PCB PIEZOTRONICS
AN AMPHENOL COMPANY

TN-8

Remote Electronic Condition Monitoring Utilizing PCB® Sanitary Dynamic Pressure Sensors

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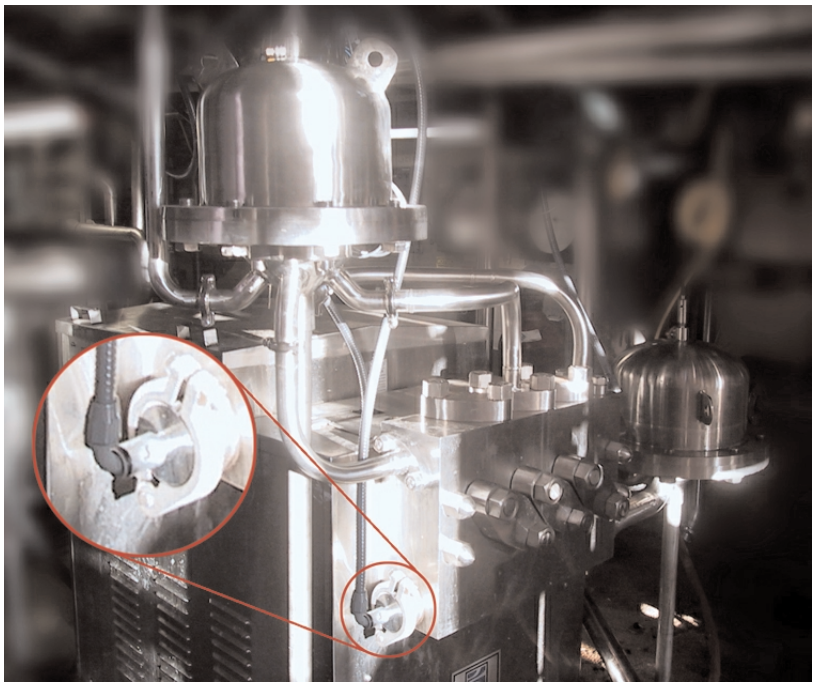
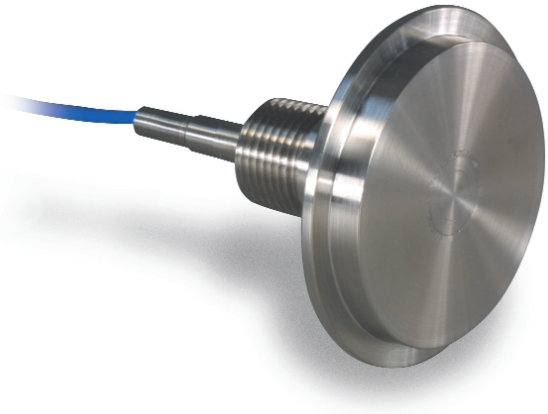
The Grall Company, Inc., based in Lemont, Illinois, has collaborated with PCB Piezotronics to design custom dynamic pressure sensors for use in sanitary/hygienic applications. Coupled with a dynamic signal analyzer and automated event capture software, the status of machine health can be continuously monitored. This technology was recently deployed at a major beverage processing facility. A high-speed timing pump was fitted with pulsation dampening equipment to reduce vibration. The diagnostic system, utilizing PCB dynamic pressure sensors, measures dynamic suction and discharge pressure waves both prior to and after dampening. Statistical anomalies present within the stream of data for each sensor trigger an event. Data from the event is captured and sent via the internet for analysis.



