



digital engineering

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# Digital Engineering

## Process management technologies

## PowerLogic Users Group Conference 2016

### Shoestrings & Duct Tape Developing an Energy Management System on a Tight Budget



Life Is On





## Shoestrings & Duct Tape

*The boss calls you in to his office and says your facility is the highest cost producer in the company.*

*He wants you to reduce costs and make the facility cost competitive within the organization.*

*Since profits are down your budget looks like this...*



*...and here are your resources.*





***Manufacturing***



***Water & Waste Water Treatment***



***Healthcare Facilities***



## How did I get myself in this position?

Are you the ....

- Electrical Superintendent?
- Maintenance Superintendent?
- Production Manager?
- Facility Manager?

You could be asked to be the  
Energy Management System Champion



## How do I get started?

### Determine the expectations

- What is our energy policy?
- What are the goals & targets?
- What is the time frame for results?
- Do I have the support of senior management?

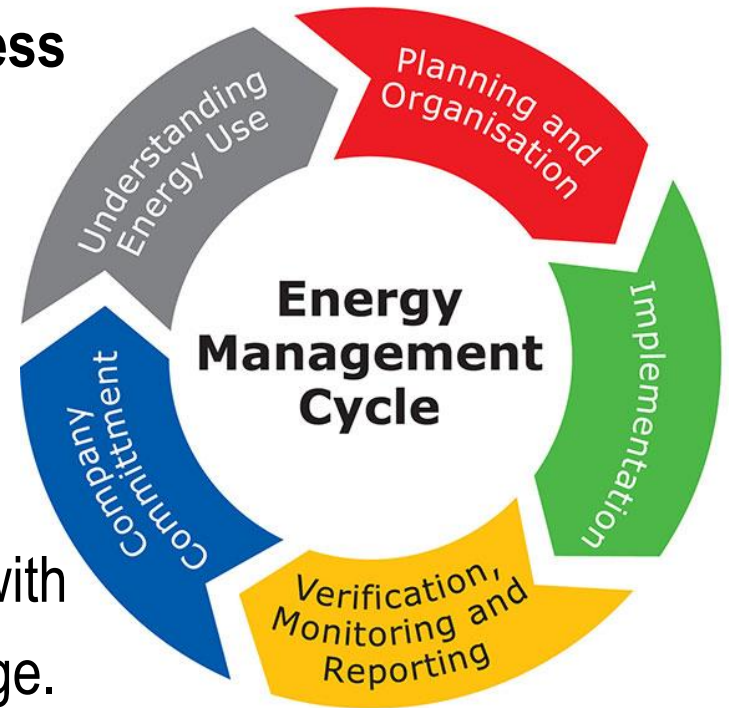


You need to know these things to build an effective Energy Management System.

## What is an Energy Management System?

**An EMS is a Management Process with a Systematic Approach for Continuous Improvement.**

Anything less will only generate short term results and leave you with a system that can't adapt to change.





## How does this help me with my tight budget?

1. Having a management process gives your project credibility and will help you gain support which leads to funding.
2. It gives you a plan to pitch to the departments that have the manpower and resources you will need.
3. Having a plan and a process will help you access funding from various levels of government.





