



Wood Pellets and Energy Efficiency

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



Aerial view of Amite Bioenergy in Gloster, Mississippi. Photo from Drax, retrieved from <https://southerlymag.org>.

Assessment Benefits

- The report identified a total cost saving of \$57,035 per year.
- The total implementation cost is \$24,646 which leads to an average payback period of 0.43 years.
- The implementations of our team's recommendations would reduce Amite Bioenergy's carbon dioxide emissions by 611 tons/year.

Summary

Through the Industrial Assessment Center at Louisiana State University, Drax Biomass Inc. Amite Bioenergy will save a significant amount of money by implementing some of the potential recommendations found by the team. The six assessment recommendations together represented a total cost savings of \$57,035/yr. The total implementation cost was estimated to be \$24,646, yielding a payback of 0.43 years. If all are implemented, these measures will result in an annual reduction of 611 tons/yr. in carbon dioxide emissions, which is 2% of current emissions.

Drax Biomass Inc. Amite Bioenergy

Drax Biomass Inc. Amite Bioenergy is located in southwestern Mississippi in the town of Gloster. The plant was commissioned in August 2015 and sits on 62 acres of land. Amite Bioenergy maintains a workforce of 71 employees, a work schedule of 24 hours a day all year long, and can produce up to 525,000 metric tons of pellets annually. This manufacturing plant converts locally sourced wood fiber into compressed pellets. Amite Bioenergy is one of Drax's sixteen pellet plants located throughout the U.S. and Canada.

Evaluation Approach

The LSU-IAC team consisted of three engineering students and three assistant directors. Once at the Gloster, MS 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 company was pleased to have the LSU team work

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 pellet facility is 520,000 tons of pellets/year.
- Drax Biomass is consistently working toward being climate positive, nature positive, and people positive. They are aiming to be carbon negative by 2030!
- The facility is already working towards going green with their partial implementation of LED lights, the use of integrated VFD on motors, and recycling metals.

with Drax Biomass to offer energy efficiency recommendations. The LSU team finalized and submitted the report on September 6th, 2021 and has since coordinated with Amite Bioenergy on the implementations of the recommendations

Large kWh Savings with VFDs

Drax Biomass had a partial installation of Variable Frequency Drives on their motors, which was one of the best practices LSU noticed while touring the facility. However, LSU-IAC noticed that implementing VFDs on 9 additional motors in the facility would provide significant kWh and cost savings. A VFD is capable of speeding up and slowing down to mirror the varying demand throughout the day. Varying the motor speed has a direct effect on performance, so when the motor is not fully loaded, the speed will slow down, and there will be significant energy savings. Installing these VFDs will save

the company \$40,876 per year with an implementation cost of only \$16,200, which has a payback period of only 0.40 year. The installation of these VFDs would save 1,202,236 kWh/year! In addition, the VFDs would reduce carbon emissions by 458 tons per year.

was to reduce the air compressor discharge pressure. AR-2 was to utilize energy-efficient belts. AR-3 was to eliminate leaks in compressed air lines. AR-4 was to install occupancy sensors. Lastly, AR-6 was to utilize higher efficiency lamps and/or ballasts.

Other Recommendations

While the installation of additional VFDs provides a quick and easy payback for Drax Biomass, the LSU-IAC team provided the company with five other recommendations which each have a payback period of under two years. All of these recommendations also provide large kWh savings. AR-1

Recommendations Presented by IAC

Assessment Recommendations	Annual Resource Savings	Total Annual Savings	Capital Costs	Simple Payback
Air Compressor Discharge Pressure	76,710 kWh	\$2,608	\$50	0.02 yrs.
Utilize Energy-Efficient Belts	68,010 kWh	\$2,312	\$318	0.14 yrs.
Eliminate Leaks in Compressed Air Lines	73,254 kWh	\$2,491	\$585	0.23 yrs.
Install Occupancy Sensors	65,091 kWh	\$2,236	\$646	0.29 yrs.
Install VFDs on the Motors	1,202,236 kWh	\$40,876	\$16,200	0.39 yrs.
Utilize Higher Efficiency Lamps and/or Ballasts	118,200 kWh	\$6,512	\$6,847	1.05 yrs.
Total	1,603,501 kWh	\$57,252	\$24,646	0.43 yrs.

