



From Sawdust to Savings: Implementing Cost-Effective Energy Measures in a Wood Products Plant

A student and faculty team from the Southern New England Industrial Training and Assessment Center (SNE-ITAC) conducted an energy assessment for a hardwood manufacturing facility. Sponsored by the U.S. Department of Energy, the assessment focused on identifying practical energy efficiency opportunities within the plant's motor-driven systems, steam generation, compressed air, and lighting. The implemented recommendations emphasized low-cost, fast-payback measures to reduce utility expenses and improve operational efficiency across the facility.

Assessment Results

- There were 13 recommendations identified by the team, resulting in over \$230,000 in annual savings
- Of the 13 recommendations given by the team, 8 were implemented
 - These 8 implementations are estimated to save the site approximately \$71,402 annually, with an implementation cost of approximately \$14,180
- 150,520 kWh and 282 kW of annual electricity savings were implemented along with 205 MMBtu of diesel savings



Hull Forest, Inc., located in Pomfret, CT

Summary

Located in Pomfret, Connecticut, this multi-acre hardwood manufacturing facility has operated continuously since 1965, evolving from a modest sawmill into a major regional producer of lumber and wood-based products. The company manages over 30,000 acres of woodland and produces more than 10 million board feet of lumber annually. Its product lines include hardwood flooring, timber, firewood, and mulch, and its operations reflect a longstanding commitment to sustainability.

Utility costs, especially from electricity and diesel, remained a significant operational expense. The largest energy consumers included a suite of motor-driven equipment, steam-based drying kilns, compressed air systems, and general lighting. Routine operations, such as late compressor shutdowns and unoptimized power factor, contributed to elevated demand charges and inefficiencies across core systems.

Assessment Methodology

The SNE-ITAC arrived on site with a team of six students and two professors. The assessment was led by Center Director Dr. Liang Zhang. At the plant, facility personnel gave the team a tour of the facility while they worked

Using Waste for Fuel

The facility operates a process heating system that repurposes waste sawdust generated during milling as fuel for its primary steam boiler. This biomass-fired system supplies process heat for the drying kilns, significantly reducing reliance on purchased fuels. By diverting wood waste from disposal and converting it into thermal energy, the plant minimizes landfill use and lowers fuel costs.

to identify possible recommendations around the building. Following the tour, the team discussed possible recommendations and the data to be collected for the final report. The team then collected necessary data and discussed their findings with the plant manager.

Steam Recommendations

The facility's diesel-fired auxiliary boiler supplements the primary wood-fired unit during colder months. Insulating steam lines and repairing failed traps reduced unnecessary heat loss and improved steam delivery efficiency. These changes lowered diesel use by decreasing wintertime reliance on the

auxiliary boiler, resulting in meaningful fuel savings with minimal disruption to normal operations.

Compressed Air Recommendations

The assessment revealed energy waste due to persistent air leaks and unnecessarily high compressor intake temperatures. Addressing these issues began with leak detection and repair, reducing unnecessary compressor power draw. Rerouting the compressor's intake to draw cooler ambient air improved compression

efficiency, also increasing savings. Finally, shutting down the compressor on non-working days also served to reduce electricity consumption.

Implementation Results

Eight energy-saving measures were implemented, including lighting upgrades, compressed air fixes, and steam improvements. Most had quick paybacks while reducing electricity and diesel use. The changes improved equipment performance and cut operating costs without requiring major

capital investment. The facility's readiness to implement these quick payback recommendations shows a commitment to energy efficiency. However, the fact that many of the larger capital projects that were recommended were not implemented demonstrated the difficulty of acquiring and allocating capital to energy-efficiency related projects that small-medium manufacturers face.

Implemented Recommendations

Assessment Recommendations	Annual Resource Savings	Total Annual Savings	Capital Costs	Simple Payback
Pay Utility Bills on Time	-	\$287	-	-
Optimize Plant Power Factor	-	\$48,394	\$1,009	0.02 years
Eliminate Leaks in Compressed Air Lines	22,714 kWh 31 kW	\$2,309	\$1,900	0.82 years
Shut Down Compressor when not in use	97,518 kWh 134kW	\$9,913	\$75	0.01 years
Install Compressor Intakes in Coolest Locations	8,165 kWh 11 kW	\$830	\$428	0.52 years
Install/Repair Insulation on Steam Lines	111 MMBtu Diesel	\$3,022	\$4,212	1.4 years
Repair and Eliminate Steam Leaks	94 MMBtu Diesel	\$2,564	\$1,995	0.78 years
Utilize higher Efficiency Lamps and/or ballasts	22,123 kWh 106 kW	\$4,083	\$4,561	1.12 years
Total	150,520 kWh 282 kW 205 MMBtu Diesel	\$71,402	\$14,180	-

