



Gaining the Edge: Minimizing Energy's Impact on Business

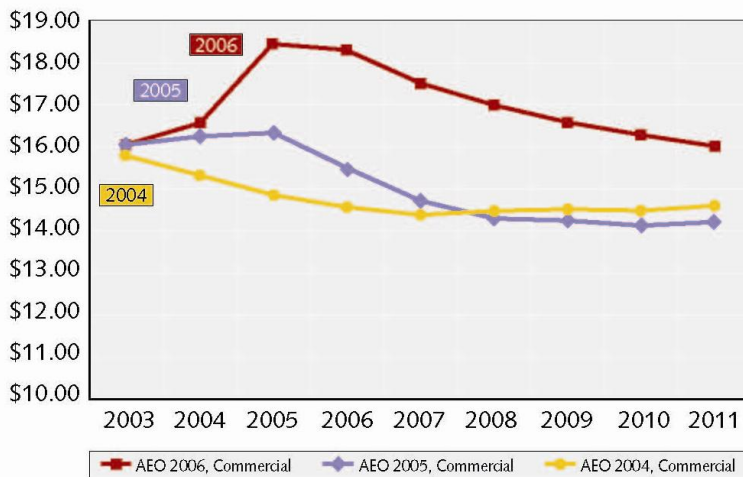
Achieve immediate and long-term energy efficiencies with a solution that adapts to the changing needs of your business and its facilities.

Introduction

As budgets remain under incredible pressure, executives are continually seeking ways in which to make the most of their company's finances to satisfy customers and shareholders alike. What they may not realize is their buildings can hold the key to financial and organizational success.

Energy costs have surged in recent years, representing a greater increase than expected. According to the U.S. Energy Information Administration's Annual Energy Outlook 2006, energy costs rose 31 percent from 2003 to 2005. These levels are projected to moderate and remain steady through 2011. However, the EIA has underestimated their projections, making it necessary to revise their forecasts the last three years.

Commercial Cost of Energy Forecast
(per Million BTU's in Constant 2004 dollars)



Source: EIA Annual Energy Outlook Years 2004, 2005, 2006

While finding resources to address these costs, there is not much room for negotiation. As the line item for energy-related costs on all organizations' budgets has increased at such a rapid rate, budget sizes have remained largely unchanged. Results of a 2004 survey¹ of 3,140 U.S.-based facility managers revealed that 58 percent said their budget remained the same or decreased from year to year.

Yet, utility costs—and allocating resources to cover them—aren't the only points of pain for building owners and managers.

Environmental issues can actually prove costly to a company's bottom line. For instance, indoor air quality can have a detrimental effect on property values as well as lead to employee illnesses and reduced productivity.

At the same time, companies want to promote an environmentally-friendly image by minimizing their impact on the environment by reducing their use of energy and water. Such measures reduce greenhouse gas productions and lower demands on clean water.

Organizations may choose to avoid dealing with these issues or attempt to tackle them on their own. But oftentimes, they find their personnel are not qualified to implement such energy- and cost-saving initiatives. While some organizations already have building automation systems in place, not all have been optimized to deliver the utmost in energy savings and operational efficiencies. And these same companies lack the knowledge and systems to realize these efficiencies and resulting cost savings.

As a result, there is increased importance for organizations to have a provider that manage the entire process—from understanding the customer's specific needs, conducting a complete evaluation of the building, implementing necessary improvements and continually monitoring those improvements to maintain (and improve) optimum results.

New, Customized Technologies are the Enabler

In the early 1970s, energy experts predicted that U.S. energy consumption in 2006 would be four or five times higher than it actually is today. Fortunately, those projections haven't been realized, due mainly to the successful implementation of technology and other energy saving strategies over the last 30 years. But there is still work to be done. Obviously, technology continues to improve. So a system put in place 10 or 15 years ago may have yielded the highest efficiencies at the time. But the newest technological solutions available today can provide even greater efficiencies, given they are installed and maintained by properly trained professionals who know how to generate those best results.

