Sherwin-Williams' Richmond, Kentucky, Facility Achieves 26% Energy Intensity Reduction; Leads to Corporate Adoption of *Save Energy Now* LEADER

When Sherwin-Williams' Richmond, Kentucky, manufacturing plant made the decision to advance its energy efficiency efforts, the company capitalized on the resources made available to industry by the U.S. Department of Energy's (DOE's) Industrial Technologies Program (ITP). In 2008, ITP conducted an assessment on the site's steam system to identify areas for improvement. Following the assessment, the plant not only chose to implement many of the identified recommendations, but it also decided to go one step further and join ITP's *Save Energy Now* LEADER initiative, further establishing the site's commitment to industrial energy efficiency. **In the Richmond plant's first year as a LEADER, it not only met its 10-year goal, but surpassed it.** This partnership proved to be a huge success for Sherwin-Williams, leading the company to make a corporate-wide LEADER Pledge.

Sherwin-Williams' Richmond, Kentucky, Manufacturing Plant

Founded in 1866 by Henry Sherwin and Edward Williams, The Sherwin-Williams Company has grown to be the largest producer of paint and coatings in the United States today. Headquartered in Cleveland, Ohio, Sherwin-Williams has more than 3,300 company-operated specialty paint stores in the United States, Canada, and the Caribbean region, and more than 500 company-operated architectural, automotive, industrial, and chemical coatings branches throughout its Global Finishes Group. The company's manufacturing and distribution facility in Richmond, Kentucky, is one of Sherwin-Williams' largest North American plants, and the subject of this case study.

Committed to improving its efficiency, Sherwin-Williams' Richmond, Kentucky, plant embodies the company's mission—to reduce its environmental impacts through the use of sustainable materials, recycling wastes, and streamlining processes to conserve fuel and other energy resources. The plant has made energy reduction a critical component of its operations, implementing dozens of energy-savings projects over the past few years. The facility is a Lean Manufacturing Leader, adhering to the lean manufacturing business-management strategy, which promotes waste elimination, process streamlining, and the improvement of consumer product quality. The plant's energy efficiency efforts began in 2004, and in 2009 the facility was awarded the Sherwin-Williams' Sustainable Plant Award for its energy reduction efforts and recycling program.

Energy Efficiency in Action

Participating in an Energy Savings Assessment

As part of its continuous improvement process, the Richmond plant took advantage of the support ITP offers industry by securing technical assistance that would help identify projects with the potential to improve the plant's efficiency. In 2008, the facility received an ITP-sponsored Energy Savings Assessment (ESA), which was conducted by a DOE Energy Expert. The ESA sought to identify projects with the potential to improve the site's steam system efficiency.

Boiler Steam System Enhancements

The Richmond plant implemented the following efficiency measures that were identified during the assessment:

- **Steam trap surveys** were conducted to determine the locations of leaks and losses in the pipe system
- **Upgraded valves** were installed to eliminate leaks in the system
- **Heat exchangers** were installed on all condensate return systems to capture waste heat energy
- **Removable steam blankets** were used to further capture waste heat, which were easier to remove and replace before and after steam trap surveys
- **Waste heat** was used from the boiler and other utilities to reduce factory heating needs during cooler months (November–March).

Recognizing that the plant's main boiler had excess capacity for most of the year, the Richmond site switched from using its main boiler (which is about 700 horsepower [HP]) to its back-up boiler (300 HP) for primary steam production. The site expects to utilize the smaller boiler for up to 10 months out of the year for facility and process heat, which will significantly reduce the plant's energy consumption.

Partnering with ITP's *Save Energy Now* LEADER Program

In September 2009, Gary Satler—the Richmond plant's manager for engineering, maintenance & safety—attended the Midwest Industrial Energy Efficiency Exchange in Detroit, Michigan. The ITP-hosted event recognized industrial efficiency leaders and featured an exchange that connected industrial companies with local resource providers. Although Mr. Satler already played an instrumental part in the promotion and implementation of energy efficiency efforts at the Richmond site, attending the exchange motivated him even further to enhance the plant's efficiency efforts. Following the event, Mr. Satler convinced the Richmond plant manager to partner with ITP as a *Save Energy Now* LEADER, pledging to reduce the site's energy intensity by 2.5% annually for 10 years.

