Penford Products

CASE SUMMARY 18

PENFORD PRODUCTS, CO.

Cedar Rapids, Iowa
Linn County

Intern: Molly Malone
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The Company

Penford Products Co., a division of Penford Corporation, is a leading supplier of specialty starches for the paper and textile industries. These starches and several co-products are produced through the corn wet-milling process.

Project Background

Penford Products Co. (Penford) is currently working with the national Energy Star® program to reduce energy consumption through a reduction in horsepower usage, thereby reducing CO_2 production. Recently, Penford also has assigned a staff position to focus on energy reduction throughout the entire plant. Penford has made a major commitment to reduce landfill waste through an internal/external recycling program. An environmental management system (EMS) also has been implemented.

Incentives to Change

Corn wet-milling is an energy-intensive industry. The motors and centrifugal pumps in the plant require a large electrical demand. Opportunities are available to help in energy reduction involving these systems. Penford is currently an EPA Energy Star® Partner. Part of the partnership contract requires employee education to promote an understanding of the costs associated with energy consumption plant wide.

To make the employees more aware of the energy savings and costs associated with everyday activities, four posters were created. These posters dealt with different areas of the plant and the potential for energy savings. The posters focused on 1) air compressor leaks, 2) Heil rotary gas-fired dryer operation, 3) energy savings in the office areas, and 4) pollution prevention goals of reuse, reduce, and recycle.

Results

In addition to educating the employees, two of the posters demonstrated cost-saving opportunities. The poster on air compressor leaks highlighted the cost associated with four different-sized air compressor leaks. The poster for the dryer depicted an idle Heil dryer that, if running on low fire, costs about $330 per day to run, or more than $115,000 per year. Leaving the burner off when not in use can save this cost.

MotorMaster+ is a software tool that was used to create an inventory database of all of the motors in the plant. This software helps to determine where potential savings can be realized relative to the different types and styles of motors. Data was collected from the nameplate for entry into the program, including the identification number, horsepower, speed, full load amps, voltage, frame size, efficiency, power factor, service factor, and the manufacturer, as well as live readings and measurements of the voltage and amperage. After entering information on 50 different motors, it was determined that savings are available on 26 of these motors. The savings are associated with rewinding the motor or auto downsizing of the motor. The total savings found from these motors was about $8,000, which was extrapolated to about $30,000 for the total number of motors in the entire plant. This is equivalent to more than 830,000 kWh of energy saved per year.

Another area for potential energy savings was pumping systems. Penford has many different pumping systems. It is necessary to look at each system individually to determine options to improve the current system. Penford's approach was to review each system using several different types of software, such as the Pumping System Assessment Tool (PSAT), Crane Companion, and Goulds Pump Selection Software. Based on the software analysis, savings of roughly $50,000 per year were predicted. This is equivalent to more than 1,350,000 kWh of energy saved each year from the 11 different systems studied.

The final area evaluated was lighting. Numerous lighting fixtures are located throughout the entire plant. Two companies were brought in on a no-charge basis to conduct a lighting evaluation. The result of these evaluations showed savings could be found in the office areas by replacing all of the fixtures; however, the upgrades were not within the recommended two-year payback period. Another option would be to upgrade to the new light fixtures as the old fixtures required replacement, resulting in less than a one-year payback. The majority of the areas in the plant show no cost savings but there were several options available for the maintenance building. A new layout is being proposed for this building that could potentially save Penford more than $8,000 per year in lighting costs.

The total opportunities from Penford Products Co. are as follows:

- 2,650,000 kWh of energy saved annually
- Equivalent to 2,200 tons of CO_2 saved annually
- Savings of more than $200,000 per year