

**SIEMENS***Ingenuity for life*

Nexus RCM

Remote condition monitoring of track assets

Siemens Nexus RCM (Remote Control Monitoring) is an application that monitors the condition of the train tracks remotely. Nexus RCM can be supplied as a standalone system or as part of the Nexus Voice cab radio.

Using the additional capacity of the new Nexus cab radio processor, together with the addition of a sensor card and accelerometer, the application is able to measure and record the motion of the train across three axes as it moves along the track. A GPS unit provides the train's position to the cab radio.

Track defects (track void, rough-ride or dip track) are detected by the accelerometers, and a defect type is defined. The GPS functionality is then used to provide an accurate defect location. The location and defect signal is then sent to the ground system using the in-built Long Term Evolution (LTE) modules. Advanced on-board signal processing is used to ensure only relevant data is transferred.

The GPS location provided ensures that maintenance is accurately directed and planned, minimising the time maintenance staff spend on tracks and therefore improving their safety.

Our extensive trials have proven that the Nexus RCM system functionality is not limited by the position on the train. Customers experiencing track problems are encouraged to initiate discussions with Siemens to investigate the savings and operational benefits that Nexus RCM could deliver.

Features

- Very customisable to customers' needs
- Accelerometer sensor card, built into the Nexus Voice cab radio can detect a number of different track defects including; voids, rough-ride and dip-track
- Accurate GPS location information allows maintenance to be directed to the identified location
- Built in signal processing means only relevant data needs to be transferred to the ground, minimising the size of data transfers
- Multiple installations on in-service trains provides network-wide track condition monitoring
- Detects voids and defects under both switchings and crossings and plain track
- Trend growth allows advanced warning, providing planned, prioritised and preventative maintenance

Network-wide installation, ideal for network operators.

Installing Nexus RCM on a fleet of trains is an inexpensive way to monitor the whole rail network, including small branch lines, during in-service train operations.

With fleet-wide Nexus RCM installations, given the multiple journeys by multiple trains, an automated assessment of the entire rail network can be provided in a very short period of time.

Analysis of a track section at the ground system takes advantage of these multiple assessments by different trains which helps with the removal of false alarms, and improves the location accuracy and defect size.

Automated reporting, including whether the defects are on switchings and crossings or plain track and defect growth trends provides advanced warning, including prioritised and preventative maintenance.

Trials have indicated that a reliable monitoring system allows network operators to make significant reductions in maintenance and train delay costs, line closures, journey re-planning and speed restrictions. This is met by having a reliable monitoring system that is non-invasive, yet gives access to 100% of the rail network to help improve train safety, network reliability and passenger comfort.

RCM functionality

Examples of where we have detected track problems include:

- Detection of voids under both switchings and crossings or plain track – can be used by network operator to help improve maintenance planning and prioritisation
- Rough ride detection – for use by train operating companies to identify possible rough-ride areas
- Dip track locations – identifying these locations early will help reduce the chances of train derailment

- Flat spot on bogies from hard breaking – trials have proven that having Nexus RCM positioned near a bogie can detect flat spots on bogies
- Detection of problems with suspension or air bags – having two or more Nexus RCM systems throughout the train can help detect differences in train suspension, allowing early detection of potential issues

Benefits

- Preventive maintenance - a comparison between runs can highlight sections where track deterioration is detected. This allows the maintenance teams to correct the problems before it becomes a more serious defect
- Planned and directed maintenance minimises time maintenance staff spend on tracks, improving maintenance workers' safety
- Track monitoring by in-service trains using Nexus RCM helps reduce the high track monitoring costs and the service disruption associated with survey trains
- Multiple trains monitoring the track leading to a reduction in false alarms and increased accuracy of defect location and size
- Small branch lines are monitored more frequently, improving passenger safety on the whole rail network
- Network-wide installation of Nexus RCM can provide a network track assessment over a period of one day

Siemens Mobile Communications
Siemens plc
Sopers Lane
Poole, Dorset BH17 7ER
UK

The information in this document contains general descriptions of the technical options available which do not always have to be present in individual cases. The required features should therefore be specified in each individual case at the time of closing the contract.

Doc Ref: 666/HS/88224/000 v3 | Printed in Country
© 03.2016 | Siemens Plc

siemens.co.uk/mobilecomms