



LOUISIANA METAL FABRICATION

LSU INDUSTRIAL TRAINING AND ASSESSMENT CENTER

CASE STUDY NO. 1

Audit Highlights

- The team's report identified 10 recommendations that estimated annual savings at \$380,860.
- The total implementation cost of projects is estimated at \$1,203,663 with an average payback period of 3.16 years.
- The recommended projects incorporate recycling/repurposing wood pallets, paper products and replacing outdated equipment.

Facility Highlights

- The site provided the students with a chance to see high-caliber employee ergonomics, which is unique for metal fabrication facilities.
- From bridges to wastewater treatment, this facilities portfolio provided fabrication for a vast number of designs.
- The facility personnel discussed internship opportunities for LSU students that focused on areas of design and engineering.

Summary

The LSU Industrial Training and Assessment Center (ITAC), hosted by the LSU College of Engineering, in partnership with the LSU AgCenter, worked with local chemical manufacturers to take the next step into a sustainable future. As part of the U.S. Department of Energy Office of Manufacturing and Energy Supply Chains (MESC) funding, the team of students and faculty provided no-cost sustainability assessments for the manufacturer. The team recommended projects including recycling wood pallets and paper products, as well as cleaning and maintaining refrigerant condensers and towers. The assessment took place during the spring 2025 cycle and will hopefully lead to a future successful funding application from the manufacturer.



Separating waste streams can make recycling logistic more simplistic. Photo by LSU ITAC students

Application Process

To take part in an assessment with the LSU team or for more information, visit the DOE-ITAC website or email M.P. Hayes at mhayes@agcenter.lsu.edu with questions. This program is designed for manufacturers with annual utility costs of \$100,000 to \$3,500,000 and annual revenue less than \$250 million. Other programs may be available for facilities that do not meet this requirement. In previous years, there have been funding opportunities associated with recommendations for implementations for eligible manufacturers through various federal agencies.



Contract a Wood Pallet Recycling Company

The LSU team recommended contracting a third-party wood pallet recycling service. A professional recycling company will provide designated trailers or collection zones for broken and excess pallets. By removing pallet stockpiles, it recovers square footage for production and reduces the energy spent on complex material handling. Many recycling companies offer rebates or credit per pallet, potentially creating a minor revenue stream.

Solid Waste Savings
\$3,510/year

Total Cost Savings
\$3,510/year

Implementation Cost
None

Payback Period
0 years

Reuse, Recycle or Sell Paper Products

Energy Savings
-8,081 kWh/year

Total Cost Savings
\$104,805/year

Implementation Cost
\$23,000

Payback Period
0.2195 years

The team identified opportunities to optimize paper product management by reusing, recycling and selling paper products. High-quality trimmings and scraps can be collected for on-site reuse or sent to specialized mills for recycling. Finished paper products that do not meet primary quality standards but remain functional can be directed to secondary markets. Determining a partnership for paper recycling also decreases waste volume to landfills and can reduce scope three carbon emissions.

Clean and Maintain Refrigerant Condensers and Cooling Towers

During the assessment, the students observed accumulation, growth and debris on the facility's refrigerant condensers and cooling towers. This forces the compressors to operate at higher pressures and temperatures to meet the facility's cooling demand. By implementing a regular cleaning and maintenance program, it ensures surfaces remain clear, allowing for maximum heat exchange between the refrigerant and the equipment. Proper maintenance also reduces the mechanical strain and internal heat stress on compressors, preventing premature motor failure and costly repairs.

Energy Savings
10,121 kWh/year

Total Cost Savings
\$1,184/year

Implementation Cost
\$241

Payback Period
0.204 years

Other Recommendations

The team had additional recommendations for upgrading to higher-efficiency equipment and renewable options. Fossil fuel equipment can be replaced with electrical equipment, which could save \$83,111 per year with a \$240,915 implementation cost. Minimal cost recommendations like using computer programs to optimize HVAC performance, installing occupancy sensors, and cleaning

refrigerant condensers and towers had a total implementation cost of \$476 with a potential savings of \$14,562. An administrative recommendation also introduced the possibility of eliminating old stock by modifying the inventory system, which has a three-year payback time. The recommendations outlined are a summary and not a comprehensive economic analysis of projects.

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