

Strategic Energy Audit and Sustainability Solutions for Industrial Facilities

This case study highlights how a thorough energy audit and sustainability assessment can uncover opportunities for significant energy savings, improved operational efficiency, and enhanced employee comfort while providing a clear path toward reducing emissions and achieving long-term sustainability goals.

Background Information

■ Client Overview

Liniform is a light industrial commercial laundry company in Barberton, Ohio. With a strong commitment to sustainability, the company prioritizes energy resilience, reducing operational costs, and employee wellness.

■ Project Overview

In 2023, Emerald Built Environments performed an energy audit, assessed Scope 1 and 2 emissions tracking, and offered engineering assessments. The goal: Reduce Liniform's environmental footprint, improve building efficiency, and increase employee comfort.

Challenges

■ Key Challenges

The facility faced several sustainability challenges, including operating outdated, inefficient equipment with limited documentation, making it difficult to assess energy usage and inefficiencies. Manual operations, lacking automation or digital monitoring, further hindered energy tracking and optimization, leading to missed opportunities for efficiency gains.

■ Client's Goals

Liniform sought recommendations to improve energy efficiency, reduce natural gas and grid reliance, and uncover funding opportunities for upgrades. A key priority was also improving the building's thermal comfort control, as employees were frequently working in high-temperature conditions. The client wanted a comprehensive plan that addressed both immediate concerns and long-term sustainability goals.





Strategies Recommended

Emerald Built Environments identified a range of strategies tailored to the facility's needs, with a focus on reducing emissions, improving energy efficiency, and enhancing operational control.

- 1 Solar Energy Options**
Install roof-mounted and field solar arrays to offset 100% of electricity use. With tax credits, achieve full payback in 8 years.
- 2 Heat Recovery System (Flue Stack Economizer)**
A flue stack economizer to capture waste heat and pre-heat water, offering a 5-year payback.
- 3 Ultrasonic Leak Detection**
Identify and repair leaks in compressed air and steam systems for immediate, low-cost results.
- 4 Building Automation and Sub-Metering**
Implement systems to monitor energy use across key equipment and identify savings opportunities.
- 5 Staging Boiler for Off-Shift Operation**
Use a smaller, efficient boiler during low-demand periods to reduce unnecessary energy use.
- 6 VRF Heat Pump System**
Convert office space heating from gas-fired furnaces to a new VRF (Variable Refrigerant Flow) heat pump system, providing a more energy-efficient solution and reducing the facility's carbon footprint.
- 7 Air Conditioning and Ventilation Upgrades**
Update and modify the air conditioning and ventilation system. This would address employee comfort with initial low-cost options while planning for long-term capital improvements.

Outcomes

■ Results Achieved

Through collaboration with the client, Emerald Built Environments provided Liniform with a detailed understanding of the costs, payback periods, and benefits of each recommendation. The strategies were aligned with both short-term needs and long-term sustainability goals, giving Liniform the flexibility to implement changes at their own pace.

■ Impact on Client's Operations

Liniform now has clear strategies to reduce energy use, cut costs, and prepare for future upgrades, enhancing employee comfort and operational efficiency.

■ Environmental Benefits

Liniform now has a roadmap for reducing its reliance on natural gas and grid-supplied electricity, improving building efficiency, and enhancing workplace conditions. The recommended strategies not only decrease emissions but also ensure long-term sustainability and resilience.



Conclusion

Through a comprehensive energy audit and tailored recommendations, Emerald Built Environments equipped Liniform with actionable strategies like solar energy integration, heat recovery, and building automation. These solutions address immediate challenges, position Liniform for long-term success, and align with evolving sustainability goals.