

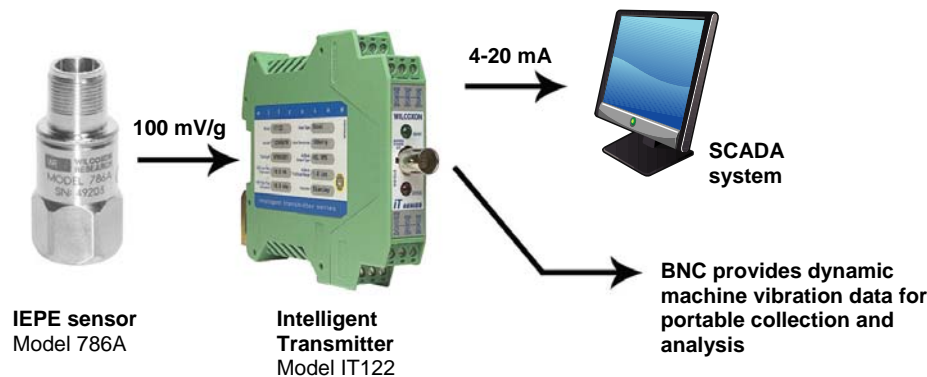
## Water authority implements vibration monitoring

After a catastrophic pump failure, a private water authority implemented continuous vibration monitoring to trend machine health and prevent unplanned down time

A privately held water authority installed vibration sensors on four pumps to maximize uptime at a new pumping station. As a for-profit, public water provider, it is critical that they be able to supply water to meet the needs of the community when called upon. Since they compete with publically held water authorities, there is a high potential to lose revenue when a pump fails or is subject to unplanned down time.

The water authority chose to implement simplified continuous pump monitoring that interfaced with their 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, 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.



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The water authority 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. The water authority implemented vibration monitoring for condition based maintenance as an investment in reliability to help detect and prevent problems and better serve their customers.

The water authority has maximized up time and minimized unscheduled maintenance by implementing this system. Their 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  
3dB frequency response from 0.1 Hz to 25 kHz  
Top or side exit  
Maximum temperatures from 120°C 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

