



Lighting the Way: Low-Cost Energy Improvements at Radcliff Wire Inc

A team consisting of students and faculty from the University of Connecticut ITAC performed an assessment for Radcliff Wire Inc. The assessment was student-led by Nick Bailey under the direction of Dr. Liang Zhang, a faculty member in the Electrical and Computer Engineering Department and Center Director of the Southern New England ITAC team. The onsite assessment was conducted in June 2023, where improvements in energy and process were analyzed.

Assessment Results

- There were 9 recommendations identified by the team, resulting in around \$38,569.56 in annual savings
- Of the 9 recommendations given by the team, 5 were implemented by the site, estimated to save approximately \$9,673 annually
- The total estimated cost for the site to implement the 5 recommendations is \$36,252

Facility Background

Radcliff Wire Inc is a manufacturer of wire products ranging from flat, square, and intricately shaped designs in over 60 metals and alloys. Starting over 6 decades ago, the company supported spring manufacturers with hard to locate flat and shaped wire products.



Currently, the plant contains 30 employees in a plant sized around 30,000 square feet where it produces \$9 million in sales annually.

Evaluation Approach

The SNE-ITAC team arrived at the facility led by the Center Director Dr. Liang Zhang. At the plant, the manager gave the team a tour of the facility while they worked to identify possible recommendations around the building. Following the tour, the students discussed possible recommendations and data to be collected for the final report. The team then collected necessary data and outlined their findings with the plant manager.

Installing LED Lighting

Radcliff Wire Inc was found to have many fluorescent lights still in use throughout the facility. During the assessment, the SNE-ITAC team managed to find at least 338 lamps around the plant that were fluorescent. The team was able to calculate switching from fluorescent to LED lamps would save 13,217.7 kWh and 52.86 kW per

year, resulting in \$2,575.78 of savings annually. With an implementation cost of \$2,260.82 for equipment and continued maintenance of bulbs, it yields a payback of 0.88 years.

Other Recommendations

Several low-cost recommendations from the assessment have been implemented either, including reducing compressed-air pressure to the minimum required, eliminating or reducing compressed-air usage, and replacing an existing HVAC unit with a high-efficiency model with support from the ITAC Implementation Grant. The remaining recommendations from the assessment have not yet been implemented. These low-cost recommendations were related to turning off unused equipment and installing thermostats. While several high-capital options, including solar PV installation and oven insulation were evaluated, the facility is not pursuing these projects at this time.

Implemented Recommendations

Assessment Recommendations	Annual Resource Savings	Total Annual Savings	Capital Costs	Simple Payback
Apply for Tax-Free Status for Energy Purchases	-	\$1,070	-	-
Install Energy Efficient LED Lighting in the Plane	13,218 kWh 52.86 kW	\$2,576	\$2,261	0.9 years
Reduce the Pressure of Compressed Air to the Minimum Required	214.78 kWh 0.29 kW	\$26	\$35	1.3 years
Eliminate or Reduce Compressed Air Usage	1,266.6 kWh 1.74 kW	\$155	\$494	3.2 years
Replace Existing HVAC Unit with High Efficiency Model	3677.87 kWh 5.04 kW 287.55 MMBtu	\$5,846	\$33,462	5.7 years
Total	18,377.25 kWh 59.93 kW 287.55 MMBtu	\$9,673	\$36,252	-

