Written by Nancy Ettele, Massachusetts Water Resources Authority
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Condition monitoring provides benefits and high return on investment.

The Massachusetts Water Resources Authority (MWRA) is a large, unionized public utility serving 2.6 million people in the Boston metropolitan area. In 2000, the MWRA embarked on a comprehensive, multi-phased asset management initiative. Its program includes dedicated staff along with a diverse senior management steering committee who organized early, communicated often, and conducted research and cross-industry benchmarking that allowed for a timely implementation of best practices, resultant efficiencies, and cost- saving benefits.

Dan Parry uses ultrasonic equipment to listen to pump bearings.

As part of this initiative, MWRA's Deer Island water treatment plant has purchased condition monitoring equipment and providing training to more than 50 maintenance technicians over the past 2 years. The maintenance staff has been performing vibration monitoring and spectral analysis, lubricating oil sampling, acoustic ultrasonic detection, ultrasonic thickness testing, laser alignment, and infrared thermography tasks.

Ultrasonic detection recommended

Reliability centered maintenance (RCM) analysis of the plant's primary scum pumps resulted in the recommendation of a preventive maintenance task using acoustic ultrasonic detection to monitor the motor and pump bearings to provide advance warning of potential failures.

Using an ultrasonic detector from SDT North America, Cobourg, ON, condition monitoring engineer Dan Parry found unacceptable noises and noise levels in 10 of 14 primary scum pumps, indicating potential bearing problems. The next step maintenance planner Michael Costa took, however, was to collect lubricating oil samples from six of the pumps' gearboxes and send them off to National Tribology Services, Peabody, MA, for testing.

Results showed viscosities that were much too high, indicating that the wrong lubricating oil had been used. Oil in all the pumps was changed to the correct oil and ultrasonic monitoring was repeated.

This time, only two pumps were found with unacceptable noise levels. Costa scheduled an alignment check before considering replacement of the bearings.

Mike [illegible] (left) and Bob [illegible] use laser alignment equipment on one of the pumps at the plant.
Nancy Ettele