



WOOD ^{to} ENERGY

Case Study

Converting from Natural Gas to Waste Wood

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Approximately one hundred miles from Mississippi's southeastern Gulf Coast, in a region known as the Pine Belt, lies the town of Laurel. Born of the timber trade in the early 1800s, Laurel was once a bustling mill town which, by the twentieth century, became the world's leading producer of yellow pine lumber products. Today, the lumber mills that remain are those that have taken a progressive and innovative approach to lumber production — mills like Laurel Lumber.

Laurel Lumber is a privately owned company that operates a remanufacturing plant specializing in drying and dressing one-inch boards from southern yellow pine. The boards are available untreated, in four- and six-inch widths. Laurel Lumber has been in operation for thirty years. Until five years ago, the plant relied upon natural gas to directly heat its kilns. But a steady annual increase in the price of natural gas prompted the company to explore new energy alternatives that are more cost effective and energy efficient. From 1999 to 2005 the price of natural gas jumped from approximately \$3.00 per thousand cubic feet to over \$8.50 (Energy Information Administration 2007).

“Due to the high cost of fuel, we needed to find a cheaper way of drying the lumber,” says Patsy Brown, plant manager at Laurel Lumber for the past four years. “We were also having a problem with the buildup of wood waste.”

A biomass energy program provided a solution to both of these problems. In 2004, Laurel Lumber discontinued the use of its natural gas-fired kilns and began

using woody biomass to meet a significant portion of its energy requirements (Figure 1). Using a \$300,000 low-interest loan awarded by the state's Division of Energy Investment Loan Program, Laurel Lumber installed a steam boiler, which allows the plant to use waste wood as fuel to heat the kilns that dry the lumber.

The green lumber first enters the kilns, where it is dried using steam generated from the boiler. The dried wood then travels to the planer, where it is planed and trimmed. Shavings created by this process are captured and transported through a network of ducts directly into a storage silo (Figure 2), which in turn feeds the boiler. Ash created by burning woody biomass is rerouted back into the boiler, where most of it burns off. All partially combusted debris is cleaned from the bottom of the boiler every three months. Two workers oversee this process, and a general maintenance employee rotates throughout all sectors of the plant, which currently operates with a total of thirty-three employees.



Figure 1. Woody biomass provided Laurel Lumber with lower energy costs than natural gas.

PHOTO COURTESY OF LAUREL LUMBER.



Figure 2. Dried wood shavings are kept in a storage silo that feeds the boiler. PHOTO COURTESY OF LAUREL LUMBER.

Although Laurel Lumber has found success with this system, the shift to using biomass for energy production did present some obstacles. Plant manager Brown identified several challenges in getting the biomass project off the ground, specifically citing high initial installation costs of the boiler and piping systems used to connect the wood chips to the silo. Still, Brown believes that despite the high initial costs, the system will continue to pay for itself over the years. Each year, the biomass program saves Laurel Lumber approximately \$200,000 in production costs.

When asked if any areas of the system could be improved, Brown mentioned the silo used to store the biomass, stating that it is often difficult to tell how much biomass fuel remains within the silo at any given time.

Laurel Lumber's endeavor to invest in alternative energy sources like woody biomass is an innovative and creative approach to solving a problem that afflicts many other similar industries nationwide. As natural gas prices continue to rise, programs that use renewable sources such as Laurel Lumber's will emerge as viable, long-term alternatives to a rapidly depleting resource. For now, Brown expresses her satisfaction with the company's present biomass program and predicts the plant will continue to use biomass as a means of energy production in the future. Asked if she would recommend the use of biomass as an energy source to other lumber mills, Brown confidently replied, "most definitely."

For more information regarding specific concerns about wood-to-energy facilities, refer to the other fact sheets, case studies, and community economic profiles available in this series at <http://www.interfacesouth.org/woodybiomass>. Additional information is available at <http://www.forestbioenergy.net>.

References

Energy Information Administration. 2007. Natural Gas Summary. <http://www.eia.doe.gov/> (accessed April 10, 2007).

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