Monitoring of axle box bearing temperature

FUNCTIONS

Failed bearings on rolling stocks present important safety risks, potentially leading to catastrophic events such as derailment or fire. A rise in the heat generated by a bearing is found to be a good predictive diagnostic of a bearing about to fail.

Thus, monitoring the hot axle box bearing temperature with Trainnet® improves train safety by detecting wheelset bearings presenting a risk of failure.

ONBOARD MONITORING OF AXLE BOX BEARING TEMPERATURE

The European standard EN 15437 defines methods for axle box condition monitoring. The method of monitoring hot axle box bearing temperature by on-board systems is illustrated at the bottom of the page.

On-board monitoring was developed to overcome number of limitations of the HABD trackside systems. Firstly, the temperature monitoring is continuous whereas track equipment only measure at one point in time, when the train passes by. Also, the track equipment is used for all trains with no possibility to develop specific solution depending on the train type, bogie design, bearing property, and so on while the on-board system can be tailored to match the train characteristics.

The rolling bearing temperature can be monitored directly. However, the most common setup up is to monitor the hot axle box temperature, or more precisely, the grease temperature.

The Trainnet® system monitors the bearing temperature at all times *via* temperature sensors. Acceptable temperatures and temperature variations are set in the system: any value deviating from the norms will trigger alarms and, potentially, actions to guarantee safety.

SAFETY INTEGRITY LEVEL (SIL)

The Trainnet® system for on-board monitoring of axle box bearing temperature can be certified up to SIL-2.

AXLEBOX BEARING TEMPERATURE MONITORING BY ONBOARD EQUIPMENT

To Train Computer

Hot AxleBox Temperature Sensor