ISO 50001
An International Energy Management Effort

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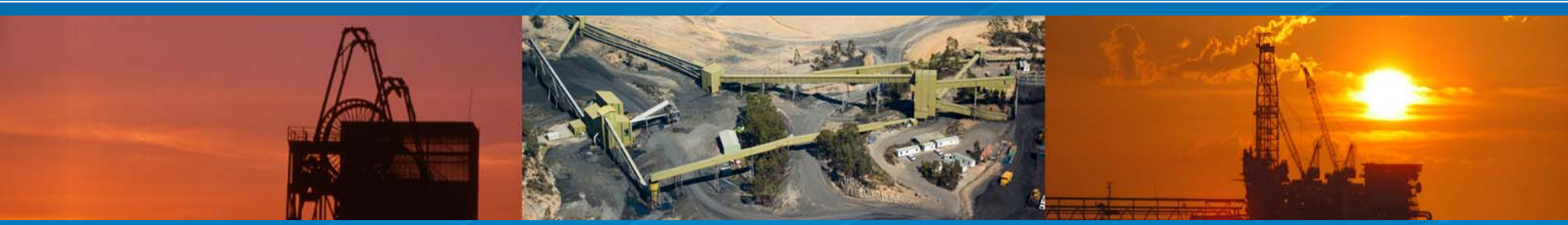

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Introduction

- Acknowledgements
- Energy management and systems
- Role of government
- North American pilot projects
- Lessons learned

Acknowledgements

Project Funders

- Ontario Power Authority – Conservation Fund
- Natural Resources Canada – ecoEnergy for Industry

In-kind Sponsors / Participants

- Partners in Project Green
- The 5 companies in our current project (Par-Pak, Lincoln Electric, Lassonde Beverages, CertainTeed Gypsum, Royal Group)

Hatch & Partners

- SEG Group
- Stephen Dixon and Doug Tripp

Energy Management Success Factors

Energy Management in Most Organizations

- Low-mid level functional, operational responsibility, usually part time
- Perceived as a specialized field outside of the core business
- Is not supported with appropriate resources, training & technology
- Occasionally becomes a “crisis”, gets some temporary attention and support
- Slides off the radar screen when the crisis is over

Energy Management in Leading Organizations

- Cross functional business process, supported by systems and clear policies
- Manage energy like they manage safety and environmental concerns
- Performance metrics broadly linked to performance reviews and compensation
- Based on long term, sustainable improvements
- Uses appropriate information, technology and measurement tools to support confident decision making
- Used to improve bottom line regardless of energy prices

Do we really need another system?

- Lasting success in business, government, sports or any other field is based on a good system
- Most organizations depend on an individual or expert group to control energy costs, when they leave, the program deteriorates
- 1990s - business cycles and low energy prices hit energy specialists very hard
- Forward-looking energy management experts around the world re-tooled their approach to follow the successes of previous movements based on “management systems”

Management System Standards - Examples

ISO 9000 Series “Quality Management Systems”

–quality requirements, customer satisfaction, regulatory requirements, and continual performance improvement

ISO 14000 Series “Environmental Management Systems”

