TÜV SÜD | Vol. 2 October 2013

E-ssentials

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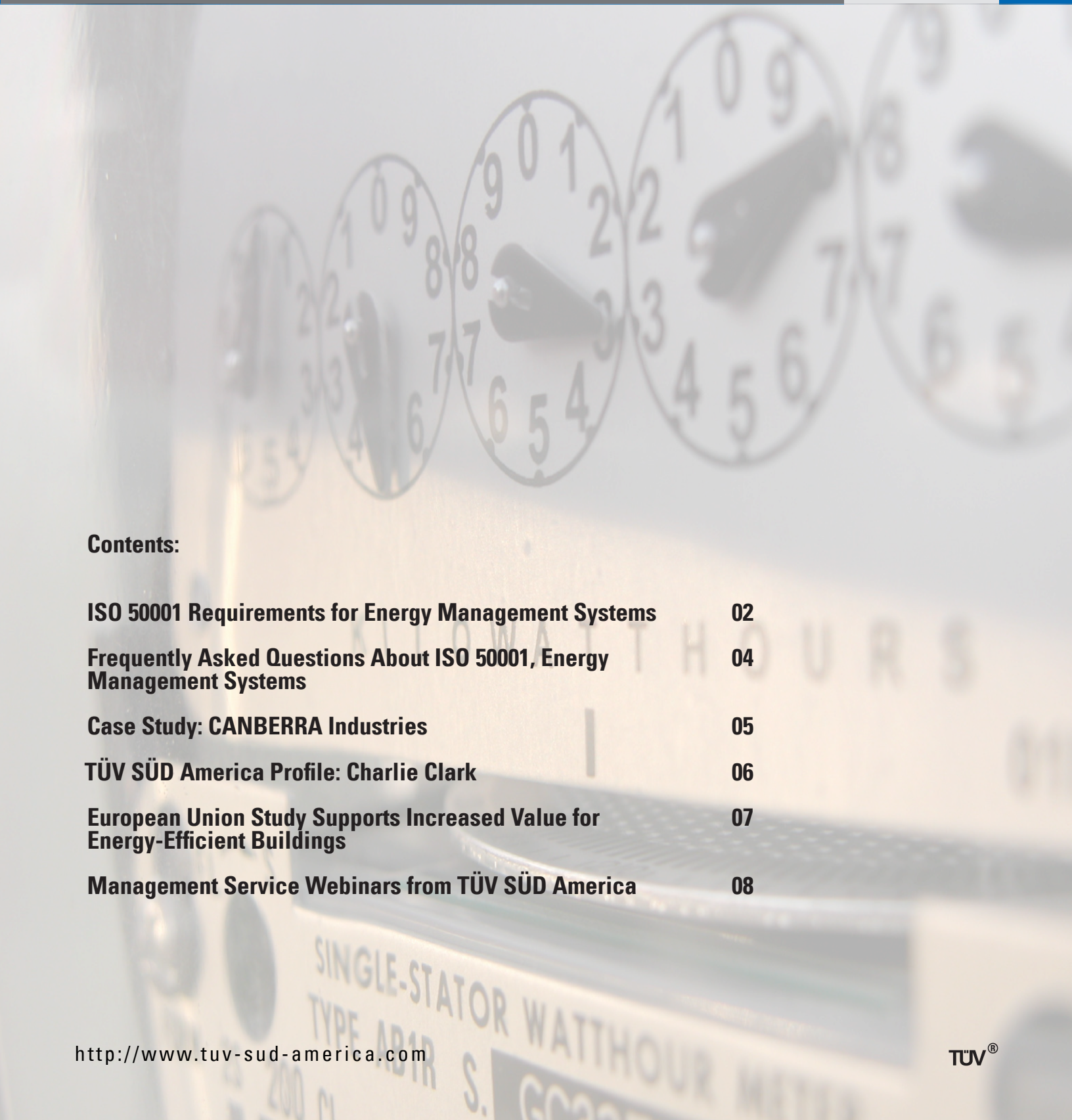

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Editorial

Dear Reader,

Welcome to the October 2013 issue of Management Services E-ssentials!

Improving overall energy performance may represent the biggest opportunity for manufacturers and companies of all sizes in the coming decades. So this issue of Management Services E-ssentials focuses on energy management systems and on ISO 50001, the international standard that addresses the implementation and operation of energy management systems.

