

Daimler Truck North America Plant - Detroit®

WHY SEP 50001?

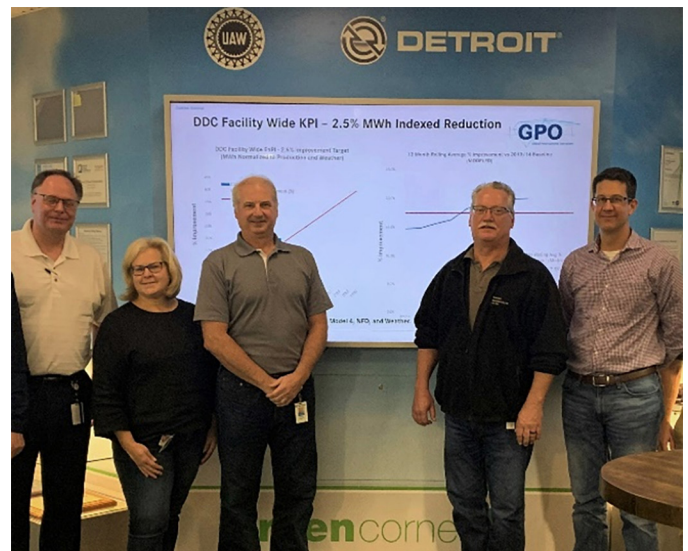
The U.S. Department of Energy's SEP 50001 program offers certification to organizations and facilities that achieve sustained excellence in energy management. To certify, organizations use an ISO 50001 energy management system to improve energy performance, and an independent third party verifies achievements. DOE offers elevated recognition at Silver, Gold, and Platinum levels to certified organizations that use best practices described in the *SEP 50001 Scorecard*.

Overview

The Daimler Truck North America Plant in Detroit® is an industry-leading original equipment manufacturer of engines, axles, and transmissions. The Detroit® Plant offers a complete line of diesel engine platforms for both heavy-duty and mid-range markets, along with axles, transmissions, safety systems, chargers, and connected vehicle services for the commercial transportation industry. The plant has about 2,900 employees, producing vehicle parts on a site of nearly 190 acres. Annually, the plant consumes between \$9 and \$11 million in energy, gas, electric, and water combined.

The company has achieved its third certification in the Superior Energy Performance 50001 (SEP) program. SEP 50001 is a U.S. Department of Energy (DOE)-administered certification program that provides guidance, tools, and protocols for facilities that want to achieve deeper, sustained savings from an energy management system certified to the ISO 50001 energy management standard.

The Detroit® Plant participates in DOE's Better Plants program, which works with industrial partners to develop, implement, and share technologies and best practices to increase energy and water efficiency and reduce greenhouse gas emissions in manufacturing plants and other industrial facilities. This plant is also a 50001 Ready facility, having earned this status in 2021 through its participation in DOE's 50001 Ready program, which provides resources and tools to steer and support an organization's energy management efforts. SEP 50001, 50001 Ready, and Better Plants work together to promote lasting energy savings for a cleaner, greener manufacturing industry.



The Detroit® Plant energy management team at the "Green Corner" where sustainability achievements are on display. Photo credit: Detroit® Plant

The Detroit® Plant's most recent achievement represents certification to SEP 50001 for three consecutive three-year certification cycles—all at the Platinum level, the highest recognition. **From 2016-2021, the plant saved \$15.5 million by reducing energy use by 1,355,186 MMBTU, equivalent to 141,729 metric tons of CO₂.**

Solutions

When initially engaging in the SEP 50001 program, the Detroit® Plant established a robust energy management system using ISO 50001. A multidisciplinary energy team was established, and the team took advantage of the facility's existing lean manufacturing process (Kaizen principles), ISO 14001 environmental management system, and Six Sigma-trained specialists. Additional meters were installed throughout the facility to help the team to better visualize energy flows, identify significant energy uses, and prioritize energy efficiency efforts. In addition, there was a significant focus on employee awareness and engagement to reinforce plant-wide commitment to energy sustainability. Approaches included virtual tools, onsite visuals, and use of a dedicated high-visibility area known as the "Green Corner."

