

## Schaeffler Global Technology Solutions

Pneumatic Engineering and  
General Ventilation Systems

Oerlikon Leybold Vacuum GmbH, Germany

### Online Monitoring of Vacuum Pumps for a long Service Life

Oerlikon Leybold Vacuum offers a wide range of advanced vacuum solutions that are used both in production and analysis processes as well as for research purposes. The company's core competences centre on the development of application and customer specific systems for creating a vacuum and extracting process gases.

#### Challenge for Schaeffler

Depending on the application, failure of a vacuum pump can cause a whole vacuum line to shut down. So, to protect their customers against such costly downtime and expensive repairs, Oerlikon Leybold Vacuum GmbH wanted to see whether an online measuring device would be suitable for use as a 'permanent guard'. The device was to be able to generate a report directly to the company's or to the machine manufacturer's after sales service department whenever an alarm was triggered. In addition, it was important to the vacuum pump manufacturer that the online vibration monitoring system should be easy to install, easy to operate and available at a price that would make it an option as standard equipment.

#### Schaeffler Solution

The FAG SmartCheck is the optimal solution for cost-effective vibration measurement and thus the condition monitoring of vacuum pumps. It is ideal for detecting problems like bearing wear, imbalance, misalignment and caking on vacuum pumps reliably and cost-efficiently. An FAG SmartCheck with different measurement configurations was installed on a continuously operated Oerlikon Leybold vacuum pump. To make the measured data available to everyone concerned, the FAG SmartCheck was integrated into the company's network. From there, the measured data could be downloaded easily and sent to Schaeffler for analysis.



**oerlikon**  
leybold vacuum

#### Produkt and Service Portfolio

- Backing pumps
- High and ultra high vacuum pumps
- Vacuum systems
- Vacuum measuring devices
- Leak detectors
- Components and valves
- Consulting and engineering services





Oerlikon Leybold vacuum pumps



Continuous real-time monitoring using FAG SmartCheck



In-depth analysis of measuring results on the PC

## Customer Benefit

Oerlikon Leybold Vacuum Pumpen GmbH has satisfied itself that the FAG SmartCheck meets their requirements on the monitoring of vacuum pumps. Critical operating states are identified immediately and visualized on the FAG SmartCheck. In addition, the measuring system passes information about critical operating states for pre-alarms and main alarms on to the control system via an analog output. The control system then visualizes the report automatically. Monitoring is effected constantly in real time. In this way both slowly developing damage and quickly developing problems are identified reliably.

## What's special

Depending on the application and level of automation, customers can select the ideal solution from a wide range of monitoring options – from alarms at the machine itself to integration into the control system to remote monitoring. Further applications that can be monitored with the FAG SmartCheck include, for example:

- Compressors
- Vibrating screens
- Liquid pumps
- Electric motors

### Technical Information about the Solution

#### Monitoring system used:

FAG SmartCheck

#### Vibration sensor used:

High resolution piezo sensor

#### Operating parameters monitored:

- Bearing temperature
- Ambient temperature
- Speed
- Load

#### Diagnosis methods:

- Time signal
- Envelope
- Speed and frequency tracking
- Spectrum and trend analysis