Our lead article, "ISO 50001 Requirements for Energy Management Systems," provides an overview of the structure and requirements of ISO 50001, and details the key steps necessary to establish and operate an effective energy management system. Then, to provide readers with additional insight into the application of the standard, our article "Frequently Asked Questions About ISO 50001, Energy Management System," answers a number of key questions regarding the standard and the benefits available to companies who seek ISO 50001 certification.

Real-world examples of energy efficiency efforts abound, as illustrated in this issue's case study about CANBERRA, a leading provider of measurement systems used in the nuclear power industry. As the case study illustrates, energy management systems can result in significant financial benefits that quickly offset investments in energy-efficient infrastructure improvements and equipment.

Although the benefits of implementing a certified energy management system can be significant, the actual task of implementation can be daunting. In this issue's Profile piece, we speak with Charlie Clark, Energy Technical Product Manager for TÜV SÜD America, who shares his insights into the specific challenges that companies should anticipate in implementing an energy management system, along with some best practices for creating an effective energy management system.

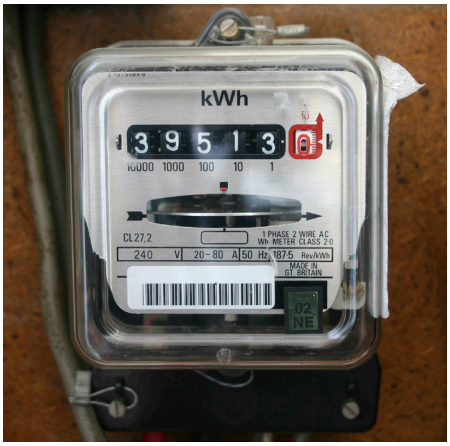
Completing our editorial lineup is a brief piece on recent report by the Commission of the European Union about the commercial value of energy-efficient buildings.

We hope that you enjoy this issue of Management Services E-ssentials.

Craig Casillas
Vice President, Management Service
TÜV SÜD America

ISO 50001 Requirements for Energy Management Systems

ISO 50001: 2011, Energy management systems – Requirements for guidance and use provides organizations with an energy management structure that can optimize their energy performance. The standard also presents a clear process for establishing and maintaining an energy management system. This article provides an overview of ISO 50001, and details the key steps necessary to establish and operate an effective energy management system.



WHAT IS ISO 50001?

Developed by the International Standards Organization (ISO), ISO 50001 covers every phase of the implementation and operation of an energy management system. The standard is based on the management system model found in other management systems (for example, ISO 9001, ISO 14001 and ISO 22000), and follows the familiar "plan-do-check-act" process for managing and improving an organization's operations and performance.

By adopting an ISO 50001-compliant energy management system, organizations can accomplish the following goals:

- Make better use of existing energy consuming assets
- Objectively evaluate and prioritize the implementation of energy-efficient technologies
- Promote energy management best practices and reinforce good energy management behaviors
- Promote energy efficiency throughout the organization's entire supply chain
- Provide integration with other organizational management systems
-

The ISO 50001 energy management model can help organizations better manage their current energy resources while also supporting longer-term efforts to improve energy technologies.

ESTABLISHING AN ISO 50001 - COMPLIANT ENERGY MANAGEMENT SYSTEM

The implementation and maintenance of an ISO 50001-compliant energy management system involves the following four phases:

- Energy Planning—In this phase, an organization profiles the energy used in a facility, and identifies specific projects to improve energy efficiency.
- Implementation and Operation—An organization then initiates the specific energy improvement projects that have been identified.
- Checking—During this phase, an organization assesses the progress of individual projects against established milestones, and takes appropriate corrective actions.
- Management Review—Finally, an organization reviews the energy management system to ensure that it is achieving its energy goals and objectives.

The following sections of this article provide details on each of the above phases.

ENERGY PLANNING

A clearly defined plan helps to ensure the success of the overall effort by providing a critical framework for the work to follow. At a minimum, effective planning involves the following activities:

- Conduct an energy review—The first planning step is to conduct a thorough review of current energy consumption to identify areas of significant energy use and prioritize opportunities for improvement. This activity helps the organization to focus its efforts on those specific areas that will provide the greatest possible return in energy efficiency.
- Establish an energy baseline—The energy review provides the information necessary to establish an organization's energy baseline, so

that changes in energy performance can be measured. Adjustments to the energy baseline can be made in specific circumstances, for example, when major changes in operations, processes or energy systems impacts energy consumption, or when established Energy Performance Indicators (EnPIs) are no longer valid.

