



## Practical Guide for Implementing an Energy Management System

### 4. Business Case presentation



*PARTNER FOR PROSPERITY*



Practical Guide for  
Implementing an Energy Management System



UNITED NATIONS  
INDUSTRIAL DEVELOPMENT ORGANIZATION

## Energy Management System (EnMS) The business case

**Insert the name of the company**

**Why a systematic approach to  
energy management makes  
business sense for us**

The purpose of this template is to help the organisation decide if a systematic approach to energy management makes business sense.

You will need to make many changes/additions to this presentation including putting it in the template style of your organisation if you have one.

This template gives a structure of how you can help your senior management to decide if reducing energy costs is appropriate to them and how they can support your efforts.

Prior to arranging this presentation with the relevant people in your senior management:

1. Identify those who will have influence over the decision. Communicate with them and try to enlist their help and support.

2. Get an understanding of your business drivers and priorities and try to make this proposal fit with those priorities. These priorities are likely to concern in particular finance including importance of costs, social and environmental concerns, customers, suppliers, legal requirements, etc.

This template is meant and will need to be modified to effectively fit and respond to each organization's context. Business drivers and top management priorities will have to be taken into account and the role that the energy management system would play in supporting those drivers and priorities will have to be understood and presented. Building a successful business case is very often a process involving and requiring the support of several individuals beside the proponent. While it is beyond the scope of this template to explain best practices in building successful business cases, quality guidance and resources are available in the public domain to help with such process.

The following two sources are suggested for reference:

1. Making the business case for a carbon reduction project – How to win over the board and influence people, Carbon Trust
2. Make the business case, DOE eGuide ISO 50001



## Content/ Structure

1. What is being proposed?
2. The Current Situation
  - Energy consumption and costs
  - Energy cost trends
3. What is Energy Management?
4. What can be achieved?
5. What can WE achieve?
6. How does it work?
7. What do we do next?

This is an overview of the structure of this presentation. Adapt as necessary in your case.

It shows the overall flow of the material.



## What is being proposed?

- ✓ Reduced operating costs
- ✓ Reduced exposure to rising energy costs
- ✓ Improved reliability and productivity
- ✓ Reduced environmental impact
- ✓ Improved corporate image
- ✓ Alignment with ISO 50001

### Initially based on low cost improvements

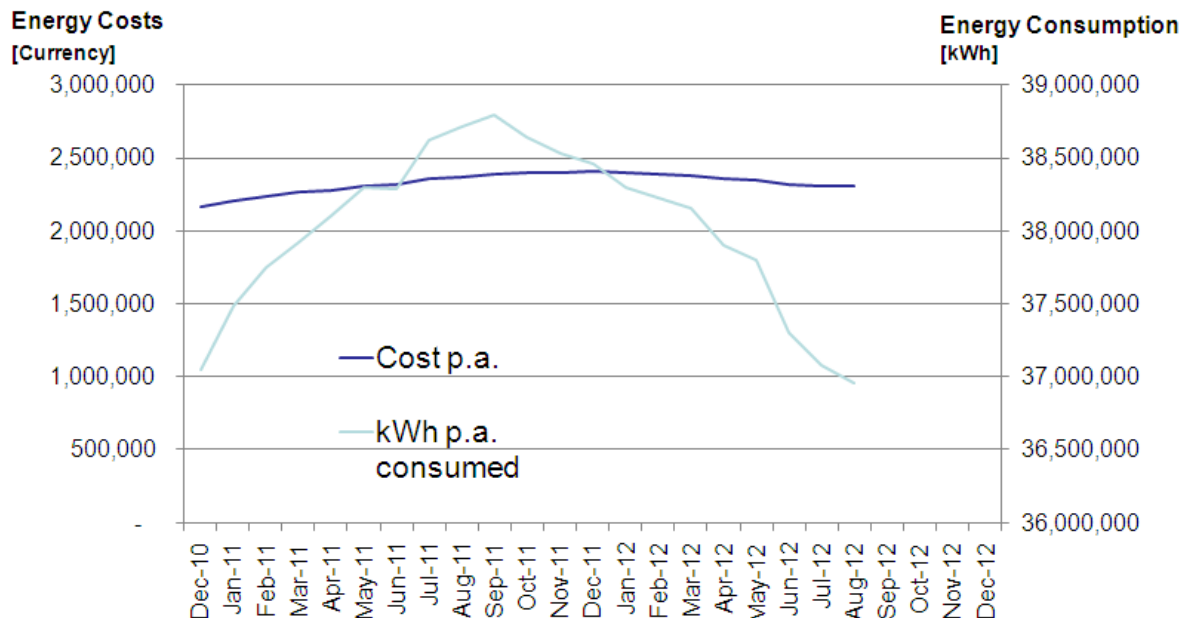
It is being proposed that all of these can be achieved using a systematic approach involving a level of commitment and support from the top management. Experience has shown that significant reductions in energy costs are possible in all industrial sectors. These savings are initially possible without investment in new technology, merely by operating and maintaining existing systems in an energy efficient manner.

