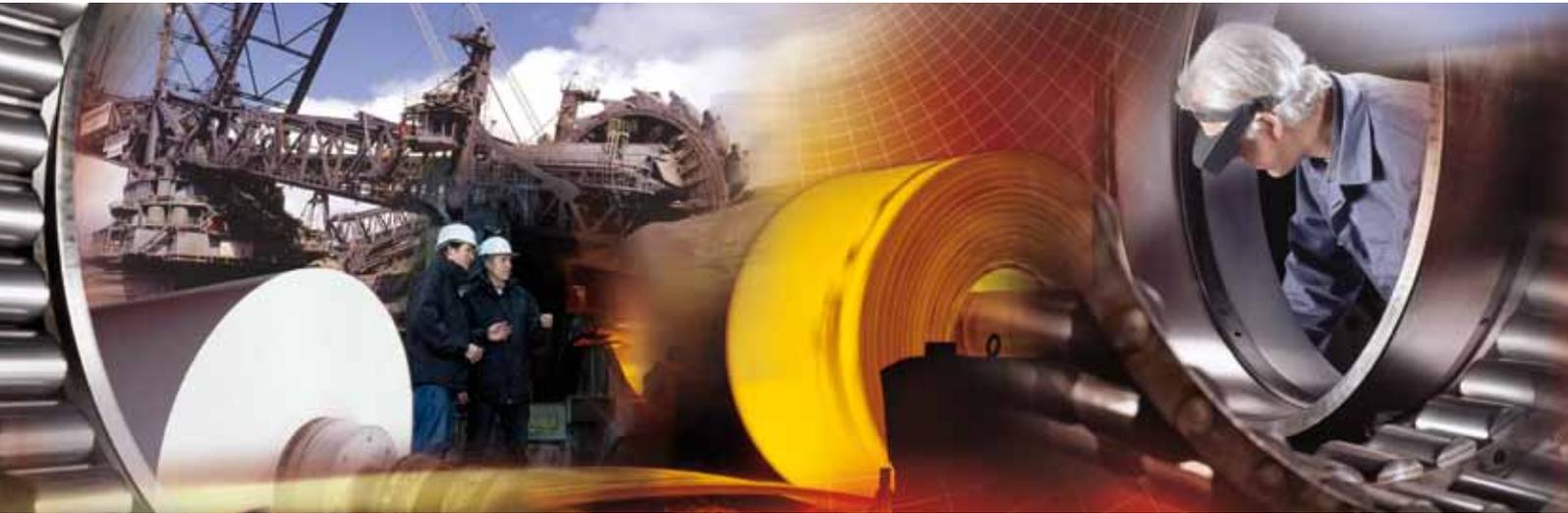


Smart Performance Program



Arrive Save and Sound with FAG Detector III

Industry: Railway and Transport

Customer: Hessische Landesbahn GmbH, Butzbach (Germany)

Hessische Landesbahn GmbH (HLB) is a state-owned regional public transport company. In addition to public transport, the company also provides rail cargo transport and tram services. More than 700 employees work in the Frankfurt headquarters and in the four branch offices in Butzbach, Königstein, Kassel and Hofheim.

Challenge for Schaeffler

In early 2009, HLB experienced bearing damage in three electric traction motors within a short period of time. Wishing to avoid that type of damage as well as the resulting costs and downtime, HLB enlisted the service unit of Schaeffler Group Industrial. As bearing damage cannot be detected when a train is stationary, and as no test rig was available, it was important to find a way to conduct measurements on the motors in spite of the external influences during operation – such as shocks from rails and points – that interfere with the measurement.




Technical Information about the Butzbach Branch

Fleet of vehicles

- 24 articulated tram cars 2/6
- 6 Desiro trains
- 1 diesel locomotive
- 40 buses

Maintenance

- 2 workshops

Schaeffler Solution

Experienced vibration experts inspected the traction motors on location and decided to conduct test measurements with FAG Detector III, a mobile vibration measurement device. These measurements were taken during a run on HLB's own test track. The result confirmed that bearing damage in motors can be detected with the help of FAG Detector III. So HLB ordered one device as well as a customer-specific training course. The customer now regularly conducts vibration measurements on the traction motors directly after every general inspection of the trains.

Customer Benefit

Thanks to the FAG Detector III, the customer has found a way to increase the trains' availability and schedule all maintenance activities efficiently. With the help of the vibration measurement device, problems in traction motors can be detected at an early stage, any necessary maintenance measures can be scheduled in good time, and unexpected failures can be avoided. In this way the customer realises the following cost savings:

Costs per motor failure: (not counting additional costs of towing the train to the next workshop, dismounting and mounting of the motor and the downtime costs which cannot be put into figures)	€ 60,000
Project costs (test measurement, FAG Detector III and training package)	€ 15,000
Cost savings (1 st failure – under compensation of the non-recurrent project costs)	€ 45,000
Cost savings (from 2nd failure):	€ 60,000

What's special

The solution is also applicable to other traction motors and trains. However, the technical feasibility should always be verified in advance by vibration experts as external effects greatly influence the motors' vibration behaviour.

Technical Information about the Solution

FAG Detector III functions used:

- Monitoring functions:
 - ISO 10816
 - Frequency selective monitoring of the rolling bearings' condition
 - Gearbox condition
- Collection of reliable trend data
- In-depth diagnosis based on time signals and frequency spectra
- E-mail service
- Free PC software

