

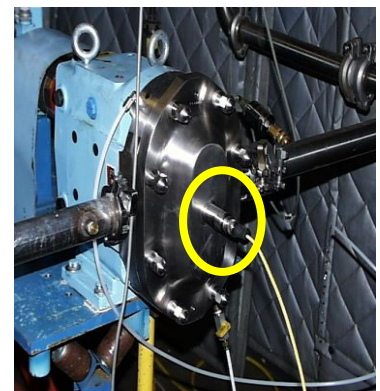
Pump cavitation detected using a Wilcoxon sensor

A pump manufacturer used a Wilcoxon vibration sensor on a positive displacement pump and found that the sensor successfully detected cavitation. Early detection of cavitation can minimize damage, reduce downtime, and save money.

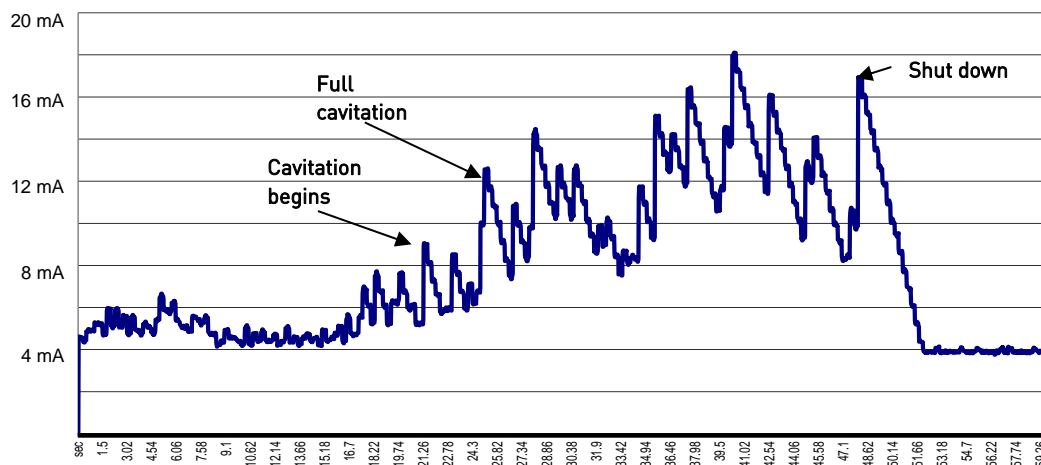
The picture shows the location of the Wilcoxon sensor. The PC420ATP-05-B3223 is a loop powered sensor (LPS™) that provides a 4-20 mA output signal proportional to the overall vibration level of the pump. Process control systems, such as a PLC or DCS, commonly accept this type of input. The PC420ATP-05-B3223 is an acceleration, true peak detection, frequency banded vibration sensor chosen because it is best suited to monitor the regular and irregular vibrations of the positive displacement lobe pump.

The pump was run at 359 RPM and had a vacuum pump connected to the input line. The vacuum pump was used to initiate cavitation conditions.

The data plot below shows the 4-20 mA loop signal output of the LPS™ during the test run. Cavitation begins to appear at 21.26 seconds and the pump is fully into cavitation by 24.98. The pump was manually shut down at 48.12 seconds.



PC420ATP-05-B3223 located at the center of the pump



The data indicates that the LPS™ detected initial evidence of cavitation™ at around 21 seconds, when the vibration level first went above 8 mA, while easily detecting the presence of full cavitation at 25 seconds. Normal pump running produced only a small increase in the vibration signal (0-18 seconds) and the sensor output returned to the quiescent 4 mA after the pump was shut down.