ENERGY OPTIMIZATION – A HOLISTIC APPROACH TO CUT ENERGY COSTS SUSTAINABLY

Puce, Tino Daniel
Energy Consultant
Siemens AG, Industry Solutions, 91052 Erlangen, Germany
e-mail: tino.puce@siemens.com

Abstract
This session covers how energy costs and the energy consumption of an industrial plant can be reduced sustainably and why it is inevitable to consider all energy forms and energy-related processes within an industrial plant. Furthermore attendants, will learn how: an energy cost reduction program can be structured to achieve a sustainable energy cost reduction; What’s the relation between the energy awareness of the employees and the energy saving potential of a site; Why only a holistic and structured approach can achieve a perceptible effect.

Keywords: Energy Cost Reduction, Energy Management Program, Industrial Plants, Sustainability

1 Focus of a holistic energy management program
In order to reduce energy costs and consumption within an industrial plant sustainably the whole organization needs to be considered. This can cover, for instance:

- Production energy usage
- Utility energy usage (compressed air, steam, …)
- Purchase of energy (energy contracts)
- Distribution of energy (metering & monitoring, …)
- Waste heat (heat recovery)
- Emissions (CO₂, NOX, …)
- Maintenance procedures (leakage detection, pump optimisation, …)
- Fine tuning of the energy budget (model to adapt to the seasonal requirements)
- Resources (creating awareness within the whole organisation that energy matters)
- Metering & monitoring of the energy consumption
- Reporting of the energy consumption (where the variances are, what caused them and how are they controllable?)

2 Concept of detecting and realizing energy saving potential
Based on our experience the most suitable and successful energy management program is structured in 4 different phases: Awareness, Analysis, Feasibility, Implementation & Controlling.

The awareness-phase is covered through an expert-system based diagnostic session called “Energy Health Check”. Via a 2.5 hour interview with the management team the following results can be retrieved:

- Interval for the potential energy savings in EUR
- A score from one star (innocence maturity level) to five stars (best practise) regarding the energy awareness level
- List of 5 critical actions with concrete proposals how to integrate in your company
- Benchmark of the scores with other companies in the same industrial sector

In the Analysis-Phase, a list of possible concrete energy efficiency measures are retrieved with an estimation of cost and energy saving. The outcome of this phase is a list of energy efficiency measures with an estimation of min/max savings and investments, thereby setting the next steps for the concept and the implementation. In the subsequent Feasibility-Phase the measures are prioritised. For the most attractive measures, a detailed investment and energy saving calculation will be made. The final Implementation-Phase finally realizes the detected energy saving potential and thereby reduces the energy costs. In order to achieve sustainability detailed monitoring, controlling, and (where necessary) training needs to be implemented.