Industrial NEWSBRIEFS

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Best Business Practices for Industrial Energy Efficiency

Your Strategic Energy Management Program

Save Energy and Money with a Corporate Energy Management Program is a two-page fact sheet from the Industrial Technologies Program (ITP) and the Energy Efficiency and Renewable Energy (EERE) Office at the U.S. Department of Energy (DOE). It describes the corporate energy management (CEM) program that encourages business strategies, decisions, and procedures to ensure energy efficiency.

"Energy Efficiency is a Good Business Decision, Especially Now!" by Neil Zobler, Catalyst Financial Group, Inc., and Robert Sauchelli, U.S. EPA ENERGY STAR for the National Electrical Manufacturers Association (NEMA), February 2009, shows how to implement energy efficiency measures along with ENERGY STAR tools and resources that can be used to promote energy efficiency to management. According to ENERGY STAR, companies can save 30% on utilities if energy projects are adopted. ENERGY STAR tools and resources can be found at the ENERGY STAR website.

Industrial Energy Management Information Center is a website from ENERGY STAR designed to help energy managers. The resource is made up of four sections:

1. **Resources for Industrial Energy Managers** includes a 17-page document, ***How ENERGY STAR Helps Manufacturers Improve the Energy Performance of their Operations,*** containing information on topics such as: benchmarking, communication and recognition resources; employee engagement and energy teams; plant energy assessment/auditing; program assessment; small and medium manufacturers; and strategy development.

2. **External Resources for Program Support** includes three areas for program support: 1) **Industrial Service & Product Provider Teaming Profiles**, 2) **Service & Product Provider (SPP) Directory: Industrial Market**, and 3) **Small and Medium Sized Manufacturers Guide to Energy Management**.

3. **Industry Specific Resources** provides energy efficiency information on 16 industries.

4. **Plant Utility and Process Improvement Resources** offers five areas of information and several online resources for each: compressed air, motors, process heating, pumping, steam, and software tools for identifying energy system savings.

ISO 50001 and Superior Energy Performance

Win the Energy Challenge with ISO 50001, from the International Organization for Standardization (ISO), provides a clear overview of the concepts and intended audience for the ISO 50001 Energy Management System (EnMS) Standard issued in summer 2011. *Note: The ISO 50001 EnMS Standard document is copyright protected and must be purchased from the ISO organization or ANSI publication sales. To purchase the standard online, go to the ANSI bookstore.*

Superior Energy Performance[cm] (SEP): A Roadmap for Achieving Continual Improvements in Energy Performance is an April 2011 document by Superior Energy Performance, an ANSI/ANAB-accredited certification program that provides an overview of SEP. SEP was launched nationwide in 2011, and is a market-based program that provides strategies for industrial and commercial facilities for achieving improvements in energy efficiency while continuing to be competive.

The Department of Energy (DOE) supports the ISO 50001 Standard and is partnering with U.S. industrial and commercial facilities to improve energy performance. For more information on ISO 50001 go to the DOE Energy Management Standard website.

Identifying and Analyzing Efficiency Measures

"The Frugal Manufacturer: Using Energy Sparingly" is a white paper from the report ***Trends in Global Energy Efficiency 2011: An Analysis of Industry and Utilities***, the ABB Group, 2011. Through an online survey, 348 senior executives were asked questions on a variety of topics on industrial energy efficiency. The executives were primarily from North America, Asia-Pacific, and Western Europe. In addition to the survey, interviews were conducted that are included throughout the study. It is stated that due to businesses experiencing restricted access to energy, improving industrial energy efficiency measures is no longer considered optional; companies that do not recognize energy efficiency will ultimately be negatively impacted.

Energy Management: Driving Value in Industrial Environments, by Mehul Shaw and Matthew Littlefield, Aberdeen Group, April 2009, is a 23-page report that surveyed 230 company executives on energy management; it focuses on aspects of energy efficiency projects and the value of technology and energy data to give executives the ability to make effective decisions. The report recognizes "Best-in-Class" companies that meet the following criteria: a company has achieved a 15% reduction in energy consumption, a 90% rate of overall equipment effectiveness, and gained a 14% higher operating margin to set corporate goals.

