



# Five Ways Educational Facilities Managers Can Use Predictive Maintenance

By Saar Yoskovitz

**P**rediction usually gets a bad rap. From weather to sports, the moments that stand out are the ones fortune tellers get wrong. But the old saying that “prediction is very hard, especially when it’s about the future,” fails to take into account modern technological advances.

Phones and cars aren’t the only things that technology has improved. Predictive maintenance methods have come a long way as well, branching out from their original uses to help ensure safer, more streamlined workplaces. Utilizing these advances will help make educational facilities more efficient now and in the future, when these technologies will be more common in general.

## WHAT IS PREDICTIVE MAINTENANCE?

Changing oil on a schedule and trying to make sure belts don’t snap by occasionally checking for cracks counts as preventive maintenance. Predictive maintenance (PdM), however, relies less on guesswork and more on measured data. PdM uses sensors and other methods to track real-time machine conditions to inform maintenance crews of the first signs of potential breakdowns.

Many educational facilities operate on critical steam-driven equipment to maintain regulatory temperatures in classrooms and dormitories. Additionally, for universities with research facilities requiring narrow ambient temperature ranges, especially facili-



ties related to biomedical research, HVAC failure can ruin months' if not years' worth of vital research. PdM offers facility managers and technicians an operating edge. Instead of running machines to failure, techs scan them for weaknesses, correct problems before they grow, and save money at the same time. Here are five ways that PdM has become accessible to educational facilities teams today:

- 1. Oil Analysis (OA).** One of the tried-and-true methods of PdM, OA was developed just after World War II. Lab analysis of machine oil provides information technicians might not otherwise have. Debris and contaminants give insight into the state of pumps, bearings, and gearboxes, and can also help determine more cost-effective oil change intervals. Whichever lab you choose, be sure it is ISO certified and that it tests to standards set by the American Society for Testing and Materials (ASTM).
- 2. Thermal Imaging.** While newer than oil analysis, thermal imaging has become increasingly affordable. From faulty insulation to overheating electric motors, thermal imaging cameras show otherwise unseen holes and hotspots that can lead to catastrophic failures and injuries. No other technology provides such accurate visuals of the wear and tear that leads to the need for service and replacement.
- 3. Vibration Analysis (VA).** Developed in the 1950s for high-end equipment, VA has benefited the most from computer and Internet technologies.

Until recently, the equipment and extensive training that VA required made it cost prohibitive for most. Now, contractors can utilize sensors that transmit data off-site for analysis instead of having to analyze it themselves. Servers send real-time alerts at the first sign of trouble and technicians can access them right on their mobile device. The newest benefit is machine learning—the software continually improves itself by comparing new data to past trends. The more data it gets, the better it gets at identifying trouble before it happens.

- 4. Custom Maintenance Schedules.** Planned downtime is a critical operational decision. Using PdM, technicians and facilities personnel can help customers develop maintenance schedules based on their machine's actual condition and not just scheduled checkups that can miss critical moments between visits. Anything that lowers risks and helps take the guesswork out of maintaining equipment is a good thing.
- 5. Bettering the Bottom Line.** PdM requires an initial expenditure for customers, who will need to invest a bit in education. The savings quickly add up. Costs related to downtime and regularly scheduled maintenance should drop significantly, and because these are loss-control technologies, insurance costs can also be reduced. As PdM technology grows, more facilities teams can offer both the strategy and the skill base for these new technologies to flourish and help streamline performance responsibilities.

#### NEW METHODS, NEW MARGINS

Today's PdM may sound a bit like old-school methods, but it is better, cheaper, and faster than anything previously available. The improvements in vibration analysis alone are amazing—it began with a \$20,000 specialized tablet and a certified engineer with 10 years of experience who took days to generate an analysis. Today, the same analysis can be done in minutes on a mobile device. As PdM becomes more and more accessible, educational facilities managers who change with the times will leave their preventive maintenance competitors behind. ☛

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Saar Yoskovitz is CEO and cofounder of Augury, Inc., based in New York, NY, and can be reached at [saar@augury.com](mailto:saar@augury.com). This is his first article for *Facilities Manager*.