

FAG



Online Condition Monitoring Equipment for Marine Applications



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**Together
We Move
the World**



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The Schaeffler Group with its product brands INA, FAG and LuK is a leading manufacturer of rolling bearings and linear products as well as a renowned supplier to the automotive industry.

The group of companies stands for exceptional customer focus, innovative ability and the highest possible level of quality. Sales of over € 10.7 billion were generated at over 180 locations in more than 50 countries in 2011.

With around 74,000 employees worldwide, the Schaeffler Group is one of the largest German and European industrial companies in family ownership.

The combined INA and FAG standard catalogue now comprises over 40,000 standard products for use in over 60 industrial sectors ranging from power transmission, wind turbines, marine vessels to automotive and aerospace.



Schaeffler Condition Monitoring systems are widely used in wind turbines. They combine high performance and monitoring technology approved by leading insurance bodies, with protection against harsh conditions.

Schaeffler (UK) Ltd

Schaeffler UK, located at Sutton Coldfield in the West Midlands, is the headquarters for all sales, marketing, engineering and logistics for both the INA and FAG brands in the UK.



In-house application and design engineers work with carefully selected distributors and direct with end users to deliver the best engineered and most cost effective solutions to each individual requirement.



Maintaining the structural integrity of critical machinery at sea is vital for safety and smooth operation. Schaeffler provides complete on-board and on-shore condition monitoring solutions for advance alerts, troubleshooting and repair planning.

FAG SmartCheck Online Condition Monitoring Device

An ultra compact, online condition monitoring device that monitors vibration and temperature, as well as other machine and process-specific parameters.

Cost effective alternative for online monitoring of small, process critical and non-process critical plant & machinery, including spindles, motors, drives, pumps, compressors, and gearboxes.



- Easy to operate. Requires no special programming skills
- Typically mounted to the machine housing.
- Small and lightweight and requires less wiring.
- Protected to IP67 and ATEX-certified to Ex II 2 D/G mb IIB T4.
- Modular, scalable system that provides multiple expansion options.

Acoustic Emission (hand held)

Acoustic Emission technology is ideal for monitoring the condition of slow rotating, variable speed and load machinery and components.

- Acoustic Emission (hand held) monitor measures the high frequency stress waves generated by the rapid release of strain energy that occurs within a material during crack growth, plastic deformation or phase transformation.

- Highly effective where components are rotating at less than 80 rpm (even down to 0.25 rpm), or operating under fluctuating load conditions or only moving through part-revolution.



Detector III

Condition monitoring by vibration diagnosis with optional integral balancing.



- Portable vibration and temperature measuring device and data collector.
- Picks up vibration signals at predetermined measuring points and calculates the effective values for velocity and acceleration.
- Data collected by the device is transferred to a computer for analysis.
- A new feature of the system is the optional functionality of automatic detection of measuring points using RFID tags.
- Detector III is now also capable of carrying out static and dynamic balancing tasks meaning that any imbalance detected can be easily and efficiently eliminated.
- The optional Balancing Kit guides the user through the balancing procedure step by step.

Dtect X1 s

Dtect X1 s is an online system for permanent vibration monitoring and diagnosis.

- Data can be accessed at a central control station for direct analysis or can be retrieved from any location via telecom links.
- Signals from up to 8 sensors can be recorded and up to 16 monitoring tasks can be stored and executed automatically.
- The system can be customised to the specific requirements of an application and process variables such as speed, temperature, torque and pressure can be recorded.
- Designed for use in harsh environments



ProCheck

The latest generation of modular online monitoring system

- Modular online condition monitoring system
- High performance solution to the prevention of unplanned downtime.
- Combine ProCheck with multiple acoustic smart sensors, for increased functionality.
- Users can remotely monitor both vibration and trend acoustic emissions of variable speed components and machines.



FAG Wear Debris Monitor

A combined oil and vibration monitoring system

- Enables early detection of damage to heavy duty, oil-lubricated industrial gears
- Easily integrated with other online condition monitoring systems such as Dtect X1 s and ProCheck systems.



- Suitable for marine propulsion systems.
- System pinpoints precise location of damage or wear to gears, bearings and cages within a gearbox or other gear unit.

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Typical Marine Applications



Cargo Pump Monitoring System

The system provides a complete log of vital pump vibration levels and speeds during cargo operations.

Accurate monitoring of these parameters helps to reduce operational interruptions.

Turbine balance, gearbox, bearing condition, cavitation and blade frequencies are all monitored with respect to pump shaft speed. Alarm conditions and fault diagnoses are clearly displayed on the dedicated alarm panel in the CCR, ECR, or both.



- In addition to providing the duty officer with alarm and diagnosis information the system automatically sends data ashore to Fleet Technical Management and our exception based monitoring centre.
- A single pair of relay contacts is available to connect to the ship's automation system to provide a group alarm for Cargo Pump Vibration.
- System satisfies OCIMF guidelines for Pump Room safety.



Propulsion Monitoring Solution

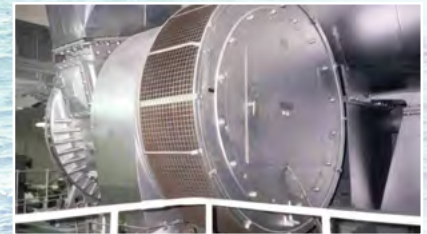
Schaeffler's online condition monitoring products can be used as part of an integrated propulsion monitoring solution.

Dtect X1 s and ProCheck systems can be customised to monitor specific vibration and acoustic parameters in the vital propulsion and steering modules.

Speed, temperature, torque and pressure data can all be gathered and logged, with monitoring tasks being stored and executed automatically.



- The system provides advance warning of developing faults in critical systems.
- The system is scalable which allows additional FAG products to be integrated into the system to monitor other equipment on the vessel, such as Turbochargers and Air Conditioning Compressors.
- All data is logged, and can be transferred to a monitoring centre via e-mail.

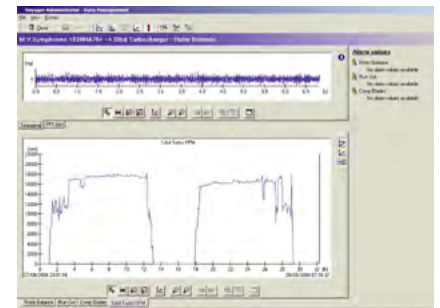


Turbocharger Monitoring System

Consistently monitors Turbochargers 24 hours a day.

The system monitors a series of key parameters linked to rotor rpm.

These include carbon build up and foreign object damage and their effects on rotor balance. Bearing wear, compressor and turbine blade frequencies are also monitored. All parameters are stored on a permanent log.



The system has been proven to provide advance warning of faults with both rolling element and plain bearings, balance and clearance problems. This greatly helps reduce the number of major failures and allows accurate maintenance planning.

- UMS alarm relays can be linked to the ship's alarm system.
- Accurate speed tracking means no 'nuisance' alarms.



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