

**At A Glance:**

- Implemented over 85% of recommendations to save an estimated \$105,291
- Eaton successfully implemented five out of seven recommendations, all of which required less than 1 year of payback

“The IAC visit gave us more information about reducing system air pressure in our plant. This helped us to carry out that recommendation.”

-Eaton Representative

Energy Saved

EATON

Assessment Overview

A team of students & faculty from the IAC at Syracuse University performed an industrial assessment for Eaton Corporation. The assessment was sponsored by the Department of Energy and was led by Center Director Frederick J. Carranti, P.E., a faculty member in the Department of Mechanical & Aerospace Engineering. The IAC team employed a comprehensive assessment methodology that considered energy, waste, & process-related improvements. The team examined all large energy-consuming equipment & systems for potential savings. They compiled a waste inventory & investigated the potential for waste reduction or improved disposal/recycling methods.

The team also examined manufacturing processes for potential improvements, & emerging technologies were assessed for potential contributions to efficiency improvements.

Summary

Through the Department of Energy's *Industrial Assessment Center* (IAC) located at Syracuse University, a vacuum interrupter manufacturer was able to realize significant savings from reductions in energy & productivity costs. Through recommended changes to the compressed air system, extending acid life and closing a heated water loop, the company is saving approximately \$105,291 annually.

Applications:

The Syracuse University Industrial Assessment team identified opportunities to decrease energy usage, increase capacity, improve product quality, & enhance employee safety and comfort. The Industrial Assessment Center team accomplished this after conducting a comprehensive assessment of the company's systems and utility scheme. The team's goal was to identify significant opportunities for cost savings, quality improvements, & productivity enhancement.

Company Background



Eaton Corporation is headquartered in Cleveland, Ohio and was founded in 1911. Through its five sections including electrical, aerospace, hydraulics, filtration and vehicle, the company is the leader in end-to-end electrical components and systems for power quality, distribution and control, systems and services for industrial equipment, aerospace fuel, and hydraulics/pneumatics for commercial and military use. Eaton as a company believes that growth through acquisition is the quickest way to grow their business whilst selling parts of the business that don't perform. Eaton's vacuum interrupters offer environmentally friendly products that are highly reliable, low maintenance and have a long lifetime.

Overview of Recommendations:

The table below summarizes specific recommendations that were identified during the assessment and were implemented or will be implemented in the near future. These projections of savings & capital costs identified during the assessment have been established through engineering analyses and research. As a result, five recommendations were implemented by the company and are listed below.

Implementation:

The company contacted the IAC team expressing concerns regarding both their energy and water usage. In total, 15 million gallons of water as well 47,760 kwh of electricity were saved annually. This effectively halved their water usage per year

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Implemented Recommendations

Assessment Recommendations (AR)	Annual Resource Savings	Total Annual Savings	Capital Costs	Other Costs	Simple Payback
<i>Recover Sales Tax on Utilities</i>	<i>Avoided Cost: \$19,413</i>	\$19,413	None	None	Immediate
<i>Reduce Compressed Air System Line Pressure</i>	<i>Electricity: 40,260 kWh</i>	\$2,375	None	None	Immediate
<i>Install Acid Life Extender</i>	<i>Avoided Cost: \$50,189</i> <i>Electricity: -11,280 kWh</i> <i>Demand: -23 kW</i>	\$49,465	\$4,029	None	0.1 years
<i>Duct Outside Air to Compressor</i>	<i>Electricity: 32,220 kWh</i>	\$1,901	\$201	\$136	0.2 years
<i>Close Pilot Line Furnace Water Loop</i>	<i>Avoided Cost: \$32,998</i> <i>Water: 15,000,000 gallons</i> <i>Electricity: -13,440 kWh</i> <i>Demand: -27 kW</i>	\$32,137	\$12,052	None	0.4 years
Totals	<i>Avoided Cost: \$19,413</i> <i>Electricity: 47,760 kWh</i> <i>Demand: -50 kW</i> <i>Water: 15,000,000 gallons</i>		\$105,291	\$16,282	\$136 N/A

Points of Interest:

The company was able to realize significant savings by increasing the life of their electropolishing acid and decreasing their NaOH solution usage. Closing the water loop in the pilot line furnace achieved large savings through decreased water usage and sewer costs. Lastly, improvements to the compressed air system resulted in high electricity savings per year.

Other Recommendations

Assessment Recommendations (AR)	Total Annual Savings	Capital Costs	Other Costs	Simple Payback
<i>Install PSA Nitrogen Generator</i>	\$8,700	\$35,000	None	4.0 years
<i>Correct for Power Factor</i>	\$8,914	\$55,516	None	6.2 years

For More Information;
Or to request your own energy assessment:

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