



Condition monitoring using FAG products

Technical Product Information

Condition monitoring by vibration diagnosis · FAG Detector II · FAG Detector III

Condition monitoring by vibration diagnosis

Vibration diagnosis is the most reliable method for identifying machine damage at an early stage. Imbalance and misalignment defects can be detected accurately, as well as rolling bearing damage and gear tooth defects.

FAG Industrial Services (FIS) offers a comprehensive product portfolio, ranging from simple vibration monitors to complex monitoring systems with a large number of measuring points. FAG vibration measuring devices help to detect incipient damage to rotating components at an early stage. As a result, unplanned downtime can be prevented and maintenance costs can be reduced.

In the field of **offline monitoring devices**, FIS offers the FAG Detector II and FAG Detector III. The **online monitoring devices** include the economical Easy Check series, FAG DTECT X1 and FAG WiPro as well as the high end systems FAG VibroCheck and FAG ProCheck.

FAG Detector II

The FAG Detector II is a portable vibration measuring device and data collector in one. Using this economical device is straightforward and easy to learn. It weighs approx. 450 g and is highly suitable for monitoring extensive plant where measurement rounds involving large distances must be covered. The FAG Detector II picks up vibration signals at predetermined measuring points and

calculates the effective values for vibration rate and acceleration. Machine vibrations are monitored in accordance with ISO 10816, rolling bearings by means of the demodulated signal method. At the same time, temperatures are measured without contact by means of an infrared sensor. The measured data are transferred to a computer for evaluation, analysis and diagrammatic presentation using the software Trendline. Any incipient damage can thus be detected at a very early stage. The FAG Detector II can also be used by personnel who have no experience of vibration measurement. A very useful feature in this respect is the "e-mail button". This can be used to send measurement data by e-mail to an external diagnosis expert for further analysis.



FAG Detector II

For detailed information, see TPI WL 80-62.
Please direct enquiries to:
info@fis-services.com

FAG Detector III

The FAG Detector III is a further development of the successful FAG Detector II. In addition to vibration measurement, contact-free temperature measurement and data collection, the system is now also capable of carrying out static and dynamic balancing tasks. As a result, imbalance can not only be detected but also easily and efficiently eliminated. With the aid of the software installed on the system, the user is guided through the balancing procedure step by step. The results of the balancing procedure and the vibration measurement are transferred to the software Trendline for analysis. The integrated bearing database containing approx. 20 000 bearings from various manufacturers gives simpler and more efficient analysis. A completely new feature is the optional functionality of automatic detection of measuring points. By means of a transponder or tags and an RFID reader, the measuring points defined for a measurement round can be assigned precisely and without error.

For detailed information, see TPI WL 80-64.

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FAG Detector III

FAG Easy Check · FAG DTECT X1

FAG Easy Check series

The FAG Easy Check devices are economical vibration monitors for permanent monitoring of critical machinery in plant with constant operating conditions, e.g. pumps, fans, electric motors etc.

FAG Easy Check vibration monitors are easy to fit and operate. They can thus be used even by employees without prior knowledge of condition monitoring. The devices monitor vibration in accordance with ISO 10816, the condition of rolling bearings with the aid of the demodulated signal method and the temperature at the bearing locations.

The use of Easy Check devices can contribute to a considerable cost reduction since incipient damage is detected at an early stage and the necessary work can be integrated into maintenance planning.

FAG Easy Check base device

FAG Easy Check is a standalone device that is powered by a battery and is applied directly to the critical machine. The vibration monitor draws attention to any problem by

means of LEDs (traffic light function). The status of the LEDs on the FAG Easy Check must be checked at regular intervals.

FAG Easy Check Online

In contrast to the base device, FAG Easy Check Online has an external power supply. Additional alarm outputs for vibration and temperature offer the possibility of presenting alarm conditions on a control station or traffic light device. This eliminates the need for regular inspections and allows the monitoring of difficult to access locations. By means of the input, alarms can be remotely reset and the learning phase of the device restarted.

FAG DTECT X1

The FAG DTECT X1 allows early detection of damage by selective frequency vibration monitoring based on individually adjustable frequency bands. By means of the selective frequency method, specifically selected machine parts can be monitored. FAG DTECT X1 has characteristics that would normally only be found on significantly more expensive systems. The system is variable and can be specially matched to the requirements of the application. The base device is available as a 2 or 8 channel system with an external multiplexer. All conventional acceleration sensors, speed sensors and proximity probes can be attached. Process values such as speed, temperature, load, torque and pressure can be recorded.

