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Source Newsletter 2006 issue 3

Airport Puts Steam Trap Monitoring on Autopilot

Jamie Chatelle showed off a few of the wireless transmitters in MAC's steam trap monitoring system.

Steam trap testing and repair are always on a facility's maintenance to-do list, but emergencies take precedence. A frozen coil today means a frozen pump that could stop production now. So trap maintenance gets delayed as staff perform triage on their projects. Maintenance staff know that if steam traps do not get fixed today that they will not be that much worse tomorrow.

The Metropolitan Airports Commission (MAC) has over 700 traps in its steam system, used for domestic hot water and air tempering. "We're restricted on personnel so we've never had the time to monitor our steam traps as often as we'd like to," said Steve Shuppert, chief engineer at MAC. "We had no way of knowing if a trap failed until there was noise in the line or people complained about the temperature."

After learning at a utility workshop about SteamEye, a steam trap monitoring system, MAC decided to pilot the system. Maintenance staff installed sensors on 66 steam traps in its energy management center and tested the system for one year.

"It worked fantastic," said Shuppert. MAC installed its complete trap monitoring system in three phases.

How it works

The steam trap monitoring system uses radio frequency wireless transmitters, threaded into the bottom of the traps, to detect temperature and conductivity fluctuations. The transmitters periodically send a signal to repeaters which send the signal on to a central receiver that notifies system operators of trap condition and instantly alerts them to failures.

MAC's system is set up using a Web-based interface that relates the trap number, location and when the transmitter signal last checked in. The system uses simple, spreadsheet-like software.

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"You know whether the traps are blowing through, cold or OK," said Jamie Chatelle, MAC assistant chief engineer. "When there's a problem, we get an audible alarm and we can check the 'failed points' screen."

Maintenance and boiler operators can install and reprogram the transmitters themselves. Transmitters need to have their batteries replaced every three to five years.

System specifications

Automated steam monitoring systems are appropriate for facilities using high pressure steam, such as food processors, pulp and paper mills, chemical manufacturers and facilities with large steam distribution networks, like some hospitals and universities. Facilities with the following characteristics may want to evaluate an automated system:

- Industrial process and high-pressure (up to 600 psi) applications
- More than 100 traps
- Hard-to-reach traps, miles of steam tunnels, and traps in unsafe, confined spaces

Shuppert estimates MAC's system has a two-and-a-half year payback, before the CenterPoint Energy rebate. "The rebate was gravy on top," he noted.

If you decide to evaluate a steam trap monitoring system for your facility, check with your gas utility about a custom rebate before you begin work. Rebate eligibility requires pre-approval.

Links to utility information can be found on the Energy Web page.