Background on TC 242

Energy Management
ISO 50001 establishes a voluntary framework for any type of organization using energy—industry, buildings, and public sector.

Potential impacts:

- Could influence up to 60% of the world’s energy use across many economic sectors

Uptake of ISO 50001 will be driven by companies seeking an internationally recognized response to:

- Energy cost reduction initiatives
- Demand created along the manufacturing supply chain
- Corporate sustainability programs
- Increasing market value of “green manufacturing” / reduced carbon footprint. Future national carbon or energy taxes;
- International climate agreements

ISO 50001

- Developed by ISO Project Committee 242; United States and Brazil lead effort with the United Kingdom and China
- 50 countries participating, 24 additional Observing members
- Publication June 15 2011
drivers for energy efficiency

- Health
  - Energy poverty
  - Local air pollution

- Economic Competitiveness
  - Productivity
  - Lower manufacturing costs

- Energy security
  - Reduced demand growth
  - Reduced energy imports
  - Reduced investment requirements
  - Shortfall mitigation

- Employment impacts

- Asset Values
  - Property prices
  - Productivity

- Consumer Surplus
  - Demand for Services/goods

- CO₂ Emissions Abatement

- Improved Energy efficiency

Source: IEA, BofA Merrill Lynch Global Research
despite significant benefits....lots of untapped potential

**Problem:** Energy efficiency is not integrated into daily management priorities and practices.

Source: World Energy Outlook, IEA 2012
Overview of ISO TC 242

- WG 1: EnMS
  - P1 Guidance
  - P2 EnMS Auditing CBs
  - P3 PWI HLS
- WG 2 Energy Performance
  - EnB and EnPI
- JWG 3 M&V
- WG 4 Energy audits
- JWG 4 M&V organizations
- WG 5 Energy Services
- WG 6 Commercial Buildings

TC 242 Lead

TC 257 Lead
ISO 50001: Plan-Do-Check-Act

Continual Improvement of
a) Energy Performance
b) EnMS

5. Implementation and operation
   • Training
   • Documents
   • Communication
   • Design
   • Operational and Maintenance control
   • Procurement

6. Checking
   • Measuring and monitoring
   • Legal requirements
     • Internal auditing
     • Nonconformance, corrective, preventive
     • Records

7. Management review

1. General requirements
2. Management responsibility
3. Energy policy
4. Energy planning
   – Energy review
   – Energy baseline
   – EnPI
   – Objectives, targets & action plans

ACT

PLAN

CHECK

DO
Membership Challenges and Success

Energy Management
Challenges for Mirror Committee

Membership Challenges
• Participation in other ISO committees
• Participation in other Professional Associations
• Travel Cost
• Membership Costs
• Time Commitment
• Learning the process

Marketing Challenges
❖ ISO Standards are consensus documents not just “magically created”
❖ Participation of a variety of Stakeholders ensures relevance
❖ We are Not ANSI

Membership Challenges
• Recognition for other committees
• Ask to provide updates to Professional Societies (We provide the presentation for you)
• Justification letters to member companies
• Presentations, handouts, and web resources

Marketing Challenges
❖ Planned outreach to each stakeholder group every year
❖ Choice of benefits
❖ Have ANSI at the meetings
Support for ISO 50001

US CEEM
• Acts as champion of U.S. industry in pursuing national energy efficiency goals.
• Seeks to improve the energy intensity of U.S. manufacturing through a series of initiatives.
• Stakeholder engagement meetings.
Benefits of International Participation

Energy Management
## Adoption of ISO 50001

<table>
<thead>
<tr>
<th>Country</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
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<tr>
<td>Germany</td>
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<td>United Kingdom</td>
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<td>196</td>
</tr>
<tr>
<td>India</td>
<td>25</td>
<td>74</td>
<td>172</td>
</tr>
</tbody>
</table>

Source: ISO Survey 2013
7,100 certified sites worldwide as of April 2014.

Number of global ISO 50001 certified sites has increased by 214% over the past year (March 2013 to March 2014).
Benefits to Members

- Professional Contacts
- Improved understanding of global perspective
- Improved understanding within their own organization
- Improved understanding of the ISO process and standard requirements
- Seeing what I worked on used by other organizations
- Seeing the results related to energy performance
Package for our Mirror Committee

- What do your members NEED?
  - Copies of working documents
  - Ability to provide marketing opportunities
  - Ability to provide information to their clients early or to develop materials early
  - Networking
  - Presentation on their organization, tours of particular sites
  - Services in kind
Benefits of ISO 50001 to Organizations

