

Are You Overlooking A Prime Source Of Cost Reductions?

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With the economy still weak and competitive pressures continuing to rise, reducing expenses is imperative for industrial businesses. Yet many underestimate or neglect a key source of savings: the electricity bill. That's because we have a tendency to see energy as a largely uncontrollable cost—we need the energy we need when we need it, and often are dealing with a monopoly provider. But even the most energy-intensive businesses can cut energy costs significantly, and without compromising operational performance or quality. The key is to take full advantage of proven but not widely used energy efficiency strategies, such as peak-demand control, utility demand response, and real-time pricing programs, as well as the technologies that enable them. Doing so can not only lower electricity costs, but also, in the case of demand response, might even generate revenue.

Cost Reduction Strategies In A Nutshell

Demand control: This is the process of understanding where and when costly energy spikes occur and taking precisely timed measures to reduce them or shift them to non-peak rate hours. The cost of peak-time energy use can be significant, accounting for as much as 40 percent of an industrial user's electricity bill. Avoiding these spikes can reduce the overall bill by as much as 20 percent.

To do this successfully, users must understand exactly which loads can be

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manipulated, when, and by how much. Some rules might remain constant while others change based on the day or time of day, season, production process, and other variables. Typically, to successfully avoid a spike in usage, a load or loads only need to be affected for a short period of time, often just minutes. Real-time access to energy consumption, as well as a comprehensive understanding of the utility bill, are also necessary.

Demand response: This is a peak-demand reduction strategy being implemented by utilities and power system operators across the country. Demand response programs pay users to reduce electricity consumption upon demand at times to be determined in the future. For example, on an unusually hot summer day a utility might notify demand response participants that it needs them to curtail their usage by an amount specified in their participation contract. If the business delivers the agreed-upon amount it receives compensation. This can generate sizeable financial rewards for industrial users while alleviating stress on the grid.

For users who opt to participate in auto-demand response, where the entire event from communication to curtailment is automated with no human intervention, the payments can be even greater. But the risks associated with demand response are greater too, as some utilities charge penalties to users who don't deliver agreed-upon capacity. That's why it's important to have a carefully orchestrated demand response strategy in place. Unlike demand control, demand response events can last much longer, typically two to four hours. This means load-shedding is likely to be more complicated and require more equipment manipulations.

Real-time pricing: Utilities that use real-time pricing change their energy rates frequently, usually by the hour, based on the market price of electricity. Users that can respond to these ongoing price fluctuations by shifting consumption to lower rate periods or reducing it during peak times can better control their energy costs and see significant overall reductions. As with the previous strategies, a detailed understanding of process and loads, and the ability to manipulate those loads quickly, is key. For instance, a plant responding to real-time pricing might drop the temperature of a cooler lower than necessary during low-cost times and then shut it down and allow it to come back up to temperature during peak hours, conserving energy when the rates are high.

These are prime money-saving opportunities, yet only a small fraction of industrial users take advantage of them. The biggest barrier is probably a lack of knowledge about what these strategies are and how to employ them. Many believe they can't participate because their complex manufacturing processes can't be altered without risking production output or quality, and many times the utility programs are not well understood or users don't even know they exist. And those that attempt to manipulate energy consumption manually tend to quickly hit a brick wall.

Automation Is Essential

Manually manipulating complex processes to achieve significant savings is difficult, if not impossible. The scope and types of loads that can be shed using manual approaches are limited, and participation in demand response programs or

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response to real-time pricing may be impossible or unprofitable, given the short notice involved. Tailored automation technology is essential for taking full advantage of energy cost control strategies, and it can work without compromising quality or causing unanticipated disruptions.

Industrial businesses are no strangers to automation, but many are reluctant to invest in new technology in the current economy. Fortunately, utility incentive programs can cover partial or even full costs of the systems needed to reduce energy consumption and/or manage peak demand. These incentives vary by state and cover a wide variety of equipment and technology for applications ranging from basic energy efficiency to automating participation in demand response programs. These programs change often and sometimes disappear altogether when funding is exhausted. It is helpful for users to have a close relationship with their utility representative or to work with a vendor who is knowledgeable about local programs to make sure they get the best rebate possible. The deals are out there and they are real. It's just a matter of finding them.

Where incentive programs aren't available, renting, renting to own, and leasing often are attractive alternatives to outright purchases. These financing options increase purchasing power and lower the upfront investment, allowing immediate opportunity to reduce energy costs even when there's no budget for new technology. Depending on the circumstances, businesses may be able to realize tax benefits through bonus and accelerated depreciation or investment tax credits, and can even realize immediate positive cash flow.

Key features of the best energy management systems are:

- An ability to take direct control of the loads—within parameters you set—so that no human intervention is required.
- Seamless integration with existing systems and the ability to extend their value.
- Capacity to connect with many loads in order to take maximum advantage of potential savings.
- Access to real-time data in order to analyze and predict events.
- Rules-driven, process-protecting routines tailored to your operations that can manage an infinite variety of industrial processes, limitations and thresholds.
- Wireless input/output, which eliminates the need to run costly conduit (often a disruptive and time-consuming process) and provides access to hard-to-reach places, ensuring that the maximum number of loads can be controlled.

Beyond the technology itself, look for a vendor that can assist in identifying and evaluating utility programs, rebates, and incentives. The vendor should also have expertise in your industry, so that they're familiar with typical processes and equipment and can share best practices based on past projects.

With the right technology partner, industrial users can significantly reduce

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previously uncontrollable energy costs. By being able to aggressively manage a monopoly-controlled resource that continues to rise in cost year after year, you can not only cut costs, but also gain a competitive advantage. In manufacturing, many companies can make a widget. It's the company that makes the widget most efficiently that wins the market.

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