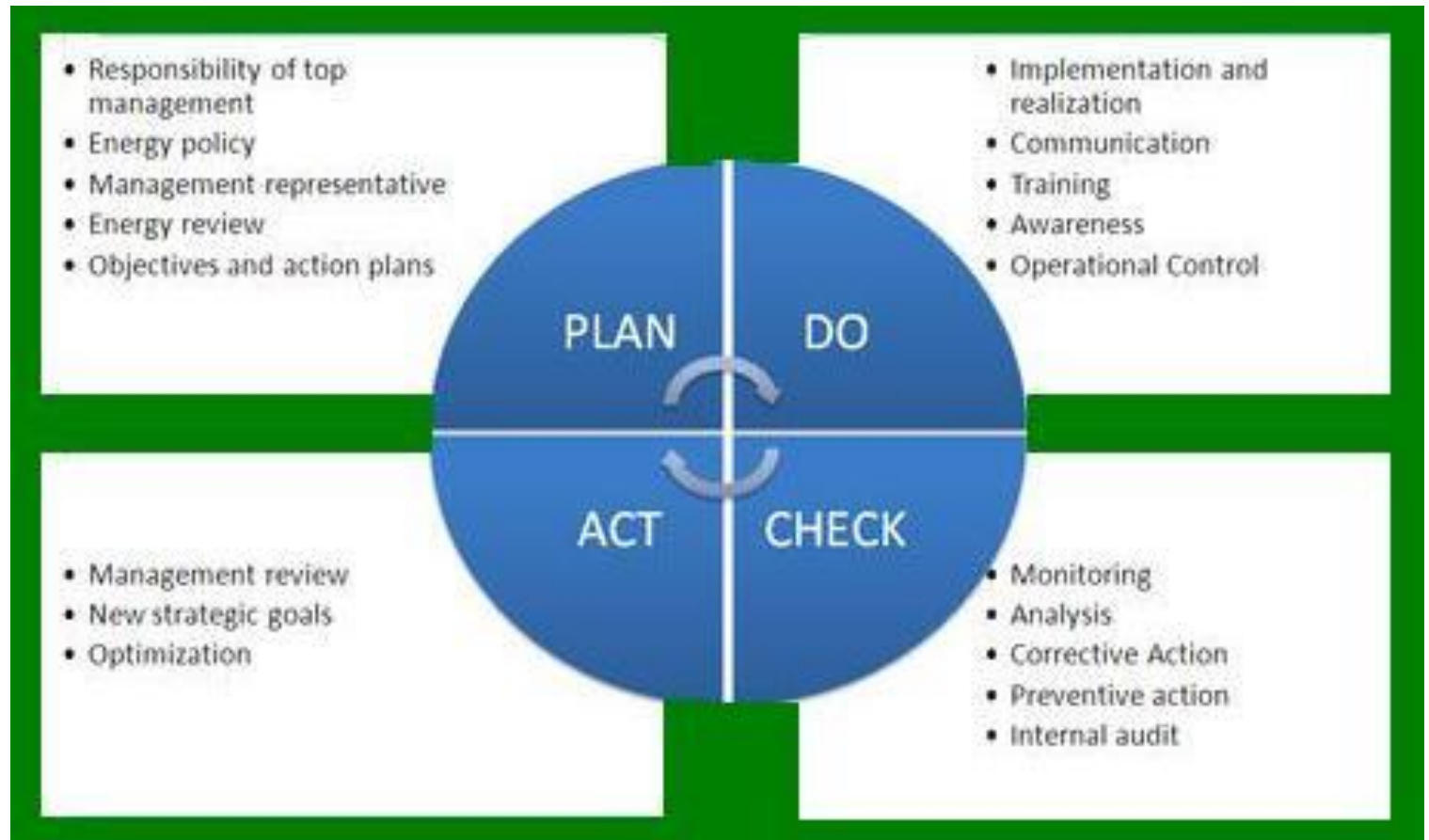
## ISO 50001 – Energy Management Standard

- International auditable standard that is based on a management system model familiar to many companies.
- It establishes a framework for industrial plants, facilities and organizations to uniformly apply operational procedures for short term and future benefits.
- ISO estimates that the standard could influence up to 60% of the world's energy use.





## How does ISO 50001 work?



## Why Should You Focus on Data Collection?

You Need to...

- have quantitative data to base your planning on
- establish what types of data you require
- establish a baseline
- ensure your data is accurate
- ensure your data can provide the metrics you will use for determining if your EMS is successful





## Low Cost Ways to Optimize Data Collection

### Go Hunting for Data

#### Electricity, Water and Gas

- Main revenue meters will exist for these commodities
- You will want access to these meters for real-time data
- Talk to the accounting department to see what billing information is available, they may also be aware of sub-metering that is used for departmental allocation

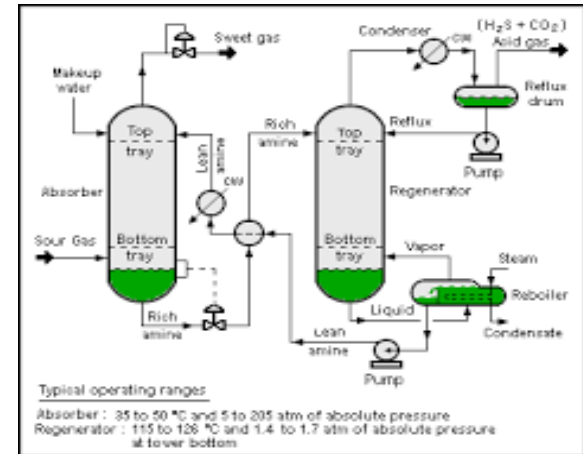


## More Data Hunting Tips

### Go Hunting for Data

#### Electricity, Water and Gas

- Talk to maintenance and engineering departments to find physical sub-metering sources
- Obtain single line electrical drawings and process flow diagrams to determine equipment locations
- Collect face plate data on equipment and manufacturer specifications for energy requirements