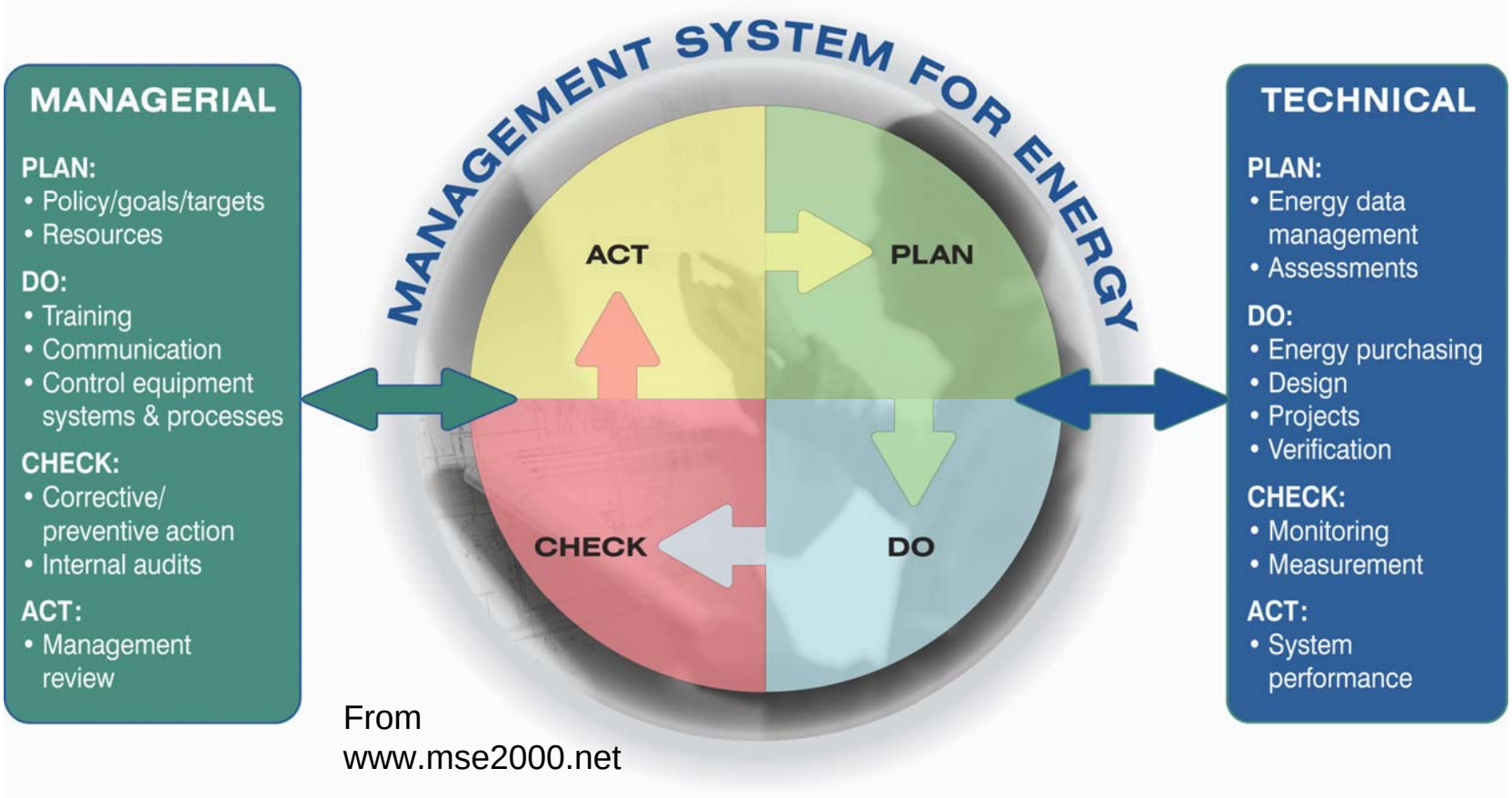
–minimizing harmful effects on the environment, and continual improvement of environmental performance

ANSI/MSE 2000, EN 16001 & ISO 50001“Energy Management Systems”

–energy management and associated environmental processes, continual improvement of energy use performance

Plan-Do-Check-Act Cycle

All current energy management system standards, including ISO 50001, are based on the Plan-Do-Check-Act (PDCA) cycle



From www.mse2000.net

Energy Management System (EnMS) = Management System for Energy (MSE)

1. Europe

- Denmark, Holland , Sweden, Ireland since late 1990s
- Irish IS393 Standard was used as the basis for the European Norm EN16001 “Energy Management Systems” (EnMS), published in 2009

2. USA

- Since late 1990s, led by Georgia Tech University and supported by industry, US DOE and others
- 1st edition of “A Management System for Energy”, MSE 2000, published in 2000
- American National Standards Institute (ANSI) recognizes the 3rd edition, ANSI/MSE 2000:2008 (published in 2008) as a National Standard

Energy Management System (EnMS) = Management System for Energy (MSE)

3. International Standards Organization (ISO)

- The first edition of what will be named ISO 50001 “Energy Management Systems” has been under development since 2008, 42 participating countries, chaired by USA and Brazil
- Expected to publish in April 2011
- Based on both ANSI/MSE 2000:2008 and EN16001 in content and scope with efforts to improve ease of use
- ISO 50001 will be adopted by many countries as a “National Standard”
- Several countries have or are developing management system registration capabilities to support formal conformance assessment

Benefits

- The EnMS approach can be applied in any organization
- Designed for integration with other management systems
- Flexible enough to be compatible with other performance improvement approaches (Lean, TOC, Six Sigma, 5S etc.)
- Particularly promising for large, high energy intensity operations
- In Canada, the mining, smelting/refining industries are very significant energy consumers, growing in real terms and on a relative basis
- Based on case studies from Europe, industries that have adopted EnMS have realized energy intensity improvements averaging well over 10%

