

Non energy benefits

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Why do we have a slow uptake of energy efficiency ?

- Many reasons, however we know economics matter

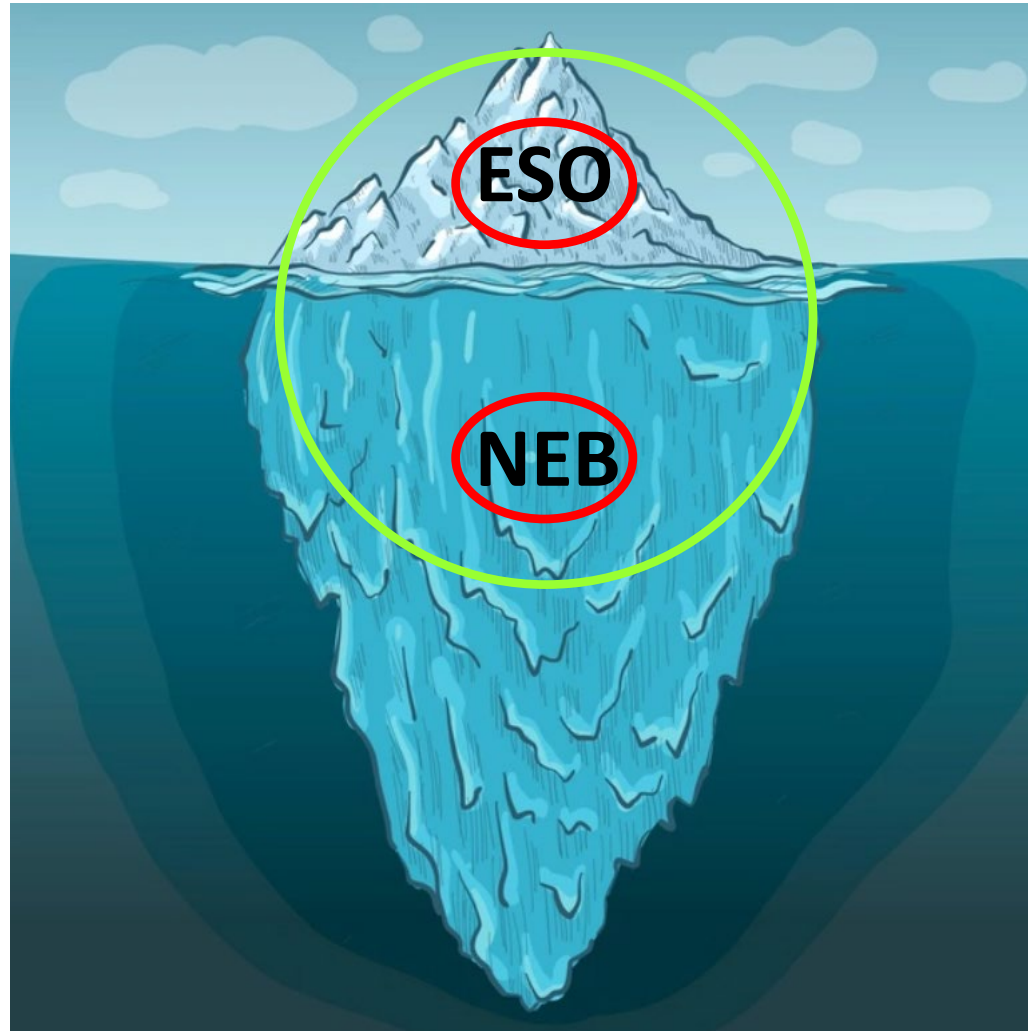
ID	Description of measure/project/action	Service	Status	Estimated/Actual (Annual) Savings			Capital Cost (Le)	Total Cost (Le)	Payback (years)
				kWh Elec.	kWh N.GAS	type of Fuel			
1	Office heating by application air-air heat exchanger on the RF dryer exhaust chapel	Heating	planned	8.000			4.000	4.000	2
2	Application of air-air heat exchanger on air conditioning system not water which used for building heating.	Heating	planned				12.000	12.000	
3	Revision humidity system of The Twisting Hall air Conditioning machine	AC	planned	10.000	12		35.000	35.000	
5	Periodic control of the steamtrap at the factory which had been listed will be made and interfere of the leakage	N.Gas	planned		325.000		20.000	20.000	1

Not real value!

