

Schaeffler Global Technology Solutions

Pneumatic Engineering and
General Ventilation Systems

Reliable Damage Diagnosis in Spite of Floating Imbalance

The customer is one of the world's leading manufacturers of industrial centrifuges with branch offices and service centers around the globe.

Challenge for Schaeffler

Decanters are used in all applications where liquids are separated or clarified. Often, malfunctions of a decanter are caused by an imbalance in the scroll or bowl. As a rule, only imbalances caused by the bowl can be adjusted by a technician. In this context, this is also referred to as a floating imbalance between scroll and bowl, which many measuring systems cannot allocate. So the decanter manufacturer was looking for a monitoring solution that would permit reliable retrieval of data from this potential source of trouble, even from a distance. The aim was to increase the decanters' level of availability and optimize the customer's ability to schedule necessary repair work.

Schaeffler Solution

Schaeffler offered the customer the FAG SmartCheck, an extremely compact and highly efficient online measuring system. One FAG SmartCheck each was installed on the bearing supports at the feed end and at the drive end to monitor the vibration, and the decanter was run at differential speed both when it was empty and when it was filled. And the measuring system was able to distinguish reliably whether the imbalance was caused by the scroll or by the bowl, even with a speed difference of only one revolution per minute.



Technical Information about the Decanters

Housing:

- Vapour-tight, with a hinged cover
- Protected supply lines

Materials:

All product wetted parts are made of high-grade stainless, acidproof steels

Centrate discharge

Through an impeller that can be adjusted infinitely during operation or via a free overflow





FAG SmartCheck allows customers a reliable machine monitoring



FAG SmartCheck – the compact system for measuring vibration and other parameters



Pairs of angular contact ball bearings in universal design are frequently used as locating bearings in decanters.

Customer Benefit

As a special feat, in addition to the monitoring of rolling bearings, the measuring system permits a reliable allocation of the two imbalances to scroll and bowl. This fact must be pointed out particularly as only very few systems, most of them much more expensive, can do this. The FAG SmartCheck has not only fulfilled but surpassed the customer's expectations. Thanks to the reliable detection of damage and the precise identification of the causes, future repair work can be scheduled, and the necessary preparations can be made, without having the system checked by an expert first. What's more, decanters are also fitted with special bearings. These bearings often have a significantly longer delivery time than standard bearings.

What's special

The customer likes the FAG SmartCheck both for the reliable and highly precise monitoring and because it is easy to install and operate. Further applications that can be monitored with the FAG SmartCheck include:

- Separators
- Compressors
- Pumps

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

Further options:

- Integration into control station or PLC
- Remote monitoring