There is certainly an urgent need to implement these new systems and technology in order to keep energy consumption at healthy levels and ensure equally successful results for organizations that support them.

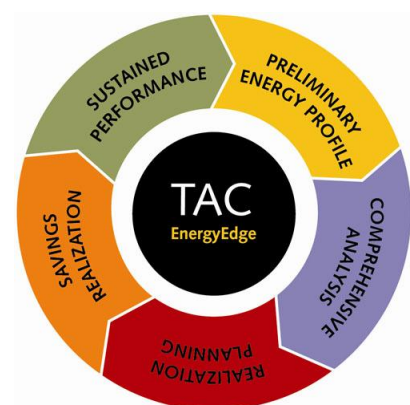
Customers require a solution that is customized to meet their unique needs and yield the most positive ROI. Service providers that specialize in such solutions can leverage their experience with other customers to tailor a targeted solution that addresses a customer's concerns.

TAC EnergyEdge is an example of an energy efficiency program, which combines the benefits of a facility improvements contract with an extended services contract. The facility improvements contract includes building automation and control measures, lighting measures, mechanical equipment measures, electrical measures (through TAC parent company Schneider Electric), water measures, building envelope measures and retro-commissioning services. Extended services are comprised of remote monitoring, operations and maintenance (O&M) support and facility performance reporting to help organizations continue the momentum of the project and sustain the desired results. EnergyEdge often yields a two- to four-year payback.

Integrating the Solution


An EnergyEdge initiative begins with a preliminary energy profile. EnergyEdge professionals combine utility bill analysis with benchmarking and identify potential Energy Conservation Measures (ECMs) to best align that profile with an organization's overall business goals.

Next, an energy engineer conducts a complete facility audit to determine a structure's base line energy usage and validate the potential savings and feasibility of the ECMs. "We have competencies that we can put on site to look at energy usage and do an analysis of how the energy is being used; and make recommendations for how it can be reduced with payback and return on investment calculations for the customer," said Paul Burley, U.K. support sales manager for TAC.



The TAC EnergyEdge Process

The customer then takes a more active role in the process through a step called realization planning. This will ensure that the customer's objectives will be met on a continuous basis; and not as a one-



time solution. The next step is savings realization, in which customers are shown how ECMs can help them achieve savings as well as other business goals.

The final piece is perhaps one of the most important: sustained performance. EnergyEdge will help organizations achieve its energy goals and continue to achieve those goals going forward.

“[Organizations] can get in a reactive mode as opposed to a proactive mode, especially when it comes to capital expenditures and energy,” said Jeff Canterberry, business development for TAC. “EnergyEdge gets them on the right track to start being proactive regarding energy as opposed to reactive. What we’re trying to do with EnergyEdge and TAC is understand when that failure is going to occur and let you be prepared for it before it does occur. That way, you’ve already got the solution on the table for when that catastrophe does hit.”

Realizing the Benefits

By putting a program like EnergyEdge in place, organizations can reduce their energy consumption as well as minimize environmental impacts related to their energy programs.

