



Energy Managers Workshop

Tuesday, June 12, 2018

The order of the presentations is subject to change.¹

"Energy Savings: 0 to 10% in Under 12 Months"



Thomas Theising
Sustainable Energy Solutions, LLC

Tom serves as the President of Sustainable Energy Solutions, LLC offering energy and reliability consulting services to industry. He is a Citadel graduate with a B.S. in Electrical Engineering and has an M.S. in Organization and Management. Tom is also a member of the Association of Energy Engineers where he is recognized as a Certified Energy Manager and a Certified Demand Side Management professional.

Tom has 37 years of experience in industry and has facilitated almost 400 industrial energy assessments. Prior to his current role, he retired from BASF Corporation where his efforts were recognized over the years with 45 Annual Energy Awards from the American Chemistry Council.

Topic Discussion

An industrial company with 16 manufacturing sites in North America was interested in beginning an energy management program but was unsure if the potential for an economical return existed.

This case study describes the process followed to not only determine the economical potential but to identify a 10% reduction in annual spend within the first twelve months of the program. The process of data analysis and facility inspections will be described. Deep dives were taken at several facilities via full scale energy assessments. The steps followed in these assessments will also be described.

Individual site savings ranged from 1% to over 27% with an average of 10.8% savings identified with 90% showing a less than two-year payback. To date, 33% of the savings have been realized. A sustainable program is now in place, including a published energy plan, and the customer continues to identify additional savings.

“Partnerships Enhance Energy Efficiency Efforts”



**Sharon Nolen
Eastman Chemical Company**

Sharon Nolen is Manager, Global Natural Resources Management at Eastman Chemical Company. Sharon holds a BS in Chemical Engineering from Tennessee Tech University and has completed the University of Tennessee's Executive Development Program. During her 29-year career at Eastman Chemical Company, she has held a variety of leadership positions in Process Engineering, Plant Engineering, Corporate Quality, Information Technology, and Utilities Division before assuming leadership of the Worldwide Energy Program in 2010. Her role was recently expanded to more broadly include natural resources, especially water conservation and renewable energy. Under her leadership, Eastman has been recognized by EPA for seven consecutive years as an ENERGY STAR(r) Partner of

the Year. Sharon is also Eastman's representative for the Department of Energy's (DOE) Better Buildings, Better Plants Challenge Program. Sharon is a Professional Engineer and a Certified Energy Manager.

Topic Discussion

Eastman Chemical Company has a long history of successfully implementing energy efficiency projects. As technical gains have been achieved, the company has recognized that more innovative and often collaborative techniques are required to move the nationally recognized energy program to the next level. Building on the foundation of the ENERGY STAR® brand, this seven-time ENERGY STAR Partner of the Year has broadened its program to include collaboration inside and outside of Eastman to more fully engage its employees and its partners to achieve greater results. This presentation will include a description of how Eastman's energy program is integrated into the company's sustainability program and other beneficial partnerships.

“Energy Optimization Projects: Identification and Implementation”



Jimmy Kumana
Kumana and Associates

Jimmy Kumana holds an M.S. degree in Chemical Engineering from the University of Cincinnati. He has more than 35 years of experience in the areas of process design and energy/water optimization. He worked for both manufacturing and engineering design companies before establishing Kumana & Associates, a Houston-based consulting firm specializing in process optimization techniques based on Pinch Analysis.

He has been a consultant to Blue-Chip chemical and Oil & Gas companies worldwide, including DuPont, Lubrizol, Mitsubishi, Monsanto, SABIC, Solutia (Eastman Chem), Union Carbide (Dow Chem), Saudi Aramco, PetroChina, Pemex, SASOL, ConocoPhillips, and Tesoro. He has also been a consultant to energy utilities including EPRI, GRI, Southern Cal Edison, Xcel Energy, Southern Cal Gas and Dubai Gas, as well as to the US Dept of Energy, the Egyptian Ministry of Petroleum and Minerals, the World Bank (IFC), and UNIDO

He has also been a consultant to energy utilities including EPRI, GRI, Southern Cal Edison, Xcel Energy, Southern Cal Gas and Dubai Supply Authority, as well as to the US Dept of Energy, Egyptian Ministry of Petroleum and Minerals, the World Bank (IFC), and UNIDO.

Mr. Kumana has authored or co-authored over 80 technical papers, book chapters, and conference presentations. He was the instructor for AIChE's course on [Pinch Analysis for Heat Recovery Optimization](#) for many years during the 1990s, and for the past 8 years he has been teaching a 3-day course on [Energy Efficiency Optimization in the Hydrocarbon Industries](#).

