Realize Sustainable Mobility

NIPPON SIGNAL

Road-Rail Inspection Vehicle

Road-Rail Inspection Vehicle

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Data captured by onboard imaging systems is extracted and analyzed on wayside equipment, with AI assisting in condition assessment.

Challenges for railway operators

- Declining workforce
- Inspection of railway trackside equipment is currently carried out on-site by workers

Transforms ground-based inspections of trackside equipment into onboard inspections.

Onboard inspection system implementation

Enabling nighttime inspections

Utilizes cameras and near-infrared lighting for image capture even at night.

AI supports detection

abnormalities difficult to capture with sensors.

Integrated with ATP and rail inspection

Inspection of ATP ground transponders and trackside equipment around rails

Supports asset management

Linking location data with equipment ledgers.

Road-Rail Inspection Vehicle

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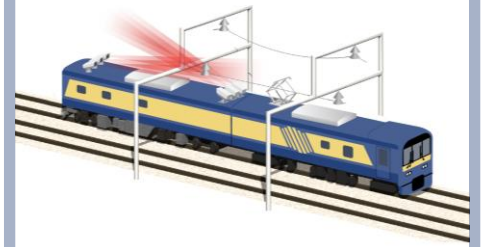
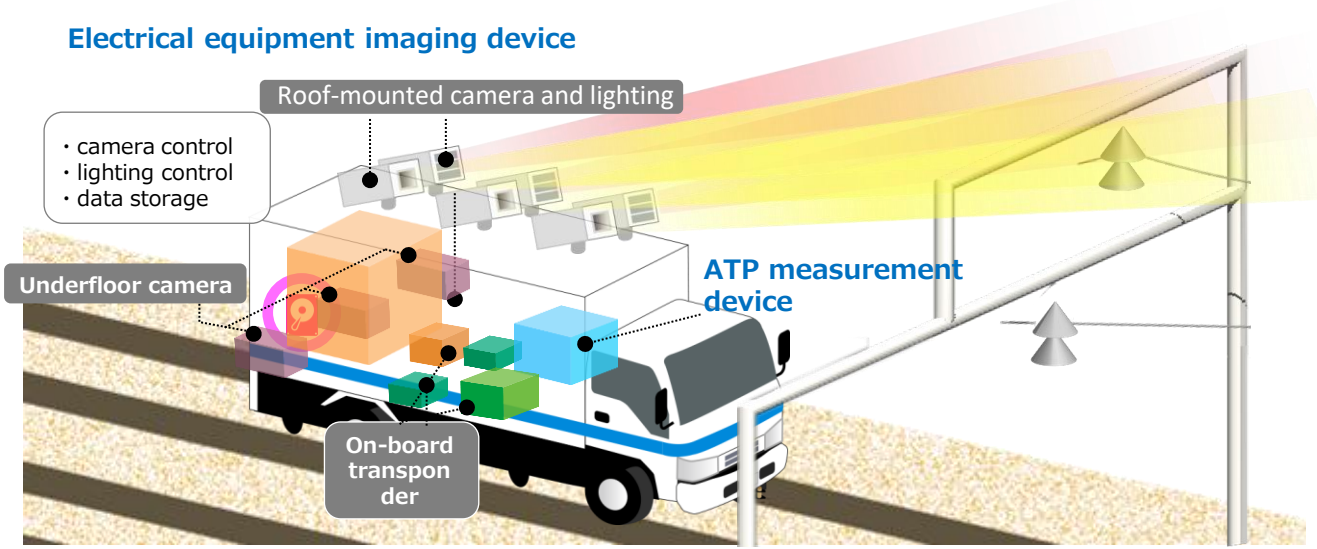
Miniaturizes comprehensive inspection vehicle functions and mounts them on a road-rail vehicle.

Inspection Vehicle



Road-Rail Inspection Vehicle



Road-Rail Inspection Vehicle

Inspection method

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Inspection method: Images captured onboard are analyzed on ground equipment and utilized via cloud services.