From Shop Floor to Top Floor: Best Business Practices in Energy Efficiency is a report written by William R. Prindle, ICF International, April 2010, and prepared for the Pew Center on Global Climate Change. It studies the recent shift in business leaders' outlook of energy and climate change issues. The report examines seven key components and strategies used by corporations within the realm of energy efficiency. In its findings, the report concludes that climate change has greatly affected the approach corporations are taking in energy efficiency.

Multiple Pathways to Industrial Energy Efficiency: A Systems and Value Chain Approach, co-authored by Lukas C. Brun and Gary Gereffi, was sponsored by the Energy Program of the Environmental Defense Fund, and published by the Center on Globalization, Governance & Competitiveness (CGGC) in February 2011. This report studies the adoption of energy efficiency measures by manufacturers. Company decision-making processes in assuming energy efficient opportunities are discussed, in addition to examples from Bridgestone, DuPont, and Nissan, all of which adopted energy-efficient processes.

"Industrial Energy Savings Potential" from the Flex Your Power website provides suggestions for low-cost industrial energy efficiency measures such as: high-efficiency lighting equipment; high-efficiency motor and drive equipment; elimination of leaks in gas, steam, and compressed air lines/valves; equipment and pipe insulation; reduction in equipment use to match loads; installation of controls and energy management systems; and preventative maintenance programs. The article reports that the U.S. Department of Energy's (DOE) Industrial Assessment Centers have calculated potential savings on average of $55,000 per manufacturer, based on commercially available energy efficiency measures.

Case Studies and Success Stories

"GM Saves Energy Through Smart IT" was written by Andrew Winston, and is from the Harvard Business Review Blog Network. The article describes how reduced equipment use in ten GM plants saves three million dollars in energy costs annually. GM is using software created by GE to shut down and restart equipment.

Rockwell Automation's Users Realize Quick Return on Energy Solution ROE Investments is a white paper by ARC Advisory Group, February 2002. Its focus is Rockwell Automation, a large business with 64 manufacturing locations. Significant percentages of the company's revenue come

from electrical motor controls. The study examines several areas in energy management and the identification of energy efficiency programs; several case studies are included.

The following case studies and fact sheets come from the Energy Efficiency and Renewable Energy (EERE) Office at the U.S. Department of Energy (DOE):

"Plant Profiles: Industrial Energy Management in Action" features six industrial plants that have implemented best energy management practices in their manufacturing facilities.

"Case Studies and Success Stories" is an Industrial Technologies Program (ITP) webpage that provides links to 13 large manufacturers that have achieved energy savings and participated in *Save Energy Now* with steam, process heating, compressed air or pumping system energy assessments.

"Alcoa: C-Suite Participation in Energy Efficiency Increases Accountability and Staff Engagement Throughout the Organization" is a case study of Alcoa, the largest manufacturer of aluminum and aluminum products in the United States. The case study describes Alcoa's participation in the U.S. Department of Energy's Save Energy Now LEADER initiative, and the company's goal of 10% energy reduction by 2020 and 15% reduction by 2030.

"Nissan North America Shares Best Practices for Building a Corporate Culture of Industrial Energy Efficiency" highlights the partnership between Nissan North America and the U.S. Department of Energy's Industrial Technologies Program (ITP). In April 2010, the plant hosted the Save Energy Now LEADER Industrial Sustainability and Energy Management Showcase at its vehicle assembly plant in Smyrna, Tennessee. The company detailed its accomplishments in energy efficiency and brainstormed ideas for future accomplishments.

Incentive Funding

Industrial facilities – and consulting engineers that work with manufacturers – should always contact the company's utility before beginning an energy program to learn about available incentives and technical support.

Fact Sheet for Industrial Facilities, October 2011, is a two-page description of BPA's Energy Smart Industrial (ESI) program. The ESI program is a Northwest resource that assists BPA utility customers and their industrial end users in meeting energy efficiency targets, and ultimately achieving industrial load energy savings.

DSIRE (Database of State Incentives for Renewables and Efficiency), funded by the U.S. Department of Energy, provides information on state, local, utility, and federal incentives that promote renewable energy and energy efficiency.

