

MONITORING

Wheel-rail monitoring for predictive maintenance

ROBUST MONITORING SOLUTION

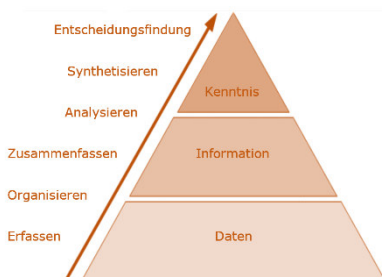
for infrastructure and rolling stock in railways

Mobile and stationary.
High information density for predictive maintenance planning.
Daily situation analysis and complete monitoring.
Environmental monitoring of noise and vibrations.

Characteristics

The monitoring system quickly collects extensive data from the fleet or the infrastructure. Decisions can be made based on robust data. The data is visualized on intuitive dash boards. Routine tasks are reduced and employees can do more important tasks. The company benefits from added value and cost reduction. The system can be used anytime and anywhere.

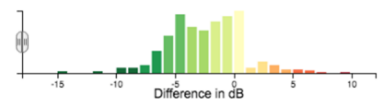
Asset Management



Measurement modules



Benefits



To be able to assess and control the effectiveness of maintenance measures independent measurements are a key component for asset management.

Two modules are used: a module for measurements nearby / at the track, which provides information about passing vehicles (fleet). Another module delivers measurements from the vehicle that provide information about the infrastructure.

Improved infrastructure condition.
Reduction of noise & vibration in the area.
Improved driving comfort
Continuous information and "always up to date".
No separate measuring vehicles or series of measurements and additional personnel required.

Information about the vehicle fleet and infrastructure, stationary or mobile monitoring

High information quality by intelligent combination of noise / noise, vibrations, speed, weather conditions including audio recordings.

Data web-based, platform-independent and visualized in dashboards.

Simple installation, robust measuring system with high information quality.

Fleet Monitoring

RS-Monitor-020

Trackside monitoring solution for passing vehicles. Connected to an external power source and weather station. Suitable as a long term measure for quality assurance in the company.

Information on the individual vehicles can be retrieved via dashboards.



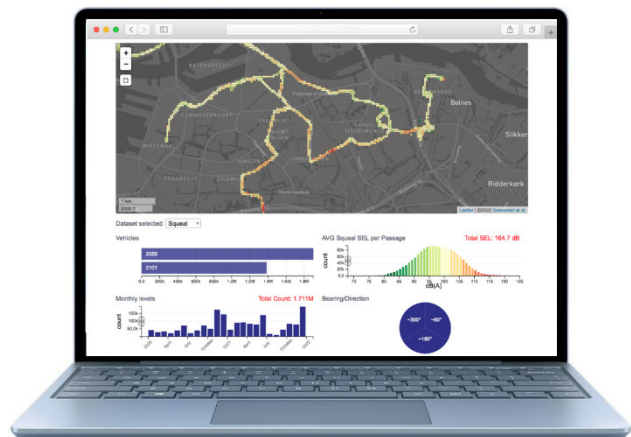
Infrastructure monitoring

RS-Monitor-020M

Mobile solution for monitoring the infrastructure from a standard vehicle. Connected to external power source and GPS station on vehicle roof.

On the hardware side, the RS-Monitor-020M can be expanded with a functionality for monitoring the pantograph shocks.

Dashboards provide information on the noise and vibration situation in the network. Other optional dashboards provide information on corrugation (based on ISO 3095), screech and flank noise, and differences between months.



Dashboard access via browser

Functionality and options

	Functionality	RS-Monitor-020	RS-Monitor-020M
Hardware	Noise and MP3 data	◆	◆
	2 x vibration sensor	◆	◆
	Humidity Sensor	◆	-
	Radar	◆	-
	Track temperature	◆	-
	UMTS without SIM	◆	◆
	Battery 98 Wh (10-12 h)	◆	◆
	Voltage 12V-36V or 230V	◆	-
Options	MP3/MPEG3, FLAC Data	◆	◆
	Spectrogram	◆	◆
Dashboard Module	Boxplot	◆	-
	Pantograph surveillance	-	◆
	Vehicle trends	◆	-
	Messages/Limits	◆	◆
	Module Direction	-	◆
	Module Difference	-	◆
	Module Screech	-	◆
	Module ripple	-	◆
Data	Availability	Up to 3 months after end of contract	Up to 3 months after end of contract

Quality

Components suitable for rail vehicles: The proposed components have been in use in various railway vehicles for many years.

Availability: If the connection is interrupted, the computer will save the measured data values until the connection is restored. Immediately afterwards, the system sends the results on to the central database.

Data security: The data is stored redundantly on two powerful servers on two separate hard drives (RAID). The measurement data is protected by user name and password authentication.



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