Going Green with ISO 14001

Presented by Stacey Walmsley
SQPS, Ltd.

Overview

- What does it mean to be Green?
- What is ISO 14001?
- Basic requirements of ISO 14001
- Identification of Aspects
- Common Aspects
- Can being Lean be Green?
- Thinking outside the box

What does it mean to be Green

- Being truly **green** means more than solar roof panels, sensor water faucets, energy-saving light bulbs and a recycling program
- Green itself cannot be sustained within an organization that does not embrace a lean platform

What does it mean to be Green

- At its core, the green movement is about efficiency. It is about increasing the efficiency with which we use all of our resources
- So the objectives are to pollute less, use less energy, consume less materials and destroy fewer ecosystems
- The objectives are also to improve our health, increase our productivity, and enhance our quality of life

What does it mean to be Green

- How can companies "go green"?
  - Implementation of an Environmental Management System, such as ISO 14001
  - Implementation of Lean Manufacturing principles

What is ISO 14001?

- Series of environmental management standards
- Guidance for voluntary development & implementation of EMS and principles
- Applicable to any organization, regardless of size, type, level of maturity
- Intended for use as a voluntary, internal environmental management tool
- Not required to become certified
- **Not intended to replace legislative requirements**

ISO 14001 Requirements

- Develop an Environmental Policy
  - How an organization supports establishment of an Environmental Management System (EMS)
  - Clear commitment to
    - Protecting the environment
    - Improving an organization's environmental performance
- Establish an EMS
  - Interrelated elements including
    - Responsibilities, authorities, relationships, functions, processes, practices, procedures, and resources

ISO 14001 Requirements

- Identification of Environmental Aspects
  - Including activities, products, and services
  - Environmental Aspect – element of an organization's activities, products, or services that can interact with the environment
- Legal and Other Requirements
  - Identify and meet these requirements

ISO 14001 Requirements

- Set Environmental Objectives and Targets
  - All relevant functions and levels within organization
  - Should address significant environmental aspects
  - Be consistent with environmental policy
- Create Programs
  - Programs to implement environmental policy
  - Achieve environmental objectives and targets
    - Must allocate responsibility for implementation and achievement

ISO 14001 Requirements

- Evaluate EMS
  - Identify opportunities for improvement
  - Monitor, measure, audit, and review EMS
  - Identify corrective and preventive actions to improve overall environmental performance
  - Make sure environmental policy is appropriate and applied
  - Objectives and targets are being achieved

Identification of Aspects

- Important step towards recognizing impact on the planet
- Necessary in order to establish objectives, targets, and programs



Identification of Aspects

- Identify Activities, Products, and Services
- Process map all operations and processes
  - Identify releases (normal, abnormal, accidental, and emergency situations)
- Consider direct and indirect aspects
  - Direct Aspects – Activities which a company can be expected to have an influence and control (i.e. emissions from processes)
  - Indirect Aspect – Actual or potential activities which an organization can be expected to have an influence, but no control (i.e. supply chain controlled aspects, customer controlled aspects)

Identification of Aspects

- When identifying aspects consider:
  - Emissions to air
  - Release to water
  - Waste management
  - Contamination of land
  - Impact on communities
  - Use of raw materials and natural resources
  - Other local environmental and community issues

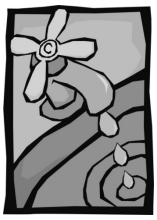
Common Aspects

- Most companies have some aspects in common, such as:
  - Raw Material Usage
  - Water Usage
  - Energy Usage
  - Waste

Common Aspects

- Aspect: Raw Material Usage
- Objective: Reduce Usage by __% by 20__
  - In the US, raw material usage has risen 5.1 times more than the population during the last century
  - The average American today uses more than 5 times as much "stuff" as the average American did 100 years ago!
- Ways to minimize usage:
  - Designing parts to minimize component counts
    - Since 1977, the weight of a 2-liter plastic soda bottle has been reduced from 68g to 51g. That means 250 million pounds of plastic per year has been kept out of the waste stream
  - Ensuring materials can be recycled
  - Use just-in-time ordering system

