

Sensor Maintenance Made Easy With Predictive Diagnosis

By Laura Martin, Associate Editor



PROGNOSYS™

As winter sets in across the country, those trips outside to take a reading or conduct scheduled maintenance on your water quality instruments aren't quite so inviting. But what if your instruments could save you the trip? Predictive diagnosis is set to become the operator's new best friend. I recently sat down with Wastewater Specialist Bob Dabkowski and Product Manager Meghan Cozzens of Hach to discuss the company's new predictive diagnosis system and learn more about its impact on traditional maintenance protocols.

What is PROGNOSYS?

PROGNOSYS is a system that can monitor instrument wear and forecast upcoming maintenance tasks.

How does it benefit operators?

Operators have regularly asked us for tools to help them monitor their sensor life and anticipate their maintenance needs. PROGNOSYS helps forecast the timing of maintenance tasks and avoid unexpected or redundant maintenance.

Typically, the first question an operator asks when an unexpected reading occurs is some version of "Is it my sensor or is it my water?" PROGNOSYS removes that anxiety by alerting you when the sensor needs calibrating in advance. You

no longer need to set up a regular calibration schedule. PROGNOSYS lets you know when a sensor's performance starts to degrade and when it needs recalibrating.

What specific information does PROGNOSYS provide?

PROGNOSYS provides two values to the customer — a measurement indicator and a service indicator. The measurement indicator is a qualitative indicator inform-



ing the operator of how much wear and tear has occurred on the instrument components. This is displayed as a percentage, with 100 percent being "like new."

The service indicator is a quantitative indicator informing the customer of what next service action or maintenance action has to be taken and when it will need to be completed. PROGNOSYS can measure this down to the day.

What are the installation requirements for PROGNOSYS and how do they differ from conventional instrumentation?

The installation requirements are exactly the same for every PROGNOSYS capable sensor. All it requires is a sc1000 controller. Nothing changes with the sensors themselves. The PROGNOSYS module can be plugged into the sc1000 controller and programmed to read out the values for any attached PROGNOSYS-capable sensor.

How are indicators delivered to the operator or technician?

The measurement and service indicators display both visually and numerically through a color-coded display on the sc1000 controller. The information can also be output to a PLC/SCADA system.

For example, the measurement health indicator uses yellow, green, and red bars to indicate how confident PROGNOSYS is in the measurement value. It's looking at some internals within the sensor, such as voltages or reference potentials, as well as the calibration service record to present a measure of confidence in the reading.

When the reading drops below 100 percent, the operator can touch the color-coded bar and PROGNOSYS will display the necessary maintenance task or the reason why it is below 100 percent health.

The service indicator is based on timers and internal signals within the sensor it-

self and alerts the operator about when the next service is due.

Which constituents can be measured with PROGNOSYS?

PROGNOSYS is currently available on 10 of our sensors, but is expanding rapidly across our instrumentation line. Within each sensor, PROGNOSYS monitors different variables according to the sensor function.

Examples of some of the Hach sensors that PROGNOSYS is enabled for include nitrate, combination ammonia-nitrate, suspended solids, phosphorus, and dissolved oxygen. Up to 20 different internal indicators can be monitored within each one.

How does predictive diagnosis enhance efficiency and reduce expenses?

The key driver of efficiency with PROGNOSYS is that maintenance becomes proactive rather than reactive, saving time and avoiding unexpected maintenance costs. PROGNOSYS helps the operator forecast his maintenance needs and labor scheduling. This results in a reduction of downtime and eliminates the need to carry unnecessary inventory. When you know exactly how well your instrument is performing today, it becomes easier to know how to best use your limited maintenance dollars and time.

Let's say you need a wiper changed. PROGNOSYS alerts you that you need to change the wiper in 10 days. You don't have to have wipers on the shelf. You can have them on order, ready to go, and they can be delivered right when you need them, so you don't have to carry excess inventory.

Similarly, if you think you have to change a wiper out every six months, but in reality PROGNOSYS states every year, it cuts your labor cost in half for this task. And those preventative maintenance tasks add up.

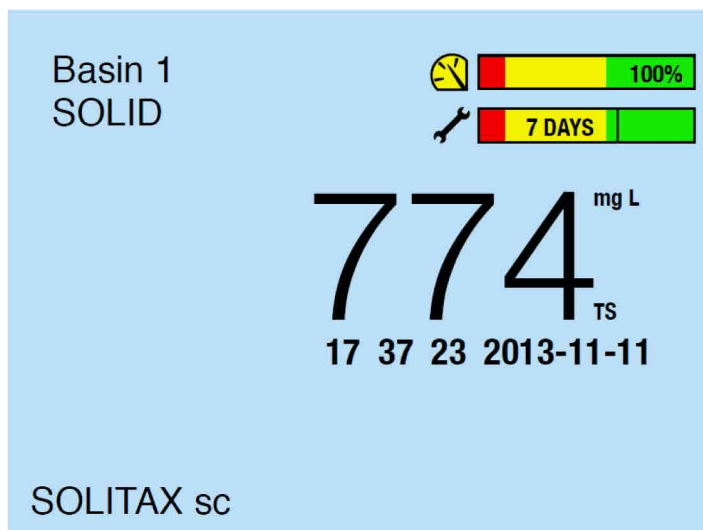
Can you provide a real-world example of cost savings at a municipality?

PROGNOSYS was deployed as part of an N/DN-RTC (nitrification/denitrification - real-time control) module at a 3.5-MGD municipal wastewater treatment plant (WWTP) to improve process stability and treatment capacity. In addition to the benefits that the RTC system yielded for this WWTP, PROGNOSYS allowed for a significant reduction of maintenance.

Before PROGNOSYS was installed, sensors were manually inspected daily for wear and tear, damage, or failures. This process added at least one hour of extra work each week that is no longer necessary due to the measurement and service indicators on PROGNOSYS. A simple glance at the controller during their rounds is all that is required of operators now.

How does this technology impact water quality?

PROGNOSYS is about having confidence in your instrument measurement. If your sensor is not properly maintained you will inevitably lose confidence in your measurement, which can put the quality of your water at risk. In the best case you may not be producing water that meets your quality standards. In the worst case your water could be out of compliance without your immediate knowledge. PROGNOSYS is designed to give confidence to any WWTP professional who is asking the question: Is this reading due to a worn-down instrument or do I have something in my water? ■



Detail of easy-to-read PROGNOSYS touchscreen display.

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