The initial push to identify energy savings measures was successful but required resources and dedication. The plant focused on low-cost and no-cost projects for several years, but now find it more challenging to identify new energy savings opportunities. Most operations and maintenance projects have already been identified, and capital projects are difficult to implement because the facility does not have scheduled outages or downtime. Despite these challenges, the Detroit® Plant has continued to use ISO 50001 and SEP 50001 to measure and evaluate energy use and identify additional ways to reduce it, demonstrating that even companies with mature energy programs can benefit from these frameworks.

Key Takeaways: SEP 50001 Energy Management Strategies

► **Complementary energy efficiency programs.** The Detroit® Plant participates in the Strategic Energy Management (SEM) program sponsored by DTE Energy, the regional utility. DTE provides many of the energy-based measurements for verification required by SEP 50001, as well as rebates for energy efficiency projects and equipment. The SEP 50001 program helped the Detroit® Plant meet the requirements to receive rebates, which in total exceeded \$200,000 in 2021.

► **Significant Energy Uses.** SEP 50001 helped the energy team identify significant energy uses. For the Detroit® Plant, HVAC and boilers are the top two. The systems are now connected to the facility's building automation system to ensure

"Detroit's certification to SEP 50001 and Platinum level recognition is just one part of our location's sustainability journey. Savings generated through these efforts have been invested in manufacturing the next generation of Detroit eMobility products, supporting our long-term commitment to reduce greenhouse gas emissions."

– Matt Pfaffenbach, Detroit® Plant Manager

energy performance can be tracked continuously, and both systems receive preventive and predictive maintenance to increase efficiency. In addition, the energy team has made improvements to these systems. For example, the plant's 65+ air houses (system with filters to provide clean, conditioned air to paint booths) used to have different set points; there is now a fixed set point for every air house. These relatively low-cost actions have resulted in significant annual savings:

- Lowering the heating setpoint to 68°F to reduce the boiler load, saving 15,325 MMBtu in annual energy consumption and \$52,897 in energy costs
- Reducing header pressures, saving 1,021 MMBtu and \$3,525
- Increasing the cooling setpoint to 77°F to reduce the chiller load, saving 3,986 MMBtu and \$14,401
- Reducing the compressor pressure setpoint, improving compressor energy efficiency, saving 1,345 MMBtu and \$4,859

- ▶ **Employee Appreciation.** The company formally recognized eight HVAC techs and five boiler operators for their help in achieving energy reduction in those areas. The employees were presented with letters and certificates of appreciation, as well as a luncheon. Recognition was posted to the Green Corner to promote the achievement internally.
- ▶ **Company-Wide Engagement.** At monthly senior staff meetings, the Detroit® Plant managers are required to review information about resource use, including gas, water, and waste. Findings and decisions made during the routine event are shared across the plant, helping to build awareness throughout the company. The benefits of the focus on inclusivity are illustrated by an established practice: employees report air leaks as they are discovered. The compressed air system is very complex, with numerous connections, so new leaks occur frequently. Although the company conducts routine air leak surveys, having workers be on the lookout for them and dealing with them promptly means fewer and less persistent leaks. Although the leakage repairs were time-consuming, the effort saved 4,923 MMBtu in compressed air energy waste and \$17,786 in energy costs.

Other Benefits

The Detroit® Plant's energy management efforts have increased employee engagement and had a positive impact on productivity. The plant's success has also led to new product manufacturing, more jobs, and additional training. The plant used its exemplary energy management and efficiency achievements to differentiate itself from peer facilities within Daimler and compete for corporate resources to manufacture new products. As a result, the Detroit® Plant secured corporate support and \$20 million in resources to renovate their space to begin producing heavy-duty batteries and electric rear axles. In addition, the plant is using some of its cost savings to convert part of an onsite building into a regional training facility.

Aside from overall cost reductions, there is a competitive advantage for facilities like the Detroit® Plant that have taken steps to ensure maximum energy savings. Their certifications and initiative in energy management demonstrate an ability to not only achieve, but also maintain energy savings, which is a desirable trait to any company looking to develop and source products from the Detroit facility. As energy management is key to decarbonization, all of the Detroit® Plant's work supports Daimler's corporate decarbonization and sustainability goals.

Updated 2023.07.31