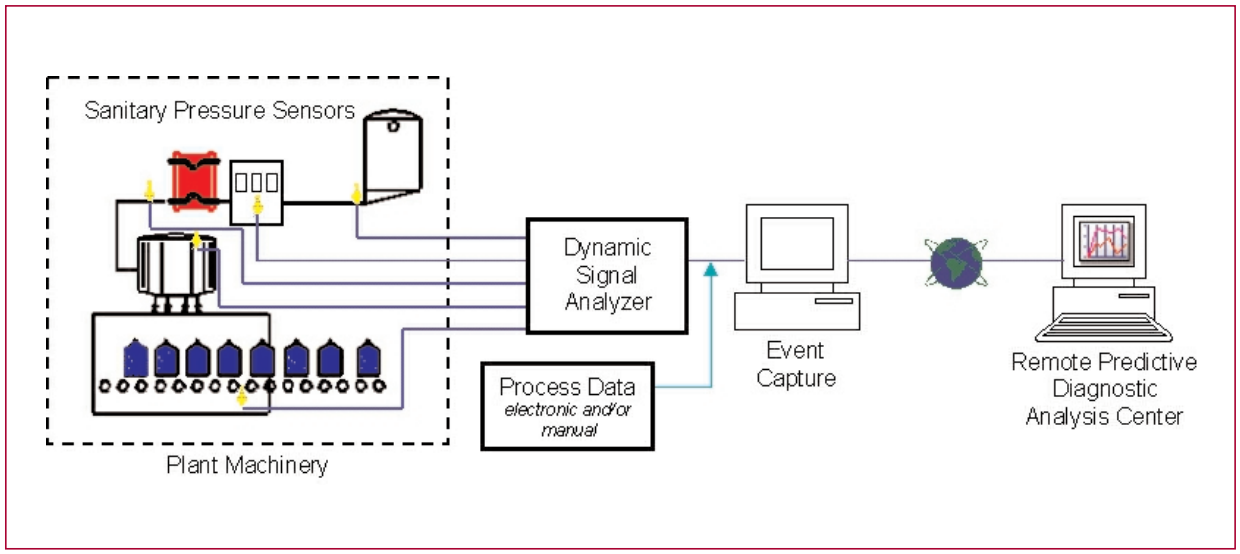
PCB sanitary sensors are installed on a high-pressure pump. Shown also with pulsation dampeners.

This technology is applicable to any industry where the idea of continuous monitoring with automated event capturing of dynamic data is desired. Applications include fluid dynamics, heat transfer, mixing, valve action, machine vibration, and leak detection among others. Continuous monitoring enhances predictive maintenance as well as continuous process improvement. With remote capabilities, analysis can be done virtually anywhere eliminating the need to travel on-site to obtain critical process measurements.

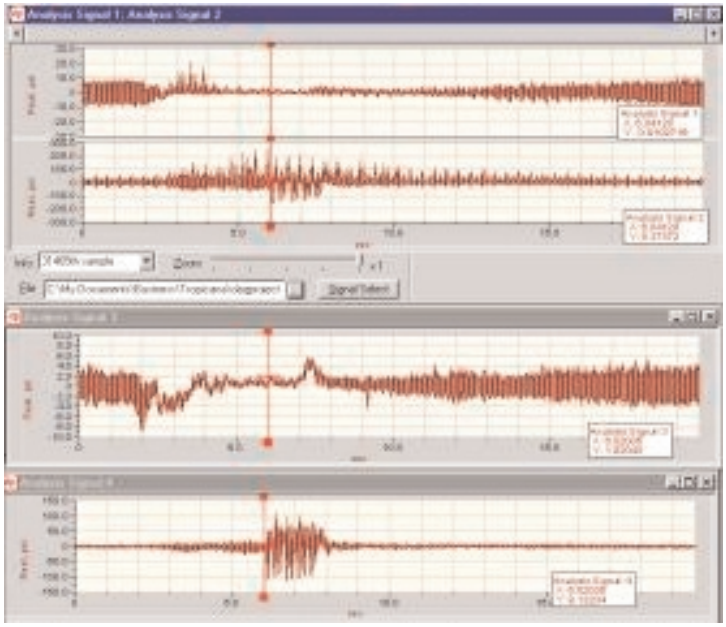
- Within the first weeks of monitoring, The Grall Company was able to identify events whose data signatures were the result of air being pushed through the system. A change in valve sequencing eliminated this problem thus decreasing the probability for premature failure of pump, instruments, and piping.
- Additionally, monitoring has identified excessive product/water transitions prompting a review of the process timing and research into alternative transition detection devices.
- Further, monitoring is allowing the move from preventative maintenance to predictive maintenance ultimately resulting in reduced labor, spare parts inventory and downtime.



PCB Model 102M241
Sanitary Dynamic Pressure Sensor



Block diagram of system setup.



Signature of pulsations of a captured event of less than 20 seconds duration.

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