



Assessment of Killeen Security Products

A team consisting of students and faculty from the University of Connecticut ITAC performed an assessment for Killeen Security Products. The assessment was student-led by Yishu Bai 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 February 2024, where improvements in energy and process were analyzed. The team was able to recommend 9 potential energy-saving opportunities, resulting in approximately \$68,827 in annual savings.

Assessment Results

- There were 9 recommendations identified by the team, resulting in around \$68,827 in annual savings
- Of the 9 recommendations given by the team, 6 were implemented by the site.
- These 6 implementations are estimated to save the site approximately \$16,455 annually
- The total estimated cost for the site to implement the 6 recommendations is \$1,683

Facility Background

Killeen Security Products is a manufacturer of security products such as door locks and other various metal components. The plant was established in 1924 as a family-owned machine shop



Front view of Killeen Security Products in Auburn, Massachusetts. Photo from Killeen Security Products, retrieved from <https://www.iccore.com/>

which produced tools for use in the aerospace industry. Since then, they have expanded to serve many more industries. Currently, the plant has 32 employees in a 43,000 square foot facility where they produce over 3,000,000 parts every year.

Evaluation Approach

Consisting of 8 engineering students, 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 went over possible recommendations and the data to be collected for the final report. The team would then collect necessary data and outline their findings with the plant manager.

Compressed Air Recommendations

The assessment team found many compressed air leaks within the facility, which is a significant savings opportunity. Using an ultrasonic leak detector, the SNE-ITAC team found 7 significant leaks around the plant. In addition, using compressor runtime data, the team was able to calculate an estimated leakage of 16.86%. When

remedied, this yields savings of approximately \$5,880. With an estimated implementation cost of \$1,300 for equipment and continued maintenance of leaks, it yields a payback of 0.22 years.

No-Cost Recommendations

Three of the recommendations implemented at this facility were common "no-cost" recommendations. Around 80% of the sites assessed by the SNE-ITAC have at least one of these recommendations, which have the highest implementation rates, ranging from 60% - 80%. These are valuable sources of savings for manufacturers as they require no upfront capital to kickstart the project, just dedication to reducing energy costs.

Smart Thermostats

The facility also implemented a recommendation to retrofit existing HVAC controls with commercial smart thermostats, which have advanced features such as adaptive schedules and machine learning-driven energy savings. Our analysis anticipated savings of \$1,116, with an implementation cost of \$333.

Implemented Recommendations

Assessment Recommendations	Annual Resource Savings	Total Annual Savings	Capital Costs	Simple Payback
Apply for Tax-Free Status for Energy Purchases	-	\$4,885	-	-
Pay Utility Bills on Time	-	\$64	-	-
Reduce the Pressure of Compressed Air to the Minimum Required	17,864 kWh 24 kW	\$2,934	-	-
Eliminate Leaks in Compressed Air Lines	35,795 kWh 49 kW	\$5,880	\$1,300	0.22 years
Reduce Compressor Runtime	10,718 kWh	\$1,576	\$50	0.03 years
Install Smart Thermostats	79 MMBtu	\$1,116	\$333	0.3 years
Total	64,377 kWh 73 kW 79 MMBtu	\$16,455	\$1,683	-