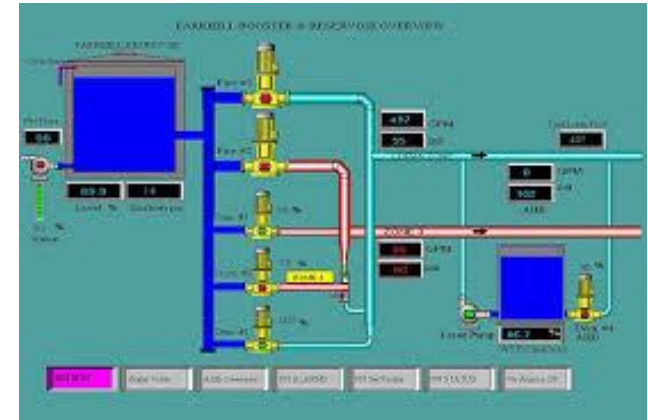


## More Data Hunting Tips cont.

### Go Hunting for Data

#### Air & Steam

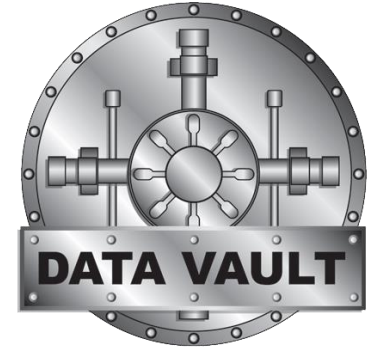
- Often these are internally generated energy sources
- They are likely metered with local instrumentation and the data can be obtained from control systems or SCADA
- Instrumentation and process personnel can provide data and information on calibration and units of measure





## Data Storage & Manipulation

Once data sources have been identified you need to have a place to store and manipulate the data.



- Does your company have a software product for this purpose?
- Do you have the internal resources to use business databases and reporting tools?
- Is there a meter vendor with a product that can input data from multiple sources?



## Metering Connectivity

Migrate old meters to network compatible communications technology

- Convert communications ports from serial to Ethernet or implement serial server devices
- Look for metering devices that use standard communications protocols
- Utilize vendor migration paths to replace aging meters with low cost, high accuracy, network friendly devices.





## Government Programs & Incentives

Government funding is available to assist with almost every aspect of EMS planning and implementation.

- Energy Managers
- Audits
- Process Improvements
- Operating Incentives (Demand Response)







## Other Programs & Incentives

Funding can also be obtained from natural gas providers





## TOP TIPS FOR EMS ON A BUDGET

***1. Establish an Energy Management System Process***

***2. Focus on Data Collection***

***3. Investigate Government & Private Funding Programs and Incentives***



## Reference Material

<http://www.iso.org/iso/home/standards/management-standards/iso50001.htm>

[http://www.energy.gov.on.ca/en/saving-energy-for-business/helping-small-businesses-save-energy/#\\_Toc6](http://www.energy.gov.on.ca/en/saving-energy-for-business/helping-small-businesses-save-energy/#_Toc6)

<http://www.nrcan.gc.ca/energy/efficiency/industry>

Contact Les Perrault at Digital Engineering Inc.

For assistance locating other links and reference materials

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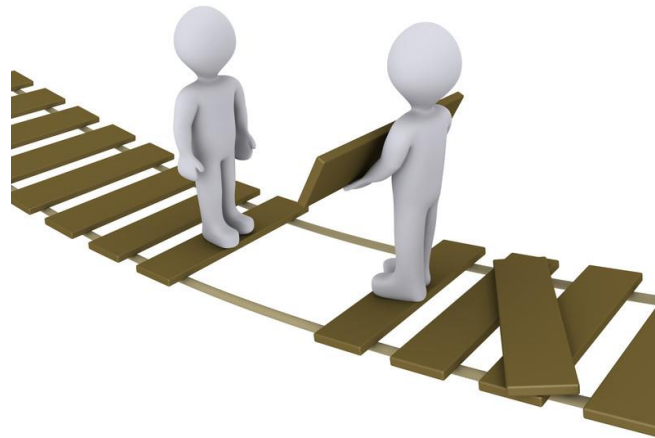
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# Questions & Answers (hopefully)



# Thanks for Your Attention!

**Benjamin MacKay – Automation Specialist**  
**Laurie Hayton – Energy Systems Technician**



**We've been building bridges between process  
and business systems for 40 Years.**