Energy cost reduction is one of the few areas in this organization where we can reduce costs without impacting our employees in real or imagined ways. This is in contrast to other aspects of cost reduction. In fact comfort levels and productivity will also improve through improved operational control.

Alignment with the requirements of ISO 50001: If we decide to seek certification to ISO 50001 now or in the future this work is fully aligned with that. It is possible that there may be incentives in the future to achieving this certification. The methodology we would follow will coincide with the framework proposed in ISO 50001.



## The current situation – energy trends



The dark blue line above which corresponds with currency units per year on the left y-axis left scale. The lighter blue line corresponds with the right scale in kWh per year for energy use. We can see in this sample case that while energy use is falling consistently in recent months costs is fairly steady indicating that unit costs are increasing steadily over this period. In this particular case savings of over 5% are being achieved through operational control alone. This is helping to keep overall costs steady while energy prices rise.

Comment on and discuss both replacing the above with you own data. Try to understand the trends in the annualised use.

You may add to the detail of this chart by showing separately lines for electricity and fuel consumption and costs.

You will need a minimum of 24 months data to produce the above type of chart.

Highlights both increases and decreases.

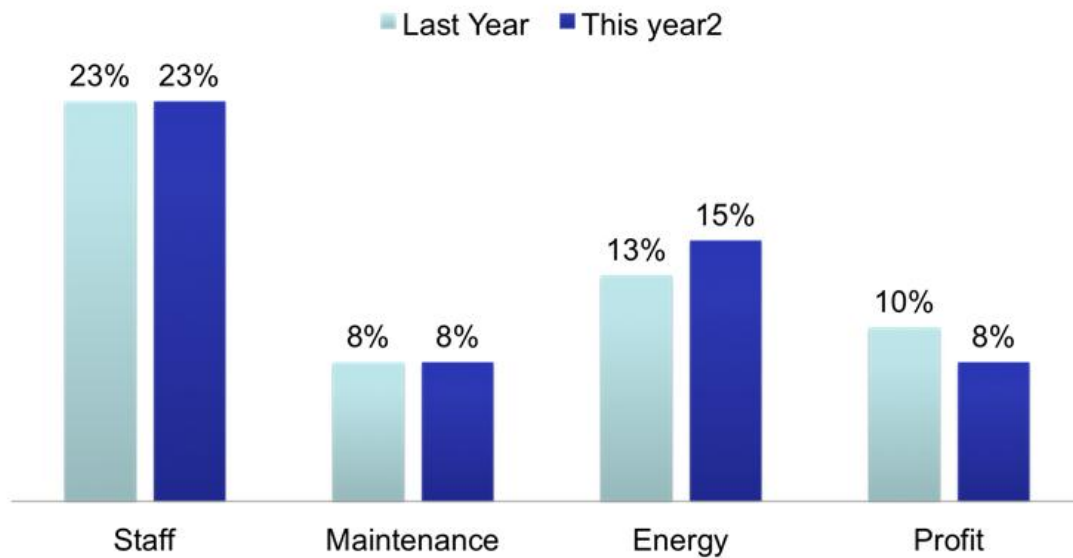
**NOTE:** In the case of increasing energy prices the rationale for energy efficiency is straightforward and easily understood by top management, i.e. contain/avoid increase of production costs.

When energy prices are low or decreasing it is usually more difficult to make a case for energy efficiency. In those contexts the argument of production cost reduction can be reinforced and sustained by highlighting the loss of a potential price advantage (of the company's products) compared to other companies/competitors paying higher energy prices.

You may use tabs ER1 Data and ER2 Trends from the UNIDO EnMS Tools spreadsheet to help with this slide.



## Relative % of turnover



The purpose of this slide is to show the relevance of energy spending to other significant costs in the organization.

