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What's Wrong with Traditional Energy Management?

Start Realizing Untapped Savings Opportunities and Tame Volatile Energy Costs

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Traditional Energy Management Approaches are Falling Short—How to Fix the Problem

Energy utility costs—primarily natural gas and electricity—account for one to two percent of sales for the average business, and can be as much as four to five percent of cost of goods sold for manufacturers. With energy prices turning volatile, corporate management teams are exposed to the risk of unanticipated movements in energy costs. They are feeling relatively helpless because of the perceived inability to proactively manage regulated energy costs. At the same time, firms are publicly committing to sustainability goals and are now wondering how they will achieve them.

Although many firms have implemented short-term measures to address energy costs and sustainability commitments, these efforts are falling short. Our benchmark data and research indicates that for most firms, 50 percent of their initial energy savings disappear within the first six to 12 months due to a lack of continuous monitoring, analysis and corrective action. However, significant opportunity to deliver value remains. Analysis from the U.S. Department of Energy indicates firms that embrace continuous monitoring and active energy management practices can achieve 15 to 40 percent energy savings.

This paper looks at why traditional approaches are failing, and outlines an active energy management approach that changes the game and generates sustainable energy cost reductions.

Typical energy management strategies—and why they fail to deliver sustainable value

A review of more than 100 companies and their practices reveal that most firms take three common actions to address the energy management challenge:

Conduct an energy audit:

To establish an energy consumption baseline—a basic requirement for successful energy cost optimization—firms deploy monitoring devices to measure energy usage from the facility level down to the machine level.

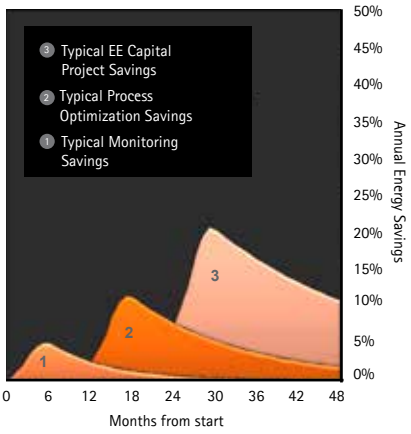
Implement audit recommendations:

After assessing energy consumption levels and trends down to the machine level, managers can implement process changes to optimize energy consumption. Actions may range from policy formulation (shutting down computers at night, turning off idle equipment, etc.) to automation (automatically turning off lights) to equipment optimization (changing set-points on heavy machinery and equipment).

Invest in high-efficiency equipment:

With a full view of the energy consumption and equipment efficiency profile of the enterprise, firms can strategically invest in high-efficiency equipment. These capital upgrades can lower energy consumption and may also qualify for rebates and incentives that can significantly enhance potential return on investment (ROI).

Figure 1:



Although these traditional energy management techniques can yield quick-hit results, there is a common pitfall: when the meters come off, it is back to business as usual and the savings disappear.

For example, when firms conduct energy audits, employees and equipment operators are aware that their energy usage is being monitored and they make changes to reduce consumption, such as turning off idle equipment. But when monitors are removed, initial savings peak and then slowly erode as employee behavior returns to normal. Similarly, when firms implement process changes, substantial initial savings accrue. However, when the monitors come off, gains decline as equipment schedules change. Operators go back to the old way of doing things and set-points revert to old levels. In addition, without detailed machine-level consumption data as a baseline (as opposed to a point-in-time snapshot), analysts are unable to come up with truly optimal process improvements because the data is not granular enough. Finally, with capital equipment upgrades, savings targets are seldom realized due to unrealistic operating assumptions used to build ROI cases and most firms' lack of market intelligence about the complex array of incentives and rebates.

"50 percent of initial energy savings disappear within the first six to 12 months due to a lack of continuous monitoring, analysis and corrective action"

A four-step Active Energy Management approach

Recognizing where most initiatives fall short, an integrated, four-part Active Energy Management strategy can stop the bleeding and address traditional energy management shortcomings:

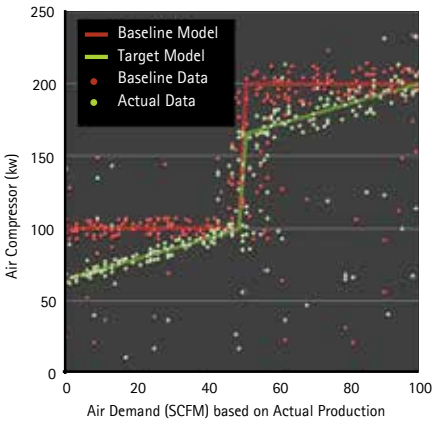
Get persistent: Apply "Active Energy Management" and take monitoring from a one-time activity to an active, ongoing analytical competency.

