



Turning understanding into results.™

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

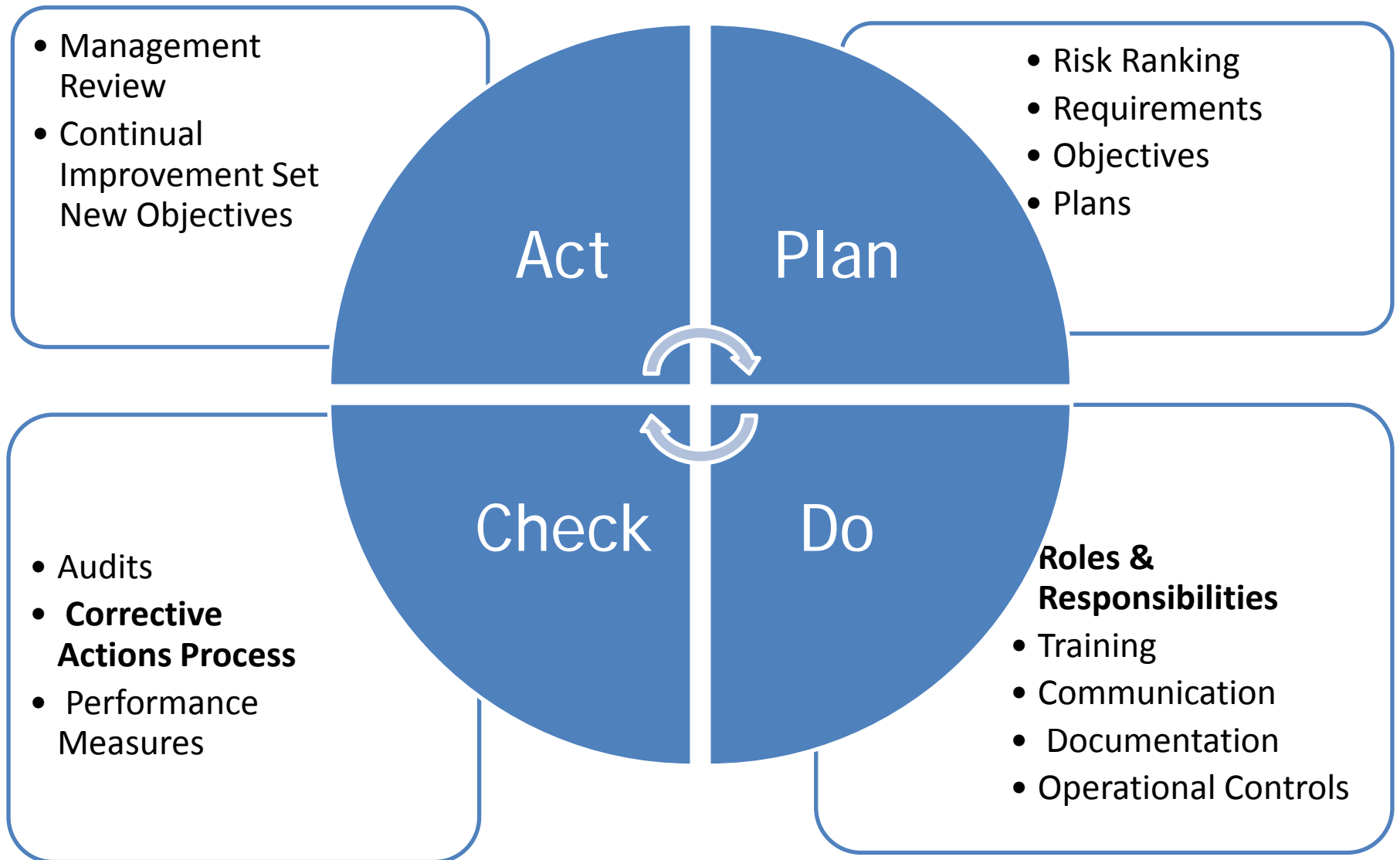
twelch@EM-Assist.com

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



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

Energy Profile

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

Management Review

(“Act”)

- Inputs
- Outputs

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

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

Management Review

- Inputs
- Outputs

Implementation and Operation

- 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

- Monitoring, Measurement and Analysis
- Evaluation of Legal/Other Requirements
- Internal Audits of the EnMS
- Nonconformities, Correction, Corrective and Preventive Action
- Records

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)

Energy Policy

Management Responsibilities

- General
- Roles, Responsibility and Authority

Management Review

- Inputs
- Outputs

Checking Performance

- Monitoring, Measurement and Analysis
- Evaluation of Legal/Other Requirements
- Internal Audits of the EnMS
- Nonconformities, Correction, Corrective and Preventive Action
- Records

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)
- Communication
- Design
- Procurement of Energy Services, Products and Equipment
- Procurement of Energy Supply

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

Management Review

- Inputs
- Outputs

Checking Performance

- Monitoring, Measurement and Analysis
- Evaluation of Legal/Other Requirements
- Internal Audits of the EnMS
- Nonconformities, Correction, Corrective and Preventive Action
- Records

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)
- Communication
- Design
- Procurement of Energy Services, Products and Equipment
- Procurement of Energy Supply

4.4 Energy Planning

ISO 50001

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

ISO 14001

- Same
- 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

Management Review

- Inputs
- Outputs

Checking Performance

- Monitoring, Measurement and Analysis
- Evaluation of Legal/Other Requirements
- Internal Audits of the EnMS
- Nonconformities, Correction, Corrective and Preventive Action
- Records

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)
- Communication
- Design
- Procurement of Energy Services, Products and Equipment
- Procurement of Energy Supply

4.5 Implementation and Operation

ISO 50001

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

ISO 14001

- Same
- Same (EMS Manual and Doc Control)
- Same
- Same
- N/A
- N/A

An Energy Management System (EnMS)

Energy Policy

Management Responsibilities

- General
- Roles, Responsibility and Authority

Management Review

- Inputs
- Outputs

Checking Performance

- Monitoring, Measurement and Analysis
- Evaluation of Legal/Other Requirements
- Internal Audits of the EnMS
- Nonconformities, Correction, Corrective and Preventive Action
- Records

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)
- Communication
- Design
- Procurement of Energy Services, Products and Equipment
- Procurement of Energy Supply

4.6 Checking Performance

ISO 50001

- Monitoring, Measurement and Analysis
- Evaluation of Legal/Other Requirements
- Internal Audits of the EnMS
- Nonconformities, Correction, Corrective and Preventive Action
- Records

ISO 14001

- Same
- Same
- Same
- Same
- Same

An Energy Management System (EnMS)

Energy Policy

Management Responsibilities

- General
- Roles, Responsibility and Authority

Management Review

- Inputs
- Outputs

Checking Performance

- Monitoring, Measurement and Analysis
- Evaluation of Legal/Other Requirements
- Internal Audits of the EnMS
- Nonconformities, Correction, Corrective and Preventive Action
- Records

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)
- Communication
- Design
- Procurement of Energy Services, Products and Equipment
- Procurement of Energy Supply

Management Review

ISO 50001

- Inputs
- Outputs

ISO 14001

- Inputs
- Not as clearly defined

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



Turning understanding into results.™

Contact Information:

Tom Welch

EM-Assist, Inc.

(757) 604-2540

twelch@EM-Assist.com