

Schaeffler Global Technology Solutions

Conveying equipment

RheinCargo GmbH & Co. KG, Germany

FAG SmartCheck ensures Maximum Crane Availability in the Trimodal Port

RheinCargo GmbH & Co. KG is one of Europe's leading logistics companies. With seven public ports on the river Rhine, including the Niehl I cargo handling port located on the western bank of the river in Cologne's Niehl district, the company is also Germany's second-largest port operator.

Challenge for Schaeffler

Due to the high degree of utilization and lack of redundancy, the gantry cranes at Cologne's Niehl I cargo-handling port are among its most critical machines. The hoisting gear trolley is used to transfer containers from land to road transport vehicles and ships. Availability is required 24 hours a day, 7 days a week. Any unplanned downtime by these giant transportation machines leads to major delays in the entire operation and generates enormously high costs. For this reason, the company operating them was very interested in obtaining information about possible component damage in the gantry cranes at an early stage.

Schaeffler Solution

Schaeffler installed two FAG SmartCheck units on each of the hoisting gear trolley's two cable drums – one on the motor and one on the gearbox. In addition to monitoring the vibrations that occur, these measuring devices record the speed and direction of rotation in order to allow an informative analysis of the measurement data to be carried out. This additional information is essential due to the short measurement times and the gearbox's reversing operation. An FAG SmartLamp was additionally installed in the machine room and illuminates red in the event of an alarm situation in order to warn the operator of the onset of damage to the bearings or gear teeth, while an FAG SmartConnect Box allows the power supply and additional signals to be distributed easily.



Technical information on the Niehl I Port

Water surface area:

472 700 m²

Land surface area:

837 300 m²

Port basins:

4

Crane equipment:

13 crane systems, one of which is intermittently out of operation





Motor and gearbox monitoring using the FAG SmartCheck



Simple visualization of the operating condition with the help of the FAG SmartLamp



The FAG SmartConnect Box allows the power supply and additional signals to be distributed

Customer Benefit

With the FAG SmartCheck, the operator can always be certain of the condition of the bearings and gearboxes installed in the hoisting gear. The onset of damage is detected at an early stage, which makes it possible to plan repair and maintenance measures and thus significantly reduces the risk of unplanned downtime.

Estimated costs for unplanned crane downtime	
Costs for repairing the motor:	€ 10 000
Crane downtime:	€ 5 000
Total cost of downtime:	€ 15 000

Potential savings with the FAG SmartCheck	
Investment costs for monitoring the hoisting gear using the FAG SmartCheck:	€ 5 000
Savings achieved due to early detection of initial damage, minus the investment costs for the FAG SmartCheck:	€ 10 000
Savings achieved through early detection of all subsequent damage:	€ 15 000

With three cranes being monitored and assuming two occurrences of damage per crane each year, an estimated annual saving of approximately € 75 000 is thus achieved.

What's special

RheinCargo also plans to integrate the measuring systems into its existing Ethernet in order to make it even easier to obtain information about possible damage. The operator can thus monitor the crane systems' operating condition from their own control station and also has the option of allowing Schaeffler to perform remote monitoring.

Technical Information about the Solution

Monitoring systems:

4 FAG SmartCheck

Monitored components:

- Motor
- Gearbox

Status display:

- Via FAG SmartLamp
- LAN and automatic forwarding of the status display to the control station are planned

Signal distribution:

- FAG SmartConnect Box

Monitored operating parameters:

- Direction of rotation
- Speed

Further options:

- Several years of history data can be stored
- Information passed on via control system to the control station
- Remote monitoring