Common Aspects

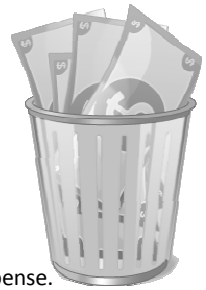


- Aspect: Water Usage
- Objective: Reduce usage by __% by 20__
- Ways to minimize usage:
  - Low-flow fixtures throughout building
    - A 300-room hotel that installs low-flow shower heads (reducing water flow from 3.5 gallons per minute to 2.5 gpm) can save approximately $35,000 annually.
  - Consider installing waste water treatment system to recycle water on-site
  - Increase amount of permeable surfaces to retain storm water on-site
  - Check for leaks in taps, pipes, and hoses

Common Aspects

- Aspect: Energy Usage
- Objective: Reduce usage by __% by 20__
  - Major contributors are lighting, computer technology, heating, and air conditioning
- Ways to minimize usage:
  - Create natural light wherever possible
  - Conduct Energy Audits
  - Automatically shut off lights, power, heating, and AC
  - Create policies encouraging employees to turn off computers
    - Activate power management functions, or sleep mode, on computers. If just 10 employees did it, a company would save $500 in energy costs per year…multiply that accordingly…
    - Use the "standby" feature of copiers. This will lighten the energy load by 70%. Nationally it costs $50 million to power the nation's copiers annually
  - Use of green power strips that stop all power use completely

Common Aspects



- Aspect: Waste
- Objective: Reduce waste by __% by 20__
  - The cost of waste throughout facilities is a huge issue and expense. Decreasing this can be a huge competitive advantage for companies
- Ways to minimize waste:
  - Minimize packaging on incoming and outgoing product
    - Reusable tote system
    - Better packaging design
  - Encourage employees to use reusable mugs instead of Styrofoam
    - Each year Americans throw away 25,000,000,000 Styrofoam cups, enough every year to circle the earth 436 times.
  - Utilize double sided copies
    - The average office worker uses 10,000 sheets of copy paper each year. Across US businesses the annual total is 21 million tons (more than 4 trillion sheets)
    - If 1 in 4 office workers utilized double sided copies the annual savings would equal 130 billion sheets
  - REDUCE, REUSE, & RECYCLE

Can you reduce costs while being Green?

Company A

- By implementing a Lean system a Tire Manufacture saw a reduction in hazardous and solid waste generation of 53% and a decrease in material scrap of 38%

Company B

- By implementing a Lean system a Plating Company was able to lower volatile organic compound (VOC) emissions by 90%, water use by 40%, and energy use by 25%

Company C

- By implementing a Lean system a Glass Company was able to cut product lead time, enhance equipment longevity, and improve quality
- They had a 50% reduction in material scrap, a 40% decrease in water use, and a 19% reduction in energy use

How being Lean can be Green

- Lean Manufacturing produces an operational and cultural environment that is highly conducive to waste minimization and pollution prevention which fits rights into an EMS
- So… being Lean can also be Green… **it's a win for both the business and the environment**

Lean Manufacturing

- Why do companies engage in Lean Manufacturing?
  - To achieve the highest quality product or service at the lowest possible cost with maximum customer satisfaction
  - **To Go Green**

Lean – 7 Wastes

- Lean Manufacturing is built around minimizing the "7 wastes"
  - Overproduction
  - Waiting
  - Transportation
  - Inventory
  - Motion
  - Extra Processing
  - Defects

- How can reducing the "7 wastes" help an EMS?