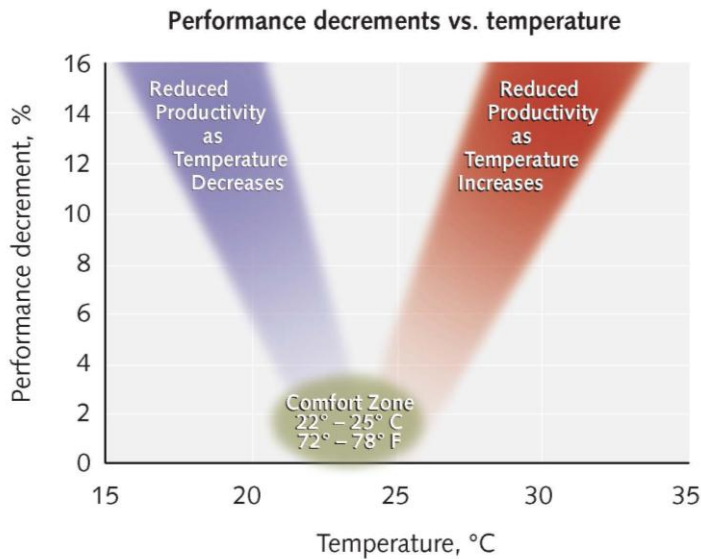
Replacing organizations’ old, outdated equipment with more efficient systems alone can save from five percent to 15 percent in energy usage. In some cases, organizations can become eligible for government-sponsored incentives once their new systems are in place. Long-term, maintenance costs will also be reduced. According to a study from E SOURCE², recommissioning can reduce a building’s energy cost by five percent to 15 percent.

Overall, a good energy efficiency program is positioned to help organizations more successfully meet these and other business objectives and satisfy their customer base. “Customers are looking for us to be much more aligned with their own business objectives,” said Burley. A good program should achieve this regardless of a building’s features and the occupants it serves.

For example, an energy efficiency program can help hospitals achieve the proper environment for their patients and universities can provide the most successful environments for learning and the healthiest environments for housing. Office building owners are able to provide an environment that promotes high tenant productivity, while pharmaceutical manufacturing plants can create an environment that meets their regulation, cleanliness and control criteria.

By using an energy efficiency program to address environmental concerns and increase employee productivity, customers can make their energy budget less cumbersome. In fact, just a one- to two-percent increase in productivity can successfully offset an organization’s total energy budget.

“There is a definite link between comfort conditions and productivity,” said Burley. “If people are hot and working in stuffy conditions, they are going to feel tired and lethargic.” Studies have found a correlation between productivity and temperature. According to a report³ entitled, “Control of Temperature for Health and Productivity in Offices,” there is a two-percent drop in productivity for each degree above 78°F. A similar reduction in productivity occurs when the temperature drops below 72°F. (Temperatures between 72°F and 78°F are considered the comfort zone).



Source: Drawn from studies referred to by Lawrence Berkeley National Laboratory LBLN 55448

The connection between indoor climate conditions and productivity continues to garner attention. In fact, ASHRAE (the American Society of Heating, Refrigerating and Air-Conditioning Engineers) commissioned a new study in late 2005 to study the correlation between environmental comfort and productivity.

One Integrated Solution; Timely Results

TAC and the EnergyEdge team understand how all building-related systems work—and work together and can put together a comprehensive plan that addresses all of them.

By implementing EnergyEdge, organizations can solve all of their energy-related problems with one integrated solution. “We have the knowledge of all the systems in a building,” said Anders Genhammar, group manager, Extended Services for TAC. “We understand many building systems and we can see how they’re all working together.”

Since one of the first steps taken by the EnergyEdge team is a visit to a customer’s site to assess the situation, some results can be achieved immediately. Executives can demonstrate ROI to their organization’s senior management within days or months, not years. The goal of a solution like EnergyEdge is for customers to receive initial the initial energy savings and continue to achieve and improve upon those results. “It’s not just about creating energy savings today,” said Burley. “If we’re not on top of that next year, those savings can just disappear.”

“The greatest value customers are going to derive is that long-term partner to help them meet their facility needs and concerns,” added Canterbury.

EnergyEdge in Practice

CASE STUDY 1

For the owner of various manufacturing buildings and distribution facilities across the UK, rising energy prices and old, inefficient equipment were among the main factors in enlisting TAC and EnergyEdge for an energy solution.

Working in conjunction with this customer to find appropriate solutions, the EnergyEdge team introduced the latest BMS and data logging capabilities and replaced the old technology.

