



## Formal Verification of Structural Rigidity Performance Testing of Axle boxes

In the unlikely event that an axlebox mechanically fails, this can have very serious consequences on railway operations. This is why the operative performance of axleboxes need to be formally verified during laboratory testing as well as in real-world trial testing.

The inspection test is described in the EN 12082 standard. On a test rig, two axleboxes are each subjected to the rotational speeds and forces that correspond with those of planned, scheduled operation. The testing programme encompasses repeating identical test runs using alternating directions of rotation over the course of several hundred thousand kilometres. During this time, the operational effectiveness of the axleboxes must be verified as a function of temperature, in the loading zone of the outer rings and on the housing near the scanning or detection area of the stationary hot axlebox detectors. A subsequent visual inspection points to, or indicates any possible areas of damage on the raceways as well as on the rollers of the rolling bearings.

DB Systemtechnik operates and maintains two identical bearing test stands. The operational speed range extends up to 3,000 rpm (corresponds to 500 km/h). The loads exerted on the test bearings are generated using servo-hydraulics and enable radial forces and axial forces up to an axle load rating of 27 tonnes. This, in turn, makes it possible to simulate commonly encountered current and future freight transport and passenger transport operations in Europe.

### Our services:

- Informative, meaningful test results via simulation of real-world, external influences that occur during active operation:
  - Two physically separate shafts operated in synchrony prevent any mutual interference of the test bearings in the case of a damage incident.
  - A 20 °C closed ventilation air flow for simulating the relative wind rules out any influence, or impact of fluctuating ambient temperatures on the test results.

### Your benefits:

- Minimal outlay thanks to services from a single source: Laboratory testing of the rolling bearings and required analysis of the used greases and lubricants
- Competent consultation as a result of many years of experience
- You are provided with a reliable test result that is obtained by applying an accredited procedure

July 2017