

3M – Achieves 34 Superior Energy Performance 50001™ Certifications

BACKGROUND

A strong culture of innovation and collaboration over nearly 120 years has driven 3M's transformation from a small Minnesota mining and manufacturing company into a global corporation with more than 60,000 products and operations in 70 countries. As a science-based Fortune 500 company, 3M focuses on producing innovative products while prioritizing sustainability as a core value throughout the company. 3M established its 1975 Pollution Prevention Pays initiative, cutting its global energy use and greenhouse gas (GHG) emissions.

3M was an early adopter of the ISO 50001 energy management system standard. ISO 50001 defines the requirements for a robust and auditable set of organizational practices that institutionalize continuously improving an organization's use of energy resources.

In 2011, the company agreed to help pilot the nascent DOE Superior Energy Performance 50001 (SEP 50001) program at two of its facilities. The DOE SEP 50001 program recognizes facilities that certify to the ISO 50001 standard and attain third-party verification of the resulting improvement in energy performance. Savings at those sites (U.S. and Canadian) exceeded savings at other 3M facilities, inspiring corporate leadership to roll out ISO 50001 and SEP 50001 to additional sites. To support this effort, 3M adopted the SEP 50001 enterprise-wide approach, which uses a robust, centralized energy management system (EnMS) to serve multiple sites.

By 2019, 3M had leveraged this approach to get 31 plants certified to ISO 50001, with 14 of those plants also certified to the SEP 50001 program. By integrating the systematic ISO-based "plan-do-check-act" framework into on-site energy management practices, 3M has reduced energy use and costs, expanded employee engagement, and improved insight into energy performance at dozens of sites.

SOLUTIONS

3M has consistently set ambitious and progressively more rigorous energy and emissions targets over the years. Most recently, the company announced its goal to



Headquartered in Saint Paul, Minnesota, 3M leverages ISO 50001 and SEP 50001 to continuously raise the bar for energy efficiency.

become 100% carbon neutral by 2050. In addition, it plans to help its customers reduce CO₂ equivalent emissions by 250 million tons through the use of 3M products.

At 3M, energy efficiency is a key part of the strategy to achieve the corporate carbon goal, and a structured EnMS is central to the corporate plan for energy efficiency. 3M continues to encourage more sites around the globe to achieve ISO 50001 and SEP 50001 certification, focusing first on those that account for the greatest energy usage. To streamline expansion, 3M developed a robust centralized EnMS, tools, training, resources, an expert energy team, and internal auditors. This approach has led to significant savings and drastic reductions in implementation time, effort, and certification costs.

As of the end of December 2021, 3M has 53 sites certified to ISO 50001 globally. Of those sites, 34 in North America also achieved SEP 50001 program certification (28 in the United States). Over the six-year improvement period (2016-2021), the SEP 50001 program has collectively improved normalized energy performance by 4.8%. As more and more customers inquire about the company's stance on carbon, 3M has found that simply showing certification to SEP 50001 and ISO 50001 is often sufficient to settle the matter and inspire confidence in the company's commitment.

SEP 50001 ENERGY MANAGEMENT STRATEGIES

3M's success in leveraging SEP 50001 to achieve ambitious energy and carbon goals can be attributed to careful, systematic planning and implementation strategies.

- ▶ **Fewer certification audits through multi-site sampling.** By certifying multiple sites together, the third-party auditor needed only to conduct ISO 50001/SEP 50001 on-site audits at a small share of the candidate sites (sampling). Sampling requirements for SEP 50001 are consistent with those of the ISO 50003 standard for the certification bodies conducting energy management system audits. In 2022, 3M's certified internal auditors will only need to assess the EnMS and performance improvements at five sites.
- ▶ **Reduced timelines.** Using its extensive EnMS experience, 3M's Enterprise Team now develops a standardized EnMS implementation plan in coordination with a collection of target sites. The team then provides a shared task list and supporting tools that significantly expedite progress. Over time, this approach has reduced site implementation time from 18 months down to four.
- ▶ **Reduced implementation costs.** 3M's in-depth experience, in-house resources, and expedited schedules have also cut site implementation and certification costs considerably. The legacy sites spent about \$63,000, primarily for certification audits, external staff, and metering; later sites spent only \$3,000 apiece.
- ▶ **Communication.** 3M recognizes that people are the driving force behind its energy management system. By recognizing contributions and highlighting accomplishments, 3M has motivated all its employees to take the initiative in spotting opportunities to save energy. This dedication to recognizing and rewarding performance, and the ambitious corporate policies and goals have enabled 3M to attract and retain high performers.
- ▶ **External support and incentives.** Proposed energy efficiency projects must meet defined criteria and undergo close scrutiny prior to selection for funding. In some cases, utility or state incentive programs can help a project meet the criteria, so site energy leaders coordinate closely with utilities to stay informed of opportunities and to secure funding.

- ▶ **EnMS Community.** Staff from sites certified to ISO 50001 and SEP 50001 have formed a strong network and convene regularly to share best practices and lessons learned. 3M taps this experienced group to test new energy efficiency and management activities.
- ▶ **Measurement & verification.** 3M uses the *SEP 50001 Measurement and Verification Protocol* to assess the savings achieved by each installed energy project. Those that score well are shared as best practices with other sites. The SEP 50001 measurement and verification process itself has become a best practice for calculating project savings across 3M, even at non-SEP 50001 sites.
- ▶ **Scorecard supports corporate carbon goals.** The *SEP 50001 Scorecard* aligns with 3M's corporate goals for carbon neutrality and inspires site teams to compete for the highest score. Several sites took a second look at opportunities for combined heat and power and solar energy based on Scorecard options. In addition, Scorecard guidance on life-cycle cost analysis helped 3M sites look beyond the initial purchase price when selecting new equipment. This approach was particularly valuable in selecting new chillers, which constitute one of the largest utility systems at 3M. They run 24/7 to support production processes and space cooling—incurring significant operating costs over their lifespans. 3M has even used guidance in the Scorecard to improve their internal Facility Energy Assessment scorecard for use by manufacturing sites to increase energy management activities.

OTHER BENEFITS AND NEXT STEPS

The ISO 50001 standard and the SEP 50001 program have accustomed 3M staff at all levels to follow a structured system of energy management and identify and exploit opportunities to increase energy efficiency across site operations. In 2020, the company's energy conservation policy was expanded to embrace design and procurement elements. Collectively, these efforts have improved energy reliability, reduced operating costs, shrunk the manufacturing carbon footprint, and further elevated the corporate image.

3M has plans to certify all Tier 1 sites, amounting to 85% of global energy consumption to ISO 50001 by 2025. In the future, 3M looks to develop a global enterprise model to spread the energy savings and emissions reductions to facilities around the world.