There are several keys to making energy savings persistent. First, take monitoring and measurement from a one-time analysis to an ongoing, active competency. Leading firms use 24x7 advanced metering and monitoring technology with skilled analysts to proactively monitor energy consumption data and patterns. Continuous monitoring helps mitigate the savings leakage described earlier. Active monitoring allows managers to see—in near real-time—if employee behavior is beginning to change or old habits are starting to return, and identify the root causes when actual energy consumption differs from projections. In addition to preventing savings leakage, active monitoring helps identify new, incremental energy savings opportunities, raising the cumulative savings realized.

Go deeper: Use machine-level consumption data to drive sustainable process optimization.

With a detailed understanding of energy consumption down to the individual equipment level, managers can implement detailed process optimization programs, such as changing set-points for heavy machinery. For example, an air compressor energy consumption study (see figure 2) revealed an opportunity to adjust the operating mode from continuous to throttled, resulting in 7 percent energy savings verified by ongoing measurement. In another example, adjusting improper temperature set-points in a chiller plant based on thorough analysis of usage data resulted in 30 percent energy savings. With the right intelligence and detailed monitoring, energy analysts can assess performance and immediately stop energy savings leakage. Analysts also can spot potential maintenance issues and proactively investigate when machine-level performance deviates from expectations.

Figure 2:



Leverage insight: Use energy demand insight to enhance capital investment decisions and capture incentives and rebates to drive higher ROI.

A comprehensive understanding of the consumption profile of the existing asset base enables much better capital investment decisions. Armed with detailed data and realistic energy consumption estimates, managers can rationally weigh the benefits of energy-efficient new equipment versus their purchase costs and other related expenses (decommissioning and disposal cost, production down-time, etc.). Beyond energy data, deep market intelligence of credits, incentives, and local, state and federal rebates can dramatically alter the ROI profile of new capital investments. The opportunities are substantial: In 2011 alone, governments, nongovernmental organizations and utilities distributed more than $6.8 billion in cash payments to promote energy efficiency initiatives.

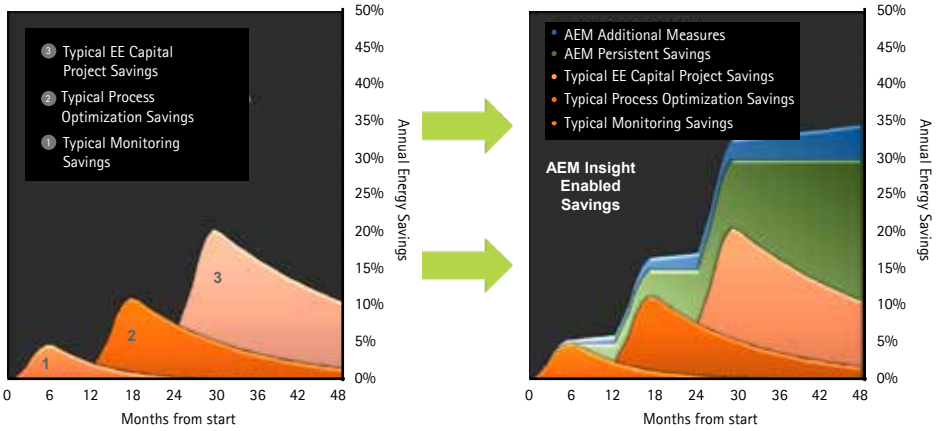
Tackle the supply side: Extend Active Energy Management to integrated energy supply and demand management to drive the next level of savings.

With an established platform of ongoing measurement and management, firms can take energy savings to the next level. Detailed understanding of historical and planned consumption allows for acceleration of supply side strategies. For example, in deregulated markets, the accuracy with which a firm can predict its energy usage determines its ability to secure favorable energy rates by minimizing bandwidth charges. Energy consumers can also capture other savings through techniques like load shifting (shifting usage into lower-rate time periods) and peak shaving.

Finally, in regulated markets, contrary to popular belief, firms can optimize their energy expenditures by taking advantage of the various rate structures available to purchasers and being aware of which available rates may be applicable to them.

As this paper describes, current energy management practices are not delivering on their promises. The short-term benefits of energy audits and near-term recommendations quickly fade without continuous monitoring. On the other hand, Active Energy Management, which includes continuous monitoring and analysis, prevents the traditional savings leakage seen in most energy management programs. It also provides the data and insight that analysts and managers need to identify new savings opportunities and drive continuous improvement and cumulative energy savings benefits.

Figure 3:



Conclusion

Energy and utilities represent a significant and highly volatile area of expenditure for most businesses. However, traditional energy management approaches frequently fail to deliver sustainable results. Many managers consider high energy spend as an area that cannot be addressed due to market regulations and commodity volatility. However, with continuous monitoring and Active Energy Management programs, leading firms can obtain substantial energy cost savings through better energy demand management, sustain those savings through ongoing monitoring and optimize energy purchases with deep market intelligence.

About Accenture

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