

Sensor Identifies Cause of Costly Mechanical Seal Failure

Chemical Industry
Chesterton Connect
Case Study 004 Equipment Monitoring

Challenge

Background

A chemical plant was experiencing an unusually high failure rate for single cartridge mechanical seals on a 65% Nitric Acid Transfer Pump application. At the time, the Mean Time Between Repair (MTBR) was only 1.2 months.

Our seal analysis revealed square, hardened O-Rings and seal faces with a heavy wear track. These symptoms typically point to dry running of the pump. However, the customer checked the operation of the system. All controls were in good working condition so dry running was very questionable. A specialist observed the installation of the seal and found that the customer was doing it correctly. There were no noticeable issues with the operation of the pump.



The pump seal failure occurred nearly every month.

Solution

Product

The Chesterton sealing specialist recommended installation of a **Chesterton Connect™** sensor, which safely and conveniently monitors operating conditions of many types of process equipment. Connect uses Bluetooth technology and offers a solid design that withstand harsh environments.

Chesterton Connect makes it easy to monitor:

- Equipment vibration
- Surface temperature
- Process temperature
- Process pressure



Chesterton Connect installed on the pump.

Results

Within a few days, the team gathered enough data from Connect to identify negative pressure in the seal chamber when the pump was running. In turn, this pressure caused the mechanical seal to show classic dry run symptoms...square, hardened O-Rings with heavy seal face wear tracks.

After conducting a system audit, the customer was able to throttle back a valve to ensure proper flow from the pump. The pump and mechanical seal are now running properly and the projected MTBR has improved to more than 24 months!

The potential cost savings for mechanical seals for this one pump is more than \$30,000. The savings due to reduced maintenance and operational improvements are estimated to be even greater.



Chesterton Connect saved more than \$30k/year.