Predictive Maintenance 4.0 for Motor/Gearbox Units

SCHAEFFLER
INCREASING AVAILABILITY AND BOOSTING PRODUCTIVITY

Drive Train 4.0

Predictive maintenance expands conventional condition monitoring approaches by looking into the “future of the machine”, thereby offering new options for increasing efficiency and for reducing the total cost of ownership (TCO).

Schaeffler’s “Drive Train 4.0” technology demonstrator links existing technology with new digital services. In this way, we are taking a big step forward in the direction of digitalized production and machine monitoring for the future.

The focus here is on two new digital services: The calculation of the remaining lifetime of rolling bearings and automated rolling bearing diagnosis. This makes it possible to determine maintenance intervals depending on the load.

The use of the concept is not only limited to production systems, but is also interesting for all markets where there are heavy and varying loads. For example, wind turbines and rail vehicles can also benefit from self-monitoring drives.

Schaeffler’s digital services are easily accessible and increase system availability.

While maintenance personnel previously had to draw and laboriously analyze information from many separate systems, Schaeffler now is offering a platform for bundling, analyzing, and interpreting these data.
SCHAEFFLER SMART ECOSYSTEM

Added value through digitalization

The digital revolution and the linking of components and systems increases the efficiency of machines and equipment.

Schaeffler is shaping the digital transformation with a clear vision and specific solutions.

With Smart EcoSystem, Schaeffler is offering a consistent hardware and software infrastructure – from sensorized components to digital services and business models:

• Obtain important data for process control and machine monitoring – dependable and precise with sensors and mechatronic products from Schaeffler.

• Make use of our unique Schaeffler domain know-how in the form of digital services in order to automatically generate relevant information from the gathered data and receive specific recommendations for action.

• Profit from our digital solutions like Drive Train 4.0 (this is only one of many solutions, such as for machine tool, railway, or wind applications) and use them specifically for controlling processes, maximizing availability, or optimizing product quality.
Single-channel vibration measurement – FAG SmartCheck
Simple assembly, ready-to-use right away, easily upgradable

Automatic re-lubrication – FAG Concept2
Simplifying the maintenance process

Configurable sensor bearings – FAG VarioSense bearings
Recording of central process data

Multi-channel vibration measurement – FAG DTECT X1s condition monitoring
The condition of the entire system at a glance
Digitalization

**FAG torque measurement module – mechatronics module with customer-specific interface design**

**Schaeffler Smart EcoSystem**
High-performance, scalable cloud infrastructure with the very highest data security standards and access to digital services:

- **System visualization:**
  System condition at a glance

- **Calculation of the remaining lifetime:**
  Determining the optimum time for maintenance

- **Automatic rolling bearing diagnosis:**
  Calculation and analysis algorithms for diagnosing rolling bearing damage as well as alignment and balance errors

- **Online monitoring:**
  Remote analysis by Schaeffler experts

**Gateway** – preparing measured data and transferring them to the cloud

**Oil particle sensor technology – FAG Wear Debris Check**
Simple and precise detection of gearbox damage
Schaeffler Technologies AG & Co. KG
Georg-Schäfer-Straße 30
97421 Schweinfurt
Germany
Phone +49 2407 9149-66
E-mail industrial-services@schaefler.com
Internet www.schaefler.de/en

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