

Danger recognized, bearing damage averted

Monitoring of the bearings of the centrifuge bowl

Flottweg has succeeded in creating digital added value from mechanical vibration signals. The Motice Condition Monitoring System monitors the bearings of the decanter bowl, thus making predictive maintenance possible. This makes it ideal for avoiding plant downtimes.

Who is not interested in preventing machine malfunctions? For Flottweg, the availability of machinery and equipment is a basic prerequisite for productivity. This is taken very seriously and is the focus of a strategy to increase availability through the use of digital resources. The Motice Condition Monitoring System was initially designed for bowl bearings. In the future, it will also be used to monitor motors and chatter vibrations in industrial centrifuges and decanters. This system facilitates the early detection of sources of potential faults and permanently monitors the condition of the mechanical components of the machines. High bowl speeds and high loads are the norm in industrial centrifuges and de-

canters. The bowl's bearings are the most heavily stressed functional components and under continuous load, they can cause premature failures and unplanned downtimes. The wear becomes visible and measurable when the vibration characteristics of the bearings change. With the Motice system, the bowl's bearings can be monitored in order to detect bearing damage at an early stage. Siemens measurement electronics monitor the bearings synchronously and continuously. An intelligent evaluation of the signals in the measuring module not only detects early changes in the condition of the bearings, but also monitors and visualizes these changes. After authorization by the customer, the service staff can quickly

access the bearing data via a remote diagnosis tool and make qualified statements about the bearing condition based on the measured values.

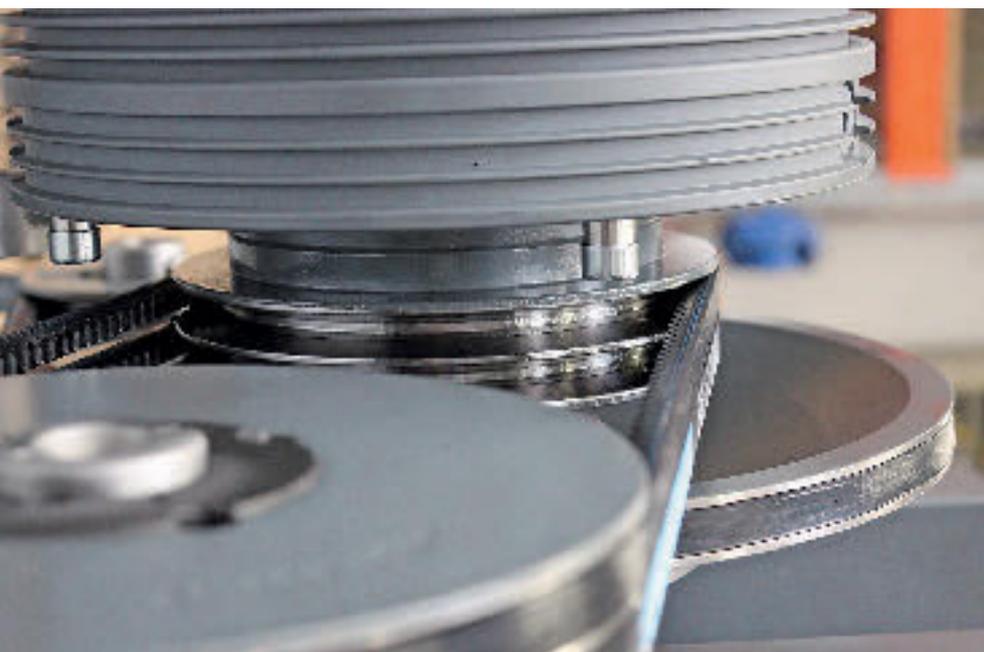
Permanent condition monitoring

Classical measuring methods often reveal the overall condition of a machine but they do not offer an exact fault analysis. Motice focuses on the bowl's bearings and evaluates important parameters such as speed, bearing type and the decanter's threshold values. Regardless of frequency, this leads to a clear and reliable assessment of any emerging damage.

All measurement data is evaluated in the Motice module and the user can quickly identify bearing faults via a visualization system. This data analysis alerts Flottweg of an upcoming maintenance appointment. Acceleration signals are recorded on all channels in the trend analysis, whereby defined threshold values facilitate monitoring. Lack of lubricant, foreign matter in the bearing or bearing corrosion can be optimally visualized within the trend profile. Using an envelope curve, bearing damage to the outer ring and inner ring, the cage and the ball bearing can be analysed and separately evaluated. Exact bearing damage patterns enable specific conclusions to be drawn about the remaining service life of the bearing. The programmed warning thresholds vary as a function of the speed.

Maximum machine diagnostics

Up to four synchronous high-resolution measuring channels are available, whereby the system ensures continuous data acquisition without an additional integrated speed sensor. With regard to the data, the net-



Images: Flottweg

Using a Condition Monitoring System, potential faults in decanter mechanical components such as gears and bearings can be detected at an early stage



▶ Motice facilitates the digital diagnosis of bearing deterioration in decanters

work-capable Motice stores the characteristic value trends with intelligent data compression for up to ten years. The high level security of user data is guaranteed, because Flottweg only has passive access rights with a release clause relating to the data to be analysed. This means that the Condition

Monitoring System can be used independently and requires no additional software or licenses. Monitoring stations always have up-to-date information on the status of the bearings and, in the event of abnormalities, it is possible to quickly estimate how long safe

operation is still possible. Conversely, abnormalities in a system can be directly correlated with the health of components, for example, whether a temperature increase is the result of a defective bearing.

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