- Identify Energy Performance Indicators—With the detailed information generated by the energy review, an organization now identifies EnPIs appropriate for monitoring and measuring its energy performance. An organization is also responsible for documenting the method for determining and updating EnPIs.
- Set energy objectives, targets and action plans—Based on the identified opportunities for improvements, an organization can now define energy objectives, targets and action plans. Objectives and targets should be consistent with the organization's energy policy, include time frames for their achievement, and identify the methods used to verify energy performance.

IMPLEMENTATION AND OPERATION

The implementation phase includes the following activities:

- Competence, training and awareness—An effective energy management system depends on the competence of all personnel involved. An organization should identify any training needs associated with its efforts to control significant energy uses and the operation of its energy management system, and document all training efforts.
- Communication—An organization should routinely provide employees with information about its energy performance and its energy management system, and allow employees and others to make suggestions for improvement. If an organization decides to provide information about its energy policy to external audiences, it should establish and implement an appropriate method to manage this communication.
- Documentation and document control—An organization must document the core elements of its energy management system. An organization must also establish and maintain suitable procedures to approve documents for use, and to periodically review and update documents as necessary.
- Operational control—This aspect includes establishing criteria for the effective operation and maintenance of significant energy uses to reduce the risk of deviations from effective energy performance, and operating and maintaining facilities, processes, systems and equipment according to the established criteria.
- Design—When considering the implementation of new, modified or renovated facilities, equipment, systems and processes, an organization shall consider energy performance improvement opportunities as part of the process.
- Procurement of energy services, products, equipment and energy—An organization shall establish criteria regarding energy use, consumption and efficiency when procuring products or equipment that would significantly impact the organization's energy performance, and inform suppliers of those criteria.

CHECKING

The checking phase includes the following activities:

- Monitoring, measurement and analysis—This aspect of the checking phase includes the monitoring, measurement and analysis of all relevant energy performance characteristics. The results from the monitoring and measuring of these key characteristics must be documented, and the organization must investigate and respond to significant deviations in energy performance.
- Evaluation of compliance with legal and other requirements—An organization shall periodically evaluate its compliance with legal requirements and any other applicable standards and guidelines related to its energy use and consumption.
- Internal audit of the energy management system—An organization shall conduct periodic internal audits of the energy management system to ensure that the system conforms with established energy objectives and targets, and that the implementation and maintenance of the system is producing anticipated energy performance improvements.
- Corrective and preventative actions—An organization should be prepared to take all actions as necessary to address any non-conformities with the planned operation of the organization's energy management system, and to prevent future occurrence of nonconformities.
- Record control—The final aspect of the checking phase involves the maintenance of records and other documentation necessary to demonstrate the organization's ongoing compliance with the requirements of its energy management system.

MANAGEMENT REVIEW

In the management review phase, an organization evaluates the overall effort from a strategic point of view. The review phase also typically includes a briefing for senior management on the results of action plans, and the overall effectiveness of the organization's energy management system. The management review usually results in decisions or actions related to changes in the following areas:

- The energy performance of the organization
- The organization's energy policy
- The organization's EnPIs
- The objectives, targets or other elements of the organization's energy management system
- The allocation of resources to energy management activities

CONCLUSION

Effective energy management is an important aspect of organizational performance. ISO 50001 provides a roadmap for organizations seeking to implement and maintain an energy management system that can reduce energy consumption, increase energy efficiency and improve profitability. The structure of ISO 50001 is also consistent with that of other management systems, including ISO 9001 and ISO 14001, allowing organizations to leverage their existing investments in management system compliance.

For more information about TÜV SÜD America's environmental certification services, please visit http://tuv-sud-america.com/iso50001.cfm or contact us at info@tuvam.com. ■

Frequently Asked Questions About ISO 50001, Energy Management Systems

WHAT IS THE ISO 50001 STANDARD?