Integrated with asset management ledgers

GIS systems

NS Cloud Services

Traio

NS Cloud

Data Utilization

Equipment ledger / GIS ledger

Data

Wayside Traio Device

Analysis terminals can be selected from on-premise servers, edge PCs, or cloud options

AI Extraction → Location Identifi-cation → AI judgement → Inspected Data

Vehicle Camera and Controller

Rail-Road Inspection Vehicle

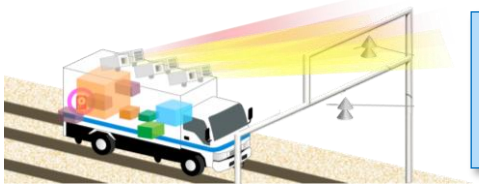

Image Data

Road-Rail Inspection Vehicle

Example of captured images

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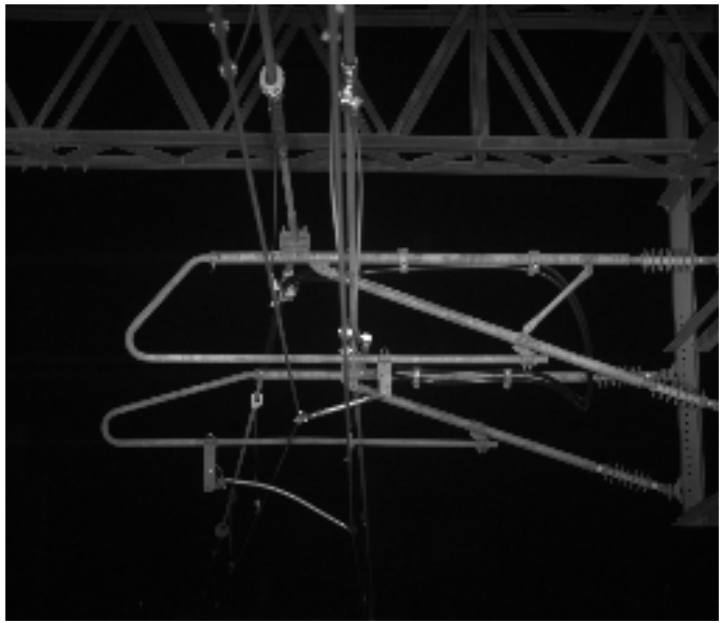
Roof-mounted camera

