

CLARIOS MEADOWBROOK LITHIUM ION— 50001 READY FACILITY

BACKGROUND

Meadowbrook Lithium Ion is a battery manufacturing facility that is owned and operated by Clarios. Formerly known as Johnson Controls Power Solutions, Clarios specializes in advanced energy storage solutions generating \$8 billion in revenue with 16,000 employees and 56 facilities worldwide. A leader in developing automotive battery technologies, Clarios accounts for over one-third of the automotive industry's total annual output of lead acid batteries for automotive and power sports, and lithium ion for electric and hybrid electric vehicles.

The Clarios Meadowbrook Lithium Ion facility in Holland, Michigan, is one of the company's 17 facilities in the United States. It specializes in manufacturing prismatic lithium ion battery cells primarily used in the automobile and electronics industries. The majority of the facility's energy consumption is driven by the intensive use of equipment required to maintain consistent temperature and humidity in its clean and dry rooms critical to the production process. The 158,615-square-foot facility employs 85 people.

"At Clarios the 50001 Ready program directly aligns with our mission to create the world's smartest energy storage solutions that benefit people, business and the planet."

- Shelly Maciejewski, Plant Manager for Clarios Meadowbrook Lithium Ion

SOLUTIONS

The Clarios Meadowbrook Lithium Ion facility obtained 50001 Ready recognition in August 2019. Given the plant's prior experience with the Leadership in Energy and Environmental Design (LEED) green building certification program, and its participation in the U.S. Department of Energy's Better Buildings program, 50001 Ready became the natural next step in strengthening the plant's commitment to environmental responsibility and reducing its energy consumption and costs.



Clarios Meadowbrook facility in Holland, MI.
Photo credit: Shelly Maciejewski, Plant Manager

The LEED Gold-certified plant is Clarios' first facility in the U.S. to achieve the 50001 Ready recognition. Its commitment to implementing an energy management system was hastened by participation in the U.S. Department of Energy's Better Plants [Energy Treasure Hunt](#), which prompted a company-wide initiative to identify energy reduction opportunities from manufacturing operations. Having run out of low-cost and no-cost energy projects, the team at the Meadowbrook Lithium Ion plant decided to pursue and complete the 50001 Ready implementation process. It took the team just over 9 months to complete the 25 tasks in the 50001 Ready Navigator and attain recognition.

Implementing a 50001 Ready Energy Management System

- ▶ **Incorporating 50001 Ready into existing program offerings:** The plant's experience with LEED and the ISO 14001 Environmental Management System (EMS) standard paved the way toward 50001 Ready adoption. With support from corporate management and plant personnel, Clarios' six-member energy team implemented energy projects targeted at lowering facility energy use and capital costs.
- ▶ **Energy team:** Shellie Ritsema, Clarios Environmental Supervisor and Energy Management Representative, spearheaded the 50001 Ready effort, using Navigator guidance documents to plan and execute energy management initiatives, engage various teams (including facilities, controllers, maintenance, procurement, etc.) on energy concerns, and to ensure progress and compliance via periodic audits.

- ▶ **Documenting facility energy consumption:** Plant managers used the Navigator's Significant Energy Use (SEU) worksheet along with the monitoring and data collection worksheets to get a bird's eye view of energy use throughout the facility. The ability to compare the energy intensity of different equipment (vacuum pumps, motors, fans) deployed in the production process has helped managers prioritize low-cost and high-impact energy efficiency projects.
- ▶ **Preferred Purchasing Policy:** 50001 Ready has helped the facility institute a Preferred Purchasing Policy by leveraging equipment performance data to inform repairs and upgrades. This helped the team save time and costs while ensuring quality control and reliability of new equipment (such as air leak guns).
- ▶ **Keys to success:** The availability of granular data and metrics describing the entire facility's energy performance has led the team to adopt a more holistic approach to continuous operational improvements; rather than troubleshoot individual equipment issues, plant managers now focus their efforts on advancing the reliability and efficiency of systems performance over time.

OTHER BENEFITS

Implementing an energy management system has revealed new opportunities to reduce the facility's energy consumption. The ability to more closely track the energy use of various equipment has allowed controllers to respond to uncertainty and variability in production with pre-emptive adjustments to equipment controls, maintaining operational integrity and generating robust energy savings. Installing and scheduling occupancy sensors for lighting controls and considering a pre-cooling system for the plant's cooling towers have helped the plant reduce its energy consumption from routine operations.

"Previously, we focused on Energy consumption as simply a metric. 50001 Ready has shown us ways to think outside of the box and dig for the savings that we may have thought was not achievable."

- Shellie Ritsema, Environmental Supervisor and Energy Management Representative for Clarios Meadowbrook Lithium Ion

The 50001 Ready process has helped the Meadowbrook facility recognize the impact of energy management in its daily operations. Energy management has engaged stakeholders on different teams, from management to maintenance, in the daily decision-making. **With the help of 50001 Ready, the team was able to make a clear business case for their energy projects and secure corporate funds and utility rebates to finance their initiatives.**

KEY TAKEAWAYS

In completing the 25 Navigator tasks, the Clarios Meadowbrook Lithium Ion facility established a comprehensive central repository of energy management data, tools, and knowledge. This has made it easier to document processes, quickly share knowledge across different teams, and develop prescriptive measures for enhancing the reliability and functionality of their systems and process lines.

Facility staff have used the Navigator's online resources to help identify opportunities to target equipment upgrades and repairs. The Navigator's data collection exercises helped the team establish accurate baselines and audit the performance of new equipment. The resulting energy, cost, and time savings have proven invaluable to the facility, demonstrating a strong business case for energy management efforts to corporate management and establishing the Meadowbrook facility as an energy leader within the company.