The international standard, ISO 50001, Energy management systems – Requirements for guidance and use, lays out the requirements for certifying an organization's energy management system. It provides a framework designed to assist organizations in:

- Developing an organization-wide policy for more efficient use of energy
- Fixing targets and objectives to achieve the goals of the policy
- Making data-based decisions concerning energy use and consumption
- Measuring the results of energy management efforts
- Reviewing the effectiveness of energy initiatives and the overall energy management policy
- Achieving continuous improvement in energy management practices

HOW DOES ISO 50001 COMPARE WITH OTHER MANAGAMENT SYSTEM STANDARDS?

ISO 50001 follows the essential "plan-do-check-act" process framework found in other management system standards, including ISO 9001 (quality management), ISO 14001 (environmental management) and ISO 22000 (food safety). By adopting this framework, ISO 50001 facilitates efforts to integrate energy management initiatives into other management systems processes and activities.

DOES ISO 50001 DEFINE AND DETERMINE PERFORMANCE TARGETS FOR VARIOUS INDUSTRIES?

ISO 50001 does not fix specific performance targets for energy usage. Instead, each individual organization sets its own energy management baseline and benchmark metrics. This approach allows any organization to adopt the ISO 50001 framework and to establish workable energy management goals consistent with its own situation and capabilities.

IS THE STANDARD ONLY APPLICABLE TO VERY LARGE POWER CONSUMERS?

The ISO 50001 framework provides a logical and consistent method for identifying and implementing energy management system improvements. For this reason, it can be used in a wide range of settings, from industrial plants to commercial, institutional, and government facilities. It can also be applied in just a single facility, or across an entire multinational organization.

WHY IS ISO 50001 IMPORTANT?

For most organizations, the availability of energy is critical to sustained operations and business continuity. The cost of energy itself also represents a significant operations expense. From a larger perspective, an organization's energy usage imposes costs on the environment and on the greater community.

The development and deployment of new technologies to take advantage of renewable energy resources can take time. While individual organizations cannot directly control energy prices or government policies around the use of energy, they can work to measure and improve their own energy footprint. Efforts to more effectively manage energy usage can quickly lead to reduced energy consumption and costs. Furthermore, organizations that proactively manage energy usage make a positive contribution to global efforts to reduce energy consumption and the depletion of non-renewable energy resources.

WHAT ARE THE ADVANTAGES OF ISO 50001 CERTIFICATION?

Like other ISO management system standards, ISO 50001 can be implemented solely for the benefits that it provides to the organization and its stakeholders and customers. Certification of an organization's energy management system to the ISO 50001 standard is not a requirement of the standard itself. Unless such certification is mandated by industry-specific regulations, the decision to certify to ISO 50001 is largely dependent on an organization's own objectives.

ISO 50001certification by an independent third party can help to provide an objective assessment of the thoroughness of an organization's energy management system, validating the effort and time invested in implementing such a program. The certification process can also uncover program areas that can be strengthened, further increasing the organization's return on investment. Third-party certification also offers customers and the community at large important evidence of an organization's commitment to effective energy management.

ISO estimates that the ISO 50001 standard could influence up to 60% of the world's energy use.

CAN ISO 50001 IMPROVE MY BUSINESS?

ISO 50001 is based on the management system model that is already understood and implemented by more than one million organizations worldwide. Adopting an ISO 50001 energy management model can directly lead to the more efficient management of energy resources, as well as more efficient and profitable operations.

WHAT ARE THE ADVANTAGES OF ISO 50001 CERTIFICATION WITH TÜV SÜD AMERICA?

The renewable professionals at TÜV SÜD America can help to provide organizations with important guidance and support on the implementation of an ISO 50001 compliant energy management system. Through TÜV SÜD affiliates in the European Union, TÜV SÜD America can also offer certification and auditing services for organizations seeking ISO 50001 certification.

For more information about TÜV SÜD America's environmental certification services, contact us at info@tuvam.com, or click here to view our ISO 50001 On Demand webinars and get started today. ■

Case Study: Energy Efficiency Initiative Produces Significant Savings at CANBERRA Industries

Energy consumption is expected to increase by 28% between now and 2040, according to data from the U.S. Energy Administration. While the most widely-publicized energy efficiency programs, such as the U.S. ENERGY STAR program, have focused on energy consumption by consumers, energy efficiency initiatives by manufacturers and businesses can have a significant impact on overall energy use, while also reducing operating costs and increasing profitability. This case study presents the results of multi-year energy efficiency initiative undertaken by CANBERRA, a TÜV SÜD America client company for nearly 10 years.

