Nichols Aluminum

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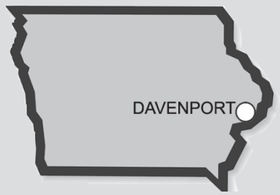

Nichols Aluminum is a division of Quanex, a producer of quality aluminum sheet from recycled materials. One of the four facilities, Nichols Aluminum Casting, uses continuous casting technology to produce coils of aluminum sheet. By recycling aluminum, Nichols Aluminum contributes to the effort of minimizing waste and air emissions. Its customers include building, construction and transportation businesses. The aluminum alloy sheet can be used to manufacture gutters, window molding, storm shutters, highway signs, license plates, trailer sides and many more applications.

Project Background

Recycling aluminum saves energy that is needed to make aluminum from ore, and Nichols Aluminum always ensures that its manufacturing processes are as efficient and environmentally friendly as possible. Nichols Aluminum realized that there is an opportunity to reduce electricity consumption by identifying waste energy in compressed air systems.

Incentives to Change

Nichols Aluminum is one of the most environmentally friendly aluminum sheet producers in North America. As a secondary aluminum manufacturer, any environmental concerns and improvement will help advance the company's green image. By improving the efficiency of the compressed air system and reducing inappropriate end-user compressed air use, Nichols Aluminum shows its effort in energy conservation and environmental concern.

Results

Finding and Fixing Air Leaks

In general, a plant can have compressed air leaks that are responsible for about 10 percent to 35 percent of compressed air cost. Finding and fixing air leaks in the plant can save a significant amount of wasted energy. A total of 18 air leaks were detected. By fixing those 18 leaks, there is an estimated $12,178 per year cost saving opportunity, as well as a savings of 243,553 kWh per year. The cost to repair the current air leaks is about $700 for parts purchasing and the payback is within a month.

Installing Energy Management System

In a regenerative dryer, the purge air consumes about 15 percent of the rated dryer capacity. There are several different ways of reducing the amount of purge air. By adding moisture sensors and making modifications to the current controller, the chamber will only regenerate when needed. The recommendation will save $1,986 per year and with an installation cost of $3,094, the payback is 1.6 years.

Air Blower Retrofit

Tap-outs allow molten metal to be transferred from the melting furnaces to the holders. When molten metal is not being transferred, tap-outs are plugged and compressed air is used to cool the seals and avoid molten metal spills. The application requires a significant volume of air, but not at a high pressure. Therefore, an air blower will be an alternative to the current procedure. The cost savings is $19,055 per year and the installation cost of $14,481 has a payback of about a year.

Project	Annual Cost Savings	Environmental Results	Status
FIXING AIR LEAKS	$12,178	243,553 kWh	Implementing
INSTALL ENERGY MANAGEMENT SYSTEM	$1,986	39,732 kWh	Implementing
AIR BLOWER RETROFIT	$19,055	381,122 kWh	Implementing

Air Pollutants Diverted in Tons

	Total for all sectors
SO2	1.98
CO	0.20
NOX	0.94
VOC	0.03
LEAD	0.0
PM	0.05

Green House Gases Diverted in Tons (CO2 Equivalent)

	Total for all sectors
CO2	368.90
CH4	12.16
N2O	4.02
CFCS	4.46