

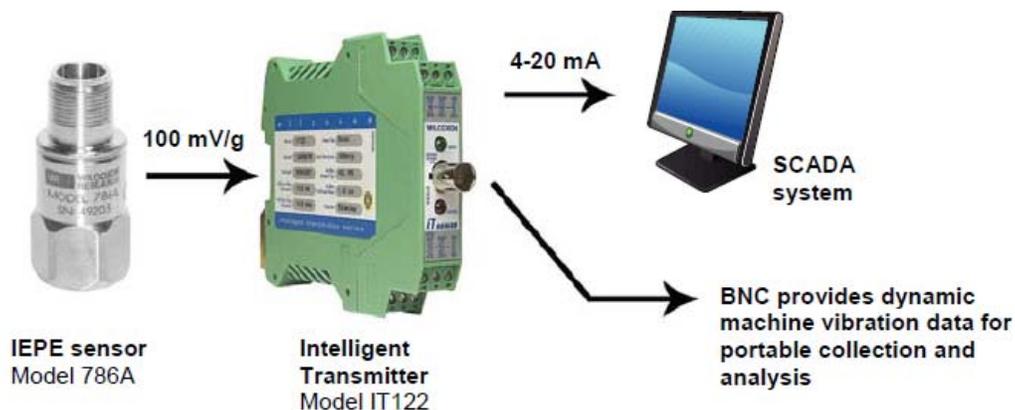
Loudon Water implements vibration monitoring

After a catastrophic pump failure, Loudon Water implemented continuous vibration monitoring to trend machine health and prevent unplanned down time

Loudon Water, a water and wastewater authority in Loudon, Virginia, installed vibration sensors on four pumps to maximize uptime at a new pumping station. As a public water provider, it is critical that they be able to supply water to meet the needs of the community when called upon. It is also important for non-profit organizations to prevent lost revenue resulting from pump failure or subjected down time. To maximize uptime and customer satisfaction, Loudon Water teamed with Meggitt Sensing Systems, the makers of Wilcoxon Research accelerometers and vibration monitoring products.

Loudon Water chose to implement simplified continuous pump monitoring that interfaced with its existing SCADA system. Four separate motor/pump combinations at a single remote pumping station were chosen for monitoring. Three of the pumps were impeller between bearing pumps. The remaining unit was an overhung impeller pump. For maximum protection, permanently installed accelerometers were mounted on the inboard and outboard bearings of the motor and pump. Because of its broad application potential, Meggitt's Wilcoxon Research 786A general purpose (100 mV/g) industrial accelerometers were chosen. Their signal was then fed to DIN rail mountable iT122 Intelligent Transmitters. These vibration transmitters were housed in an enclosure local to the machine. This provided a termination point for the vibration signal conditioners, power supply, and cables as well as a means of determining present condition at the machine.

Each of the 16 786A sensors captures a unique signal from its bearing location. This signal is forwarded to a dedicated Intelligent Transmitter where the time domain signal from the accelerometer is processed into a 4-20 mA signal. This 4-20 mA signal, which represents the overall vibration velocity, is then tied into the water authority's existing SCADA system. The result is 24/7 online vibration monitoring at the pumping station with both local and remote monitoring capabilities. The water authority chose the Intelligent Transmitter because it includes a 4-20 mA output signal for simple trending and a front-panel BNC connector to access the dynamic data when additional vibration analysis is needed.



Loudon Water had already experienced a catastrophic failure because they had no monitoring equipment on their pumps. If a vibration monitoring program had been in place to detect a failure, the water authority would have saved thousands of dollars on pump repair and parts replacement as well as down time and lost revenue. Loudon Water implemented vibration monitoring for condition based maintenance as an investment in reliability to help detect and prevent problems and better serve their customers.

As a result of implementing this system, Loudon Water has maximized up time and minimized unscheduled maintenance. Its belief in this system is evidenced by including continuous vibration monitoring requirements into planned station upgrades.

Dynamic accelerometer and velocity sensor options

- ▶ Sensitivities from 10 mV/g to 500 mV/g;
and from 20 mV/ips to 500 mV/ips
- ▶ 3 dB frequency response from 0.1 Hz to 25 kHz
- ▶ Top or side exit
- ▶ Maximum temperatures from 120 to 150° C

Intelligent Transmitter options

- ▶ Monitor acceleration, velocity, or displacement
- ▶ Measure root-mean-square, peak, true peak, or peak-to-peak
- ▶ 3dB frequency response from 0.3 Hz to 20 kHz
- ▶ Selectable full scale range
- ▶ Buffered dynamic output for portable data collectors and analyzers
- ▶ 4-20 mA signal transmission
- ▶ 8-pole low pass filter and 2-pole high pass filter