Pay Back does not show real value

ENERGY COST 2-5 % OF PRODUCTION COST

There is more to Energy Saving Opportunities than ENERGY



ESO Energy Saving opportunity
NEB Non Energy benefit

What could be the unique selling points in - “selling” energy efficiency

- We could start looking at the non energy benefits
- What are non energy benefits ?
 - **Any benefit other than energy saving received from an energy efficiency activity.**
- NEB is not a new thing, there has been research for more than 25 years, however the concept has been very slow to be recognized

Non energy benefits

Non-energy benefits from efficiency improvements

Waste	Emissions	Operation and maintenance
Use of waste fuels, heat, gas Reduced product waste	Reduced dust emissions Reduced CO, CO ₂ , NO _x , SO _x emissions	Reduced need for engineering controls Lowered cooling requirements
Reduced waste water Reduced hazardous waste		Increased facility reliability Reduced wear and tear on equipment/machinery
Materials reduction		Reductions in labor requirements
Production	Working environment	Other
Increased product output/yields	Reduced need for personal protective equipment	Decreased liability
Improved equipment performance Shorter process cycle times	Improved lighting Reduced noise levels	Improved public image Delaying or Reducing capital expenditures
Improved product quality/purity Increased reliability in production	Improved temperature control Improved air quality	Additional space Improved worker morale

How to assess non energy benefits ?

Use the multiplier value from research (2.5 times!)

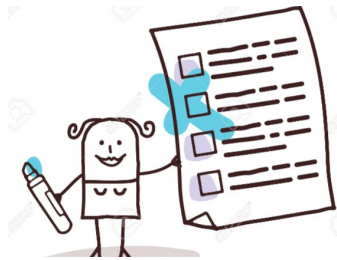
NON-ENERGY BENEFITS FROM COMMERCIAL AND INDUSTRIAL ENERGY EFFICIENCY PROGRAMS: ENERGY EFFICIENCY MAY NOT BE THE BEST STORY

Nick P. Hall, TecMarket Works
John A. Roth, TecMarket Works

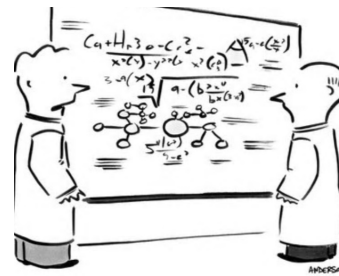
The results indicate that businesses place significant importance on the non-energy benefits associated with the installed technologies, and that the value of these benefits are equal to about 2.5 times the projected energy savings for the installed measures. In summary, businesses report that the

