SHOWCASE PROJECT: TRONOX — 50001 READY FACILITY

SOLUTION OVERVIEW
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With nearly 7,000 employees across six continents, Tronox is one of the world’s leading producers of high-quality titanium products, including titanium dioxide pigment, specialty-grade titanium dioxide products and high-purity titanium chemicals, and zircon. The company mines titanium-bearing mineral sands and operates upgrading facilities that produce high-grade titanium feedstock materials, pig iron, and other minerals. Tronox’s commitment to sustainability includes efficient use of resources, respect for the environment, and safe and healthy workplaces.

The Tronox manufacturing operation in Hamilton, Mississippi, employs approximately 425 people and produces about 225,000 metric tons of high-quality titanium dioxide pigments annually. The complex production process requires significant energy use, which directly affects operational efficiency. In 2015, Tronox launched a multi-year operational excellence initiative to address energy demand. The initiative drove a range of energy efficiency improvements, including process control automation, heating and cooling optimization, and insulation measures. The plant has been certified to the ISO standards 9001 and 14001 for many years, but sought a more consistent approach to improved energy efficiency, with a focus on low and no-cost operational changes, as identified when implementing an ISO 50001 energy management system.

LOCATION
Hamilton, Mississippi

SOLUTIONS
In 2018, the Hamilton plant began working with the Strategic Energy Management (SEM) program funded by the Tennessee Valley Authority (TVA) and led by the Strategic Energy Group (SEG). The plant’s energy team conducted onsite energy mapping with SEG and met with teams from other companies in the same SEM cohort to share strategies and successes. Through these activities, Tronox learned that the U.S. Department of Energy’s (DOE) 50001 Ready provides a roadmap to continuous energy savings and federal recognition for effective energy management.

From the start, Tronox management supported the Hamilton plant’s participation in 50001 Ready. Participation throughout the plant has proven invaluable in improving the energy efficiency of the complex manufacturing processes performed within this large and diverse facility.

Implementing a 50001 Ready Energy Management System

- 50001 Ready Implementation: The plant completed the 50001 Ready program quickly
since it had already been involved in the SEM program. SEG helped the plant’s energy team understand how their prior work fit the 50001 Ready Navigator framework and how they could leverage the Navigator tool to validate their work.

- **Energy team:** The plant energy team, which includes representatives from diverse departments (e.g., process engineering, accounting, operations, and management), meets regularly and reviews monthly energy usage against the established baseline.

- **Employee awareness:** The Navigator tool helped the Tronox plant substantiate the comprehensive energy management program that they have adopted. The energy team meets individually with workers on all four shifts in each area of the plant, presenting specific energy and cost data for the motors and other pieces of equipment in each area. This process provides a platform of continuous engagement to support new opportunities for saving energy.

- **Priority focus areas:** For the plant’s first year in the 50001 Ready program, the energy team prioritized three major areas of opportunity: (1) leak detection and management; (2) overdriven or over-used assets; and (3) elevating awareness by all partners, including onsite air and gas suppliers.

- **Energy savings:** So far, the plant has reduced its annual energy use by more than 3,650,000 kilowatt hours relative to its baseline. This reduction is primarily a result of operational changes, such as those implemented under the 50001 Ready program. The only major equipment upgrade requiring a significant capital expenditure was the purchase and installation of a more efficient air-drying system for compressed air.

- **Keys to success:** Tronox attributes its success to the regular meetings of its energy team, SEG support for setting up its energy baseline, and attention to broadly and continuously engaging its workers, suppliers, and other partners.

### OTHER BENEFITS

*Tapping into the expert knowledge of those who regularly operate the equipment and machinery is the best approach. Getting their insights has been a tremendous help for us.*

Steve Merritt, Senior Reliability Engineer, Tronox

Achieving 50001 Ready recognition from the U.S. DOE has further elevated awareness of energy savings opportunities within the Tronox plant, suggesting that savings will continue to accumulate.

Though extended service life is difficult to quantify, members of the energy team report that turning off equipment when it is not in use and avoiding the practice of driving equipment harder than necessary will likely extend equipment life.

In the near term, the energy team will work with its project teams to ensure energy efficiency is a key consideration in equipment investment decisions. The team is also opening discussions with outside personnel stationed at the plant’s onsite air separations facility (responsible for 25% of plant energy load) to explore opportunities for better coordinating supply and loads.

**Key Takeaway**


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SEG assistance with the program’s initial SEM steps helped to get the team started. Once the energy baseline and tracking method were in place, the step-by-step process laid out in the 50001 Ready Navigator made it easy to keep moving forward. 50001 Ready served to validate their energy management systems (EnMS) and elevate plant-wide awareness of energy issues. The ongoing benefits of this broad engagement should continue to persist, now that a solid EnMS structure has been established.
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Tronox Hamilton, Mississippi facility