Energy Management
ISO 50001 Benefits

- Works from large to small organizations across diverse commercial, industrial and public sectors
- Improved cost savings
- Helps to achieve energy efficiency & compliance
- Reduced environmental impact – carbon & GHG
- Facilitates external financial incentives (Electric utility, third party financing, tax benefits and others)
ISO 50001 Benefits

- Builds energy management into business practices
- Optimizes energy-consuming assets
- Improves operations and capital cost decisions
- Facilitates energy management best practices
- Improves the ability to benchmark, measure and report energy intensity improvements
- Improves transparency and communication on the management of energy resources
- Helps in evaluating and prioritizing new energy-efficient technologies
- Framework for promoting energy efficiency throughout the supply chain
CCP Plant – Houston Texas
• 36 Employees
• Manufactures and distributes coatings resins, structural resins, gel coats

Significant Energy Use Equipment:
• Hot Oil Boilers, Steam Boilers, Thermal Oxidizer, Cooling Towers,
• Air Compressor
• N2 Generator

Results
• 14.9% energy savings/24 months
• Savings of $250,000 per Year
• $0 capital investment required
SEP Platinum Certified: Ontario, NY, facility

Improved energy performance by 16.5%

EnMS implementation resulted in $52,000 in annual savings through operational improvements with no capital investment

SEP is the organizing framework in driving the company’s goal to be a carbon-neutral company

Adopted a CHP system and two wind turbines
  – ISO 50001/SEP strengthens management of this equipment, increasing the benefits gained

“We are wary of statements of intent, but third-party verification under SEP provides evidence of proven energy savings. Without verification, stated savings are just a nice statement.”

- Bob Bechtold, President
Schneider Electric: Smyrna, Tennessee & Beyond

- **SEP Platinum Certified**: Smyrna, TN facility
- Improved energy performance by 15.3% over 3 years
  - Facility did not add any staff to support SEP implementation.
  - Smyrna’s success is driving Schneider Electric to certification **and implementation SEP across 11 additional facilities in 2014**:
    - United States: 8
    - Canada: 1
    - Mexico: 2

“At first, we didn’t appreciate the value of third party verification, but our facility has evolved to value third party verification as critical. Any facility can claim energy savings, but a third party verification proves the savings to be real.”

- Schneider Electric, Smyrna, TN
Nissan: >$900K Savings, 4 Month Payback

- **SEP Silver Certified**: Smyrna, TN vehicle assembly plant
- 7.2% improvement in energy performance over 3 years
- $938,000 total annual energy savings
- 4 month payback
- Used the DOE EnPI Tool to measure and track improvements

“SEP adds rigor, analysis, and gives good guidance. It’s one thing to have a target and objective, but SEP gives tools that empower you to be more disciplined and prove the impact certain activities have.”

-Nissan North America Energy Team

View this and other SEP case studies at: http://superiorenergyperformance.energy.gov/successes_and_testimonials.html
Working with Government Policy

Energy Management
Government are promoting energy management strategies to help realize potential

- **Solution:** EnMS will help tap unrealized energy efficiency potential by helping industry identify and implement new opportunities for energy and cost-saving objectives **on an ongoing basis.**

- The publication of ISO50001 International Energy Management System Standard in June 2011 has raised the profile of EnMS as a key energy efficiency strategy.

- Many countries have a long history promoting energy management (e.g. Japan and Ireland)
Key to success of government energy management programs!

Incentives
- Taxes
- Subsidies
- Recognition programs

Technical Assistance
- Technical expertise made available to facilitate implementation low to no costs

Training
- In-house staff – broad reach across organization
- Consultant and Auditors

Information and Knowledge Sharing
- Tool, guides and case studies
- Peer networks to motivate and promote best practices
energy management within broader policy frameworks

• Governments are promoting energy management systems as compliance pathways for energy policies with broader energy efficiency goals:
  
  • Energy Savings Targets
  • Energy Taxes
  • Energy Efficiency Obligation Schemes
  • Voluntary Agreements
Energy Savings Targets offer a structured policy approach, providing clear milestones towards achievement of long-term climate and energy goals. A number of countries are positioning energy management systems as key strategy for ensuring targets are met.

**China**

China’s Top 10,000 Enterprises Program negotiates energy savings targets with large-energy users in order to meet economy-wide targets within the country’s 12th Five-Year Plan (FYP), has an. Industries obligated under the Top 10,000 Program must collectively meet 37% of the FYP’s absolute energy-savings goal of 670 Mtce.

The program also requires local authorities to establish programs to support industry implementation of China’s national EnMS standard, GB/T 233331, which was revised in 2012 to align closely with ISO 50001.
energy tax policies

• Many governments have created energy tax schemes to motivate increased energy efficiency. Some governments offer tax exemptions to companies who have been certified to an EnMS standard, or ISO50001.