Topic Discussion

This presentation focuses on how to navigate the organizational procedures (i.e. company politics) to get projects approved and implemented after they have already been identified by the energy team and deemed to be both technically feasible and economically attractive and highlights key Project Management strategies for success.

“Empowering Industrial Energy Efficiency: DOE Partnership Programs”



Bruce Lung
U.S. Department Of Energy

For more than eighteen years, **Mr. Lung** has supported industrial energy efficiency and clean energy programs through research and analysis of best practices and technologies as well as outreach and policy analysis on behalf of federal, private sector and non-governmental organizations.

Mr. Lung has worked as a Senior Associate at Resource Dynamics Corporation, as Director of the Alliance to Save Energy's Industrial Program, and as President and owner of his consulting firm, Industrial EE Advisor. Currently, Mr. Lung is an ORISE Fellow with the U.S. DOE's Advanced Manufacturing Office where he supports the

Better Plants and other Technical Partnership programs by helping with expansion of industry participation and ensuring that the programs offer value to manufacturers and industrial-scale energy users.

Mr. Lung holds a Bachelor of Science in Foreign Service from Georgetown University, and a Master's in Economics from Virginia Polytechnic & State University.

Topic Discussions

Industrial energy efficiency program staff need to ensure that their programs yield meaningful value to the manufacturers that participate in those programs. In 2013 the Southeast Energy Efficiency Alliance (SEEA) performed a survey of industrial energy managers to help SEEA staff understand how to configure their industrial program.

This presentation will discuss the results and conclusions from the SEEA survey and how they have informed the development of U.S. DOE Better Plants and energy management programs. We will discuss various existing and new program elements such as technology demonstrations and new ways to implement energy management along with examples from Better Plants partners that have benefitted from these programs.

“Efficiency 2.0: Energy Technologies, Markets and Policies for the New Tomorrow”



R. Neal Elliott
American Council for an Energy Efficient Economy

Neal Elliott is the Senior Director for Research at the American Council for an Energy-Efficient Economy (ACEEE), coordinating ACEEE's overall research efforts. Elliott has been with ACEEE since 1993 and is an internationally recognized expert and author on energy efficiency programs and at domestic and international conferences. He is the recipient of the 2014 Industrial Energy Technology Conference Energy Award.

Prior to joining ACEEE, Elliott was an adjunct associate professor of Civil and Environmental Engineering at Duke University and Senior Engineering Project Manager at the N. C. Alternative Energy Corp. (now Advanced Energy). Elliott received B.S. and M.S. degrees in Mechanical Engineering from North Carolina State University and was a Dean's Fellow and received a Ph.D. from Duke University. He is a registered Professional Engineer in North Carolina and holds six patents. Elliott serves on the Boards of the Industrial Energy Technology Conference, Smart Manufacturing Leadership Coalition and Southeast Energy Efficiency Alliance.

Topic Discussions

Energy markets are experiencing unprecedented technology, supply and regulatory changes. It is important for energy managers to be aware of these changes and be able to position their companies to respond. This presentation will review electricity and gas market changes, and regulatory changes that are occurring in response. The role of customer-sited information technology to respond to these changes will be discussed.

“A Step by Step Method for Energy Analysis of Industrial Processes”



Mike L. Stowe
Advanced Energy

Mike is a Senior Energy Engineer with Advanced Energy in Raleigh, NC. He has over 30 years of experience in manufacturing plants including roles as production manager, maintenance manager, and plant engineer.

Mike has extensive experience with many industrial processes and all types of plant facility systems. He works with utilities, industrial equipment vendors, and manufacturing plant teams to find the best technical and most energy efficient solutions for industrial processes.

Mike has developed and delivered numerous presentations on industrial energy efficiency and other related topics for utilities, industrial trade associations, and technical groups.

Mike is a graduate of Georgia Tech, Mechanical Engineer, 1982, and the US Navy, Nuclear Power School and Submarine Officer Training, 1983.

Topic Discussion

Many energy audits focus primarily on facility support systems such as compressed air, lighting, and chillers. These are very important but are not the focus of this presentation. This presentation focuses on the energy saving opportunities available within the actual processes in the manufacturing plant. Process are things like melting, baking, drying, forging, curing, and on and on.