The signal collected by the sensor is broken down into its frequency components by means of Fast Fourier Transformation (FFT).



FAG Easy Check base device



FAG Easy Check Online

For detailed information, see TPI WL 80-68.

Please direct enquiries to:
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FAG DTECT X1

FAG DTECT X1 · FAG WiPro

It is thus possible to monitor amplitudes within fixed, very narrow frequency bands for specified limit values and trigger an alarm. If necessary, the remote monitoring function can be used to monitor machines without the need for a diagnosis expert on site. Irrespective of the location of the system, changes are notified automatically and worldwide to the operator, plant manufacturer or service provider by telecommunication channels (fixed network or GSM modem, Internet, e-mail, VPN, Ethernet). Stored and current data can be remotely retrieved and analysed by the FAG Diagnosis Centre.

For detailed information, see
TPI WL 80-65.
Please direct enquiries to:
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FAG WiPro

The FAG WiPro is a cost-effective online monitoring system for the condition-based maintenance of wind turbines.

The system, acknowledged by the AZT (Allianz Zentrum für Technik) and certified by the Germanischer Lloyd, can monitor not only the drive train (main bearing, gearbox, coupling, generator) but also vibrations in the tower. If required, other information such as rotor blade speeds or oil quality can be integrated in the condition monitoring. The FAG WiPro is equipped with a signal processor and evaluates all measurement signals in the nacelle itself. Due to the intelligent linking of expert knowledge with information from the turbine, it is possible to keep the transfer data volume very small. This is particularly important where a large number of turbines are to be monitored on a permanent basis, allowing transfer data quantities to be kept to a minimum. Due to the

different communication options, an appropriate solution can be found for any wind farm. With the FAG WiPro, the operator is kept informed at all times of the condition of the most important components. This gives a high level of investment security and active machine protection.

The modular concept of WiPro systems allows all types of wind turbines to be retrofitted with the system. Any wind farm can be networked using the WiPro system, whether the turbines are connected using copper cables, fibre optics, ISDN or analogue lines or even if no telephone connection at all is present.

For detailed information, see
TI WL 80-66.
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FAG WiPro

FAG VibroCheck • FAG ProCheck

FAG VibroCheck

The online monitoring system FAG VibroCheck is used for the permanent, reliable monitoring of industrial plant with numerous measuring points, such as in rolling mills, paper plants and power stations. In its most expanded form, up to 2048 sensors can be integrated in the system. For the detection of defects such as imbalance and misalignment, the FAG VibroCheck generates spectrum-based parameters that are managed within narrow frequency bands according to speed. In addition to general parameter monitoring, the user has available an automatic, rule-based expert system that can monitor up to 20 components per sensor. This allows monitoring of all rolling bearing types and tooth meshes in the vicinity of a sensor in relation to the occurrence of component-specific frequency windows. In addition to vibration signals, other process parameters such as temperature, power, pressure, torque etc. can also be detected by



FAG VibroCheck

analogue or OPC means. By remote access, the data can also be analysed by external service providers or condition monitoring experts at other locations. The display, which is individually tailored to the customer's requirements, gives a user interface that allows a rapid overview of the condition of the plant. Depending on the complexity of the plant, this display can be arranged on several levels. Through the high predictive accuracy and early identification of forthcoming damage, optimum use can be made of planned stoppages and downtimes due to failure can be drastically reduced.

For detailed information, see TPI WL 80-67.
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FAG ProCheck

The FAG ProCheck is the latest generation of modular concept online monitoring system. The device records vibration data, process parameters and operating data, assesses these data and provides the customer with authoritative and reliable information on the condition of his equipment. The system is available in several expansion levels – with 8, 12 or 16 channels. A large number of analogue and digital input and output signals can be correlated to the vibration data. These signals also allow simple communication with higher level systems such as process control systems. For monitoring of complex systems, FAG ProCheck uses methods and

techniques established in the market such as frequency-selective parameters, demodulated signal detection and trend monitoring. Through monitoring of vibration combined with other process parameters such as temperature, potential machine defects can be reliably identified on complex equipment and countermeasures introduced in good time. Due to its flexibility, scalability and extremely robust design, this system is destined for use in all industrial segments. The system has almost no limits, whether it is used in steelworks, paper machinery or cement plants. This is aided by its extremely compact and robust design, together with its ATEX and UL approvals (the hardware is developed by National Instruments).



FAG ProCheck

For detailed information, see TPI WL 80-69.
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