

Schaeffler Global Technology Solutions

Aerospace

Schaeffler Technologies AG & Co. KG, Germany

Professional monitoring of main spindle bearing supports on grinding machines in the aerospace sector

Schaeffler is a leading manufacturer of rolling bearings worldwide and a renowned supplier to the automotive industry. This globally active company and its 76 000 employees generated sales of approximately 11.1 billion euros in 2012. The Industrial division supplies products and services from the INA and FAG brands for over 60 different sectors. These include high-precision bearings for aerospace applications, which are also manufactured in our plant in Schweinfurt, Germany.

Challenge for Schaeffler

Special bearing supports for aerospace applications are subject to extreme conditions and very high quality requirements. Process reliability has the highest priority during manufacturing due to the complexity and high value of materials (use of heat-resistant steels). In addition, high plant availability is a prerequisite for compliance with delivery times. Unplanned machine shutdowns or damage to components, which can affect the grinding process, must be prevented as far as possible.

Schaeffler Solution

The aerospace sector chose the 8-channel monitoring system FAG DTECT X1_s for permanent monitoring of all main spindles of the external grinding machine. Vibration measurement of the main spindles of this machine tool is carried out automatically at defined time intervals that are matched to requirements or the application. Measurement data is also automatically forwarded to a central server in an alarm situation to enable a direct evaluation and the implementation of relevant measures.



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Technical Information about the Plant

External cylindrical grinding machine
for inner and outer rings
Manufacturer: Göbel

2 tool spindles on B axis with balancing
system

1 workpiece spindle

Dressing possible with special fused alumina
wheel and turbine

Radius dresser





Checking the condition of machine components



FAG DTECT X1_s for online vibration monitoring of machines and systems



Monitoring of main spindles

Customer Benefit

The grinding process was optimized and high product quality was ensured by reducing downtimes and detecting bearing damage at an early stage. Delivery reliability was also ensured and maintenance costs reduced by means of preventative maintenance measures and planned shutdowns.

What's special

The large shock impulses and background noise during machining processes make a precise analysis of vibration measurements on machine tools very difficult. Schaeffler's monitoring systems use communication with the machine control system to carry out measurements at suitable intervals and at the right time. This monitoring concept can also be transferred to similar machine tool applications in other sectors.

Technical Information about the Solution

Schaeffler monitoring system:

8-channel FAG DTECT X1_s system

Sensors:

8 ICP accelerometers

Housing:

IP66

Communication:

Internal company network

Additional signals:

Speed signal