

Pavemetrics

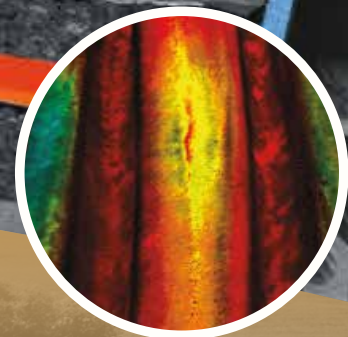
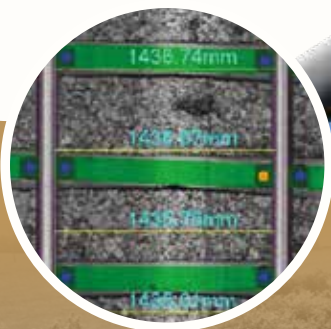


LRAIL

AI-Enhanced Railway Inspection System

KEY FEATURES

- Inspection at speeds up to 180 km/h
- Combined high-resolution 2D imaging and 3D laser profiling
- Day or night-time operation
- Automated railway inspection:
 - Ballast inspection (level and fouling)
 - Track geometry including: gauge width, alignment, cant/cross-level, twist, longitudinal level
 - Rail head wear profiling and surface defect detection
 - Wooden tie assessment (cracking, splits, skew)
 - Concrete tie assessment (cracking, chipping, skew)
 - Joint gap and bar bolt inspection
 - Fastener inspection (missing, loose, covered, damaged)
- Can be mounted on a high-rail vehicle, inspection car or locomotive



Vision Systems for the Automated Inspection of Transportation Infrastructure

Pavemetrics



LRAIL

AI-Enhanced Railway Inspection System

The Laser Rail Inspection System (LRAIL)

is a light-weight and high-speed automated railway imaging and inspection solution. The LRAIL combines 2D imaging, 3D scanning, image processing and Artificial Intelligence to automatically scan and inspect the entire track area including: ballast, ties/sleepers, rail heads and fasteners.

LRAIL sensors are low power, can be mounted on a high-rail vehicle or a dedicated inspection car, and can be operated during both day-time and night-time. The LRAIL can inspect standard gauge, wide gauge, and narrow gauge embedded track, at inspection speeds up to 180 km/h.

The LRAIL's proprietary processing library combines Artificial Intelligence (a Deep Neural Network) and traditional image processing to automatically detect railway features and assess their condition. The learning aspect of the DNN and continual algorithm development by Pavemetrics staff mean that the LRAIL's capabilities are constantly growing.

The LRAIL can provide the data needed to manage track safety as well as support asset management, deterioration monitoring and predictive maintenance. System data outputs include: high-resolution images (JPEGs) with high-lighted defects, 3D scans (LAS), geometry graphs, missing fastener reports, tie condition ratings and much more.



SYSTEM SPECIFICATIONS

- Number of laser profilers: 2
- Motion compensation: built-in IMUs
- Vehicle speed: 0 to 180 km/h
- Profile spacing: 1 to 5 mm (adjustable)
- Transversal field of view: ~3.5 m
- Transversal resolution: ~0.9 mm (4,096 points/profile)
- Depth resolution: 0.1 mm
- Laser profiler dimensions: 428 mm (h) x 265 mm (l) x 139 mm (w)
- Weight: 13 kg per sensor head
- Power consumption (max): 150 W at 120/240 VAC
- IP 65 Rated

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