

Schaeffler Global Technology Solutions

Railway applications

Regional railway operator, Asia

Condition monitoring test rig for railway gearboxes and axlebox bearings

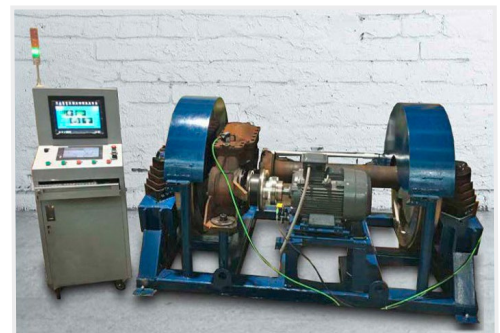
Local public transport with regional rail vehicles is part of our customer's core business. Low maintenance costs and high train availability are decisive factors for the railway operator. Not least because downtimes and delays can mean considerable costs and financial penalties.

The challenge for Schaeffler

To ensure the best possible availability, the gearboxes and wheels of all the wheelsets of a train, including its axle and gearbox bearings, are regularly inspected, overhauled or replaced. The company was therefore looking for a solution, which ensured reliable and precise checks while also reducing the downtimes of the trains to a minimum.

The Schaeffler solution

With its special condition monitoring test rig for railway gearboxes and axlebox bearings, Schaeffler has implemented a cost-effective solution optimized for the customer's specific application. SmartCheck sensors are simply attached to the components to be monitored using magnets and undertake precise measurement of vibrations and temperatures without a requirement for further installation outlay. They are directly connected via SmartController to the input and output terminals such as a touch-screen control panel, an external monitor, and alarm and data processing systems. The axles are driven by means of an integrated electric motor for the test runs. In addition, the system can reliably check whether the bearings were correctly mounted, for example, after bearing replacement.



Technical information on monitoring

Monitored components:

Gears in gearboxes

Gearbox bearings

Axle bearings

Wheel axles

Monitored parameters:

Vibration

Temperature

Speed

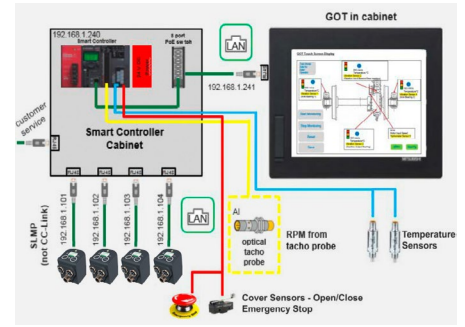
Bearing end position



The CM test rig can accommodate complete railway wheelsets



Schaeffler SmartChecks supply reliable precise data



Layout of the control system for the wheelset test device

The benefit for the customer

For the customer, the integrated solution for the inspection of gearboxes and wheelsets is an important tool in eliminating unplanned downtimes and malfunctions in railway applications. The investment costs for the test rig are also significantly lower compared to complex onboard monitoring systems, which are often used in long-distance trains. Our customer also benefits from the following advantages:

- Reliable and very precise condition monitoring
- Simple and full integration into the customer's infrastructure
- User-friendly and efficient operation
- Inspection of gearboxes without dismantling and changing the oil
- Inspection of bearings without dismantling and replacing the seals
- Mounting check after maintenance or replacement of bearings

Special features of the project

Unplanned downtimes in trains can always result in direct and indirect costs for the railway operator. The reputation of the operator can also be damaged, particularly in public transport. In the case of our customer, there is an additional significant risk because some downtimes and delays in railway traffic are penalized by the severe financial penalties stipulated by national regulations. Following the positive experience with our test rig, the customer is now planning to use the system at other locations.

Technical information about the solution

Monitoring system:

Schaeffler SmartCheck

Transmission and control of signals:

Schaeffler SmartController

PoE switch/router

Touch-screen display unit
(human-machine interface)