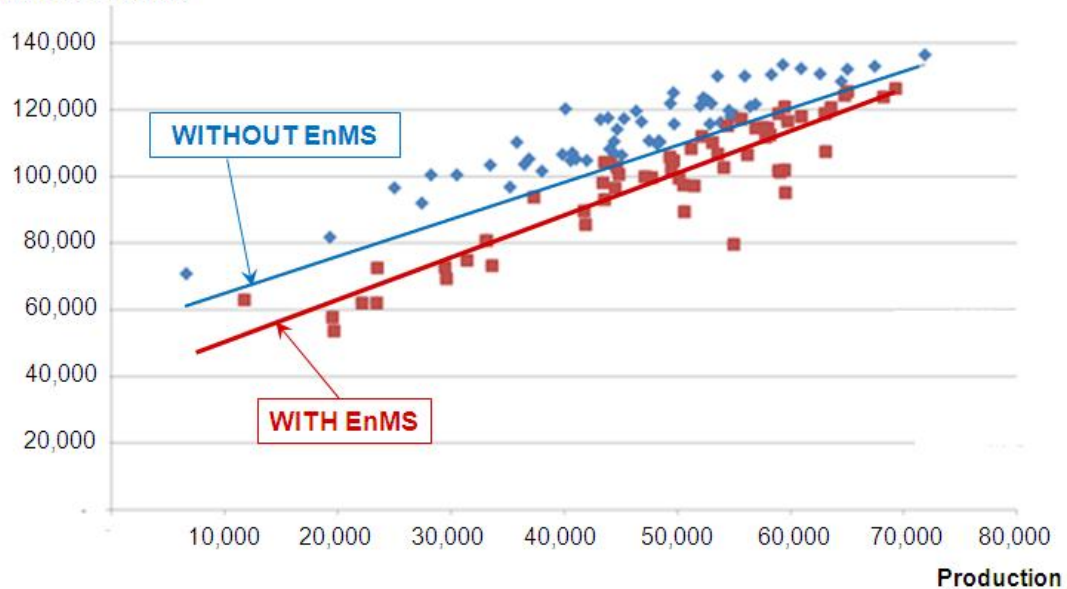
Draw a bar chart comparing last year (or earlier years if possible) with this year in the main cost categories, e.g. energy, maintenance, total costs, profits, etc.

The intention is to highlight if energy costs are becoming more significant and the benefits of reducing them.



## What can be achieved with EnMS/ISO 50001

Energy Consumption



This slide shows what can be achieved in the case of a typical industrial plant.

How to interpret/explain the chart:

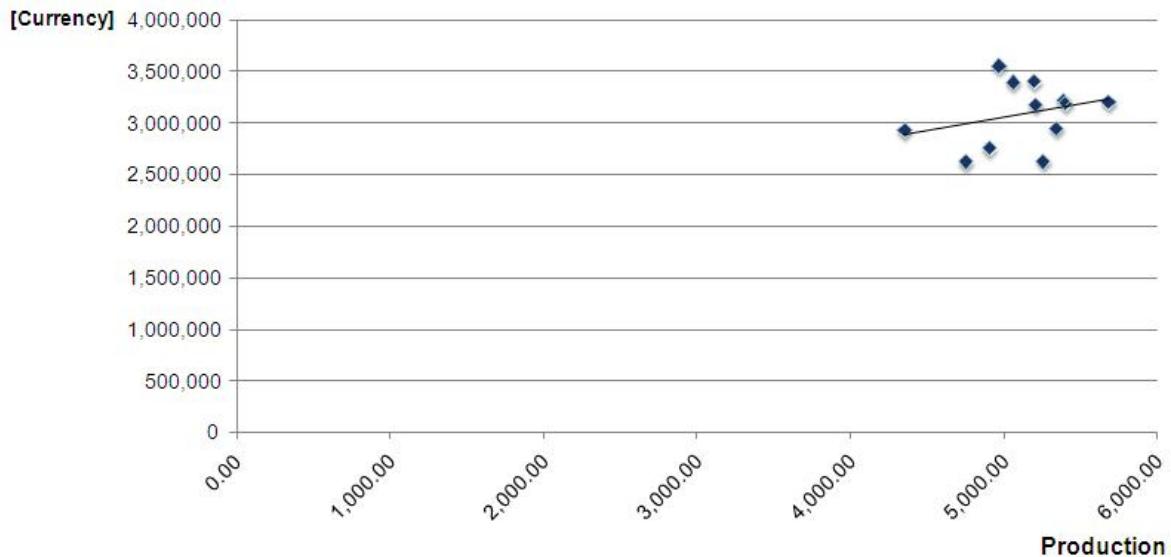
The blue dots on the chart represent the profile before improvements were made. The red dots are the situation afterwards. The 2 straight lines are the best fit before and afterwards. This represents a 29% energy saving in a typical production year.