Selling Energy Efficiency Projects to Management

"Making the Business Case for Energy Efficiency" is a paper authored by Shirley J. Hansen, Ph.D., that describes the challenges of promoting and selling energy efficiency to upper management. In this paper, Hansen lists several barriers that prevent top management from investing in energy projects: organizations lack the funding for energy efficiency projects; money is invested in other areas, such as new production equipment, that seem more pressing; and the lack of immediate payback. In addition, upper management is often concerned with energy when there is a shortage.

"Guiding Principles for Successfully Implementing Industrial Energy Assessment Recommendations" from the Energy Efficiency and Renewable Energy (EERE) Office at the U.S. Department of Energy is an April 2011 guidebook based on a workshop held in 2010 and co-hosted by Oak Ridge National Laboratory (ORNL) and the American Public Power Association (APPA). The guide's primary focus is on the implementation of industrial energy assessments.

"Making the Business Case for Energy Efficiency" is available on the Flex Your Power website. The article identifies various barriers in promoting energy-efficient projects within organizations of all kinds. It also offers methods, techniques, and arguments for supporting energy-efficiency and its benefits to businesses: simple payback (cost/benefit analysis); annualized savings; standardized payback equations; Life-cycle Cost (LCC) analysis; Internal Rate of Return (IRR); profits, depreciation and taxes; and utility, state and federal financial assistance.

"Driving Energy Efficiency in the Mining Sector: The Business Case and Beyond" was created by the Department of Resources, Energy and Tourism, Commonwealth of Australia, and the Minerals Council of Australia (MCA), 2010. This guide provides seven how-to steps to improve business case proposals for energy efficiency projects and gain decision-makers' support in implementing energy efficiency projects.

Additional Reading

Energy Project Financing: Resources and Strategies for Success, was co-authored by Albert Thumann, P.E., CEM, and Eric A. Woodroof, Ph.D., CEM, CRM, and published in 2009. It discusses various aspects of financing energy management projects through examples, details, and useful terminology. The book provides valuable guidelines to ensure the success of an energy project, and helps identify risks and hidden costs in potential energy projects. According to Eric A. Woodroof, projects are considered good if they have a three-year payback or less. The authors also discuss financing international projects and ESCO (Energy Service Company) financing. For information on purchasing this book, go to the ACEEE online bookstore.

Managing Energy from the Top Down: Connecting Industrial Energy Efficiency to Business Performance was written by Christopher Russell, CEM and was published in 2010. It explains the strong connection between energy management and business performance. Concisely written and clearly stated chapters make this an excellent guide for readers in all levels of industry who wish to have a better understanding of industrial energy consumption and the value of energy management. For information on purchasing this book, go to the ACEEE online bookstore.

The Industrial Energy Harvest: Managing Energy from the Top Down, by Christopher Russell, CEM, was published in 2008. The author states that the intent of the book is to "democratize" the subject of industrial energy use. In a very clear manner, Russell provides a useful guide to people in all levels of industry from upper management to machine operators. The book gives a valuable overview of the magnitude of industrial energy use and then explains various aspects of industrial energy use such as misperceptions about the outcomes of industrial energy efficiency, strategies toward energy management, and the high cost of doing nothing. Ten case studies are also included. For information on purchasing this book, go to the TAPPI online bookstore.

Please be aware that although every URL is checked for accuracy prior to the publication of **Industrial Newsbriefs**, URLs are, for various reasons, subject to change.

"Energy management establishes the means for guarding the wealth that energy represents. Energy, like currency, can be invested, preserved, and positioned to grow a business. Companies that understand this will manage energy like cash, tracking what they consume, waste, recover, and apply to the creation of wealth."

The Industrial Energy Harvest: Managing Energy from the Top Down
Christopher Russell, CEM

WSU Energy Program Industrial Services

The WSU Energy Program delivers timely and relevant energy efficiency information to industrial processors, operators, maintenance and engineering staff, and management. The WSU team offers:

- Technical assistance that can include energy assessments and guidance to tailor an energy management approach or information on emerging technologies.
- Best practices training programs to help organizations identify and implement energy improvements. Training opportunities range from one-day workshops on system fundamentals to three-day national certification programs covering topics including motors, pumps, fans, refrigeration, process heat, compressed air, and steam.

Contact the WSU Extension Energy Program to learn more about upcoming trainings or how to access WSU's technical team.

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