Holistic Approach to Daily Energy Efficiency Management at Production Sites

Presentation contents

- This is SCA
  - CO2 and energy

- “Man vs. machine” in energy mgmt
  - Roles and responsibilities
  - Targets at all levels
  - Energy follow-up

- Real-life examples to empower your organization!
This is SCA

- At a glance
- Business areas
- Environmental goals
- CO2 and energy
SCA at a glance

- SCA is a global hygiene and paper company
- Annual sales of EUR 11.3bn (SEK 107bn) in 2010
- Approximately 45,000 employees
- Some well-known brands: TENA, Tork, Zewa, Tempo, Libero, Drypers and Saba
Our business areas in 2011

Sales 2011: SEK 106 billion

- Tissue: 36%
- Packaging: 25%
- Personal Care: 23%
- Forest Products: 16%

EBIT:
- Tissue: 32%
- Packaging: 21%
- Personal Care: 27%

Packaging was divested in June 2012.
Leading market positions

North America
AFH Tissue: 3
Incontinence care: 3

Mexico
Incontinence care: 1
Tissue*: 2
Feminine care: 1
Baby: 3

Colombia
Incontinence care: 1
Feminine care: 1
Tissue*: 1

Nordic region
Incontinence care: 1
Baby diapers: 1
AFH tissue: 1
Consumer tissue: 2

Global
Incontinence care: 1
AFH tissue: 2
Consumer tissue: 3
Baby diapers: 4
Feminine care: 5

Europe
Tissue*: 1
Corrugated board**: 2
Solid wood products: 2
Baby diapers: 3
Incontinence care: 1
Privately owned forests: 1

Australia
Feminine care: 1
Incontinence care: 1
Tissue*: 2

*Tissue includes both AFH tissue and Consumer tissue
**Packaging was divested in June 2012 excluding two kraftliner mills
SCA is the main European Tissue Player
Largest Manufacturing Footprint

* Excluding GP sites, acquired Q3 / 2012
We lifecycle
Responsible environmental stewardship

SCA has committed to three key environmental goals concerning:

- carbon dioxide emissions
- water use and
- fibre sourcing
Reducing carbon dioxide emissions

“SCA will reduce its carbon dioxide emissions by 20% by the year 2020, with 2005 as a reference year”
Our forests as absorbers of CO$_2$

SCA is Europe’s largest private owner of forest land: 2.6 million hectares

Net growth of 1% per year = a net absorption of 2.6 million tons CO$_2$ per year
1,300 projects for reducing CO$_2$

The E-SAVE projects, have saved 700 GWh of electricity and 1,400 GWh of heat annually since 2003. This corresponds to EUR 63m per year.
1,300 projects for reducing CO₂

Examples of such projects:

- **Heat** recovery
- High-efficiency **motors**
- Upgrades of **lighting** systems
- **Electricity** co-generation increase
- **Boiler** upgrades
- In-depth **energy** measurement systems
- **Water** loop closures
- **Compressed air** system improvements
- More efficient **vacuum** systems
- New **process** technologies
- …
1,300 projects for reducing CO$_2$

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BUT

THIS IS NOT THE TOPIC

AND

THIS IS NOT ENOUGH!
"Man vs. Machine" - how to manage energy?

Are we getting the most out of our technology?

- There are numerous measurable feed-back loops in process industry. Is energy use always a parameter when automizing or managing the process?
- There are hundreds or even thousands of individual energy consumers in a medium-sized factory. Are we managing each load at all times optimally?
Who is responsible for energy?

Cliché but true: Everybody is!
Who is responsible for energy?

- Factory Mgr reviews energy consumption at least monthly (Euros, MWh per unit)
- Targets and long-term plans need to be realistic & achievable; and agreed with Operations Mgr
Who is responsible for energy?

- Once energy is part of the factory’s long term plan & everyday life, it’s also part of production optimization, for example:
  - Sourcing needs to optimize operational costs
  - Compromises between quality and energy – involve the customers
  - Production planning
Who is responsible for energy?

