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In the midst of all the talk about being green and environmental impacts of industrial operations, one fact seems to get lost—reducing energy consumption saves you money. That fact translates to a lot of other benefits, including competitive advantage, reduced MRO over time, increased ability to plan maintenance expenditures and, thus, forecast budgets, etc.

With rare exception, EVERY industrial facility can reduce its energy consumption. Why, then, don't more do it? When energy costs were low, it wasn't a priority. Now it's making a lot more sense. But, where do you start? Fluke emphasizes two approaches.

1. Practice proactive, rather than reactive, maintenance. This will keep equipment operating at optimal efficiency and require less energy.
2. Conduct regular energy audits to map energy consumption patterns and implement new practices to reduce usage.

This magazine has long sung the praises of proactive maintenance—using readily available tools to identify and abate equipment degradation. While there are startup costs to this strategy over the run-to-fail method, the savings accrue relatively quickly, typically within 18 months.

So, how much can you save by adopting proactive maintenance practices? Consider that reactive maintenance due to labor, equipment replacement and downtime costs three to five times as much as proactive maintenance. Then, add 20% more savings from reduced energy use. That's because poorly-maintained equipment requires more energy to function. Think about worn bearings or misaligned shafts or highresistance connections.

When moving to proactive maintenance, keep it simple at the outset. Combine your knowledge of key equipment with manufacturer-recommended maintenance cycles to create a maintenance schedule, and then inspect-as-you-go. Newly-affordable tools like thermal imagers make it possible for maintenance staff to quickly survey plant equipment on a regular basis and identify many types of equipment degradation early on.

Conducting an energy audit also can help you prioritize equipment for your maintenance schedule. Start with an energy study and then target the biggest energy culprits in manufacturing facilities—inefficient equipment and the HVAC system.

An energy consumption study requires a power logger that can monitor voltage and current simultaneously and measure power factor. If the power factor at your facility is too low, it means you are not managing your power effectively, and the utility will charge a higher rate. Once you log energy consumption over time, for each part of the plant you'll see what system aspects are consuming energy when. You then can rebalance loads, schedule for off-peak hours or upgrade equipment.

When evaluating your equipment, consider these points. Have you installed newer-model variable frequency drives where possible? Have your circuits and systems been thermally scanned? If not, you may not be aware of overloaded or imbalanced circuits, loose connections, overheating motors, malfunctioning steam traps and a host of other conditions that could signal inefficient use of energy.

The overhead cost of the HVAC system is an afterthought to most facilities. But, when is the HVAC system cycling on? Has the equipment been updated? Chillers often use up to 30% more energy than required as a result of system inefficiencies. Neglected boilers and AC units also become less efficient over time.

The fact that proactive maintenance is "green" may be nice, but beyond the "color" are the economics. They just make sense. **MT**

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