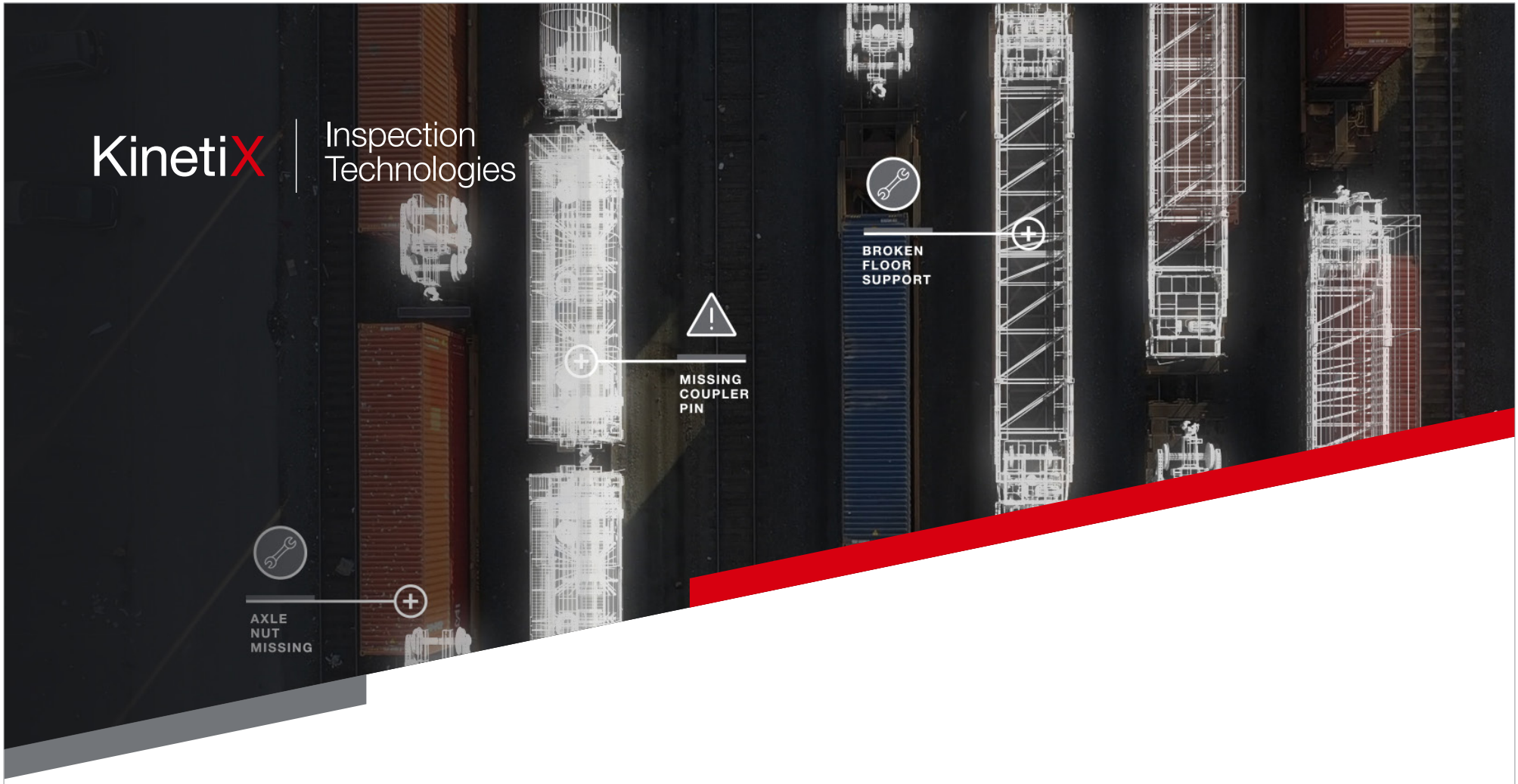


KINETIX INSPECTION TECHNOLOGIES

Keeping railway assets **in motion**

Wabtec CORPORATION

KinetiX | Inspection Technologies

How can you make your operation faster and more efficient while helping to ensure optimal performance and safety?

In today's challenging environment, many railroads struggle with asset condition, situational awareness, and a workforce in transition.

RAIL OPERATORS NEED THE ABILITY TO

Streamline inspections and operations:
Automate inspections. Improve accuracy.

Increase asset reliability and availability:
Preempt issues. Maximize workforce. Reduce cost.

Improve safety and compliance:
Mitigate incidents. Protect personnel.

Increase situational awareness:
Maintain visibility. Execute efficiently.

IMPROVE ASSET PERFORMANCE, REDUCE MAINTENANCE COSTS, AND MINIMIZE TRAIN DELAYS.

Railroads worldwide face a common challenge: how to maximize the operational availability and reliability of rail assets while minimizing costs. Within every trip, there are hundreds of variables that when not maintained properly, can reduce fuel efficiency, shorten maintenance intervals, degrade asset life, or even bring the mission to a complete halt, resulting in costly network delays and service interruptions.

KinetiX Inspection Technologies delivers the next generation of automated rolling stock and infrastructure monitoring, inspection, and maintenance optimization.

WAYSIDE

Identify and manage the factors impacting asset reliability – automatically.