This is real data from a participant plant in the UNIDO Energy Management System program.



## What can WE achieve?

### Energy Consumption



Insert you own scatter diagram. Note the following for improvement:

A) If the scatter is very random it suggests that you have poor operational control, i.e. energy use is varying considerable regardless of output. This is the case with the sample on the right above.

B) If you have a high base load (Y axis intercept) why? How can you reduce it? How much would you save be reducing it? This is also the case with the sample on the right above.

The chart shown here is real data from a factory. It indicates very large variation in energy use regardless of production. This was found to be a result of 2 factors; one is the weather which has a large influence on energy use in this industry (does it in yours?) and the other was a lack of operational control. This plant has started on a program of improvement in this area and its correlation is improving in line with reduced energy costs.

From this you may be able to estimate the potential savings especially from improvements in operation control and base load reduction.





## What is energy management?

- ✓ It is how we propose to manage our use of energy!
- ✓ We want to be more systematic
- ✓ We will combine the following:
  - Behaviour change among all employees
  - Behaviour change among management
  - Objective use of data to show performance
  - Technical improvement
  - Low cost operation and maintenance of existing equipment

An Energy Management System is not a piece of software.

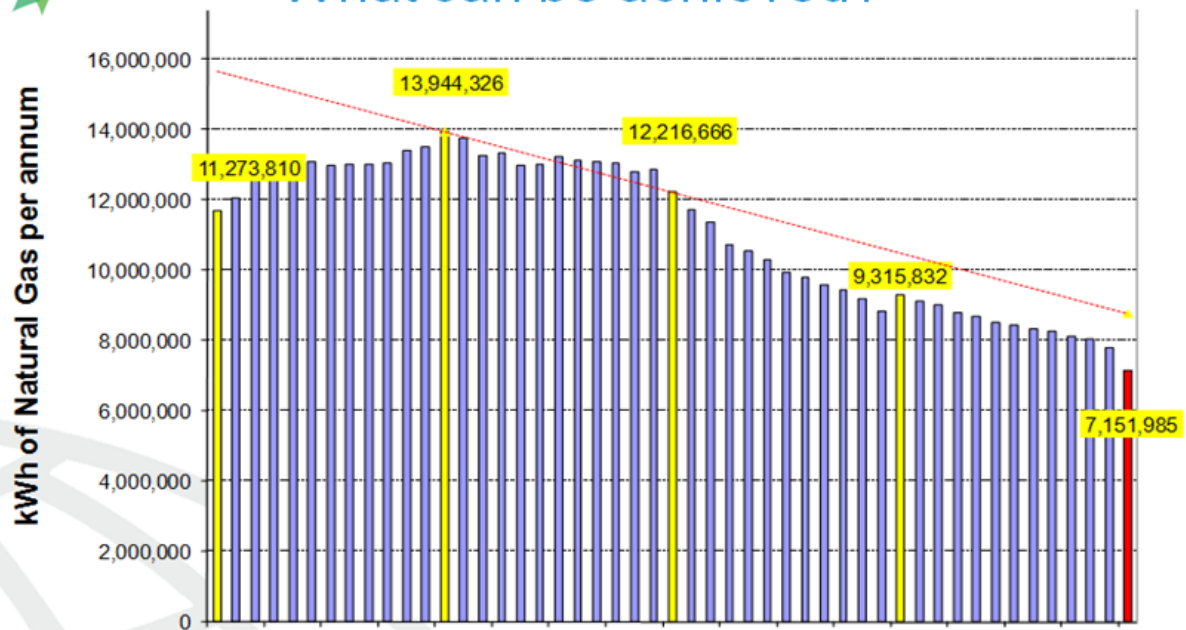
It is not a technical solution.

It is the application of good management practice

It is a combination of an overall systematic logical approach to how you manage energy. It involves gaining commitment from top management to give appropriate priority to improving energy performance. It involves a combination of changes to behaviours at all levels in the organization but especially at the top and mid levels. It also involves getting a good picture of how energy is used and where opportunities to improve exist. It especially involves improving how energy is used in the operation and maintenance of existing equipment. It also involves technical improvements and investment where normal investment criteria are met.