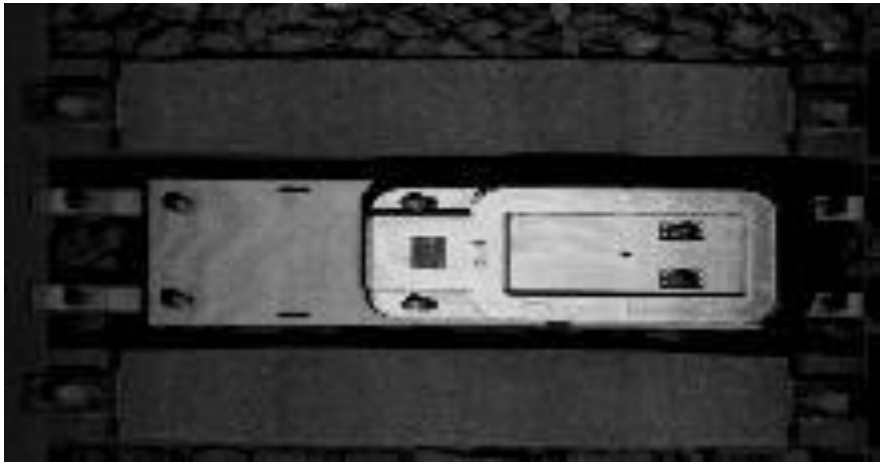


Adjustable bracket

Side-mounted camera

Concrete pole

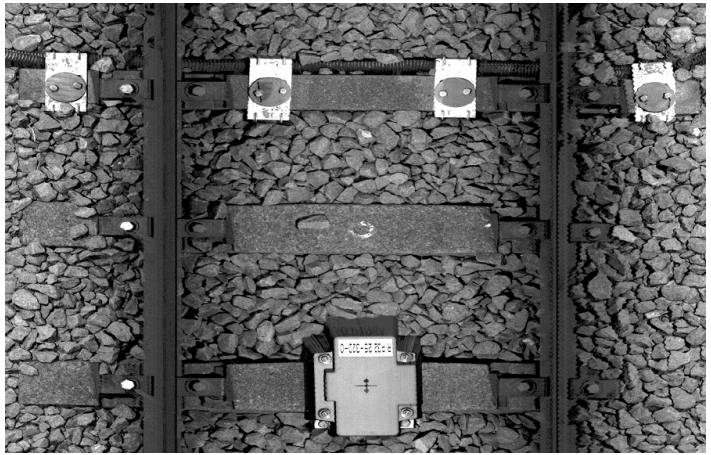
Underfloor camera



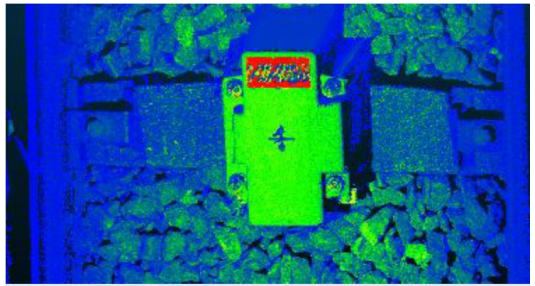
Trackside transponder

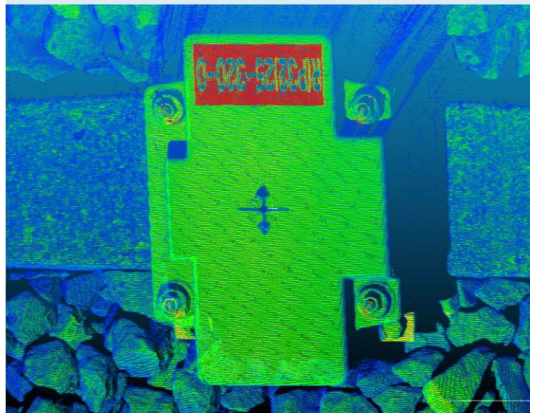
Rail bond

Underfloor camera

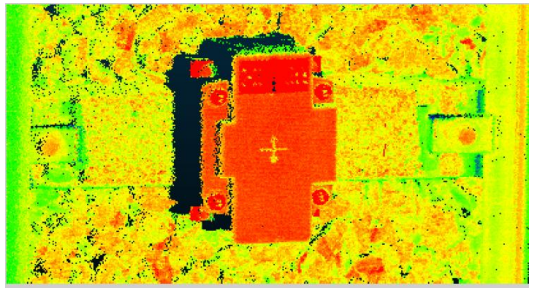


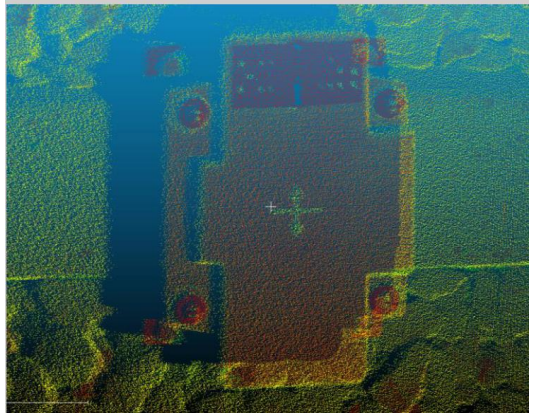
Processed data





3D camera
(used in this system)





LiDAR sensor