

rip® Railcar Inspection Portal



Railcar Inspection Portal

Overview

The Railcar Inspection Portal (**rip**®) is an intelligent imaging system that provides real-time, high-resolution, 360-degree imagery of railcars at speeds up to 120 mph. Machine-learning algorithms perform image analysis to automate maintenance inspection and security monitoring of freight and transit railcars.

The system increases operational safety and greatly decreases inspection costs while providing advanced information to streamline maintenance workflows.

Traditional Inspections

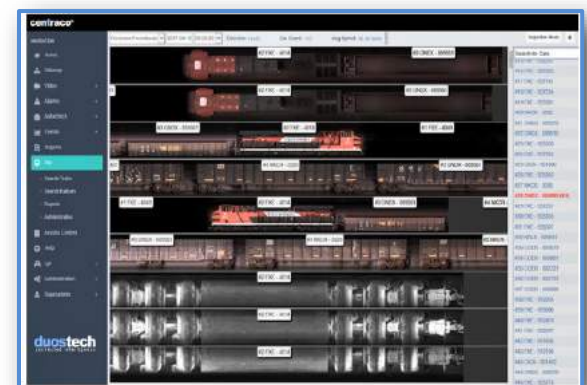
Traditional inspections of railcars and locomotives are a dangerous but vital element of railway safety. Trained mechanical teams often perform inspections in challenging conditions. Rail companies need safe, reliable networks yet need to control operating expenses. Inefficient inspection processes can result in excessive dwell times where trains sit idle when they should be producing revenue.

Automated Inspections

The Railcar Inspection Portal automates the inspection process and provides mechanical teams with the latest technology to improve and optimize railcar inspection workflows. These systems ultimately reduce online failures due to mechanical defects, improve yard and network velocity, and make railroads more safe and secure.

How It Works

Multiple imaging and sensing systems work together to create a high-resolution 360° image of each passing railcar. These images are interpreted by machine-learning algorithms and sent to the centralized command and control software platform, **centraco**®. Operators use this software to perform desktop inspections of railcars and review anomalies that have been flagged by the system, without having to stop trains and schedule inspection teams.



Centralized Command and Control Software

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Duos Technologies provides a broad range of sophisticated intelligent technology solutions with an emphasis on mission critical applications.

We combine an innovative business philosophy with a focus on customer service.

Our specialty is the development and delivery of turnkey solutions for rail-centric critical infrastructure systems.

All products, systems and solutions are backed by a 24 x 7 x 365 global training, maintenance and service program.

System Features

- 360° ultra-high-resolution images of the consist including top, sides, and undercarriage
- Inspections at speeds of up to 120 mph, 365 days per year in all weather conditions
- High-intensity LED lighting system
- AEI integration to match searchable images to AEI consist data
- Virtual security fencing around the portal installation site
- Centralized command and control software for remote inspection workflow automation
- Easily integrates with existing wayside software and systems



Portal Subsystems

- Top panorama system
- Side panorama systems
- Vehicle Undercarriage Examiner (**vue**®)
- Linear speed sensor
- Car cutting subsystem
- Virtual fence subsystem
- Core head-end equipment subsystem
- Portal canopy
- **centraco**® Command and Control software

Inspection Algorithms

Our A.I. inspection algorithms are designed to meet AAR and CFR regulations for mechanical defects. These algorithms deliver on our promise of safer, more efficient railroads.

A small sample of our algorithms include:

- Open or missing doors and hatches
- Low-hanging air hoses
- Hazmat placard OCR identification
- Railcar OCR identification and classification
- Train rider detection
- End-of-train detection