The factor could range from 0 to 70

- Questionnaire



- Exact calculation



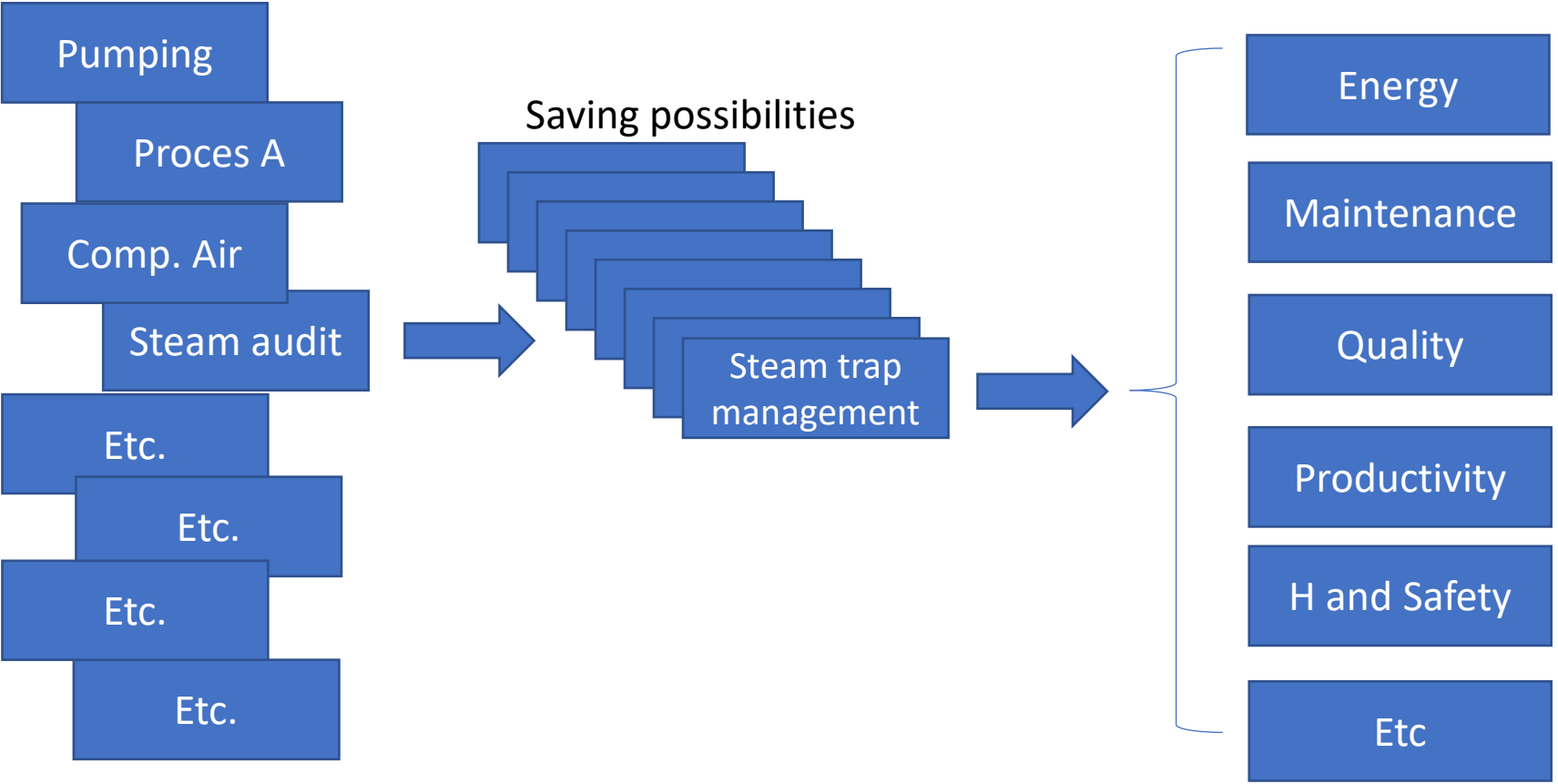
So what do we achieve besides saving electricity, if we go from halogen to LED in a shop?



NEBs of LED lights compared with halogen

- Reduced maintenance, LED life 25000 hours, halogen 1000 hours
 - Reduced procurement and installation cost
- Reduced cooling
 - Less heat from LED, less cooling, that leads to less energy consumed by aircon, less time for aircon means less maintenance and extended life of aircon
- LEDs does not change colour of clothing, that means less clothing has to be sold at sale prices
- LEDs reduce fire risk
- LEDs do not give off heat: maybe people stay longer, shop more 😊
- LEDs gives shop green image
- Less hazardous waste disposal on replacement
- ETC.

NEB assessment process, start with the Energy Saving list from the energy audit



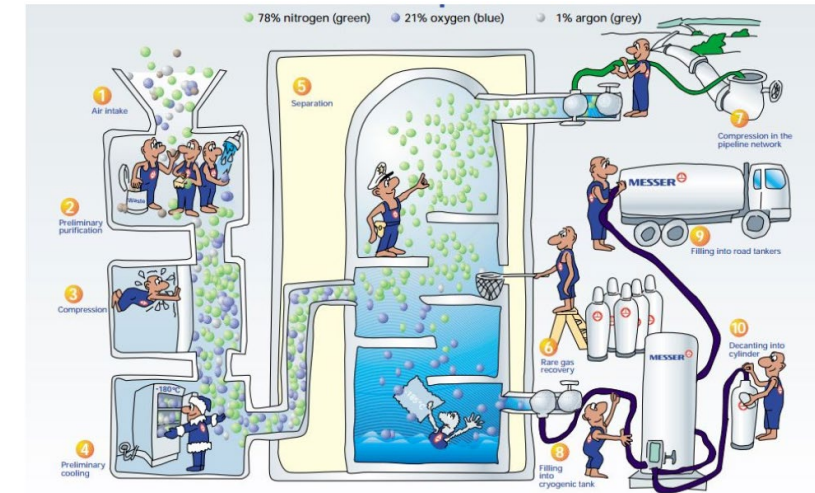
One by one the NEB are discussed with the responsible department, for maintenance as an example you ask the maintenance people what what will a steam trap maintenance Program lead to

- reduced make up water
- reduced chemical procurement
- better steam quality
- etc

For each of the benefits you will discuss If it is possible to put monetary value on the benefit or not, if yes calculate it if not assess whether the benefit is positive or not

Case Production of liquid gasses

- Case:
 - If the temperature of the cooling water goes up it has a great influence on the energy consumption in the production of liquid gasses.
 - Systematic metering introduced in connection with the implementation of EMS, indicated rising temp over time, due to smudge of the heat exchanger. In spite of well controlled chemical treatment of the cooling water.
- What to do ?
 - Special investigation pointed towards instalation of an ozone unit together with a sand filter to improve water quality
 - Result temp decreased with 1-2 degrees compare to the situation before.



