Course 12196: Understanding ISO 50001 Energy Management System Standard and its Integration with an EMS

Tom Welch, P.E., LEED AP, RAB/QSA Lead Auditor
(757) 604-2540
twelch@EM-Assist.com
COURSE PURPOSE

- Provide a Basic Understanding of ISO 50001* Energy Management System (EnMS) and show its interaction with ISO 14001 Environmental Management System
- Assume a basic management system understanding

*ISO 5001 Cold-reduced carbon steel sheet for vitreous enameling
Typical Elements of a Management System

- Management Review
- Continual Improvement Set New Objectives
- Audits
- Corrective Actions Process
- Performance Measures

Roles & Responsibilities
- Training
- Communication
- Documentation
- Operational Controls

Risk Ranking
- Requirements
- Objectives
- Plans

Act

Plan

Check

Do

3
History of Energy Management Standards

- In response to the need for increased energy efficiency, reduced GHG emissions, increased use of renewable energy sources
- Recognized industry’s need to mount an effective response to climate change and to respond to multiple national energy standards – made request to ISO
- Other standards developed or being developed in China, South Korea, Germany, Ireland (EN 16001)
- ANSI Standard (MSE)
Specific Requirements of ISO 50001 (EnMS)

> Establishes a framework to manage all aspects of energy

> Fosters management system principles of continual improvement; compatible with ISO 9001 and ISO 14001

> Must consider energy performance opportunities in the *design, modification* and *renovation* of facilities, equipment, systems, and processes

> Purchasing of energy services and goods

*Although a process standard, there is more focus on performance!*
How ISO 50001 is similar to ISO 14001

- POLICY
- PLAN: Requirements; O&Ts; Action Plan
- IMPLEMENTATION: R&R; Training; Document Mgmt/Control: Ops controls
- CHECK: Perf. Measures; Audits; Corrective Actions
- REVIEW
Specific Requirements of ISO 50001 (EnMS)

- Energy Review & Determine Energy Profile
- Based on Energy Profile, identify the areas of significant energy use
- Identify and prioritize opportunities for improvement
- Set objectives and develop action plans
- Establish baseline based on 12 months of data
- Identify energy performance indicators (EnPIs)
A Management System AND Performance-driven

**Improve Processes**

Provides the framework for managing energy (P-D-C-A)
- Policy
- Objectives/targets/action plans
- Implementation/operation
- Roles and responsibilities
- Awareness, training, and competence
- Design/operational control
- Auditing
- Management review

**Energy Performance**

Establishes a methodology for realizing & measuring improvements in energy performance
- Collect and analyze available data
- Identify significant use
- Identify and prioritize opportunities
- Establish a baseline
- Measure and track changes in energy use
- Measuring energy performance via energy performance indicators
- Reporting results
An Energy Management System (EnMS)

Management Responsibilities
- General
- Roles, Responsibility and Authority

Energy Policy

Planning ("Plan")
- Legal and Other Requirements
- Energy Review
- Energy Baseline
- Energy Performance Indicators
- Objectives, Targets and Action Plans

Implementation and Operation ("Do")
- Competence, Training and Awareness
- Documentation Requirements
- Control of Documents
- Operational Control (OC)
- Communication
- Design
- Procurement of Energy Services, Products and Equipment
- Procurement of Energy Supply

Checking Performance ("Check")
- Monitoring, Measurement and Analysis
- Evaluation of Legal/Other Requirements
- Internal Audits of the EnMS
- Nonconformities, Correction, Corrective and Preventive Action
- Records

Management Review ("Act")
- Inputs
- Outputs

("Act")

("Plan")

("Check")
An Energy Management System (EnMS)

Energy Policy

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Planning
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Management Review
- Inputs
- Outputs

Checking Performance
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4.2 Management Responsibilities

ISO 50001

- General
- Structure, Roles, Responsibility and Authority

ISO 14001

- Management Responsibilities Not Specifically Called Out
- R&R part of Implementation and Operations

*ISO 50001 puts more clarity on Senior Management Responsibilities; moves Roles and Responsibilities “up front”*
An Energy Management System (EnMS)

Management Responsibilities
- General
- Roles, Responsibility and Authority

Planning
- Legal and Other Requirements
- Energy Review
- Energy Baseline
- Energy Performance Indicators
- Objectives, Targets and Action Plans

Implementation and Operation
- Competence, Training and Awareness
- Documentation Requirements
- Control of Documents
- Operational Control (OC)
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Checking Performance
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Management Review
- Inputs
- Outputs
4.3 Energy Policy

The energy policy shall state the organization's commitment for achieving energy performance improvement.

