

Chemical Manufacturer Avoids Dangerous Failures by Monitoring Vibration and Employing Analysis Software Tools

Business Results:

- Avoiding equipment failures that could lead to unplanned expenses
- Increased reliability of equipment and production for fewer maintenance hours
- Improved availability of equipment for uninterrupted production

Application:

Motor-driven reactor reciprocating compressor.

Customer:

Specialty adhesive polymer manufacturer.

Challenge:

A chemical manufacturer had difficulty monitoring vibration in the critical vertical motor that drives a reactor reciprocating compressor. To manually test the motor, a technician would need to enter a hazardous area. To avoid that safety risk, the team chose to use a vibration monitoring/protection system on the drive unit of the compressor. The system response, however, was not fast enough to enable the team to prevent two catastrophic failures that impacted the 13-Inch thick protective steel around the bearings.

The existing monitoring system was also not showing them the impact forces or enabling them to predict potential problems, avoid repeat incidents, and institute improvements that would mitigate risks.

Solution:

The existing monitoring system included three accelerometers attached to the motor's roller element bearing to measure acceleration online, but no diagnostics were available. Thanks to the flexible communication options inherent in the Emerson solution, an Emerson AMS 6500 Machinery Health Monitor was connected to the three existing accelerometers and to a new accelerometer that was added to the existing protection system for more comprehensive monitoring.

The customer chose Emerson's AMS Machinery Manager, which includes PeakVue technology for trending and analysis. By monitoring trends using PeakVue, the team can see indicators of bearing impact even earlier than they could sense vibration in the equipment. This early warning for potential risks enables the customer team to predict vibration issues and address them before they cause expensive breakdowns and stoppages.



AMS 6500 MACHINERY HEALTH MONITOR AND PEAKVUE TECHNOLOGY

Emerson's AMS 6500 Machinery Health Monitor is a versatile, scalable system that can be deployed in a variety of configurations to deliver online condition monitoring exactly as needed for the application. To simplify asset mechanical health analysis, AMS 6500 is embedded with Emerson's patented PeakVue technology for detecting the earliest symptoms of mechanical failure or degradation using PeakVue values and waveforms.

CONDITION MONITORING CASE STUDY | CHEMICAL

In the previous two failures of this reactor motor, the company recognized expenses in lost production, repairs, re-start, and scrapped materials. Avoiding these expenses in the future will reduce the team's workload and improve the site's throughput.

The vibration data maintained in the AMS Machinery Manager will be used for trending and will improve predictive maintenance practices. In the coming year, Emerson's reliability services will assist in capturing useful data and using it in their systems.

Not only can the team now improve the response to potential risks, but the site can share data with experts throughout the global company. Other sites can improve their own operations or help guide the Texas site in finding solutions.

Beyond improving operation of the compressor motor, the Emerson software can assist in the balance of plant equipment such as cooling tower fans or other machines that include rolling elements. The returns on the initial investment will naturally increase.

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