Case Study: Production of liquid gssaes

Energy saving due to lower cooling water temperature :

153.000 kWh/year or 12.000 US dollar

However, "what did the company achieve besides the energy saving ?"

Reduced:

- Use of chemicals 50.000 US dollar/year
- Corrosion inhibitorer 12.000 US dollar/year
- Reduced corrosion 20.000 US dollar/year
- Reduced labour cost not calculated
- Reduced down time not calculated
- Reduced enviromental influence not calculated
- Better working enviroment not calculated



- Pay back less than half a year

Benefits of ISO 50001 is it true???

- Increase energy efficiency.
- Contribute to cost reduction.
- Gain competitive advantage.
- Increase effectiveness.
- Promote best energy practices.
- Improve energy performance.
- Implement environmentally friendly practices.
- Help the organization to improve its reputation.
- More effective production

What do you get with well implemented EnMS plus NEB ?

GO'ENERGI CASE
Energiledelse

Go'Energy
Maj 2012

Energiledelse skaber overskud hos Scanola

Hos madolieproducenten Scanola har man sat energiforbruget i system. Det har betydet store økonomiske besparelser, en mere effektiv produktion og et bedre sammenhold mellem de ansatte. Ved at sætte fokus på energiforbruget i det daglige har Scanola også styrket sin grønne profil som en foregangs virksomhed på energiområdet.

Sæt forbruget i system
Energiledelse handler om at skabe oversblik og sætte sit energiforbrug i system. Ved at sætte sig ind i virksomhedens energiforbrug er – og løse eventuelle problemer i opløbet. Fortæller Claus Emmertsen.

Et godt overblik er vigtigt for at kunne måle energistandarden – men også for styrkeligheden.

Når maskinerne kører som i olie hos Scanola, skyldes det ikke kun de 240.000 tons raps, madolie virksomheden bruger årligt. Det handler også om veltilrettelagt vedligeholdelse og produktionsplanlægning med fokus på energiforbruget. Scanola bruger nemlig energiledelse aktivt i hverdagen – og det kan mærkes.

"Vi har klart en bedre produktion i dag, end før et begyndte med energiledelse. Fabrikken kører konstant og udnytter energien bedre. Vi har sparet penge, og produktionskapaciteten er øget." Fortæller direktøren i Scanola, Claus Emmertsen.

Scanola har sæt sit energiforbrug i system, og nu kan de måle deres produktionsstandard, og effektivt af deres energi. Således kan de se om de kan spare. Det betyder bedre styring og styrket samarbejde med leverandørerne.

Energy savings

Annual interest rate

Årlig energibesparelse:
880.000 kWh el og
3.150.000 kWh varme

Investeringer:
I alt 2,7 mio. kr. over 13 år

Årlig kontant besparelse:
1,9 mio. kr. (2011)

Årlig forrentning: ca. 450 %

Increased productivity

24 hour production

Less scrap

NON ENERGY BENEFITS HOS SCANOLA

Fordele ved energieffektivisering ud over energibesparelser kaldes Non Energy Benefits eller NEB. NEB'erne hos Scanola er blandt andet:

- Øget produktionskapacitet 30-35 %
- Mulighed for at producere i døgndrift
- Overvågning gør det muligt at fange fejl i opløbet

"Fabrikken kører konstant og udnytter energien bedre. Vi har sparet penge, og produktionskapaciteten er øget."

Claus Emmertsen

Non Energy Benefits of High Efficiency Motor

- What do you get from installing HEM besides energy efficiency?
 - Low noise/ silent operation which makes it suited for indoor use.
 - Less heating of motor due to the efficiency factor being high. Extended life time.
 - Bearings last longer because the temp is lower
 - Low maintenance because of the higher quality materials used. The chances of breakdown are very limited
 - Life of these machines is generally higher than regular machines.

**GET 10% MORE
ENERGY SAVINGS**
WITH THE
NEW IE5-RATED
MGE MOTORS
COMPARED TO IE3





Thank you for listening
Any questions ?