

A Master Plan to Reduce Wood Waste: Residuals Solutions of Montello

CASE STUDY



BIOMASS



SOLAR



WIND

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Glen Oak Lumber & Milling, Inc. of Montello, Wisconsin is one of the nation's largest and most diversified hardwood lumber and millwork manufacturers. The company's wood products are produced and distributed by state-of-the-art facilities in seven states. As its facilities have expanded, they have produced an increasingly large supply of wood byproducts such as shavings, sawdust, ground knots and scraps. Recently, company management realized that instead of treating this growing supply of byproducts as waste, it could instead explore the material's potential for new products and product lines. To capitalize on this concept, Glen Oak recently established a new company, Wood Residuals Solutions, and recently constructed a 22,500 square foot production facility, also located in Montello, Wisconsin.

Today, Wood Residuals Solutions develops and produces Densified Bio Tech FuelTM, a wood byproduct that can be used as fuel for energy production. The new company also screens, processes and packages wood shavings for animal bedding, producing wood flour for the wood/plastics composite industry, and colorizing mulch for landscaping applications.

HEATING THE NEW PRODUCTION PLANT

Wood Residuals Solutions installed a wood-fired boiler to meet the heating needs of the Montello facility. This decision supports the company's commitment to renewable fuels and demonstrates the value of its densified wood products. The wood-fired boiler provides 100 percent of the facility's space heating. The feed system for the boiler is designed to use wood pellets, but it also works with the company's densified wood products. This system will displace approximately 56,000 therms of natural gas annually, resulting in a payback period of approximately four years, depending on natural gas prices. Wisconsin Focus on Energy awarded Wood Residual Solutions an Implementation Grant of \$20,000 to reduce the capital costs associated with the project.

Jeff Rabl of Wood Residuals Solutions explains that there were several significant reasons for installing the wood biomass heating system. First, the company intends to use the system as a laboratory for gathering data on the performance of its densified fuel product via stack emission sensors and burn residue



PHOTO COURTESY OF JOHN KATERS

Underground pipes connect the biomass boiler to the building heating system. The hopper that feeds the wood fuel to the burner is shown on the right.

measurements. Second, it will demonstrate the business and environmental advantages of using its product. The plant's fuel production line is designed to provide flexibility so it can eventually incorporate other types of wood waste, such as construction and demolition waste, forest byproducts and agricultural waste into the densified fuel product mix.

MINIMIZING WOOD WASTE IN LANDFILLS

The formation of Wood Residuals Solutions supports Glen Oak's ongoing commitment to full resource utilization. The company plans to achieve 100 percent wood fiber recovery while creating profitable new business opportunities.

The company is also focused on minimizing the amount of wood waste in landfills by promoting the use of renewable fuel in south central Wisconsin. While it will market its Bio Tech Fuel primarily to large coal-burning plants, the company sees its Montello facility as a valuable demonstration for other manufacturers and commercial operations that want to use renewable energy. Glen Oak considers businesses wanting to replace natural gas heating with a renewable fuel to be a strong secondary market for wood fuel pellets. Wood Residual Solutions will highlight its own wood-fired boiler system as part of a larger message about the green initiatives that Glen Oak companies are undertaking, and invites companies in south central Wisconsin that are considering the use of wood-fired boilers to tour its facility.



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Date Completed: July 2007

CASE STUDY FACTS

PERSONNEL	<p>Owner: Wood Residuals Solutions, LLC System installer: Decton Iron Works, Inc., Butler, Wisconsin www.decton.com</p>
BUILDING AND SITE	<p>Location: Montello, Wisconsin Square footage of structure: 22,000 sq ft Use of structure: Production of wood byproducts Renewable resources on site: Process wood waste</p>
RENEWABLE ENERGY EQUIPMENT	<p>Renewable energy technology: Biomass combustion boiler System components:</p> <ul style="list-style-type: none"> ■ Burnham Series 4N natural draft firebox boiler (40 HP) ■ Brock hopper bin ■ Fuel feed system ■ Fuel metering bin and control panel ■ Water transfer pump and piping ■ Plant heaters
EQUIPMENT COSTS AND BENEFITS	<p>Economic costs and benefits:</p> <ul style="list-style-type: none"> ■ Total project cost: \$189,350 ■ Implementation grant from Focus on Energy: \$20,000 ■ Estimated payback: 4 years to 5 years <p>Energy and environmental benefits:</p> <ul style="list-style-type: none"> ■ Projected BTU production/year: 56,000 therms ■ Percentage of load offset: 100 percent of natural gas load