THE BACKGROUND

Based in Meriden, CT, CANBERRA is a leading provider of innovative and cost-effective measurement systems used in the nuclear power industry. CANBERRA technology and software are used to assess the operational health and efficiency of nuclear plants worldwide, maintain safe operating conditions for plant personnel and protect the public and the environment.

As a company, CANBERRA is committed to a philosophy of continuous improvement in business systems and practices. More than 30 years ago, CANBERRA adopted procedures consistent with ASME NQA-1, Quality Assurance Standard for Nuclear Facilities to measure the outcomes of its many quality initiatives. This commitment was furthered by the company's decision in the early 2000s to work with TÜV SÜD America to continue certification of their ISO 9001 system and to achieve ISO 14001 certification.

In addition to its focus on quality, CANBERRA has long supported the adoption of sustainable energy practices. According to Carl Elsishans, CANBERRA's sustainable development manager, the company has been measuring its corporate-wide impact on the global environment for nearly eight years through annual assessments of its carbon footprint. As a leading company in the energy industry, CANBERRA's commitment to sustainability is an important complement to its corporate mission.

THE CHALLENGE

CANBERRA's Meriden headquarters facility includes a four-floor office building, comprised of approximately 68,000 square feet, and a production factory of over 100,000 square feet. These 30 plus year old facilities were equipped with legacy lighting and heating systems that consumed over three million kilowatt hours of electricity annually, along with significant volumes of natural gas and water. Elsishans estimates that CANBERRA was spending upwards of $600,000 on total energy costs related to office and plant operations in Meriden.

In 2010, Michael Raicik, CANBERRA's energy manager, undertook the task of developing a detailed plan to reduce energy consumption throughout the company's building complex. Raicik's three-pronged plan focused on electric, gas and water consumption, and included retrofitting lighting fixtures throughout the facilities with state-of-the art dimmable fluorescent lighting technology, and upgrading the plant's heating and air conditioning systems with more energy-efficient equipment. In addition, the plan called for the implementation of a sophisticated computerized control system to allow for pinpoint control of all energy-consuming building equipment to reduce consumption during peak periods.

The implementation of CANBERRA's energy efficiency plan was completed in mid-2011. The total cost of the conversion was less than $800,000, and equipment incentives provided by Northeast Utilities' Connecticut Light and Power and Yankee Gas divisions provided approximately 40% of required funding.

THE OUTCOME

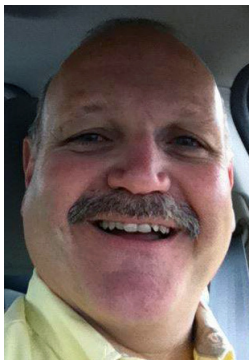
In 2012, CANBERRA recorded a 15% reduction in overall electrical usage as compared with 2010 base year data, representing nearly 500,000 kilowatt hours and resulting in an annual savings of $150,000 in electric costs alone. The company also estimated a 3% reduction in its use of natural gas as a result of upgraded systems and controls, and a 65% reduction in its water use through the implementation of a closed loop process water recycling system.

Further improvements in CANBERRA's energy usage are expected. According to Raicik, the company is only beginning to realize the effectiveness of its computerized energy management system in optimizing daily energy usage, meaning that ongoing system adjustments are likely to yield even greater savings. Equally important, CANBERRA's investment in increase energy efficiency is expected to pay for itself in about two years. Given that the infrastructure and system improvements implemented through this program have a life span of more than 10 years, the short payback period will help drive the company's future profitability, as well as the impetus for additional energy efficiency initiatives.

ABOUT TÜV SÜD AMERICA INC.

TÜV SÜD America Inc., a subsidiary of TÜV SÜD AG, Munich, Germany, is a leading globally recognized testing and certification organization. In addition to the certification of energy management systems to ISO 50001, TÜV SÜD offers a range of environmentally-related certifications, including Responsible Recycling (R2), ISO 14001, and OHSAS 18001, as well as services in wind energy, photovoltaics (PV), and battery testing. ■

TÜV SÜD America Profile: Charlie Clark



As the global use of energy continues to increase, manufacturers and other organizations around the world are actively working to better manage their energy consumption. An effective energy management program can reduce energy costs and drive other operational efficiencies, thereby supporting an organization's financial objectives. Energy management programs can also strengthen an organization's societal and environmental stewardship credentials with buyers and consumers, providing an important advantage in a competitive marketplace.

