

5 STEPS TO INCREASE ENERGY EFFICIENCY IN MANUFACTURING

Site and Plant Managers drive forward the intensification of Continuous Improvement (CI) with regard to energy and resources in a targeted manner:



1. Optimize the plant's energy balance

- Analyze energy consumption data for different sources of energy (depending on product, production quantity, plant section, day of the week and shift).
- Describe the energy optimizations already implemented. (How has energy consumption developed in the past?)
- Check the company's optimization targets and which measures result from them.
- Document results in the form of target achievement at company/plant level and regarding individual projects. The focus of the initiatives should be checked for
 - i. What: e.g. relevant energy type
 - ii. Where: e.g. operational area affected
 - iii. Who: e.g. greater integration of technological departments in the operational CI
 - iv. When: e.g. manufacturing of a specific product

2. Promote responsibility and commitment in the teams

- Designate a coordinator for operations management, for each area and shift, to manage CI activities. Support the exchange with other companies to learn from optimization initiatives. (Apprentices can also take on the role of energy scouts).
- Assign tasks to shift workers to monitor and perform basic repairs, promoting an ownership culture - especially when using autonomous maintenance and TPM.

3. Enable efficient information sharing

- Increase your teams' awareness of the reduced use of fossil fuels. A management representative should communicate goals and measures for sustainability and energy management in a kickoff.
- Document information in a standardized and transparent way in digital plant process management. A guided, digital process is essential for data-driven collaboration across departmental boundaries and for the creation of diagrams for further problem analysis (e.g. histograms, quality control charts, correlation diagrams, Pareto diagrams).
- Use digital dashboards. If these are based on web technology (e.g. HTML5), they can be displayed on a wide variety of end devices - from large screens in the control room to tablets for operators and PCs for process engineers.
- In the guided process, shift teams collect information for subsequent problem and root cause analyses. These are supplemented by prioritization.
Key data and information on costs for the specific sort of energy must be made available.

4. Carry out initial problem analysis on the shift

- Problems should be recorded by shift teams and in all areas of the company. They should be analyzed in depth for their cause using the 5W method. Solutions must be sought for the relevant problems and checked for the efficiency of the necessary measures.
- Include the areas of operational technology, research and development in the CI initiatives in order to obtain relevant information and assessments regarding economic efficiency, investment costs and planning.

5. Define optimization measures in CI meetings at plant level

- CI coordinators conduct an exchange on the optimization proposals in the plant management team. Topics should be assigned to specific shifts to avoid duplication of work.
- Involve representatives for other energy-relevant areas of the site, such as the central energy supplier for steam, hot water, etc.
- Document the information on a „problem - cause - solution - measure“ basis as part of A3 management in digital plant process management.
- Create a cross-group list of topics according to energy types, operating section and processing shift and enable comments and information to be added online.
- Efficient optimization measures are approved by plant management, measures are implemented and employees are rewarded according to company agreements.
- A status update and an update of the procedure should take place at least once a year for all employees in the company with the involvement of the upper management level/management. The results of the projects and the achievement of objectives at company and operational level are presented at this meeting.

This entire organizational concept must be regularly reviewed for efficiency and employee satisfaction. This is fundamental to CI management.

This checklist was created by Dr.-Ing. Klaus Müller, Senior Consultant Continuous Improvement, in collaboration with Veit Hora, COO at eschbach.

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