## What can be achieved?



This company reduced natural gas use by close to 50% over a 3 year period from 14 GWh per annum to 7 GWh per annum. Each bar is calculated monthly from the bills and is the total of the previous 12 bills, i.e. each bar shows a full 12 months gas use. The yellow bars are the year ends i.e. December of each year.

It did this without any financial investment.

It did it without reducing output.

It did it through a systematic approach to improving performance through improved operation and maintenance.

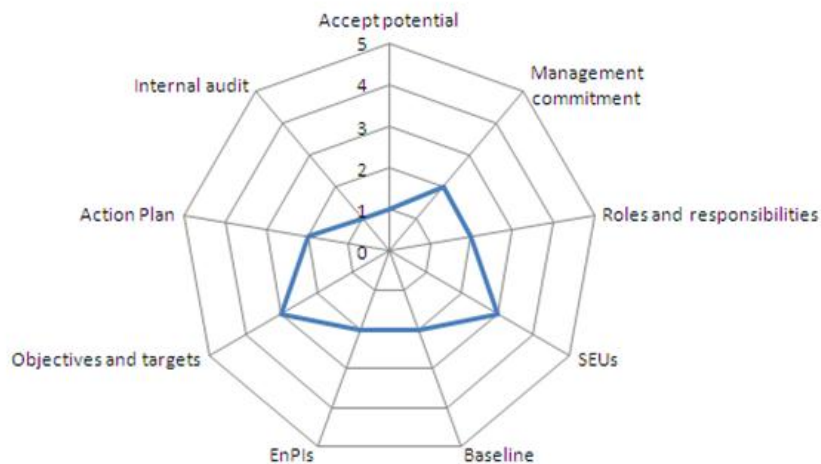
It simultaneously improved reliability and productivity.

It started from a typical position, i.e. it was not particularly wasteful to begin with.

It did it by rigorous application of the principles of continuous improvement.



## Our current level of energy management



Complete the self assessment provided in the EnMS Tools spreadsheet and insert the correspondent generated spider diagram here.

Discuss this with the management.

Highlight both the strengths and areas for improvement of the organization.

Be as objective as possible.

It is by building on your strengths and being open to improving the other aspects that your energy performance will improve.



## How does it work?

- ✓ Gain commitment
- ✓ Plan what actions to take
- ✓ Take the action
- ✓ Check that they are working
- ✓ Build more commitment

Based on the principles of Plan – Do – Check – Act from ISO 50001 (ISO 14001 and ISO 9001).

Very simple approach to systematic and sustained continuous improvement of energy use.

Shift in emphasis from individual projects to systematic, data driven management approach.

Schedule:

1. Gain commitment today!
2. Develop specific actions plans over the coming weeks and months (< 5 months)
3. Start to implement improvements immediately
4. Start to check performance immediately
5. Review progress in 6 months with you, the management, to build further support.



## What sort of actions will we take?

### ✓ Operation and maintenance initially

- Fix leaks
- Fix insulation
- Switch off
- Run optimum equipment
- Optimum settings
- Check controls
- Training
- Maintain improvements

Update this list to correspond with your plant and its systems. These are all very low tech and unexciting topics but they produce extraordinary results in typical plants.

While it may not be comfortable to say it, this is reducing the energy that we currently WASTE.

We should complete these items initially. These are categorized as operational control. They result in significantly reduced cost and improved reliability and comfort.

They will also result in improved correlation between energy use and output as variability is reduced.

They will reduce base load.

A coherent approach to this area typically results in savings of 10 to 20% of energy demand and in many cases over 50%. These are all achieved in plants that think they are doing a good job to begin with.

Investment in energy efficient technology is more viable and appropriate after completion of these steps.

These items will reduce cost, energy use and CO2 emissions.



## What do we do next?

- ✓ Make a decision to go ahead
- ✓ We do not need financial investment until **AFTER** we start to show savings
- ✓ Viable investment projects may follow later
- ✓ We do need management commitment to improve
  - Some staff need to help
  - Some staff need to change behaviour
  - Some staff need training

Management need to be persuaded by this presentation to decide to go ahead with an EnMS.

Emphasize that initially there is no financial investment required. Completion of the planning phase may identify opportunities to invest in energy saving but will also identify many opportunities to save without financial investment.

The initial investment required is to support increased prioritisation of energy management in day to day operations. People will need some time to focus on the topic and to identify and implement savings opportunities.

Training will be required to raise awareness among staff and among management and also training of operational and maintenance staff in the energy impact of their day to day activities and decisions.