KANSAS MANUFACTURING SOLUTIONS

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Solution Resource:

Improving Energy Efficiency Can Save You Money

WHITE PAPER

OVERVIEW

In today's competitive global market, manufacturers must scrutinize all elements of their price-sensitive products in order to maintain and increase market share. Progressive manufacturers analyze energy usage regularly to minimize the non-value added costs of producing their products - because wasted energy costs alone can drain manufacturers of thousands of dollars each year.

An energy assessment is a close look at your company's consumption of all power from all sources, at all times of the day and in all functions of your operation. Energy assessments have two principal purposes: to determine how much energy is consumed for each purpose or function in a manufacturing environment, and how much of that energy can be saved at what price. Here's a guide to conducting an energy assessment.

Assemble Billing and Usage

1

- Contact your utility provider to request billing and usage statements for a minimum of the past 12 months.

Identify Peak Energy Consumption

2

- It's difficult to quantify potential energy savings without first determining how much energy you're using. On electric bills, for example, it's critical that manufacturers fully understand the demand component, which reflects the capital requirements of your utility to provide necessary power to metered facility.
- Demand is a measure of maximum concurrent load maintained for some predetermined time interval (usually 15 or 30 minutes) during the billing month. Since utilities don't typically monitor demand in every month, knowledge of when this affects billing is very important.
- Manufacturers should strive to keep the peak demand as low as possible. Methods of doing this include scheduling production during off-peak hours, installing motion sensor-lighting controls and programmable controllers, and timers for electric water heaters.

Identify Energy Use Of All Functions Within the Facility

3

- To determine how much energy you're using for each purpose or function in your facility, it's important to look at metered, or measured, energy-consumption data in relationship to the building's equipment and systems. This data frequently is available at many different time intervals (hourly, weekly, monthly, etc.), and usually for each type of power consumed in a building. Usage meters reveal how much energy you're consuming for specific purposes.

Determine Base Load or Non-Weather-Related Energy

4

- Base load is non-weather-related use of energy in a facility - such as lighting and equipment. It's important to isolate this variable to understand the impact that facility and manufacturing-process changes will have on energy use.
- The difference between total consumption and base load is the energy you use for heating and cooling. Improving insulation and installing programmable thermostats are two proven methods for reducing weather-related energy use.

Determine Occupancy and Non-Occupancy Energy

5

- Occupancy energy consumption is the energy you consume in a building when it's occupied for its ordinary purpose or function. In a manufacturing facility, this would be during the hours when products are being manufactured.
- Non-occupancy energy consumption is the energy you consume when a building isn't occupied. In simpler terms, on what are your energy dollars spent when no one is in the building? Are you lighting finished or raw-goods inventory? Heating water for restroom use? Setting back heating and cooling temperatures? Lighting exit signs with incandescent bulbs vs. LED? Checking for air system leaks?

Identify Times of Minimum Use

6

- Building designers traditionally have installed equipment that can perform functionally during peak loads. Utility companies bill customers for peak demand for electricity, steam and even natural gas. The peak rate influences energy costs, but the minimum rate of energy consumed also can be a very significant influence on energy consumption.
- If you're aiming to conserve energy dollars, look at the peak-rate use or demand. If you're also looking to conserve energy use, look throughout your manufacturing facility at what happens during the hours of the year in which minimum use occurs.
- The purpose of an energy assessment is to determine not only how much energy you're consuming for each purpose, but also how much you're wasting.

Tips For Saving Energy Costs

- Make energy consumption a line item in the budget - managers will make an effort to keep their costs within budgets and look for ways to save money. This is extremely effective when each department can measure its energy consumption.
- Use more efficient industrial equipment and processes - doing so could result in a 24-38 percent savings in energy use. For manufacturers, the most promising targets for efficiency gains are motor drives, boilers and steam, lighting and reducing air leaks in compressor lines.
- Make energy savings one of the factors weighed when considering changes and improvements to products, procedures and production methods.
- When possible, use energy a second time, particularly heat or heat as a by-product.

Involve Staff in the Effort

Energy conservation efforts will be most successful if your staff is involved in the process. Some of the ways you can do this are to:

- Appoint an internal change agent that will be your energy manager.
- Establish a team (with representatives from each plant department) and challenge the team with formulating and conducting an energy-conservation program.
- Establish guidelines for the team.
- Plan and participate in energy-saving surveys
- Develop record-keeping, reporting and energy accounting
- Research and develop ideas on ways to save energy
- Establish challenges to reduce energy consumption
- Communicate management's commitment to energy conservation.

SUMMARY

You must manage energy conservation daily. You not only need to be cognizant of your energy use itself, but also what portion of your product cost is related to it. Fortunately, you can realize immediate cost savings by implementing an energy conservation program.

Energy assessments and conservation programs can be time-consuming, but the payback is well worth it. If you need affordable assistance with your energy assessment - or evaluating opportunities for energy savings - please call KMS. We're equipped to perform both extensive and walk-through energy assessments and can provide insight and assistance with your energy conservation projects.