Petrochemical Company Anticipates Avoiding Millions of Dollars in Unplanned Repairs by Using Software Embedded with Expert Knowledge

RESULTS

- Avoiding pump seals failure that could lead to $8M in unplanned labor and materials expenses
- Estimated savings of $9.6M in installation and commissioning of 800 sensors
- Safety improvements and labor savings via automated data collection

"Prescriptive analytics specifically for pumps will enable insights that reduce Loss of Primary Containment (LOPC) events."

Project Manager Rotating Machinery

APPLICATION

Centrifugal pumps used for metering in the refinery.

CUSTOMER

Petrochemical company, United States.

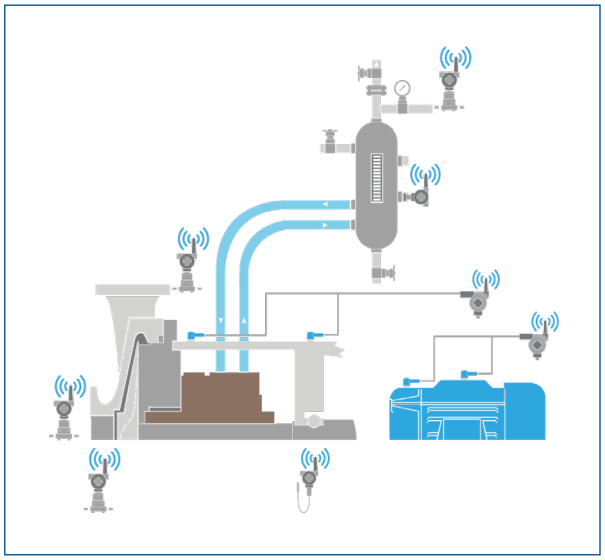
CHALLENGE

A refinery petrochemical complex with over 450 critical centrifugal pumps had been collecting pump vibration data manually every 90 days. To improve safe conditions and reduce pump-seal failures, the team sought improved condition monitoring techniques. Their goals included reducing pump-related Loss of Primary Containment (LOPC) events and meeting company reliability wins.

SOLUTION

The customer team recognized that by automating the collection of vibration data and enhancing vibration analysis, they could predict issues well in advance of failure and could address the needs before vibration caused damage to the pump seals.

Teams from the customer, Emerson, and Puffer Sweiven (Emerson's local Impact Partner) collaborated to add an AMS Wireless Vibration Monitor, which delivers full vibration data over a self-organizing wireless mesh network. In addition, for a full complement of pump-related analysis and prescriptive analytics, the team included expertise-embedded software — PeakVue technology and the Plantweb Insight pump application.



PeakVue technology prescribes the necessary corrective actions to preserve bearing life and ensure long-term asset availability. The Plantweb Insight application displays real-time pump status and alerts using machine learning based asset models and analytics to provide early warning of pump cavitation, gear wear, and more. Alerts are sent to the team, who can address the condition of these critical pumps.

The wireless, battery-operated transmitter gathers data at a defined time of day without manual intervention and enables the team to capture trends and be alerted to problems. If conditions require, an alert is immediately sent to the operator or to the system to shut down the pump.

To make the analysis even more robust, the collaborating teams added data gathered by pressure, temperature, and flow measurement devices to the vibration monitoring system. The Insight software takes advantage of these digital transformation advances. Data is gathered, artificial intelligence driven by expert design analyzes the data, and alerts are automatically distributed to the right people at the right time.

The complete solution — including gathering data, storing data, analyzing data, and acting on information — is through a single source, Emerson, who has designed all elements to work together without fail. Collaboration by the teams ensured its success.

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