Safety / Environmental Bulletin
No. **2**
March 2015
Powered by: *Outotec*

GOOD & MAL-PRACTICES

This bulletin aims to present poor and good practices supported by photographic material.

EHSEC hopes that this material be used for reference in training sessions or for benchmarking purposes.

EHSEC also urges all members to contribute with relevant material as long as the material:

- Was legally obtained
- The photograph does not reveal the identity of workers by showing their faces.
- The photograph does not reveal the identity of the company depicted.
- The photograph does not reveal the identity of any brand name.
- Is not protected by copyright issues

All rights for the pictures contained in this bulletin are protected.

Alignment and balance of process equipment

Malpractice: In case the process equipments (e.g. pump and motor) are misaligned and not properly balanced, more energy is consumed. Energy consumption on the other hand relates directly to many environmental impacts, e.g. global warming, acidification, eutrophication, etc – depending on the energy source. Furthermore, more breakdowns will occur and spare parts will be consumed, which has a direct impact on the environment as well, due to higher material consumption. The noise will level rise.

Good practice: Aligning and balancing the process equipments at least according to standard requirements and controlling that vibrations stay low will help to save energy as well as wearing parts, thus making the process more environmentally sustainable. It will also help to reduce noise level.

Leakages

Malpractice: In case there is a leakage in the seals, flanges, insulation, compressed air or hydraulics, energy will be wasted and environmental risks (e.g. contamination) will rise. Depending on the leakage, also water can be wasted.

Good practice: Controlling all leakages will allow energy/water to be saved and other environmental risks (e.g. contamination) to be controlled.

Condition Based Maintenance

Malpractice: Without condition monitoring, measurements and inspections, there is a risk of sudden failures, causing unplanned shutdowns and increasing environmental risks (e.g. contamination). Furthermore, unplanned shutdown and ramp-up will increase energy consumption. Unplanned repairs and preventive maintenance based on intervals can increase spare part consumption.

Good practice: Condition-based maintenance and optimized maintenance practices allow maintenance actions to be done only when needed. Bigger overhauls can be conducted in controlled manner in planned shutdowns, reducing risk of contamination. Spare part consumption can be lowered. Properly working machines are also likely to save energy.

Estimation of design parameters of process equipment

Malpractice: Process equipments are overestimated, i.e. designed with too high service and safety factors and not with optimized material and energy balances etc. This means, that additional process control practices (such as control valves limiting flows etc.) are needed, which increase energy consumption.

Good Practice: Systematic practices for finding out bottlenecks and process optimization as well as knowledge of operating curves etc. are implemented. For example control valves regulating flows are replaced with VFD (Variable Frequency drive) driven pumps and fans and at the same time old motors can be replaced with more energy efficient motors.

Lubrication

Malpractice: Use of unsuitable lubrication. Quantities of lubrication not optimized. Poor lubrication can impact energy consumption as well as cause failures (increase risk of contamination and spare part consumption).

Good Practice: Systematic approach for standardizing lubrication practices.