Rail-Bound Rail Flaw Inspection System

Key Features

The Rail-Bound Rail Flaw Inspection System includes the following key features:

- Test carriage with several wheel probe options, containing:
  - Transducers, including enhanced side-looking transducers for VSH (vertical split head) detection
  - Water, electric, and pneumatic controls
- Operator control console
- Ultrasound couplant delivery system
- Fully integrated Windows operating system with redundant data collection and storage
- GPS tagging of car movement and defect location
- Adaptive learning and feature extraction tools
- Dual inspection modes for decision making and defect detection
- Forced operator acknowledgement of all anomalies
- Ability to handle inspections at vehicle speeds up to 60 km/h.

Provides real-time assessment of wheel flaws.

Use your smartphone to scan this code for more information.

Rail vehicle with installed rail flaw detection system

Real-time assessment of rail flaws

The Rail-Bound Flaw Inspection System is designed to be installed on rail-bound vehicles for field testing of rail at vehicle speeds up to 60 km/h. The system automatically inspects both rails simultaneously and is capable of accurately locating defects through GPS coordinates and reported mileage to the thousandths of a mile.

The testing carriage is lowered using the operator control console, positioning the wheel probes correctly over the rail to ensure that accurate ultrasound measurements can be made. Water, electric, and pneumatic controls handle the coupling, gauge, cant, lateral, and up/down functions to further control placement. The carriage design handles auto alignment, or centering, of the wheel probes on the rail web, with automatic positioning adjustments as the vehicle travels on the track.

The system then provides real-time assessment and reporting of flaw types, flaw sizes, and flaw locations that appear in the rail.

Digital signal processing

The Rail-Bound Flaw Inspection System also features 24-, 32-, or 48-channel digital signal processing (depending on customer needs), allowing real-time sequential data processing, improved signal-to-noise ratios, and higher testing speeds with fewer false positive test results.

Recordable test results

Test results are fully recordable, meaning you can store, evaluate, and compare results at a later time. Nordco can also create reports for uptime, movement, defect details, and more.

Dual Display Formats

Nordco's Windows-based rail flaw inspection software processes ultrasonic data to measure signal amplitude, signal time, and distance traveled. Operator-controlled functionality includes channel gates, gains, and thresholds. Two independent display formats are available:

- **Strip Chart Event Recorder format** - quickly shows potential defects using channel patterns. Typical data responses appear on the three main channels; any indications on other channels potentially mean a possible defect.

  Operators monitor the channels on the strip chart, watching for indications outside the main channels. When a flaw indication appears, operators re-test the rail segment to confirm that the indication is repeatable and consistent. If yes, the operator marks the rail segment for further analysis.

- **Consolidated B-Scan format** - quickly shows a cross-sectional plane view of a rail segment, displayed as a two-dimensional plot. Similar to the strip chart format, typical data responses appear in the main channels area; any indications outside that area potentially mean a possible defect.

  Operators monitor the channels on the B-scan, watching for abnormal indications. When a flaw indication appears, operators re-test the rail segment to confirm that the indication is repeatable and consistent. If yes, the operator marks the rail segment for further analysis.

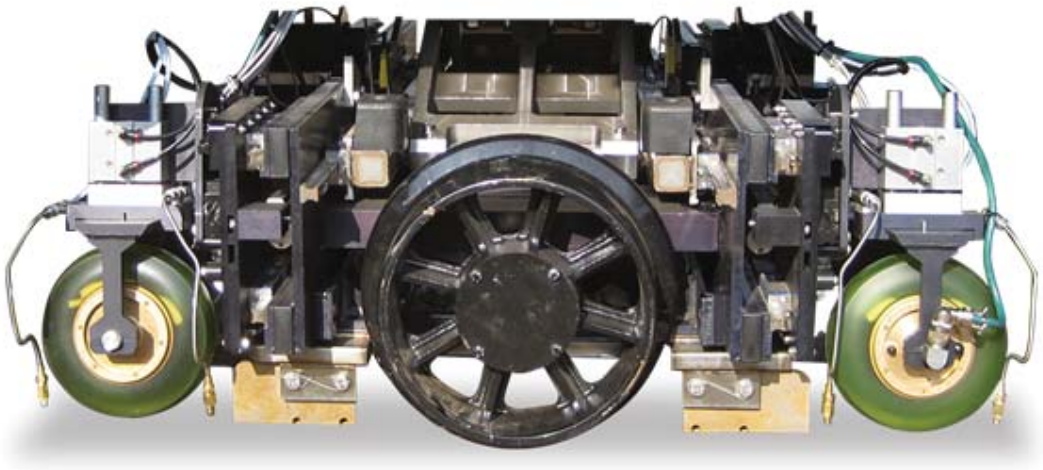
Pattern recognition engine

Nordco's pattern recognition defect recognition engine incorporates multi-level artificial intelligence to recognize common rail conditions, as well as recognize and classify defects. It is an adaptive learning system that adds new defects to the library as they are analyzed, allowing the system to recognize new defects automatically.

On one level, the system recognizes that it has encountered a certain rail structure, such as a joint. Therefore, when there are indications outside that rail structure, the system classifies these outside indications as defects.

On another level, the system looks inside the rail structure, i.e. a joint, to determine if any anomalies appear outside the normal parameters of that rail structure. If yes, the anomalies are displayed separately on the right of the screen, alerting the operator to analyze it more closely.

This multi-level assessment reduces the number of operator errors attributed to fatigue and stress, since it reduces the number of defects that the operator needs to assess. In addition, the adaptive learning capability means that as more defects are assessed, the library of recognizable defects grows for future use.



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