



The Jackson Paper Manufacturing mill in Sylva, NC. Courtesy photo by Jackson Paper Manufacturing Company.

Paper Mill's Rebuilt Biomass Boiler Supports Jobs and Lower Emissions

The Jackson Paper Manufacturing mill in Sylva, NC, recently faced a stark choice over how to upgrade its 40-year-old biomass boiler. Converting to natural gas was cheaper than continuing to rely on wood waste from the region's wood product mills. But hundreds of local jobs in mills, and related sectors like trucking, would be at risk and emissions would increase if natural gas replaced biomass to fuel the boiler. Supporting rural jobs and mitigating climate change are U.S. Department of Agriculture (USDA) Forest Service priorities.

Jackson Paper produces top-quality, 100 percent recycled containerboard. The process starts with bales of old corrugated containers from recycling centers that source from places like local grocery store chains. The corrugated containers are fed into a large blender, called a pulper, which mixes them with water to form pulp. Contaminants, such as dirt, staples, tape, plastic, and adhesives, are removed to yield a clean pulp, which is processed into high-quality recycled paper.

"We decided to install new controls and continue to use biomass with the cost difference covered by a Forest Service Community Wood Energy grant," said Carr Tyndall, president of Jackson Paper Manufacturing. "We will continue to purchase over 80,000 tons of biomass each year for boiler fuel, which makes the economics much better for the wood products businesses in our region."



Josh Carnes, assistant production and quality manager at Jackson Paper Manufacturing. Courtesy photo by Jackson Paper Manufacturing Company.

About 30 wood product manufacturers in western North Carolina, eastern Tennessee, and upstate South Carolina use timber from public and private lands, and they will be able to keep selling their sawdust and wood chips instead of paying to send their biomass to the landfill. The Jackson Paper mill is their only remaining customer after the recent shuttering of another area mill.

BIOMASS BOILER UPGRADE MEANS LOWER CARBON FOOTPRINT

“Choosing to stick with biomass means we are maintaining the mill’s annual carbon footprint of about 1,000 tonnes of carbon dioxide (CO₂) equivalent. Opting for natural gas would have seen our emissions increase dramatically to 34,000 tonnes of CO₂ equivalent,” Tyndall said.

The upgraded biomass boiler is delivering improved energy efficiency with the installation of a programmable logic controller (PLC) system to replace the single-loop controllers that were past their useful life expectancy. The system reduces the air going through the boiler, which means less energy is wasted on heating excess air.

PROJECT DELIVERS IMPROVED EFFICIENCY, RELIABILITY, AND COMPETITIVENESS

The new PLC system is enhancing rural economic competitiveness—a Forest Service priority—by giving the operators much better troubleshooting tools. These tools are not only more accurate than manual checks, but they are safer because operators are interacting with the PLC system and not directly with the boiler’s mechanical systems.

“The boiler upgrade has also improved reliability by replacing the boiler’s north wall, as well as replacing damaged generating tubes and inlet air preheating tubes. These changes will reduce tube failures and result in less downtime for the boiler,” said Josh Carnes, assistant production and quality manager at Jackson Paper Manufacturing.

A sonic soot blower was also installed as part of the upgrade. The sonic soot blower prevents ash and particulates from building up. It uses high-energy, low-frequency sound waves that debond particulates. Using sound waves means that, unlike steam soot blowers, sonic soot blowers eliminate concerns about corrosion, erosion, and mechanical damage and do not produce effluents.

More Information

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FAST FACTS

- Upgraded biomass boiler supports hundreds of local jobs at 30 wood product manufacturers
- Related sectors, like trucking, also benefit economically
- Biomass boiler saves 33,000 tonnes of CO₂ equivalent annually compared to natural gas
- PLC system gives operators better and safer troubleshooting tools



The Jackson Paper mill produces top-quality, 100 percent recycled containerboard. Courtesy photo by Jackson Paper Manufacturing Company.

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