

Taking advantage of the New Jersey Clean Energy Program

Biomass system helps lumber distributor chop energy costs and recycle wood waste.

A biomass system uses natural replenishable organic matter to produce energy, including heat, electricity and steam. The Rex Lumber Company of Englishtown, NJ, has a continuous supply of plant matter in the form of wood waste, and is using this waste to dramatically cut its energy costs. The New Jersey Clean Energy Program helped Rex Lumber make it happen with a rebate for nearly 50% of the cost to purchase and install the biomass system.

Established 56 years ago, the company is a leading wholesale distributor of hardwood lumber and a manufacturer of custom wood molding. Long-term clients include furniture manufacturers, and musical instrument manufacturers like Steinway Piano and Gibson Guitar. The company's Englishtown location includes a facility that houses drying kilns and a mill where the moldings are manufactured.

A high-energy production process

Before it can be crafted into fine furniture or a concert hall piano, newly cut (green) lumber must undergo a lengthy drying process that includes kiln-drying. At Rex Lumber, six kilns work 24 hours a day year-round to dry millions of feet of lumber. For 30 years, the company used natural gas to provide heat for the kiln-drying process. "We were spending an average of \$100,000 a year on natural gas to heat the kilns alone," said Ben Forester, the company's president and CEO. Additionally, the annual cost for natural gas required to heat the mill totaled about \$20,000.

In the kiln facility, Rex Lumber incurred annual electric costs of \$75,000. The cost was due in part to other equipment necessary in the kiln-drying process, such as fans that continuously pass air over the wood to carry away excess moisture.



The Rex Lumber facility houses 6 wood-drying kilns that run 24 hours a day all year. By replacing a natural gas system with a wood-waste boiler to heat the kilns, the company eliminated an average annual gas bill of \$100,000. The silo in the center stores the wood waste.

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The economical, clean energy alternative

When the company examined its options for replacing the natural gas system, they found the answer right next door in the mill. “We decided to install a clean burning boiler fueled by saw dust and wood waste from the molding cutting process,” said Forester. Rex Lumber produces approximately 44,720 cubic yards of wood waste annually. Previously, the waste was trucked away to a landfill for disposal.

To implement the system, Forester and his mill manager, Larry Reitsma, worked with a consultant from Novis Energy, an advisor to the wood industry. Since Rex Lumber produced more wood waste – and therefore more steam – than necessary in the kiln-drying process, the consultant offered another cost-saving idea. Said Reitsma, “He recommended that we install a steam turbine generator that uses excess steam to provide 150 kW of electricity to the facility.”

Southern Engineering of Birmingham, Alabama, installed the system, which consists of the wood waste boiler, the steam turbine generator and related equipment, including a condenser and cooling tower. Rex Lumber constructed a separate 25’ x 50’ building to house the new boiler and a silo for wood waste storage.

The power of incentives

Rex Lumber qualified for a New Jersey Clean Energy Program rebate that covered close to half of the system’s purchase and installation expense. Forester and Reitsma worked with representatives of JCP&L, who administered the rebate. “JCP&L was extremely helpful,” said Forester. “They walked us through the entire process and provided guidelines for the steam turbine generator installation.”

Savings on energy costs and more

With the installation of the system, the gas bill for kiln drying was eliminated. The cost to heat the mill with gas has also been eliminated because steam is now used. According to Forester, approximately 50% of the kiln facility’s electricity is provided by the steam turbine generator. In the summer, the generator delivers enough electric power for both the kilns and the mill.

Forester also reports that emissions from the wood waste boiler are well below federal and state limits. The New Jersey Department of Environmental Protection performs unannounced annual inspections to verify emission levels and Rex Lumber performs regular required testing.

“We wanted to be self reliant,” said Forester, “and this system does just that and more. Not only do we have substantial energy savings, we have a use for wood waste that is far more environmentally sound.”

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The wood waste boiler supplies heat for the kilns, and produces enough excess steam for a turbine generator to provide 150 kW of electricity for the facility.

