RENEWABLE ENERGY

Sharing heat and energy savings: Vesper Pallet Company and Woodruff Lumber

CASE STUDY

BIOMASS

SOLAR

WIND

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Biomass is an important renewable energy source in Wisconsin. In particular, wood waste is sparking renewed interest throughout the state for a variety of applications. A good example is the unique arrangement between the Vesper Pallet Company and Woodruff Lumber. The Vesper Pallet Company, located in Vesper, Wisconsin, 10 miles northwest of Wisconsin Rapids and its next door neighbor, Woodruff Lumber, share a system that uses industrial wood waste as an inexpensive and readily available source of heat.

The Vesper Pallet Company needed an economical source of process heat to satisfy a new international requirement to treat pallets for pest control. This requirement was enacted to reduce the global spread of pests through infected packaging materials such as wooden pallets and crates. Manufactured wood packaging must be heated or chemically fumigated to kill pests. Heat treatment is considered by some to be a more environmentally beneficial method than chemical fumigation. To meet this standard, Vesper now heat treats pallets at elevated temperatures of 133° F for at least 30 minutes.

A UNIQUE BUSINESS RELATIONSHIP

In order to cut energy costs, Vesper teamed up with its neighbor, Woodruff Lumber, to replace an antiquated heating system with a newer, more efficient industrial grade wood-fired boiler. Vesper and Woodruff Lumber have a long standing and unique business relationship. Woodruff supplies Vesper with untreated wooden pallets that Vesper heat treats and distributes for sale throughout the Midwest and other American markets. Woodruff Lumber also transfers its wood process waste to Vesper. Vesper chips and screens it and returns it to Woodruff Lumber for use as a consistent, high quality fuel in Woodruff's boiler. The boiler supplies hot water to provide space heat for both companies and process heat for Vesper's pallet treatment oven.

AVAILABLE ALTERNATIVES

Both companies realized that replacing Woodruff's antiquated boiler was a necessary step in improving overall plant energy efficiency. They considered capital and operating costs associated with both natural gas and wood-fired boiler systems. Initial capital investments for wood boilers often exceed those that burn natural gas—primarily due to additional equipment needed to transport, store or otherwise handle the wood chips. Operating costs for wood burning systems depend greatly on the distance the fuel must travel. In this case, the two neighbors had the advantage of close proximity. The higher capital investment costs for a new wood-fired system were outweighed by the savings associated with the use of a readily available and inexpensive source of a wood waste energy feedstock. Also, if the wood waste from Woodruff's production were not used as fuel, the company would need to pay for its disposal. Moreover, while a natural gas boiler system would have been less expensive to install, natural gas prices have trended upward over the past decade and have exhibited both year-to-year and seasonal volatility.

PHOTO COURTESY OF JOHN KATERS

Vesper Pallet Company heat-treats its products to meet international pest management standards.

THE RIGHT CHOICE

In light of the available alternatives, Vesper and Woodruff chose to replace the existing boiler with a new wood-fired system. The Vesper Pallet Company subsequently received a Renewable Energy Implementation Grant of $20,200 from Focus on Energy for a new Hurst wood boiler. The installation of the new boiler allows Vesper Pallet to continue using approximately 1,600 tons of wood waste generated on-site each year, avoiding disposal costs. This wood-fired boiler was installed at a cost of $290,000 and should produce approximately 125,000 therms/year resulting in a three-year payback. It also allows Vesper Pallet to meet the growing customer demand for heat-treated pallets that meet the standards for international trade.

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Date Completed: May 2008

CASE STUDY FACTS

PERSONNEL	**Owner:** Vesper Pallet Company **System installer:** Messersmith Manufacturing, Bark River, Michigan www.burnchips.com
BUILDING AND SITE	**Location:** Vesper, Wisconsin **Square footage of structure:** 20,000 sq ft, with process heating for the 700-sq-ft treatment oven. **Use of structure:** Operations facilities for the Vesper Pallet Company and Woodruff Lumber **Electrical Supplier:** Alliant Energy **Gas Supplier:** WE Energies
RENEWABLE ENERGY EQUIPMENT	**Renewable energy technology:** Wood biomass boiler system **System characteristics:** ■ Hurst Model S1-150 firebox boiler rated for 30 PSI water, rated at 3.85 MMBtu/hour. Messersmith Manufacturing installed the boiler and provided the burner. ■ Induced draft fan—7.5 hp motor and variable frequency drive ■ Storage bin and conveyor system
EQUIPMENT COSTS AND BENEFITS	**Economic costs and benefits:** ■ Total project cost: $290,000 ■ Implementation grant from Focus on Energy: $20,200 ■ Estimated payback: 3 years **Energy and environmental benefits:** ■ Therms Saved: 125,000 ■ 100 percent of load for building and heat treating system

Focus on Energy works with eligible Wisconsin residents and businesses to install cost effective energy efficiency and renewable energy projects. Focus information, resources and financial incentives help to implement projects that otherwise would not be completed, or to complete projects sooner than scheduled. Its efforts help Wisconsin residents and businesses manage rising energy costs, promote in-state economic development, protect our environment and control the state's growing demand for electricity and natural gas. For more information, call **800.762.7077** or visit **focusonenergy.com**.

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