced 205,000 msf of 3/8” equivalent. The Heffley Creek mill employs 197 people.

Tolko partnered with Nexterra in 2005 to develop the 38 MMBtu/hr gasification system that converts 13,000 bone dry tonnes per year of wood residue into a clean burning, renewable biofuel called syngas. The syngas generated will displace approximately 235,000 GJ (gigajoules) per year of natural gas previously used at the mill to dry veneer and to produce hot water for log conditioning. This is equiva-

lent to the amount of natural gas required to heat approximately 1,900 residential homes in BC.

Energy use in the Forest Industry

North America's forest industry has made significant strides in reducing costs and becoming more competitive. It produces more of its own energy than any other industry.

However, the industry still uses large amounts of fossil fuels and recognizes that innovative clean technologies, such as Nexterra's gasifier, are needed to further reduce dependency on fossil fuels.

Since the mid-1990s, the cost of natural gas has increased by 500 to 700 per cent, leaving North America with some of the highest natural gas prices in the world and placing severe competitive pressures on North American forest companies.

North America's forest products industry consumes more than 900 trillion Btu of natural gas and fuel oil each year at a cost of US \$8.0 billion.

Switching to this biofuel can significantly reduce fuel costs at other plywood and solid wood mills, and pulp and paper mills, allowing forest companies to gener-