

RAILCAR INSPECTION PORTAL (RIP®) TECHNOLOGY

Duos Technologies, Inc.

Operating at track speeds up to 125 MPH, Duos systems capture 360° high-resolution images of every railcar and instantly make them available for review from anywhere 24/7/365. Advanced AI with Machine Learning (ML)/Machine Vision (MV) which models automatically detect anomalies and defects, delivering results in an average of **60 seconds**."



360°
Coverage



AI/ML/MV
Detection



60-Second
Results



HOW OUR SYSTEM WORKS

1

Railcar Arrives
at Gantry

2

Cameras/Sensors
Capture 360° images

3

AI/ML/MV Detects
Anomalies & Defects

4

Real-Time Alert
to Inspector



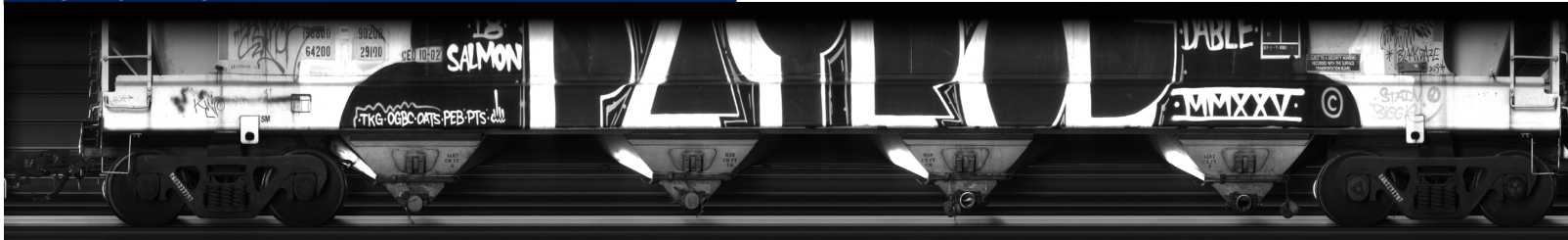
Real-Time Results on
CENTRACO®

360° CAPTURE ZONES — REAL SYSTEM IMAGERY

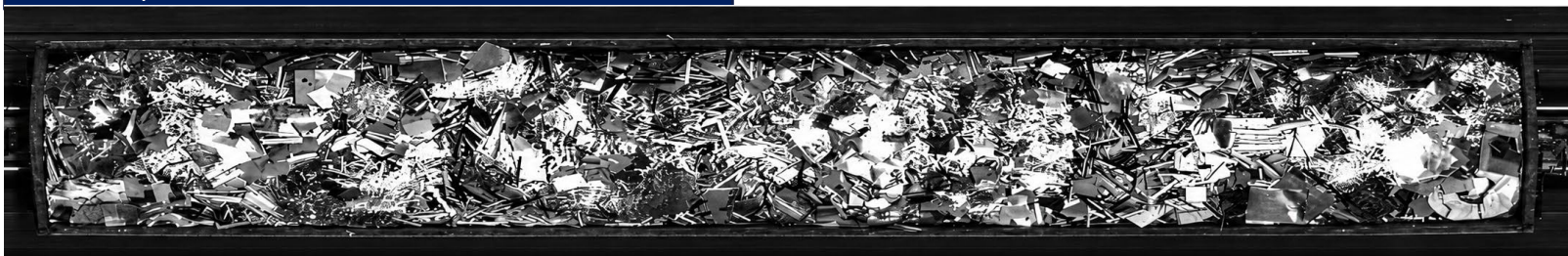
SIDE PANORAMA



LOWER SIDE PANORAMA



TOP VIEW / COVER PLATE



SYSTEM CAPABILITIES

- 360° railcar capture at track speed ✓
- Top, side pano, lower side pano, VUE ✓
- Thermal + visible light imaging ✓
- AI/ML/MV anomaly & defect detection ✓
- Results delivered in avg. 60 seconds ✓
- Edge + cloud processing available ✓
- Operates at speeds up to 125 MPH ✓

VUE® — VEHICLE UNDERCARRIAGE EXAMINER



KEY BENEFITS

- Reduce derailments & unplanned outages
- Detect defects before they become failures
- Improve inspector productivity & safety
- Digital records & full traceability
- Scalable across multiple sites

MOBILE RAILCAR INSPECTION PORTAL (mRIP®)

The Mobile Railcar Inspection Portal (mRIP®) provides flexible, real-time railcar inspections with rapid deployment, using AI and machine vision analytics to deliver actionable data that enhances safety and operational efficiency.

Duos Technologies, Inc.

