LORD APPLICATION NOTE

Wireless Monitoring of Rail System Track Geometry

Non-intrusive solutions to measure high-speed rail infrastructure conditions

Why monitor track geometry?

Track geometry issues are among the leading causes of increased maintenance costs, and they also result in increased risk to passenger and crew safety. Factors such as normal wear, inadequate upkeep, and environmental conditions can all contribute to faulty track systems, making it vital to monitor track geometry regularly.

LORD Microstrain wireless nodes:

- Enable convenient remote monitoring
- Are easy to install and maintain
- Can be customized to any rail system
- Eliminate need for bulky, intrusive wires
- Provide low-power, battery-driven solution
- Are part of robust online system that includes data storage and review with SensorCloud™

Featured Product:

68 x 85 x 33.5 mm 178 grams

G-Link2™-LXRS®

Wireless Accelerometer Node

The G-Link2™-LXRS® is a ruggedized wireless sensor node with an on-board tri-axial or external single-axis MEMS accelerometer. Its wireless framework is ideal for remote monitoring of vibration and acceleration.

- Continuous sampling: 32 Hz to 512 Hz
- Burst sampling: 32 Hz to 10 KHz
- IP67 enclosure

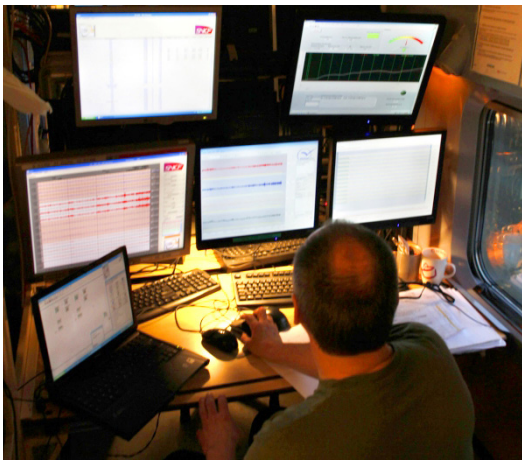
LORD MicroStrain®
SENSING SYSTEMS

Wireless Track Geometry Monitoring

Real-world application: Wireless track geometry monitoring system

SNCF, France's national state-owned railway company, required a non-intrusive system to monitor track geometry on its commercial high-speed lines. LORD MicroStrain worked with SNCF researchers to develop a wireless sensing system that fit their needs, utilizing several G-Link2-LXRS wireless sensing nodes.

Due to their small size and wireless capabilities, the G-Link2 nodes were installed on TGVs (high-speed trains) quickly and efficiently. More importantly, the nodes were unobtrusive, with no wires to disturb passengers.



There were no packet losses during data collection, even as the TGVs reached 185 mph; the nodes' radio signal strength remained constant. The systems' ability to time-sync with GPS satellites was crucial for SNCF to accurately pinpoint the location of track geometry issues, and the remote data collection capability proved highly convenient. In addition, the system's power conservation allowed SNCF to stop monitoring when not needed (e.g. when the TGV was stopped in a rail station).

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LORD MicroStrain® SENSING SYSTEMS

Wireless Simplicity, Hardwired Reliability.®