

Maintenance and energy management

There are many technologies and ideas for conserving energy and using



it wisely. Some of them can be expensive to acquire and install if they were not built into an existing facility or plant design. One strategy that is often overlooked

is to simply maintain what's already there; it requires no capital investment and has spin-off benefits in other areas.

Maintenance sustains performance. If we are truly maintaining our assets, we keep them operating at peak efficiency. Deteriorated or lost insulation, excessive dirt that causes overheating, loose connections that generate heat, eroded or corroded fluid systems that increase pumping losses, blocked or obstructed gas paths are all examples of failure mechanisms that waste energy. They are also areas where maintenance can make a big difference.

Below are things one can do to improve energy efficiency and keep equipment running better:

- Keep electric motor cooling fins clean.
- Clean heat exchanger fins and coils.
- Use boiler water treatment to keep heating and process piping in good condition

and capable of effective heat transfer.

- Clean or change filter elements.
- Use infrared technology to spot insulation problems or loose electrical connections.
- Use infrared technology to find other energy wasters, such as leaky steam traps, loose drive belts, misaligned shafts, blocked or obstructed pipes, etc.

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- Use engine performance analysis and indicators like cylinder exhaust temperatures to monitor engine efficiency.
- Watch fuel consumption or utility bills for signs of deterioration.
- Use vibration analysis to detect deterioration of rotating equipment performance.
- Ensure variable-speed drives are functioning properly.
- Look for and eliminate leaks in all fluid systems.
- Listen for sounds of cavitation in operating pumps.
- Look for signs of cavitation, excess erosion and corrosion in equipment that is

being repaired — identify the causes and eliminate them.

- When component or equipment replacement is required, use energy efficient versions.

These simple actions are all well within the purview of a maintenance department. One client, a hospital, has diligently replaced lighting fixtures with more efficient designs as repairs or replacements were required. It took no additional effort and has resulted in substantial savings. A survey of heat exchangers revealed a need to clean coils — again resulting in a noticeable drop in steam consumption. An infrared survey of heating units throughout the facility revealed that most were in excellent shape and transferring heat efficiently, a result of diligence in boiler water treatment.

Proper maintenance is not just about keeping equipment up and running; it can also make a major contribution to energy efficiency and management. **PEM**

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