



Assessment Date: May 13, 2003

Benefits:

- Achieved nearly \$100,000 in savings per year for implemented projects
- Showed ways to reduce total annual energy use by 14.5%
- Estimated payback periods ranging from immediate to 1 year
- Estimated reductions in CO₂ emissions by more than 5 million pounds annually

Applications:

The West Virginia University IAC assessment team focused on Superfos Packaging's energy use, primarily in the manufacturing process and for motors, lighting, and compressed air.

Superfos Packaging: Plastics Manufacturer Saves \$100,000 Per Year by Implementing Industrial Energy Assessment Recommendations

Summary

West Virginia University's Industrial Assessment Center (IAC) performed an energy audit at Superfos Packaging in Cumberland, Maryland. By implementing measures recommended in the assessment, Superfos will save nearly \$100,000 per year in energy costs. The IAC, sponsored by the U.S. Department of Energy (DOE) Industrial Technologies Program (ITP), is one of 26 across the nation in which faculty and students provide eligible small- and medium-sized manufacturers with no-cost energy assessments. This assessment project was sponsored by ITP and The Society of the Plastics Industry, Inc. (SPI), a DOE Allied Partner.

During the assessment, the IAC team found that Superfos could save electrical energy by insulating heated surfaces on molding equipment, starting a motor management system program with the help of DOE's MotorMaster+ software tool, improving the compressed air system, and making changes in the lighting system. These energy enhancements will reduce electrical energy consumption by 7,950 MMBtu per year.

Company Background

Superfos Corporation is one of the largest plastic packaging specialists in Europe and is expanding into the U.S. market. Cumberland is a modern and fully automated plant that develops and produces injection-molded, rigid containers with open tops. The Cumberland facility measures 187,000 square feet in size and operates continuously, 7 days per week. Energy costs at the plant total approximately \$760,000 per year, most of which is for electricity and the remainder for natural gas.

Assessment Approach

A team of students and staff from West Virginia University's IAC performed the assessment at the Cumberland plant on May 13, 2003. IAC Director Dr. Ralph W. Plummer led the assessment team, which included IAC student lead, Nasr Alkadi and three graduate students.

Recommendations

Energy Conservation Awareness. Superfos management and employees are interested in energy conservation; at the time of the assessment they were already



taking many steps to save energy. The company had well-insulated pipes and valves in the chiller room, used synthetic lubricants in air compressors, and applied variable speed drives to control pumps, fans, and air compressors.

Molding Machines. The assessment team found that some molding machines were using significant energy because heated surfaces lacked insulation. However, by insulating these surfaces, the machines' heaters will operate less frequently, which will reduce energy consumption.

Motors. Another recommendation involved implementing a motor management system to help reduce motor energy costs. The assessment team suggested use of DOE's MotorMaster+ software to assist with analysis of energy and cost decisions, such as rewinding a failed motor versus replacing it with an energy-efficient motor.

Compressed Air System. The compressed air system at Superfos consumes a significant amount of energy. To help the company save energy and ensure a more efficient operation, the assessment team made these recommendations for the Cumberland plant:

- Set the air pressure at the level required by the system
- Repair compressed air leaks and install engineered nozzles to reduce air consumption.

Results

By putting into practice the IAC assessment recommendations, the Superfos Cumberland plant will lessen its annual electricity consumption by more than 2.3 million kWh, or 7,950 MMBtu. This translates to costs savings of nearly \$100,000 per year. Furthermore, the company's actions improve environmental performance, reducing carbon dioxide emissions by more than 5 million pounds per year. The table below describes recommendations for the Cumberland plant and savings results.

Implemented Recommendations for Superfos Packaging's Plant in Cumberland, MD

Project Category/ Recommendation	Annual Resource Savings	Annual Cost Savings	Implementation Cost	Payback Period
Process				
Insulate molding machine surfaces	5,464 MMBtu	\$76,401	\$2,253	1.2 months
Motor				
Implement motor management system	1,500 MMBtu	\$8,388	\$480	1.2 months
Compressed Air System				
• Reduce compressor air pressure	484 MMBtu	\$6,764	\$128	1.2 months
• Repair compressed air leaks	245 MMBtu	\$3,425	\$250	1.2 months
Lighting				
• Replace 400-W metal halide bulbs with 360W metal halide bulbs	197 MMBtu	\$6,764	\$0	Immediate
• Install occupancy sensors	60 MMBtu	\$839	\$800	1 year
Total	7,950 MMBtu/yr	\$98,542	\$3,911	

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Project Partners:

Superfos Packaging
Cumberland, MD

The Society of the Plastics Industry, Inc.
Washington, DC

For Additional Information:

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