The grassroots efforts of Sherwin-Williams' Richmond, Kentucky, site—with the support of the plant's manager and the manager for engineering, maintenance & safety—not only produced meaningful energy savings for the facility following the signing of the *Save Energy Now* LEADER Pledge, but also led to the company's corporate-wide commitment to energy efficiency.

Enhancing Efficiency Efforts

After joining the *Save Energy Now* LEADER initiative, Sherwin-Williams' Richmond plant implemented additional energy-savings measures, such as making improvements to its compressed air systems and building envelope.

Sherwin-Williams uses compressed air systems for multiple applications throughout its Richmond plant, including the application of paint spraying in spray booths, the opening and closing of valves on the process floor, and the actuation of equipment and valves on filling machines. As much as 80%–90% of the electrical energy used in industrial compressed air systems is converted to heat.[1] To recapture some of this lost energy, Sherwin-Williams was able to divert the waste heat from its compressed air systems back into the building during the winter, which supplemented heating for the plant. Reusing this waste heat allowed the plant to extend the use of the smaller boiler throughout the year while reducing the site's energy intensity by 1%.

Other projects focused on smaller improvements that would have greater future impacts, such as efficient lighting and insulation upgrades. To reduce the building's heat loss, outside doors were either insulated or replaced with more efficient models. This improvement—made from the entire process of buttoning up the plant—was estimated to reduce the facility's energy intensity by an additional 2%. Also, the plant replaced all incandescent light bulbs with low-wattage LED light bulbs (indicator type lights on panels, switchgear or equipment). While these projects only produced moderate net savings during the first year, the longer life of the LED bulbs will significantly reduce costs related to bulb replacement and maintenance over the next few years.

Energy Efficiency Impacts

In the Richmond plant's first year as a LEADER, it not only met its 10-year goal, but surpassed it. In 2010 alone, Sherwin-Williams' Richmond, Kentucky, facility reduced its energy intensity by 26%. In addition, the plant estimates that total energy-intensity reductions of up to 50% may be possible as more improvements are made and newer technologies are deployed.

Sherwin-Williams' partnership with ITP is now at the cornerstone of the Richmond plant's efforts to reduce energy intensity. To promote its energy programs to employees and visitors alike, Sherwin-Williams posted its signed LEADER Pledge in the entrance lobby for all associates to see. The Pledge provides a visual reminder and incentive for employees to participate in the design and implementation of energy efficiency projects and improvements.

Energy efficiency upgrades are a constant consideration for the Richmond plant as it makes other product and capital investments. Over the past two years, the plant estimates that 20%–25% of its capital investments were for energy efficiency projects. In 2010, 17 of 40 capital-investment projects positively impacted energy use at the plant.

Making a Company-Wide Commitment

The energy and cost savings realized by the Sherwin-Williams Richmond, Kentucky, plant received high visibility from the company's upper management. The energy efficiency projects and the savings generated by the improvements were presented to senior management, demonstrating the clear incentive to standardize these practices across the company to maximize energy-cost reductions. Further, Mr. Satler presented the benefits of the *Save Energy Now* LEADER program to corporate leadership, tying the reduction in energy costs to other facility costs, including overhead, maintenance, parts, and equipment. Just a few weeks later in August 2010, convinced of the company-wide benefits, Sherwin-Williams signed the *Save Energy Now* LEADER Pledge corporate-wide.

Through the use of a company-wide database, Sherwin-Williams introduced a system to record and track the energy efficiency projects at each of its plants. Not only does the database allow each plant to see commonly implemented improvements, but it also allows each plant to see all of the projects currently underway throughout the company, which helps to reduce potential redundancies in initial project-scoping efforts across plants.

Conclusion

As many companies look to cut costs and overhead during difficult economic times, the bottom-up approach used by Sherwin-Williams has proven its value. In environments where innovation is fostered and a commitment to environmental responsibility is embraced, employees and plant managers have the ability to influence an organization's corporate culture to incite change. Sherwin-Williams made a corporate-wide commitment to energy efficiency after one plant took the initiative to become part of the *Save Energy Now* LEADER program and reduced its energy intensity by 26% in just one year. The energy savings realized through this kind of corporate- and plant-level leadership have the potential to revitalize the economic outlook for manufacturing plants across America.

Endnotes

[1] Moskowitz, F., Heat Recovery and Compressed Air Systems, Compressed Air Challenge, http://www.airbestpractices.com/technology/air-compressors/heat-recovery-and-compressed-air-systems Accessed December 14, 2010.

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