Implementing the Management System for Energy

Objective: to achieve business level management of energy-related activities

Approach

- Goals, policies
- Responsibility structure
- Formalized decision making processes
- Operating practices, Training
- Information management and communications
- Commitment to measurement, reporting and taking necessary actions to improve
- Commitment to continuous improvement

Implementing the Management System for Energy

Four general types of energy cost saving opportunities exist:

1) Administrative (purchasing, planning); investigate life cycle energy costs of energy-using processes, equipment and materials, production planning, taking advantage of time-of-use rates, demand response programs, incentive programs

2) Operational (how energy is used and controlled); equipment running unnecessarily, equipment and controls are not running at optimal levels/efficiency, operators lack the necessary training

3) Maintenance (improving equipment performance); significant energy savings can be achieved at relatively low cost by making sure equipment is properly set up, clean, lubricated and within an acceptable operating range

4) Retrofit/replacement of technology; objectively assess the savings associated with technology retrofits or replacements, involve all appropriate stakeholders and life cycle costing, and due diligence of suppliers

The Role of Government

- Over time, quality, safety, and environmental management systems have been reasonably well adopted by North American industry
- Recognition of the need for EnMS is building as North American energy prices trend higher
- Even with significant savings potential, government and utility sponsored programs are necessary to help build critical mass of capability and incentives for early adopters
- It is critical that support (policy and investment) remain in place over the long term so that companies do not revert to old habits when energy prices drop
- Where energy costs alone are not an incentive, tax breaks or market incentives are critical. In countries with carbon tax programs, refunds or preferential utility rates are available to companies that demonstrate compliance with an EnMS system and continuous improvement as verified by independent auditors.

Current North American Energy Management System Programs

US Superior Energy Performance - Texas

- Since July 2008
- US Department of Energy & “Texas Industries of the Future”, support from Oak Ridge National Lab, Lawrence Berkley National Lab, Georgia Tech and University of Texas
- Implement EnMS and certification program based on ANSI/MSE 2000-2008 and ASME equipment standards
- 5 Texas plants - Cook Composites and Polymers Co. (Houston); Union Carbide (Texas City); Freescale Semiconductor (Oak Hill); Frito-Lay (San Antonio); and Owens Corning (Waxahachie)

Current North American Energy Management System Programs

US Superior Energy Performance - Northwest (Washington State)

- Since mid 2009
- U.S. Department of Energy & Northwest Energy Efficiency Alliance (NEEA), Georgia Tech, Lawrence Berkley Laboratories and local utilities are also contributing energy expertise and materials
- Energy-efficiency mentoring program based on the ANSI/MSE 2000-2008 and draft ISO 50001 standards
- 4 plants – AMCOR (plastic packaging), Gray's Harbor (paper mill), Kenworth (truck assembly), Simplot (large food producer)

Current North American Energy Management System Programs

Ontario, Canada

- Since December 2009
- Hatch Ltd. implementing energy-efficiency programs based on the ANSI/MSE 2000-2008 and draft ISO 50001 standards, funded via contribution agreements with the Ontario Power Authority & Natural Resources Canada, and supported in kind by “Partners in Project Green” and others
- 5 companies – Par-Pak (plastic packaging), Lincoln Electric (welding), Georgia Gulf - Royal Group (plastic building products), Lassonde Beverages (juice packaging), CertainTeed Gypsum (drywall board)
- The pilot program will run until November 2011, and will be used to help develop future energy management system incentives programs in Canada
- Funders are already discussing expansion of current program

Current North American Energy Management System Programs

New Programs based on MSE 2000 & ISO 50001

- Additional US Superior Energy Partnership sites
  - **2010:** Southeast, Midwest, Mid-Atlantic, Northeast region
  - **2011:** California, Colorado, Texas (round 2)
  - Over 30 Companies involved
- Global Superior Energy Partnership, includes
  - 3M, Brockville Ontario
  - NRCan Facilities
- Informal work by individual organizations

Lessons Learned

- Support and strong interest must exist at all levels, ownership at facility level is critical
- The team must be lead by a local senior manager, with full time coordination/support on site
- Experience with “systems” is a big advantage
- Submetering and real time monitoring are major enablers
- Even with all the incentives in place, low energy prices in Ontario make it difficult to justify retrofits in manufacturing sector
- The real test of a system is whether it survives personnel changes

For More Information…..

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Funding partners, supporters, more info

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- Natural Resources Canada, Office of Energy Efficiency www.oee.nrcan.gc.ca
- Partners in Project Green www.partnersinprojectgreen.com
- US DOE http://www1.eere.energy.gov/industry/energymanagementdemonstrations/