

“Motives and Rewards for Managing Plant-Wide Energy Consumption”

Many facilities managers are quick to point out that they don't have the time or expertise to manage their energy costs... after all, it takes all of their effort to “keep the car on the road,” much less monitor or tinker with its performance. Actually this is true for the vast majority of manufacturers. However, some of facilities can and do find time to perform energy management functions that contribute to their competitiveness.

What are the motives for managing energy in today's lean competitive environment? (*Hint: It's not all about fuel bills.*) Companies that successfully manage their energy costs are those that link energy management to *business performance*. Industry's motives and rewards for managing their energy include plant reliability, speed, flexibility, product quality, and greater capacity to generate revenue. The Alliance to Save Energy maintains a set of industrial energy management case studies¹ that illustrate the practical outcomes of energy management, which include:

Plant reliability. Facilities that implement energy efficiency—optimizing combustion firing rates, installing insulation that conserves thermal energy, and using digital controls to monitor and apply power, among other measures—are also gaining better plant reliability and mechanical integrity. They are minimizing downtime. Manufacturers produce more products when existing assets are more reliable and fully utilized. This is a strategy for boosting output without investing in new plant capacity. In certain high-value production processes, the time and effort expended to achieve energy reliability is insurance against the risk of system failure and revenue loss.

Speed. In a global economy driven by cheap labor costs, American industry's competitive edge is predicated in part on speed. This means faster process set-up and order fulfillment. Good energy management assures the unimpeded transfer of heat and power, which contributes to speed. Reliable equipment allows manufacturers to fill orders faster, so that they can fill more orders in the space of a year. Therefore, they make more money.

Flexibility. Energy management also enables a more accurate and ongoing assessment of plant capacity. Poorly managed plants and equipment have an uncertain capacity to fill orders on time. Disciplined energy management gives facility staff an ongoing survey of thermal and power capacity. That knowledge allows managers to more quickly and confidently determine their ability to accommodate the new and varied process loads that come with custom orders. Instead of forfeiting productive capacity to waste and inefficiency, plants can use that capacity to make more products that bring in new revenue.

¹ See <http://www.ase.org/section/topic/industry/corporate/cemcases>

Product quality. Any manufacturer of pharmaceuticals, plywood, corrugated paper, or a host of other items will indicate that good products require thermal energy that is applied at the right temperature, for the right duration, and in proper proportion to material inputs. Failure to do so will result in wasted raw materials and other costs expended up to that point in production. Manufacturers enjoy lower scrap rates when they obtain control of their process through energy management efforts.

The Alliance to Save Energy develops a series of case studies that illustrate success stories in industrial energy management. The companies featured in these cases show surprisingly varied motives for pursuing energy management. Perhaps the most obvious reason is to “control energy expenditures,” although this is far from being the only reason. Some companies put a premium on resource stewardship, for both public relations and risk management purposes. Other companies monitor and benchmark their energy use to sustain and replicate operational improvements that would be otherwise lost over time due to staff changes—in so doing, they avoid “re-inventing the wheel.”

Plant reliability leads to predictable fuel consumption. Reliability allows plant managers to purchase a greater proportion of fuel through fixed priced contracts, which usually feature lower prices per unit. This avoids the bother and expense of purchasing fuel in spot markets, which may happen when plants put on extra, unscheduled shifts to compensate for downtime. The net impact of energy efficiency is a reduction in the average price of fuel consumed.

One immediate benefit of energy flow management is the verification of fuel bills. Utility companies can and do make errors in billing. Some plant managers never see the fuel bills for their facilities. Effective energy management puts information in the hands of such plant managers who can then compare their internal energy statistics with those metered by the utility. Response to erroneous utility charges can add savings over and above any efficiency initiative.

Here’s a summary of their motives and rewards for managing energy use:

- **Energy expense control.** One way to reduce energy expenses is to use less of it. The ability to manage energy use is a hedge against volatile energy prices.
- **Non-energy expense control,** such as reduced raw material waste attributable to more effective use of heat and power.
- **Increased revenue potential** through identification and replication of measures that allow managers to boost production from existing equipment.
- **Improved product marketing** through visible resource stewardship. Companies assure their buyers of lowest prices by squeezing resource waste out of the cost of their products.
- **Risk mitigation** related to environmental liabilities and operational reliability. The combustion of fuel creates emissions that are subject to regulation. The reduction of fuel waste immediately reduces the volume of emissions.

Bottom line: energy management contributes to business performance in today’s competitive economy.