As a result, the customer gained intelligent control over its energy-related equipment and is now able to collect energy consumption data to continue to study the progress of this project. After raising the capital to fund the initiative, the customer has achieved a 35 percent savings in electrical consumption and a 25 percent cost savings. In addition, the customer has been recognized in its industry for its efforts and has also received energy-related awards for its work.

CASE STUDY 2

Struggling with high energy costs as well as aging HVAC and lighting equipment and no control of its equipment, a U.S.-based industrial manufacturer needed to cut those costs while aligning its HVAC controls with its business objectives.

Outdated lighting equipment and HVAC roof top units were replaced. In addition, TAC helped implement network-based HVAC controls to serve production times and schedules. The company is now able to track its energy consumption through ongoing monitoring and reporting capabilities.

As required, the building management system is now aligned with the company's goals. And with this energy management system in place, the organization has achieved an annual savings of \$241,000 and a payback of three years. The company and its building are also positioned for continued efficiencies and financial successes with a sustainable energy management solution in place.

CASE STUDY 3

Although their structure was new, the owners of a London-based tourist destination also sought ways in which to make their building more energy efficient while reducing the environmental impacts and energy costs.

An energy management consultant dispatched by TAC Satchwell monitored the building's performance and controls as well as emissions and consumption. From that data, an energy action plan was put in place.

The initiative achieved its desired goals: within the first 18 months, the company achieved energy and cost savings of more than £55,000. In addition, electrical consumption was reduced by nine percent and gas consumption dropped by 15 percent. The long-term savings realized by the customer will help enable the implementation of additional energy-saving programs. And because it is operating more efficiently, the building's equipment is earmarked for a longer life span—saving the owner substantial maintenance costs.

CASE STUDY 4

A London-based retailer with 500 retail units sought to decrease its utility costs while improving environmental conditions and plant efficiency. TAC used data analysis, benchmarking and the compilation of a pre-visit report to create a best practice strategy.

The TAC team then conducted a one-day site visit to conduct an energy survey in order to identify energy saving opportunities. TAC followed up with the implementation of the outlined strategies. It also created a report outlining future payback. Continued savings are being ensured through post visit energy performance tracking.

After investing £131,000, the customer has achieved an annual savings of £750,000 as well as increased its plant life expectancy through reduced loading.

A Solution for Today and Tomorrow

While initial reasons behind implementing an EnergyEdge solution include energy and cost savings, the actual end results are even more far-reaching.

“In the beginning, the focus is on energy costs. In the end, it’s added values like having better control over the situation,” said Genhammar. “[Customers] understand the building much better after the project and they’re getting more knowledge of how the systems are working. They are really getting a whole picture of the building.”

And EnergyEdge becomes a partner to help executives convert their facilities from cost centers to more cost-efficient components of the business. EnergyEdge provides the knowledge and expertise to create a program that will continually yield positive ROI.

“I see EnergyEdge as a way of creating a stronger, more value-adding relationship with our customers,” said Burley.

About TAC

TAC is a leading provider of building automation solutions based on Open Integrated Systems for Building IT. TAC's mission is to provide added value through building environment services for indoor climate, security and use of energy, delivered with advanced technology to end users and property owners throughout the world. With over 80 years of experience in the HVAC, building automation and security arenas, TAC employs more than 5,000 people worldwide, with partners and branches in 80 countries. TAC's parent company, Schneider Electric, is the world leader in automation and electricity management, with 112,000 employees worldwide and operations in 190 countries.

Footnotes

¹The survey was conducted by the International Facility Management Association, FMLink, the Association for Facilities Engineering (AFE), The Association of Higher Education Facilities Officers (APPA), The Building Owners & Managers Association (BOMA) and Building Operating Management magazine.

²“Commissioning Existing Buildings,” *E SOURCE Tech Update (TU-97-3)*; March 1997.

³“Control of Temperature for Health and Productivity in Offices” was written by Helsinki University of Technology Institute of Heating Ventilating and Air Conditioning and the Lawrence Berkeley National Laboratory Environmental Energy Technologies Division.