TÜV SÜD America is a premier service provider of auditing and inspection services addressing a range of management systems. As Energy Technical Product Manager for TÜV SÜD America, Charlie Clark has training and knowledge in implementing ISO 50001 energy management systems, and understands the challenges facing organizations seeking to improve their energy efficiency.

Clark recently spoke with Management Services E-ssentials about ISO 50001, the tangible benefits available to manufacturers and other companies that implement energy management systems, and the energy management certification and auditing support that TÜV SÜD America provides to industry.

(Management Services E-ssentials): More and more organizations are implementing energy management systems to reduce costs and increase efficiencies. Based on your own experience, what are the greatest benefits of adopting an effective energy management system?

(Charlie Clark): Direct, measurable cost savings are a tremendous advantage for organizations that certify their energy management systems to ISO 50001. But reduced costs are only the beginning. An ISO 50001-certified system provides a formal framework for the proactive measurement and management of optimized energy usage, which can support the development of effective energy management behaviors throughout the organization and the entire supply chain. ISO 50001 certification can also help facilitate the evaluation of new energy-efficient technologies and help prioritize their introduction. Finally, ISO 50001 certification publically demonstrates an organization's commitment to effective energy management to customers, employees and other stakeholders.

(MSE): In implementing an energy management system, what are some of the key mistakes that organizations make that impedes their success? How could these mistakes be avoided?

(CC): The first mistake is to assume that energy management is just a fad and that the interest in energy management systems will not last. History is full of examples where seemingly inconsequential activities were actually the precursor of fundamental changes, and I think that's the case here. The increasing awareness of the importance of sustainable business practices and the efficient management of energy clearly indicates that these activities will be critical differentiators that separate successful organizations from less successful ones.

The next mistake companies often make is to view energy management system requirements as part of a progression that first requires compliance with the requirements of other management systems, such as quality (ISO 9001) or environmental management (ISO 14001). Actually, the implementation of an energy management system can be a standalone effort that optimizes an organization's energy usage while providing real bottom-line benefits.

The final mistake is the tendency to assign the responsibility for implementing an energy management system to a single person. In some cases, the task is assigned to the resident "systems" person, such as the facility's chief engineer or quality systems manager. Unfortunately, few individuals, regardless of their background or training, have the requisite experience or skills to single-handedly address all aspect of energy management. At the same time, a facility's plant manager may thoroughly understand energy usage in his/her facility, but lack an understanding of the management systems approach. Compliance with the requirements of ISO 50001 requires a collaborative, team-based approach, drawing on talent and experience throughout the entire organization, in order to be truly successful.

(MSE): When conducting an energy review process, are there specific areas or activities that organizations typically overlook or underestimate? What are they?

(CC): The economic incentives for improved energy management have never been better, and even small improvements can yield major savings. Depending upon the age of the equipment being evaluated, replacement costs should be compared with the cost of various retrofitting options. Perhaps the best approach is to simply ask the members of the team conducting an energy management review to identify the immediate changes that they would make to save energy, such as retrofitting equipment with variable controls. Many simple changes can result in immediate savings with a short payback period, and even increased profitability.

(MSE): Often, little attention is given to the importance of training and ongoing communication in the implementation of an effective energy management system. Why are these activities important, and what do they contribute?

(CC): As an auditor of multiple standards, I have the benefit of observing the best practices in management in a variety of industries and settings. From my perspective, the best companies invest in effective training programs, and constantly communicate their energy management goals and objectives. They do this by devoting the time and effort necessary to develop and deliver impactful training, so that the message becomes an integral part of the organization's culture. The critical elements are metrics and consistency.

(MSE): How do organizations with successful energy management systems continue to build on their efforts to achieve even greater efficiencies?

(CC): The key activities ingrained in every management system, including energy management systems, are: 1) plan; 2) do; 3) check; and 4) act. Following this P-D-C-A paradigm is critical to the success of every implementation effort because its cyclical nature helps to direct the organization toward continuous improvement. Note that management plays a critical role throughout this entire cycle.

