DEWESoft®

MONITORING

RAILWAY MONITORING

SOLUTION DATASHEET

From data to better maintenance decisions.

V26-1

7 YEAR WARRANTY

DEWESoft®

CONTINUOUS INFRASTRUCTURE MONITORING

TRANSFORM YOUR ASSETS INTO DIGITAL INFORMATION SOURCES

Smarter measurements. Better maintenance decisions.

Railway networks are facing increasing pressure from growing transport demand, aging infrastructure, limited maintenance windows, and the need for improved operational efficiency.

Continuous Infrastructure Monitoring (CIM) enables railway operators and infrastructure managers to move beyond periodic inspections by collecting valuable condition data during normal train operation.

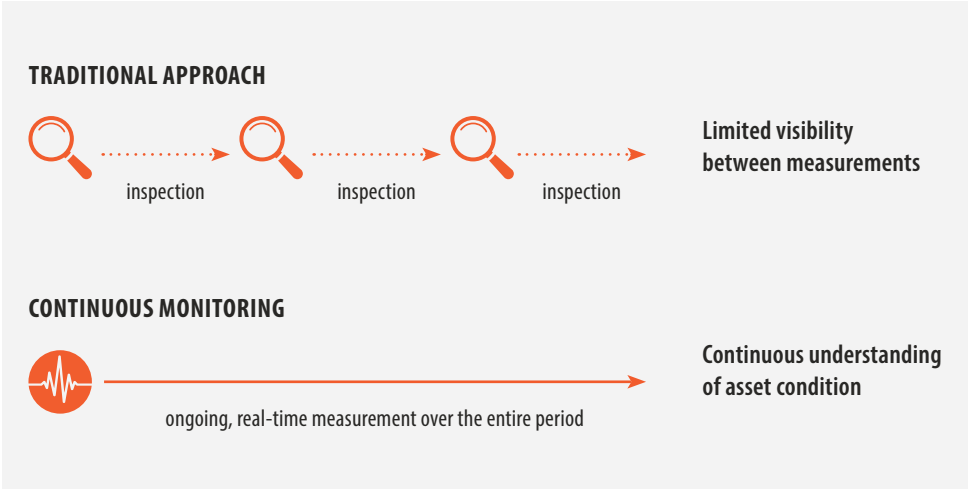
By combining high-performance measurement technology, precise positioning, and advanced data analysis, Dewesoft helps transform your assets into digital information sources that support safer, smarter, and more efficient railway maintenance.