- Each production department needs to have a separate energy target – again, based on opportunities
- Energy consumption follow-up on a daily basis; deviations investigated
Who is responsible for energy?

- Departmental action plan must be consistent with the energy target
- Engineering support needs to be given for projects with high ROI
- Teams need to give the training & responsibility of efficient operation down to the shopfloor
Who is responsible for energy?

- The operators need to run the equipment within the assigned setpoints (temperature, pressure, flow, moisture, speed etc…) to ensure efficient operation.
- Depending on the complexity of the factory, these might be the persons with most impact in the efficiency!
Who is responsible for energy?

- Energy efficiency cannot be just a “side-job” of one or two persons! Ownership must be within production!
- Everybody must feel free to present ideas for energy conservation!
- Communication & feedback at all levels ensures sustainable process!
Follow-up: Seasonal top-level target

• Part of monthly management reports
• Seasonally adjusted e.g. due to ambient temperatures, planned shutdowns etc.
Follow-up: departmental targets

Each department is responsible for their own consumption per type of energy (fuels, steam, electricity, air, H₂O…)

Frequent follow-up, “traffic-light” indicators per departments

Separate & understand where are main successes & opportunities
Follow-up: department-specific consumption & focus areas

- This is where it all happens!
- Follow-up of energy consumption on a daily basis
- Understand which processes consume to most energy
- Understand why and how the consumption is varying vs. time, vs. process input, vs. product, vs. raw material…
- Prioritize actions & follow-up against biggest losses
- Provide engineering for profitable projects

Daily follow-up, kWh/unit

- Gas
- Steam
- Electricity

Individual process variation

Develop new operation standard /automation

or

Invest in new technology

Understand the loss, analyze what can be done
Follow-up: department-specific processes to maintain low consumption levels

- Here the most critical decisions are made – or not!
- The standards created by engineering must be promoted, maintained, and kept in range!
- Ask the operators for ideas how to consume less!
- Shopfloor is the key area where people need to be involved & and aware of energy

A car doesn’t work properly without right standards!

The same principle applies to industrial processes!

What is optimal for energy consumption?

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<th>DCS</th>
<th>m³/min</th>
<th>Δp</th>
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<td>kPa</td>
<td>t/h</td>
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<tr>
<td>A</td>
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</tr>
<tr>
<td>kg/m³</td>
<td>g/kg</td>
<td>...</td>
</tr>
</tbody>
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Examples

- Communicating the Vision
- Awareness Campaigns
- Cost information
- Treasure Mapping
- Working Standard
- Celebrate Success!
La conservation du matériel et des énergies est suivie par un système faisant partie des 20 clés.


L’objectif doit être atteint pour 2020.

L’objectif à une valeur de 2 Mios €.

Communicating the Vision

... to everybody!
Awareness Campaigns
Cost Information

Key 19 May Newsletter

AD YOU KNOW??

Homes lose an average 50% of their heat through the walls and loft spaces.

Insulation is necessary to protect these spaces may seem costly, but in the long run, it’s more energy efficient.

Consider closing chimney flues when the fire place is not in use, cap the drop stairways to attics and check weather stripping around all doors and windows. Curtains and blinds on all windows also provide insulation in summer from letting the heat in and in winter from letting the heat out.
Treasure mapping
Standard example: Condensate

Plant Process control - Condensate

Condensate program

SAP PM Order → DOM

losses >1.5% → no

valve & trap tour → no action

defects → yes

→ Notification to SAP

→ no action

Condensate losses 2004 - 2012

Including:
* Blow Down
* Elutriation
* Yankee heat up

[ % ]

[Bar chart showing losses from 2004 to 2012]
Celebrate Success!

Movie tickets for the best shift of the month!

Energy-efficient light bulb for 7000 employees in Europe in 2011!

Recognition!
Thank you!

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