*ISO 50001 is very similar to the Environmental Policy and the two can be easily integrated*

Top management shall ensure that the energy policy:

a) is appropriate to the nature and scale of, and impact on, the organization's energy use;

b) includes a commitment to continual improvement in energy performance;

c) includes a commitment to ensure the availability of information and of necessary resources to achieve objectives and targets;
An Energy Management System (EnMS)

Energy Policy

Management Responsibilities
- General
- Roles, Responsibility and Authority

Planning
- Legal and Other Requirements
- Energy Review
- Energy Baseline
- Energy Performance Indicators
- Objectives, Targets and Action Plans

Implementation and Operation
- Competence, Training and Awareness
- Documentation Requirements
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Management Review
- Inputs
- Outputs

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4.4 Energy Planning

- Legal and Other Requirements
- Energy Review (audit)
- Energy Baseline
- Energy Performance Indicators
- Objectives, Targets and Action Plans

ISO 50001:
- Same

ISO 14001:
- Aspect ID & Ranking
- Aspect ID & Ranking
- Env. P.Is
- Objectives, Targets and Action Plans
An Energy Management System (EnMS)

Energy Policy

Management Responsibilities
- General
- Roles, Responsibility and Authority

Planning
- Legal and Other Requirements
- Energy Review
- Energy Baseline
- Energy Performance Indicators
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Implementation and Operation
- Competence, Training and Awareness
- Documentation Requirements
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- Procurement of Energy Supply

Management Review
- Inputs
- Outputs

Checking Performance
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- Internal Audits of the EnMS
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- Records
4.5 Implementation and Operation

- Competence, Training and Awareness
- Documentation:
  - Requirements & Doc Control
- Operational Control
- Communication
- Design
- Procurement: En. Services, Products and Equipment & En. Supply

ISO 50001: Same
ISO 14001:
  - Same
  - Same (EMS Manual and Doc Control)
  - Same
  - N/A
  - N/A
An Energy Management System (EnMS)

Energy Policy

Management Responsibilities
- General
- Roles, Responsibility and Authority

Planning
- Legal and Other Requirements
- Energy Review
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- Objectives, Targets and Action Plans

Implementation and Operation
- Competence, Training and Awareness
- Documentation Requirements
- Control of Documents
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- Communication
- Design
- Procurement of Energy Services, Products and Equipment
- Procurement of Energy Supply

Management Review
- Inputs
- Outputs

Checking Performance
- Monitoring, Measurement and Analysis
- Evaluation of Legal/Other Requirements
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### 4.6 Checking Performance

<table>
<thead>
<tr>
<th>ISO 50001</th>
<th>ISO 14001</th>
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| • Monitoring, Measurement and Analysis  
  • Evaluation of Legal/Other Requirements  
  • Internal Audits of the EnMS  
  • Nonconformities, Correction, Corrective and Preventive Action  
  • Records | • Same  
• Same  
• Same  
• Same  
• Same |
An Energy Management System (EnMS)

Energy Policy

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Checking Performance
• Monitoring, Measurement and Analysis
• Evaluation of Legal/Other Requirements
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Management Review
• Inputs
• Outputs
## Management Review

<table>
<thead>
<tr>
<th>ISO 50001</th>
<th>ISO 14001</th>
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<tbody>
<tr>
<td>Inputs</td>
<td>Inputs</td>
</tr>
<tr>
<td>Outputs</td>
<td>Not as clearly defined</td>
</tr>
</tbody>
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*Essentially the same; ISO 50001 puts more clarity on Outputs expected from Management Reviews*
Closing Thoughts

- Expect ISO 50001 to Be Finalized this Year (2011)
  - See my forthcoming text; *Implementing ISO 50001 and integrating energy and environmental management*

- My Guess: ISO 50001 will be mandated for Federal Agencies within 5 Years (E.O. rewrite)
  - ISO 14001 was published in 1996

- Existing E.O.s Drive Behavior for Energy Performance

- Using Existing EMS structure to manage
  - Develop Objectives, Targets, Action Plans
  - R&R, Training, Document Control, Corrective Action
Contact Information:
Tom Welch
EM-Assist, Inc.
(757) 604-2540
twelch@EM-Assist.com