



Assessment Date: June 18, 2003

Benefits:

- Saves more than \$105,000 annually in energy costs
- Reduces total energy usage by 22%
- Has payback periods ranging from less than 1 month to 9 months

Applications:

Electricity is the only energy source at the assessed plant and is used mainly for heating molds, compressing air, lighting, heating, and cooling. The molds were well insulated, so the assessment team concentrated on reducing the amount of energy used by compressors, lighting, and heating, ventilating, and air-conditioning (HVAC) equipment.

Precise Technology, Inc.: Molded Plastics Manufacturer's Energy Use Drops 22% as a Result of Industrial Energy Assessment Recommendations

Summary

West Virginia University's Industrial Assessment Center (IAC) performed an energy audit at the Precise Technology, Inc. plastic moldings manufacturing plant in North Versailles, Pennsylvania; as a result, energy use and costs are at least 20% lower at the plant. 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.

The assessment team made several recommendations for improvement. Those for the compressed air system included recovering waste heat, using outside air for intake, installing isolation valves, reducing pressure, and repairing leaks. Recommendations for the lighting system included replacing T12 fixtures with T8 fixtures, using electronic ballasts and reflectors, replacing fluorescent fixtures with metal halide lamps, installing occupancy sensors, and reducing lighting levels in some areas. The team also recommended installing thermostats in offices and implementing a motor management system. Six of the 11 total recommendations were implemented, reducing energy consumption by nearly 4,500 MMBtu per year and saving more than \$105,000—or about 22% of pre-assessment energy use and costs—annually.

Company Background

Precise Technology, Inc., is a full-service injection molder of precision plastic components and assemblies, primarily serving the personal care, health care, and food and beverage industries. The company has 11 plants in the United States and one in the Netherlands; it specializes in the production of custom plastic injection moldings and parts. The North Versailles, Pennsylvania, plant and offices measure approximately 72,000 square feet. The office area is cooled and heated by one rooftop unit. The plant area makes use of the heat generated in the manufacturing process. The plant's primary energy source is electricity, and its total energy budget is approximately \$328,000 per year.

Assessment Approach

An assessment team from the West Virginia University IAC spent one day at the plant, examining its operations and collecting data. The team, which included three graduate students and one undergraduate student, was led by IAC Assistant Director Dr. Wafik Iskander.



Recommendations

Energy Conservation Awareness. In general, the management and employees of Precision Technology, Inc., are energy-conservation oriented, and they follow many good practices to save energy. For example, the company uses an economizer on its air-conditioning unit, and the molding machines are very well insulated.

Compressed Air System. Because compressed air uses a significant amount of energy, the assessment team recommended the following measures to reduce energy usage:

- Repair compressed air leaks
- Set the air pressure at the level required by the system.

Motors. The assessment team recommended implementing a motor management system based on DOE's MotorMaster+ software. This software assists in the analysis of many energy- and cost-saving decisions, such as whether it is better to rewind a failed motor or to replace it with a new, energy-efficient motor. A motor management system can also help to reduce energy costs by providing both a preventive and predictive maintenance program.

Lighting. The lighting levels in many areas were more than adequate. The team recommended upgrading the fixtures to more efficient ones with electronic ballasts and reflectors. They also recommended increasing the use of task lighting and reducing general lighting levels, to reduce energy usage and costs.

Results

The table below shows the annual energy savings at the Precise Technology plant resulting from the implemented recommendations. This will reduce annual electricity use by approximately 4,450 MMBtu, about 22% of pre-assessment usage. The resulting energy cost savings will be more than \$105,000 per year, and reductions in carbon dioxide emissions will be 2.9 million pounds per year. The payback periods range from less than 1 month to 9 months, with an average payback period of less than 4 months.

Implemented Recommendations for Precise Technology's Plant in North Versailles, PA

Project Category/ Recommendation	Annual Resource Savings	Annual Cost Savings	Implementation Cost	Payback Period
Air Compressor System				
Repair air leaks	352 MMBtu	\$5,685	\$500	1 month
HVAC				
Install thermostats in offices	584 MMBtu	\$9,443	\$2,500	3 months
Motors				
Implement motor management system	778 MMBtu	\$11,747	\$700	Less than 1 month
Lighting				
• Replace T12 with T8 lights and electronic ballasts	1,910 MMBtu	\$46,327	\$10,000	4 months
• Replace fluoride fixtures with metal halide fixtures	573 MMBtu	\$27,812	\$6,667	9 months
• Install occupancy sensors	255 MMBtu	\$4,123	\$2,500	7 months
Total	4,452 MMBtu/yr	\$105,137	\$22,867	

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Project Partners:

Precise Technology, Inc.
North Versailles, PA

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

For Additional Information:

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