**Germany**

Germany offers industry exemptions with proof of certified EnMS for its renewable energy and electricity taxes of up to 99% and 90%, respectively.

As of February 2014, German accounts for 52% of global certifications to ISO50001.
energy efficiency obligation schemes

• These policies impose energy efficiency obligations on some category of energy market operators, and are sometimes coupled with various trading options (white certificate programs).

• Traditionally, these policies include eligible projects that are easier to monitor and verify such as equipment replacement.

• Governments are finding innovative ways to include expand programs to include eligible measures like adoption of energy management systems.

France

Strong incentives for implementing ISO50001 by providing parties with bonuses of 50% to 100% for the white certificates they obtain for energy saving measures in the perimeter of a certified ISO 50001 EnMS. The bonus increases as the EnMS is further developed.
voluntary agreements

• Voluntary Agreements (also known as target-setting or negotiated agreements), have been in use since 1990’s and programs exist in many countries including the United States, Canada, Australia, New Zealand, Japan, Republic of Korea, Taiwan Province of China and many in Europe.

• Key features of Voluntary Agreements:
  • Signed, legally-binding agreements with realistic long-term (typically 5-10 years) target
  • Require facility- or company-level implementation plans
  • Annual monitoring and reporting
  • Strong enforcement mechanism – tax or incentive
  • Effective supporting programs
Voluntary Agreements and Energy Management

• In practice, Voluntary Agreements with an energy management strategy mostly promote energy management system standards adoption. ISO50001 is a requirement of agreements in Denmark, Ireland and Sweden.

Sweden

• Program for energy efficiency in energy intensive industries (or PFE) was established in 2005

• Offers attractive tax incentives to energy-intensive industries that join the five-year program.
  • The core of the program is certification to ISO 50001.

• As of January 2014, companies volunteering to participate in the PFE represent over 90% of energy use in the Swedish energy-intensive sector.
Some governments are also designing policies that mandate adoption of energy management systems or practices. These policies can coexist and compliment policies such as energy savings targets.

<table>
<thead>
<tr>
<th>Country</th>
<th>Energy Management Requirement</th>
<th>Excerpt of supportive Measures</th>
</tr>
</thead>
</table>
| **Singapore** | Requires large industrial energy users to:  
• appoint energy managers;  
• report on energy use;  
• submit energy efficiency improvement plans. | Several initiatives in the areas of capability building in energy management, incentive schemes and awareness raising are currently ongoing.                                                                                                                                                                                                                   |
| **Kazakhstan** | Requires that large energy users become certified to ISO50001                                 | 50% subsidy on the certification of the energy management system                                                                                                                                                                                                                                                                                          |
voluntary energy management programs

• Without regulatory levers or fiscal incentives, voluntary programs depend on market-based strategies to promote adoption of EnMS.

United States

The Superior Energy Performance (SEP) program is a market-based certification program. SEP has ISO50001 as a foundation with added energy performance improvement requirements. Robust conformity assessment is emphasized in this program.

SEP uses market recognition, technical assistance and training as supportive measures to promote adoption. Though utilities at sub-national level are exploring promotion of SEP to meet energy efficiency obligations.
designing energy management programs

- A number of domestic factors help shape government program approaches:
  - Existing efficiency policy and programs
  - Social and political culture
    - Level of capacity
    - Data availability
  - Accreditation and certification infrastructure
    - Business culture
    - Available government resources
    - And others.

No one-size-fits all solution. Government need to consider these factors and others to build nationally appropriate programs.
Initiatives – International Energy Agency

Information and Networks

IEA activities

- Engagement with international standardisation organisations
- Policy Pathway on promoting energy efficiency in SMEs (2014/2015)

Energy Management Action Network (EMAK)
- Online resources
- Workshops
- Webinars

Source: V. ROZITE
GSEP is supporting the development of internationally-relevant certification schemes for ISO 50001 Auditor and Lead Auditor. The goal is to improve consistency of ISO 5001 certification outcomes by establishing a standardized and high level of knowledge and skills for ISO 50001 auditors globally.

**Contributing Countries**
- Canada, Chile, Korea, Mexico, South Africa, and the US

**Benefits to Participating Countries**
- Builds on and is consistent with the requirements of ISO/DIS 50003 – Energy management systems -- Requirements for bodies providing audit and certification of energy management systems
- Opportunity to influence development of professional qualifications critical to the success of ISO 50001
- Leverage existing efforts among GSEP participants in professional qualifications and training
- Access a package of materials to support national implementation of an ISO 50001 Auditor program that meets rigorous international requirements
Resources

- http://www.iso.org/iso/home/standards.htm
Thank You

Deann Desai
Email: deann.desai@gatech.edu
Mobile: +1 770-605-4474