Waste 1 - Overproduction

- Manufacturing items for which there are no actual requirements or orders
- Producing reports no one needs
- Entering repetitive information
- Environmental Impact
  - More raw materials consumed in making the unneeded products
  - Extra products may spoil or become obsolete requiring disposal
- Take Credit in your EMS:
  - Decreased raw materials purchased and stored
  - Decreased waste disposal costs
  - Reduced building space needed

Waste 2 - Waiting

- Stock-outs, lot processing delays, equipment downtime, capacity bottlenecks
- People late for meetings
- Not responding to sales leads in a timely manner
- Dependency on others to complete tasks
- Environmental Impact
  - Potential material spoilage or component damage causing waste
  - Wasted energy from heating, cooling, and lighting during production downtime
- Take Credit in your EMS:
  - Increased efficiency reduces energy usage

Waste 3 - Transportation

- Poor facility layouts can cause excess transportation and damage to product
- Excessive filing of hardcopies
- Environmental Impact
  - More packaging used for internal transportation
  - More energy used to move product throughout facility
  - Emissions from transport
- Take Credit in your EMS:
  - Improved indoor air quality
  - Reduce emissions
  - Less packaging = less waste costs

Waste 4 – Extra Processing

- Extra steps that add cost but no value
- Conducting unnecessary tests or more frequent inspections
- Issuing statements for inactive accounts
- Environmental Impact
  - More parts and raw materials consumed per unit of production
  - Unnecessary processing increases wastes, energy use, and emissions
- Take Credit in your EMS:
  - Maximize energy efficiency
  - Minimize waste

Waste 5 - Inventory

- Excess raw material, work-in-process (WIP), or finished goods
- Excess amounts of office supplies
- Presence of old and outdated manuals and books on shelves
- Unused / unneeded electronic files on hard drives
- Environmental Impact
  - More packaging to store WIP
  - Waste from deterioration or damage to stored WIP
  - More materials needed to replace damaged WIP
  - More energy used to heat, cool, and light inventory space
- Take Credit in your EMS:
  - Reduce waste disposal cost
  - Reduce energy cost
  - Reduce floor space needed

Waste 6 – Motion

- Human motions that are unnecessary or straining, carrying work-in-process (WIP) long distances, transport
- Computer files not organized, too many icons on desktop
- Environmental Impact
  - More energy use for transport
  - Emissions from transport
  - More space required for WIP movement, increasing lighting, heating, and cooling demand and energy consumption
  - More packaging required to protect components during movement
- Take Credit in your EMS:
  - Improve indoor air quality
  - Reduced emissions from transportation
  - Reduced energy usage

Waste 7 - Defects

- Scrap, rework, replacement production, inspection
- Re-submitting applications
- Online connection not reliable
- Environmental Impacts
  - Raw material consumed in making defective products
  - Defective components require recycling or disposal
  - More space required for rework and repair, increasing energy use for heating, cooling, and lighting
- Take Credit in your EMS:
  - Decreased waste disposal costs

Waste
Reduce, Reuse, and Recycle

- Reduce and Reuse
  - These have the greatest impact from a cost and energy perspective
    - By not buying, or buying less, means fewer materials are purchased or used in the first place
    - Reducing cost to purchase, process, and remove materials from the point of use
  - Example:
    - Company can rent less real estate, reduce paper use, minimize materials required to produce products
    - Reuse office furniture, lights, appliance, equipment, and so on

Waste
Reduce, Reuse, and Recycle

- Recycle
  - Not as impactful as reducing and reusing but still better than adding waste to landfills
  - Some recycling companies will pay for the materials they collect, such as:
    - Carpet, ceiling tiles, painted drywall, metal from doors, electrical systems, furniture parts, cardboard, bottles, and cans

Can you be Green and reduce costs at the same time?

- By utilizing a Lean System along with an EMS you can be Green and reduce costs

Thinking Outside the Box

- Engaging employees is a critical step to success
- Look for clever ways to reward individuals or groups for their green behavior
  - Carpooler(s) of the month award

- Average worker drives an average of 10,000 miles/year
- If the average commuter carpooled everyday they would save 500 gallons of gas or 550 lbs. of poisonous exhaust emissions every year

Questions / Discussion

Earth Day
April 22, 2010

- Earth Day is next week!
- 40th Anniversary
- How you can get involved:
  - www.greencbus.org
  - www.update2010.org

- Bike to Work Week (B2WW) is May 10-20!

Contact Information

- Stacey Walmsley, SQPS, Ltd.
  PO Box 218132, Columbus OH 43212
- Email: staceyw@shraimqps.com
- Direct: 614-264-4746

- Copies of this presentation can be found at www.shraimqps.com