PHOENIX^MDS AMS
ACOUSTIC MONITORING SENSOR

PHOENIX

AMS Acoustic Monitoring Sensor

Continuous Monitoring of Bearing Health

Monitoring of the health of bearings during train operations provides a valuable source of information for optimizing maintenance and overhaul intervals of wheelsets.

The function Acoustic Monitoring Sensor (PHOENIX^MDS AMS) is a highly sensitive measurement system that collects the acoustic signature of each bearing of a passing train. Defects associated with the individual components of both tapered and cylindrical roller bearings are detected at an early stage and trends for each monitored bearing are provided. Alarms are generated at user-defined tolerance levels, which supports efficient wheelset maintenance programs.

In addition to bearing defects, future phases of development will identify wheel defects, locomotive engine defects and locomotive drive train defects.

Key Features

» Early-stage detection of bearing defects
» Optimizing bearing overhaul periods
» Safety management of railway operations
» Asset protection
» Long-term monitoring
» Optimized wheelset, locomotive and railcar maintenance management
» Condition based maintenance
» No moving parts for increased robustness and decreased maintenance
» Measurement of out-board and in-board bearings
» High reliability and availability due to measurement of multiple bearing rotations even under bad weather conditions
» Easily removed and re-installed from/to any standard sleeper for easy track maintenance
» Wide range of supported bearing types

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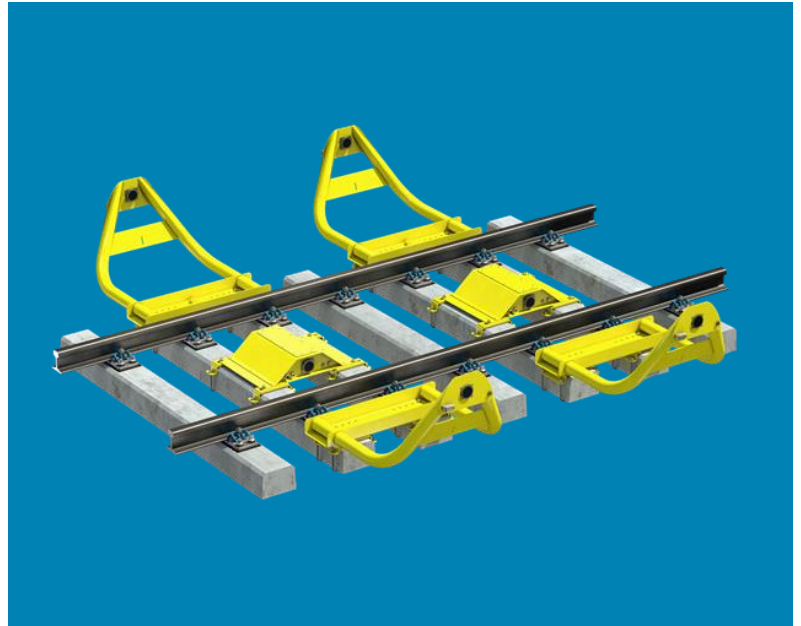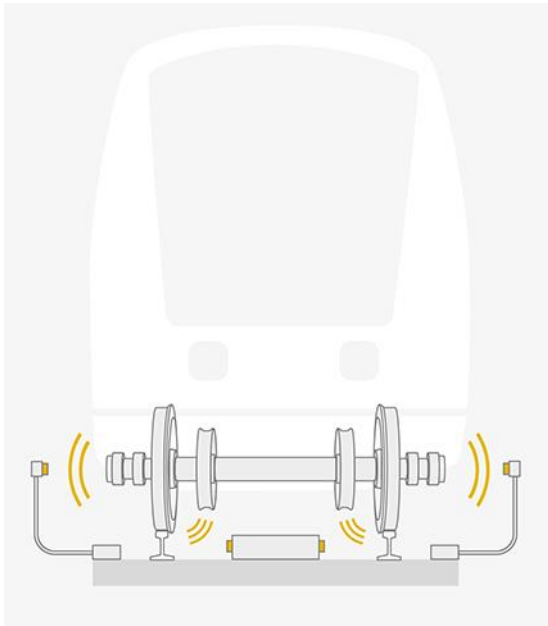
ACOUSTIC MONITORING

Microphones record the sound emitted from passing trains. The microphones are placed beside and between the rails to measure both out-board and in-board bearings. Due to a doubled setup a high reliability by measuring multiple bearing rotations is given, even under bad weather conditions. In addition, the sensors are able to identify the source of a sound by the use of advanced algorithms to distinguish between train and environmental noise.

Each bearing type is identified by the use of tags in combination with an Automatic Vehicle Identification system (PHOENIX^{MDS} AVI).

Detected defects are assigned to bearing components like cups, cones or rollers. For each train passage defects are tracked and ranked according to customer defined tolerance levels. This also provides trending data for each individual bearing by our software PHOENIX^{CMS}. The algorithms cover a wide range of axle bearing types and can be easily adapted to new types.

Technical Specifications

Train speed:	30 to 160 km/h
Defects reported:	Cup, Cone, Rollers, Multiple Railway Defects, Large Area Spalling
Double Track Installations:	Yes
Reporting:	PHOENIX^{CMS}
Trending:	Yes
Environment:	-20 to +60 °C
IP class microphones:	IP65

Options and Variants

Slab Track

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