(MSE): You've mentioned that the full commitment of an organization's leadership is essential to a successful energy management system. Why is this important and what happens when the commitment from the top doesn't exist?

(CC): As organizations look for ways to increase overall productivity, individual employees have more to do than ever. Without active, top-level commitment to the goals of an energy management program, and direct involvement in the work that is required for successful implementation, employees will question whether the organization's commitment to energy management is genuine, or just another fad initiative.

(MSE): How can TÜV SÜD America help organizations implement and maintain an effective energy management system?

(CC): The effectiveness of an energy management system depends in large part on working with a partner who has the experience to understand the needs of your business, and the expertise to help you implement solutions that best meet your requirements. We have extensive experience in energy management systems in a wide range of industries, and have a first-hand knowledge of the challenges in achieving ISO 50001 certification. For those organizations that have or are seeking certification to ISO 9001 or ISO 14001, we can also provide parallel system audits that reduce overall audit time and increase value.

(MSE): Why should organizations choose TÜV SÜD America as their energy management partner?

(CC): We are fully committed to helping you ensure that your energy management system not only satisfies the requirements of ISO 50001 but is also a genuine asset in your efforts to achieve your broader business goals and objectives. ■

European Union Study Supports Increased Value for Energy-Efficient Buildings

The Commission of the European Union (EU) has released an in-depth report supporting claims that energy-efficient buildings have greater economic value when sold or rented.

The EU's Energy Performance of Buildings Directive (2002/91/EC) provides a regulatory framework for evaluating a building's energy performance and issuing energy performance certificates (EPCs) for new and renovated buildings that meet the Directive's essential requirements. In an effort to determine whether a connection exists between the energy performance of EPC-certified building and sale or rental prices, the Commission studied real estate listing and rental data from five EU countries, including the United Kingdom, France, Austria, Belgium and Ireland.

As noted in its report, "Energy performance certificates in buildings and their impact on transaction prices and rents in selected EU countries," the Commission found a clear correlation between EPC certification and increased value in both sales and rentals. Specifically, a one-letter improvement in EPC-rated energy efficiency resulted in an 8% increase in the sales value, and a 4.4% increase in the rental value, of EPC-certified buildings.

Most evaluations regarding the benefits of energy-efficient buildings focus on reduced energy consumption and lower operating costs. The EU Commission study is one of the first to make a clear connection between investments in energy-efficient building methods and materials and increased property values. While further research needs to be conducted, the benefits of energy-efficient construction and renovation appear to provide real estate developers and property owners with an even better return on investment than previously realized.

The full report of the EU Commission on energy performance in buildings is available here.■

Management Service Webinars

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Contact us at info@tuvam.com for the latest news on revisions to the standard.

LIVE WEBINARS

Integrated Auditing Using the Process Approach for Quality and Environmental Management Systems
Date: Friday, November 1, 2013, 1:00 PM ET
This webinar will discuss how to use the process approach to audit integrated management systems to achieve more effective audits together with a more efficient use of auditor resources. Cick here to register.

ON-DEMAND WEBINARS

Energy Directives Worldwide
This webinar will provide a basic understanding of the EU Energy Directive which establishes a framework for the promotion of energy efficiency with the European Union and to ensure the achievement of the EU's 20% energy efficiency target by 2020.

TL 9000: Broadening the Focus on Product & Risk
This webinar covers: Purpose and use of TL 9000, updated Measurements 5.0, updated Requirements 5.5 and how these updates help improve business.

The Value of Accredited Certification
Learn what your industry peers think about the benefits of a Quality Management System Certification. This brief, 30-minute webinar will cover the results obtained from a 2011 global survey conducted by the International Accreditation Forum (IAF).

Achieving Cost Savings and Quality Improvements From Your Supply Chain
An effective supplier auditing program is crucial to managing your business and ensuring the quality and reliability of your suppliers and thus your end product. This webinar will discuss the best ways for maximizing cost savings and improving quality throughout your supply chain.

Aerospace Supplier Excellence: Leveraging Success Through Quality Environmental Programs
This one-hour session will discuss how to improve supplier excellence with AS9120, the customized AS9100 standard relevant for organizations that resell, distribute and warehouse parts found in aircraft and other aerospace components for the aerospace industry.

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