Industrial processes require significant amounts of energy to transform raw materials into finished products. Understanding industrial processes, equipment, technologies and support systems are key to finding energy efficient solutions. This presentation will provide a step by step methodology to examine energy usage and consumption throughout the manufacturing process.

This process approach focuses on the energy that is required for the transformation of the incoming raw material into the finished product that is shipped out the door. One way to think about this is the “dock to dock” energy consumption. This presentation will answer the question: What energy is consumed to get the product from the receiving dock to the shipping dock. In this approach, a process block diagram is useful.

Using a process block diagram, the characteristics for each block are reviewed for energy inputs, energy wastes, energy recovery, problems and possible energy improvements. Some blocks may have multiple energy inputs including electricity, natural gas, steam, chill water, etc. Understanding the type and magnitude of the energy inputs to each block help understand and prioritize processes for energy improvements or new technology recommendations.

Areas covered include:

- 1) Energy Intensity: Energy input per unit of product
- 2) Typical energy consumption for various manufacturing segments
- 3) Dock to dock industrial process energy analysis methodology
 - a. The process block diagram
 - b. Energy analysis of each block
 - c. Identifying opportunities in each block
 - d. Possibilities for new technologies
- 4) Finding energy savings opportunities through process analysis
- 5) Examples and case studies of the industrial process analysis methodology
- 6) Technologies for energy efficiency processes
- 7) Non-energy benefits
- 8) Other programs and resources for energy savings

“Energy Assessments – Tricks of the Trade”



Walt Brockway
Brockway Consulting

Walt Brockway provides Energy Management solutions to global clients and serves as a Technical Account Manager supporting DOE's Better Buildings, Better Plants Program Partners. In his 32 years with Alcoa, Inc., the largest aluminum and titanium manufacturer in North America, his career spanned from Project Engineer to his last assignment as Global Manager of Energy Efficiency. At Alcoa, he spent time as the Engineering and Power Manager at the Alcoa Massena Operations, Energy Manager for US locations, VP of Hydro Electric Operations, Regulatory Affairs Manager for Alcoa owned generating assets, and various other technical roles. Prior to Alcoa, Walt was involved with nuclear energy startup with General Electric and power system engineering with Niagara Mohawk Power Corp.

He has extensive experience in assisting companies with the development of energy programs with emphasis on top level sponsorship, implementation of tools and techniques to identify sustainable energy savings. Walt holds a Masters and Bachelors degrees in Electric Power Engineering from Clarkson University. He is a registered Professional Engineer and Certified Energy Manager – International.



Glenn Cunningham
Cunningham Engineering

Dr. Cunningham has taught in the Mechanical Engineering Department at Tennessee Tech University for the past 31 years, teaching thermal science courses in the area of Energy Conversion and Conservation, Steam Power Plants, HVAC Design and Applied Thermodynamics.

Dr. Cunningham was elected as a Fellow of ASME in July, 2001 and is also a Professional Engineer, Certified Building Commissioning Professional and a Certified Practitioner in Energy Management Systems.

Topic Discussion

After performing in excess of 50 energy assessments and treasure hunts Walt and Glenn have observed some common themes and some less obvious opportunities. The goal in energy assessments is to not only identify opportunities and cost saving but identify, evaluate and facilitate their execution.

They will share an inventory of opportunities that have been identified, how the value is estimated and what to look for in an industrial facility. Focus is on both the traditional items as well as less obvious energy opportunities. They will also discuss some traps that look good but often deliver little value.

“A Step by Step Method for Energy Analysis of Industrial Processes”



David Arkell
360 Energy

David Arkell is the President and CEO of 360 Energy, a company he founded in 1995. David has a deep understanding of energy markets and of corporate consumer energy management behavior. His knowledge has enabled 360 Energy to offer innovative customer energy programs to drive continual business improvement processes. David's unique approach integrates energy efficiency implementation with optimizing energy supply management. David's clients consistently achieve energy performance improvements year after year. From small beginnings, 360 Energy has emerged as one of North America's leading energy management consulting firms.

Topic Discussion

Currently, there are four significant energy management performance programs available to manufacturers in North America: Energy Star, ISO 50001, Superior Energy Performance (SEP), and Certification in Energy Excellence (CEE). The four programs vary in their implementation requirements and outcomes. The presentation will answer the following questions:

- What are the key features and attributes of each program (e.g. Third Party Verification, GHG emissions reporting, procurement etc.)?
- For which sectors is each program best suited?
- For which organizational function(s) is each program best suited (e.g. corporate executives, accounting, operations)?
- How can companies obtain the maximum value from each program?