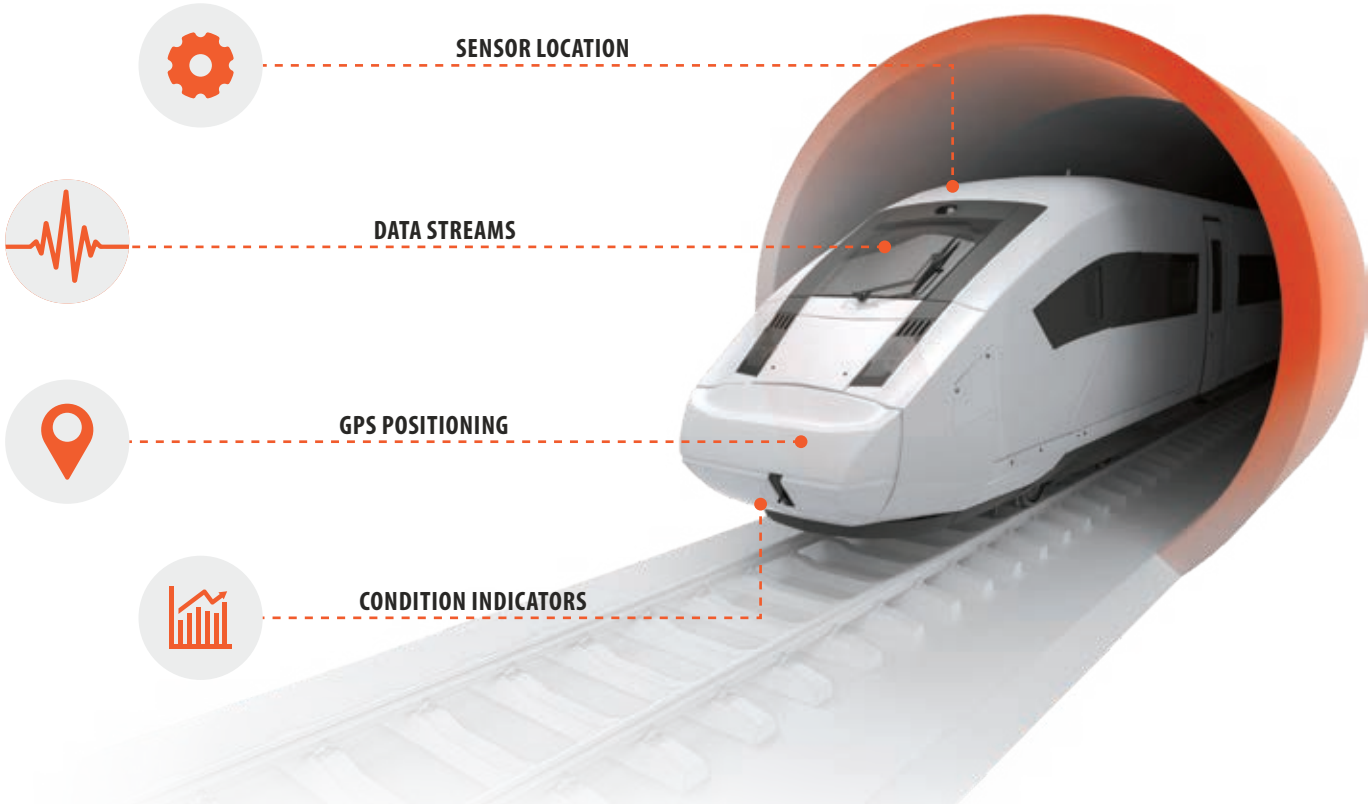
FROM SCHEDULED INSPECTIONS TO CONTINUOUS CONDITION AWARENESS

Traditional maintenance approaches rely mainly on periodic inspection campaigns, providing only snapshots of infrastructure condition.

Continuous monitoring provides a continuous flow of operational data, enabling:

- Early detection of infrastructure degradation
- Condition trend analysis
- Improved maintenance planning
- Reduced inspection effort
- Increased infrastructure availability
- Data-driven maintenance decisions





MONITORING APPLICATIONS

ON-BOARD TRACK CONDITION MONITORING

Understand infrastructure behavior during normal operation.

Monitor changes in track condition and identify developing issues before they become critical.

Measured parameters:

- Track-induced vibration
- Dynamic vehicle response
- Track quality trends
- Irregularities and defects
- Long-term degradation behavior

Typical sensors:

- Axle-box accelerometers
- Vehicle body accelerometers
- Inertial measurement units (IMU)
- GNSS positioning systemand rotational vibration, order tracking, combustion noise, sound power and more…

CONDITION MONITORING OF SWITCHES

Switches (turnouts) are critical components that are highly loaded and exposed to dynamic impacts.

Continuous monitoring with accelerometers enables non-contact measurement of switch displacement and supports early detection of emerging faults.

Accelerometer-based switch monitoring:

- Measures switch blade and crossing displacement using vibration-based techniques
- No moving parts or direct contact with critical components
- Accurate performance even at high train speeds
- Enables continuous trending of switch condition

STRUCTURAL HEALTH MONITORING

Monitor critical railway assets.

Operational trains can support monitoring of:

- Bridges
- Tunnels
- Trackside structures
- Infrastructure response over time

Typical sensors:

- High-precision accelerometers
- Strain gauges
- Temperature sensors
- GNSS / RTK positioning
- Inclinometers
- Inclinometer chains
- LVDT
- Humidity
- Weather stations

RAILWAY TRACK DEFORMATION MONITORING

Continuous monitoring of track geometry changes and long-term deformation to ensure safety, comfort, and infrastructure reliability.

- High-resolution measurement of track profile and settlement
- Detection of gradual deformation and sudden changes
- Early warning of ballast settlement, subgrade issues and instability
- Supports predictive maintenance and intervention planning

Typical sensors:

- Inclinometer chains

RAILWAY MEASUREMENT SOLUTION

1. SENSORS

Capture the physical behavior of railway systems:

- Vibration
- Acceleration
- Strain
- Temperature
- Position
- Electrical parameters
- Video
- Vehicle communication data (accelerometer-based)

2. SYNCHRONIZED DATA ACQUISITION

Dewesoft systems provide:

- High-channel-count acquisition
- Precise time synchronization
- Rugged railway-ready hardware
- Flexible sensor connectivity
- Distributed measurement capability

3. DEWESOFTH

Long term data storing and visualisationH

- Securely accessible
- Central data visualization
- Classic data analytics
- Modern physics-informed AI based analytics
- Alarming and notification

NEMOSENSE®

NEMOSENSE® wireless monitors enable long-term, unattended monitoring of infrastructure assets – complementing on-board measurements with permanent, remote data.

IOLITE® SINGLE CHANNEL

Compact, wireless, and easy to install. Ideal for single-point measurements with ultimate flexibility.

IOLITE® MULTI CHANNEL

Modular, scalable systems combine wired and wireless measurements with high-precision synchronization and easy integration for complete coverage of complex railway monitoring applications.

DEWESoft®

LEARN MORE:
https://dewesoft.com/applications/railway

HEADQUARTERS
Gabrsko 11A, 1420 Trbovlje, Slovenia
+386 356 25 300
www.dewesoft.com
support@dewesoft.com
or sales@dewesoft.com

DEWESOFT WORLDWIDE:
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