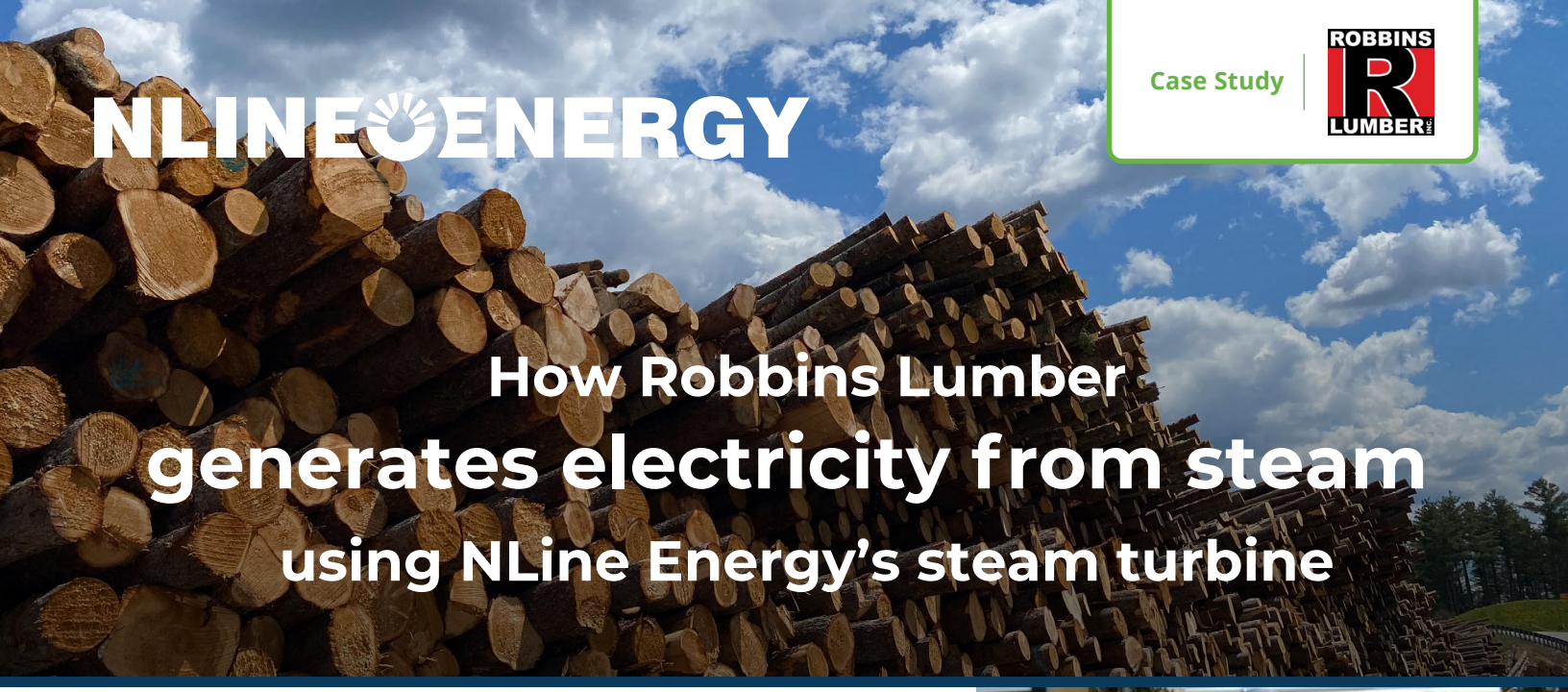
NLINE ENERGY

Case Study | ROBBINS LUMBER



How Robbins Lumber generates electricity from steam using NLine Energy's steam turbine

In Search of the Right Turbine

Robbins Lumber is a family-owned mill that has processed Eastern white pine trees into boards across five generations. Recently, management of the mid-sized, Maine-based milling operation considered generating electricity using the steam that their boilers produce.

"We have a 250-horsepower boiler," said Win Smith, President of Robbins Lumber, East Baldwin. "It has the capability of producing three hundred pounds of pressure, but we ran it at fifteen pounds of pressure to produce steam. We then use that low-pressure steam to dry our lumber and assist in heating of our sawmill and planer mill during the winter. This low-pressure system played an important role at the mill."

Win was happy with what he could do with the mill's steam, but he knew more could be done. He searched for a turbine that could turn the boiler's steam into electricity to offset the power the mill purchased from the electrical grid. Every turbine Win found might work for very large mills, but not his smaller facility—that is, every turbine except NLine's.

Project Statistics	
Species	Eastern white pine
Sawmill Output	20 MMBF/year
Primary Boiler Fuel	Biomass
Pressure Drop	270 psig to 15 psig
Steam Flow	7.5 MLbs/hour
20-Year GHG Savings	20,700 tons
Annual Generation	1,740,500 kWh
Generation Capacity	275 kWe
Year Installed	2022
Simple Payback	< 2 years

"I enjoy working with the NLine team because of their **professionalism** and **levelheadedness.** They really go **above and beyond.** Also, **their turbine is perfect** for our application and many other lumber mills."

Win Smith
President of Robbins Lumber, East Baldwin

NLINE ENERGY

Case Study | ROBBINS LUMBER INC

Generating In-House Electricity

When the NLine Energy team visited the mill, they took the time to understand how the mill operates and what facilities were available. The team then explained to Win that the mill could start running its current boiler at high pressure instead of low pressure. This simple modification allowed Robbins Lumber to run the same steam used to dry lumber and heat buildings through a turbine first and generate usable power.

The NLine team presented Win with the idea of using its steam turbine to handle the power generation. The proprietary turbine is a compact energy-recovery system that generates electricity from the pressure and flow energy previously wasted through a steam system's pressure-reducing valve.

Understanding that Robbins Lumber is a relatively small mill and didn't have the staff to handle the project alone, the NLine team took care of everything involved with the installation. The team found grants to help Robbins Lumber afford the project and worked with the state and power utility to obtain the necessary allowances to install the turbine.

"The installation was a turnkey project," said Win. "The NLine team's communication with all project vendors and contractors led to the project's success during the heart of the COVID-19 pandemic."

▲ The steam turbine fits Robbins Lumber's East Baldwin mill perfectly.

Results

Strong Solution for Sawmills

The steam turbine is a robust addition that **recovers energy that would otherwise be wasted** through the release of steam pressure. It's compact, efficient, and capable of being installed in mills where larger turbines won't fit.

Turnkey Process

The steam turbine was delivered turnkey. **NLine handled everything relating to the installation.** This included managing vendors and contractors seeking a variance from the state to operate the turbine twenty-four hours a day without constant supervision.

Financial Savings

Robbins Lumber will experience a **remarkable return on its investment:** The turbine is projected to pay for itself in less than two years.