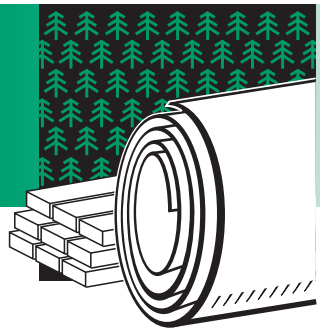
FOREST PRODUCTS

Project Fact Sheet

A Steam Challenge Case Study



GEORGIA-PACIFIC'S INSULATION UPGRADE LEADS TO REDUCED FUEL COSTS AND INCREASED PROCESS EFFICIENCY

BENEFITS

- Eliminated purchased fuel
- Saved $138,560 in energy costs
- Payback of 6 months
- No required downtime
- Better personnel protection
- Reduced CO_2 emissions

Among Georgia-Pacific's environmental goals and principles are conservation and sustainable use of resources, including energy efficiency. Georgia-Pacific is committed to reducing the amount of fossil fuel and purchased electricity consumed per unit of product.

Summary

Georgia-Pacific was looking for opportunities to reduce purchased fuel costs at its plywood plant in Madison, Georgia. By insulating steam lines and replacing 70 steam traps, the plant was able to reduce fuel costs, increase process efficiency, and improve plant safety.

Plywood Plant Background

The plant runs 24 hours, 7 days a week and employs about 400 people. The plant normally uses wood bark and wood by-products for fuel. However, at certain times of the year, not enough bark was available so additional fuel had to be purchased from outside sources.

The process of making veneer layers in a plywood panel involves soaking logs in water to soften them, which allows them to more easily pass through the lathe. The veneer is then dried at 405°F. From the dryers, the veneer goes to the glue line where layers are pressed into panels. The panels then go to the saw line for trimming before banding and shipping.

The Challenge

Because the steam lines to the dryer were uninsulated, heat was radiating out of 1500 feet of saturated steam lines and energy was being lost. A loss of heat meant a loss in pressure, resulting in a reduced temperature. Darryl Jackson (the plant's boiler superintendent), along with the area manager, the plant manager, and others met frequently to discuss the situation.

The Approach

Insulating the steam lines seemed to be the most obvious solution to the heat loss problem. The project team used a computer program called 3E Plus from the North American Insulation Manufacturers Association (NAIMA) to determine the insulation thickness. Computer projections estimated that insulation would reduce the heat loss along the steam lines leading to the dryers. Reducing this heat loss increases the operating temperature by 15°F, while maintaining the process temperature throughout the lines. This improved temperature combination would result in a faster and more efficient veneer plywood process.

Plant employees installed 2" thick mineral fiberglass pipe insulation—the most effective thickness to reduce heat loss, maintain process temperature, and bring down the pipes' surface temperature.

Benefits

Improved Process Efficiency—Reduced steam usage by approximately 6,000 lbs/hour—equivalent to saving about 18 tons of fuel per day or $52,560 a year. The hotter, more consistent temperatures in the dryers decreased drying time, which resulted in a faster, more efficient veneer plywood process.

Dependence on Outside Fuel Eliminated—By insulating the piping, Georgia-Pacific has been able to eliminate the purchase of fuel and is now selling some of their excess fuel to a paper company.

Reduced Pollutants—By reducing fuel consumption, the Madison plant has been able to reduce the amount of ash being generated and landfilled. Georgia-Pacific estimates that the energy savings have reduced CO_2 emissions by 5-6%.

Better Personnel Protection—Prior to installing the insulation, the piping in the Madison plant had a surface temperature of approximately 400°F. With insulation, the surface temperature has been reduced to approximately 85°F—a safer level for personnel protection.

Additional Savings—In addition to insulating the steam lines, Georgia-Pacific also replaced 70 steam traps. "We've probably gained 10% condensate return from replacing the thermal dynamic traps," said Jackson. "By increasing the condensate by 10%, our annual savings will be about $86,000 based on a fuel cost of $8 per ton."

Total Energy Savings—Georgia-Pacific estimates that the amount of energy saved by insulating the steam lines to the dryers and installing new steam traps is 62,899 MMBtu.

Payback on Initial Investment—With implementation costs of $69,280 and annual savings of $138,560, the payback period at the Madison plant was only 6 months.

No Downtime Required—A major advantage of using fiberglass insulation on the steam lines was no required downtime. Several areas that could not be insulated while the line was running were insulated on scheduled down days.

Industries of the Future—Forest Products and Agenda 2020

*In November 1994, DOE's Secretary of Energy and the Chairman of the American Forest and Paper Association signed a compact, establishing a research partnership involving the forest products industry and DOE. A key feature of this partnership was a strategic technology plan—**Agenda 2020: A Technology Vision and Research Agenda for America's Forest, Wood and Paper Industry**. Agenda 2020 includes goals for the research partnership and a plan to address the industry's needs in six critical areas:*

- *Energy performance*
- *Environmental performance*
- *Capital effectiveness*
- *Recycling*
- *Sensors and controls*
- *Sustainable forestry*

For each of these areas, task groups including industry, university and government representatives have developed detailed research agendas called research pathways—all of which are consistent with Agenda 2020's goals.

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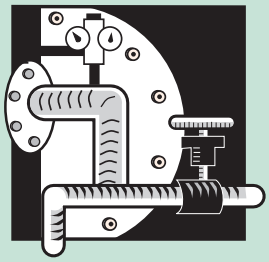

The Steam Challenge is a public-private initiative between the U.S.Department of Energy, the national non-profit Alliance to Save Energy, and several private companies and associations. It promotes the comprehensive upgrade of industrial steam systems so U.S. manufacturers can increase productivity and lower production costs.

Steam Challenge assists the forest products industry and other OIT Industries of the Future by identifying near-term gains in energy efficiency these industries can achieve by adopting existing technologies.

PROJECT PARTNERS

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