BENEFITS

- 

Prevent Dwell Time



No Gantry Modifications
- 

Improve Safety



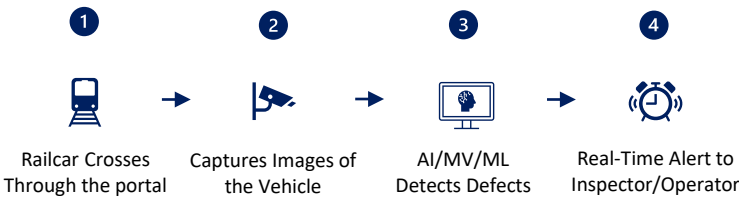
No Vehicle Modifications
- 

Increase Operational Efficiency

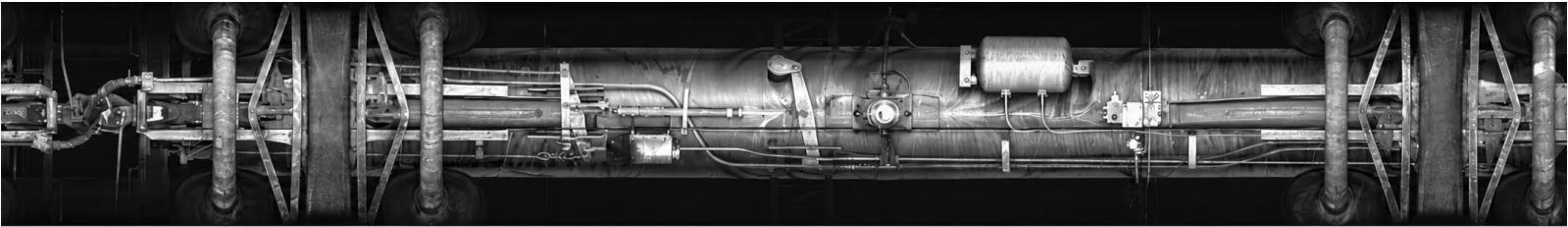


Vision-Only Solution

HOW THE SYSTEM WORKS

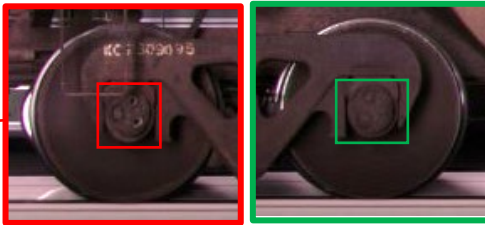


THE VUE® (VEHICLE UNDERCARRIAGE EXAMINER)

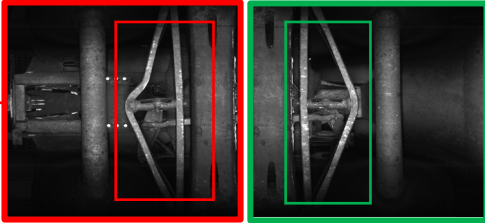
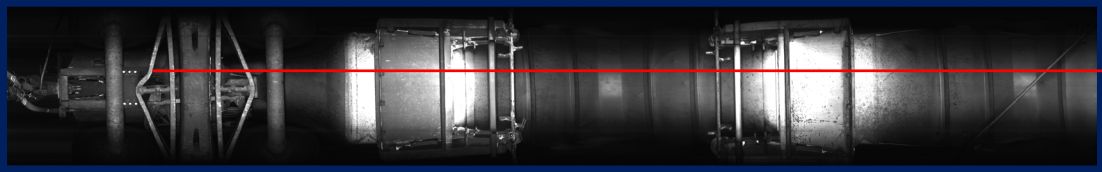


AI ANALYSIS EXAMPLES

ARR / FRA Reference: AAR – Rule 36 (Roller Bearings) | 49 CFR Part 125



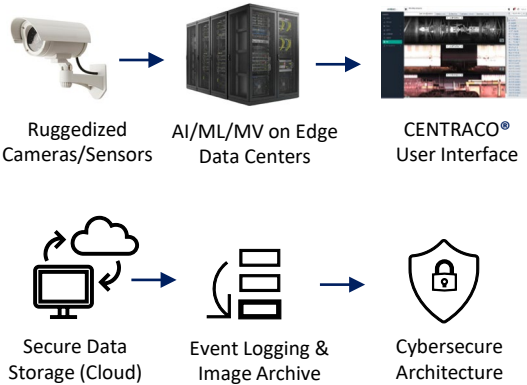
ARR / FRA Reference: Rule 7 (Brake Beam, Hangars, Brackets, Wear Plates & Break Connection Pins, Hangar Pins, or Bolts) | 49 CFR Part 232



ALIGNMENT WITH YOUR REQUIREMENTS

- Low false-positive rates through Duos' proprietary Human-in-the-Loop AI training ✓
- Built for all-weather operation ✓
- Portable, rapidly deployable solution ✓
- No permanent installation required ✓
- High-resolution railcar imaging ✓
- AI-assisted defect detection ✓
- Real-time inspection results ✓
- Comprehensive undercarriage inspection ✓
- Seamless workflow and API integration ✓

SIMPLIFIED SYSTEM CONFIGURATION



KEY BENEFITS

-  Reduce loading-related spill incidents
-  Decrease manual valve inspections
-  Provide digital records & traceability
-  Improve operator safety & efficiency
-  Scalable across multiple sites

BUILT FOR REAL-WORLD INDUSTRIAL ENVIRONMENTS

-  Weather resistant
-  Day/Night operation
-  -40C to +40C operating temperature
-  Ruggedized & sealed hardware
-  Capture at truck speed
-  Quick to install
Minimal disruption