



Saving Energy for Gulf South Machine

The Louisiana State University Industrial Assessment Center (LSU-IAC) is committed to helping local industries take the next steps to energy efficiency and sustainability. Gulf South Machine, Inc. has recently partnered with LSU-IAC for an assessment of their facility.



Gulf South Machine, Inc. Ponchatoula, Louisiana.
"Providing Precision Machining and Manufacturing Since 1969."

Assessment Benefits

- The report identified a total cost saving of \$66,456 per year.
- The total implementation cost is \$683,094 leading to an average payback period of 10.28 years.
- The implementations of our team's recommendations will reduce their carbon dioxide emissions by 31.69%.

Summary

The Louisiana State University Industrial Assessment Center (LSU-IAC) is committed to helping local industries take the next steps to energy efficiency and sustainability. Gulf South Machine, Inc. has recently partnered with LSU-IAC for an assessment of their facility. The assessment took place in Ponchatoula, Louisiana on October 14th, 2021. Ten recommendations were finalized in the report estimating a total cost savings of \$66,456 per year. An annual reduction of 90 tons/year is estimated for the recommended changes. By working with Gulf South Machine, Inc., student engineers were able to help a local company save money and go green!

Gulf South Machine, Inc.

Gulf South Machine, Inc. is an integrated CNC machining and manufacturing facility. The company specializes in many areas such as oil and gas equipment, flow control components, heavy equipment and transportation, food service, medical, aerospace, and prototypes. The 10 employees keep this 35,000 square-foot facility running smoothly. LSU-IAC was impressed with the facility's energy-efficient best practices in place prior to the assessment. These best practices include the implementation of metal recycling to reduce waste, the use of daylight for lighting, and the partial installment of LED lighting.

Evaluation Approach

The LSU-IAC team consisted of four students and three assistant directors. Once on site, the team worked with plant management to tour the facility and identify areas of possible recommendations. After a brief meet, students revisited potential recommendations to collect data for the final report process. The assistant directors worked with plant management on identifying areas of concern for additional recommendations. The team had a final meeting with the plant manager about

Facility Highlights

- This site is a part of LSU-IAC rural outreach initiative to better help industries in remote areas of the state.
- Annual production for this facility is 50,000 parts/yr.
- A full-service precision CNC machine shop providing precision machining, contract, and subcontract manufacturing services since 1969.
- The facility reached out to our team because of their interest in developing a solar infrastructure.

the findings and returned to campus to conduct further research and calculations. The LSU team finalized and submitted the report on December 13th, 2021.

Use Tanks with a Conical Bottom to Reduce Waste

The LSU-IAC team discovered that Gulf South Machine, Inc. could save \$1,451 annually by replacing their 275-gallon chemical tote tanks with a conical tank. The facility reclaims coolant from spent oil with chemical tote tanks. Our team observed that there was a potential for cost savings on coolant by optimizing the collection tank. By using a conical collection tank instead, the liquid separation would be more distinct

between layers and allow for a greater recovery of coolant. Although this recommendation does not provide energy savings, the payback period is only 0.76 years, making for an easy cost-saving implementation.

Other Recommendations

Our team found nine other recommendations, and when combined with the savings from the conical tank, they would save the company 65% of the estimated pre-pandemic total annual

utility cost! AR-1 was to reduce air compressor discharge pressure. AR-2 was to eliminate air compressor leaks. AR-3 was to utilize higher efficiency lamps and ballasts. AR-4 was to close holes in the building. AR-5 was to install vinyl strips. AR-6 was to use energy-efficient belts. AR-8 was to replace the HVAC. AR-9 was to optimize a power factor at the facility. Finally, AR-10 was to use solar heat.

Recommendations Presented by IAC

| Assessment Recommendations | Annual Resource Savings | Total Annual Savings | Capital Costs | Simple Payback |
|---------------------------------------------|-------------------------|----------------------|---------------|----------------|
| Air Compressor Discharge Pressure Reduction | 2,437 kWh | \$242 | \$25 | 0.10 yrs. |
| Eliminate Compressed Air Leaks | 66,789 kWh | \$6,612 | \$675 | 0.10 yrs. |
| Use Higher Efficiency Lamps or Ballasts | 1,669 kWh | \$199 | \$53 | 0.26 yrs. |
| Close Holes in the Building | 1,218 kWh | \$121 | \$49 | 0.40 yrs. |
| Install Vinyl Strips | 4,867 kWh | \$482 | \$240 | 0.50 yrs. |
| Utilize Energy-Efficient Belts | 999 kWh | \$99 | \$50 | 0.51 yrs. |
| Use Tanks with Conical Bottom | | \$1,451 | \$1,103 | 0.76 yrs. |
| Replace HVAC | 154,595 kWh | \$15,305 | \$31,464 | 2.06 yrs. |
| Optimize Plant Power Factor | | \$464 | \$3,415 | 7.36 yrs. |
| Use Solar Heat | 419,000 kWh | \$41,481 | \$646,020 | 15.57 yrs. |
| Total | 651,574 kWh | \$66,456 | \$683,094 | 10.28 yrs. |

