



Rapid-Line Inc. Sees Green in Reducing Its Energy Use



Rapid-Line Inc.

Established: 1926

Headquarters: Grand Rapids, Michigan

Employs: 101

Annual Sales: \$10 - \$25 million

Natural Gas Savings: 4,400 Mcf

About the Green Suppliers Network

Working in collaboration with the U.S. Department of Commerce (DoC), the U.S. Environmental Protection Agency (EPA) established the Green Suppliers Network to help small and medium-sized manufacturers stay competitive and profitable while reducing their impact on the environment.

The Green Suppliers Network review took place in July 2007. The review team consisted of:

The Right Place, Inc., a NIST MEP
Rick Fleming
Bill Stough

The Grand Rapids-based, full-service metal fabrication and tooling shop designs, manufactures, and finishes metal products for office furniture, automotive, and other industrial customers. It provides engineering, laser cutting, powder coating, machining, stamping and other metal fabrication services. In 2006, the company turned to the Green Suppliers Network to help reduce its operational costs and environmental impact.

One of Rapid-Line's customers, Steelcase Inc. nominated the shop to participate in the Green Suppliers Network and provided significant support for the project. "There is a big push in the industry right now to become more environmentally friendly, and we wanted to be a proactive part of that with our customers," explained Rapid-Line President Mark Lindquist.



Inside view of the infrared curing oven and its 576 reflectors

The Situation:

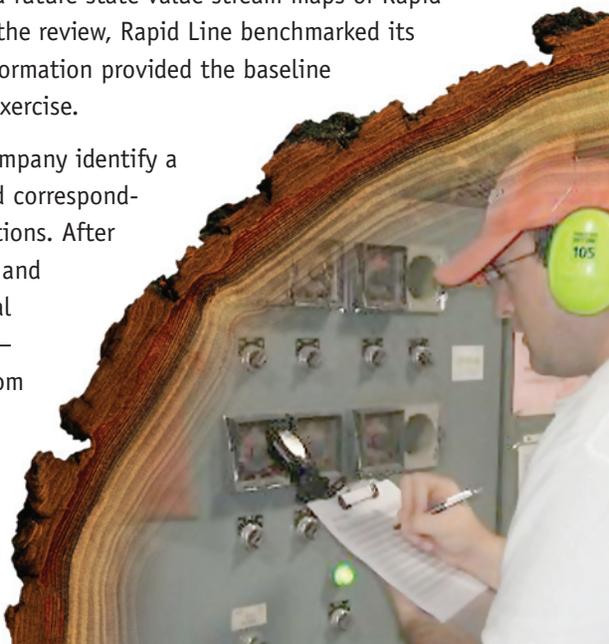
Between 2002 and 2005, Rapid-Line's cost for natural gas, which is used for heating, washing metal parts, and fueling the powder coat curing oven and the rack burn-off oven, had increased from \$3,500 to \$12,000 per month. Lindquist looked to the Green Suppliers Network for recommendations on how curb this energy use. Rapid-Line opted to review its windows product line while paying particular attention to the powder coating process and its energy use.

The Solution:

Lindquist and other Rapid-Line staff worked with the Green Suppliers Network review team to complete current and future state value stream maps of Rapid-Line's windows product line. Before the review, Rapid Line benchmarked its environmental performance. This information provided the baseline data for the value stream mapping exercise.

The value stream map helped the company identify a number of specific opportunities and corresponding cost and waste reduction projections. After reviewing the findings with Fleming and Stough, Rapid-Line focused its initial efforts on natural gas conservation—capturing excess energy and heat from the company's powder coating line in particular.

"We focused on our use of natural gas first because we've observed so many increases in those costs



and there were several things we could do relatively quickly that would have a significant impact,” Lindquist said.

To lower these and other costs, and increase efficiency, the review team drafted improvement ideas, including:

- Installing insulation and industrial-grade fans to capture and redirect excess heat from the paint-line ovens out into the plant in cold weather, increasing the efficiency of the oven heating units and providing enough heat to eliminate the need for furnace heating.
- Installing two, 20-foot-diameter, variable-speed ceiling fans along with baffles on the outer plant walls to heat and cool the plant more efficiently.
- Installing additional insulation around the paint line wash tanks as well as a computerized washer controller that keeps the water system at a constant temperature and three new sets of air knives in the dry-oven help dry parts more efficiently, using less energy as a result.
- Monitoring the external temperature of curing ovens in order to locate and fix thermal leaks.



Cover installed over the curing oven to redirect heat either into the facility or outside depending on the season

Results:

Lindquist compared Rapid-Line’s natural gas reduction efforts to “taking small bites out of an elephant.” He explained that “there wasn’t one single improvement in which significant savings could be achieved. It was only through implementing all the improvements that we could see a significant benefit.” As a result of the combined efforts, Rapid-Line has reduced its annual natural gas consumption by 4,400 Mcf, saving \$46,000.

Rapid-Line is already looking for new opportunities. With the help of an intern provided by the Michigan Department of Environmental Quality, the company is examining opportunities to reduce electricity costs by improving the efficiency of its lighting and machine operations. The company also is exploring ways to reduce its material waste expenditures by increasing the volume and efficiency of its recycling efforts. Planned lean activities include using lean tools in the front offices to improve the efficiency of non-production departments.

“The real value of **Green Suppliers Network** is the resources it makes available. The chance to get someone from the outside to provide training and assistance makes it **worth participating**. It really shows you where there are specific and significant opportunities with a new and fresh perspective.”

—Mark Lindquist, President,
Rapid-Line Inc.