KEY TECHNOLOGIES

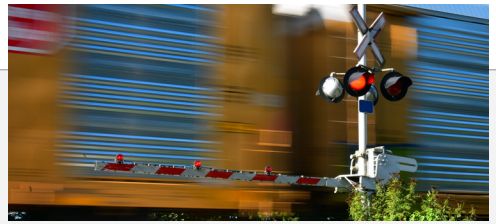
Advanced vision systems

Bayesian image processing

Acoustic sensors

Thermal sensors

Vibration sensors



CROSSINGS

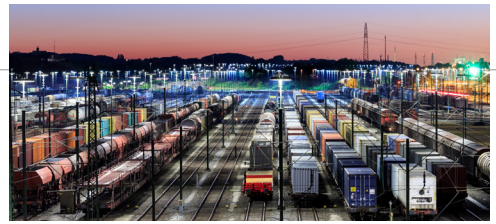
Monitor crossing equipment with real-time data and powerful analytics.

KEY TECHNOLOGIES

Existing PTC telemetry data

Smart crossing data recorder

Communications to back office without needing WAN



YARD

Track and trace railcars/containers in the yard. Execute plans in response to operational conditions.

KEY TECHNOLOGIES

Advanced vision systems

Edge computing

AI models & algorithms

KinetiX | Inspection Technologies

01

REDUCE TRAIN DELAYS

Increase the reliability and availability of rolling stock assets through automatic measurement and inspection at track speed.

02

EXPAND VISIBILITY IN THE YARD

Give your crew a new set of eyes and reduce time spent looking for information with real-time railcar and container status.

03

INCREASE WORKFORCE PRODUCTIVITY

Streamline and automate inspections through continuous condition monitoring with machine vision, powerful sensors, and AI-driven analytics.

04

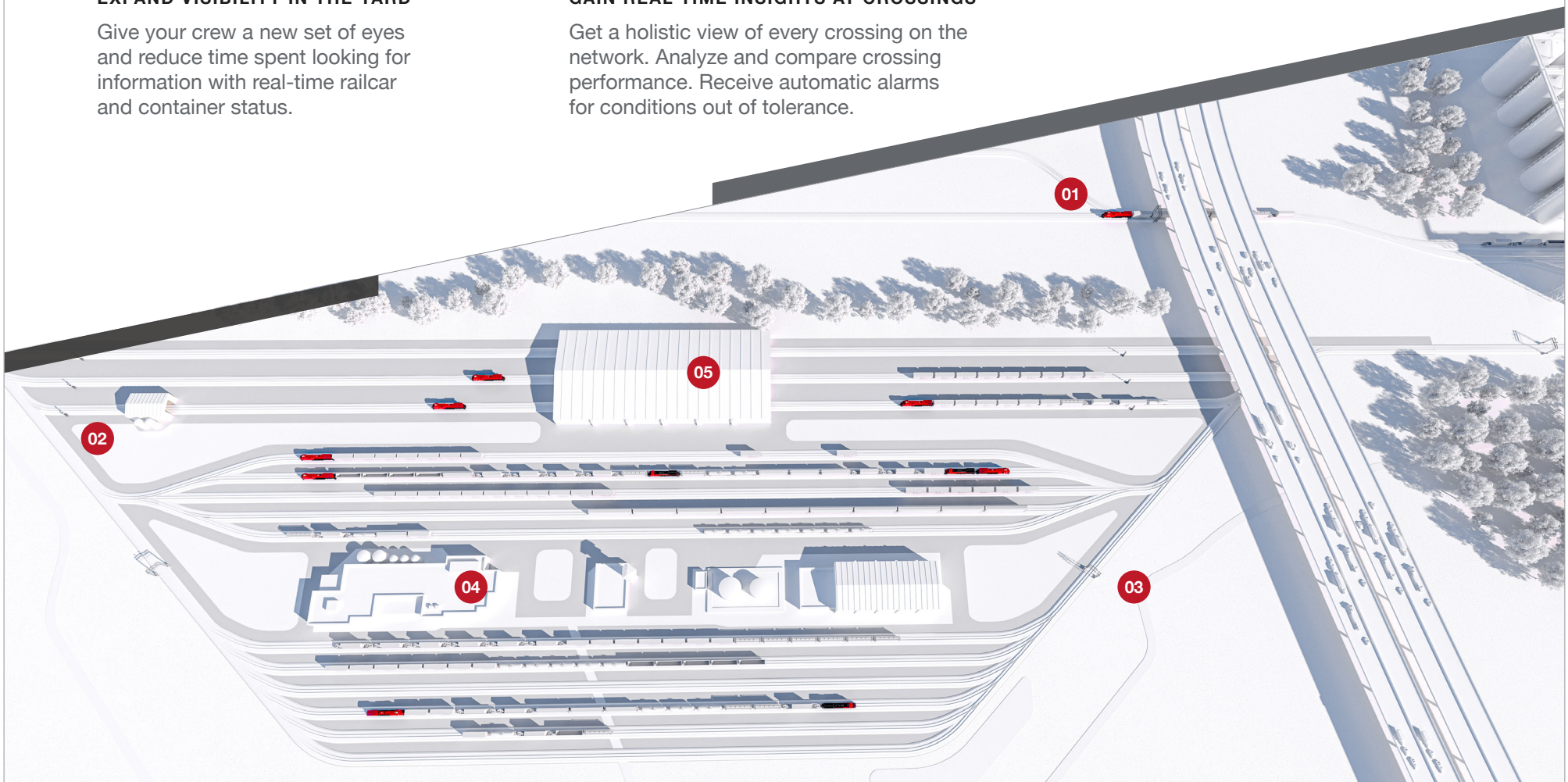
GAIN REAL TIME INSIGHTS AT CROSSINGS

Get a holistic view of every crossing on the network. Analyze and compare crossing performance. Receive automatic alarms for conditions out of tolerance.

05

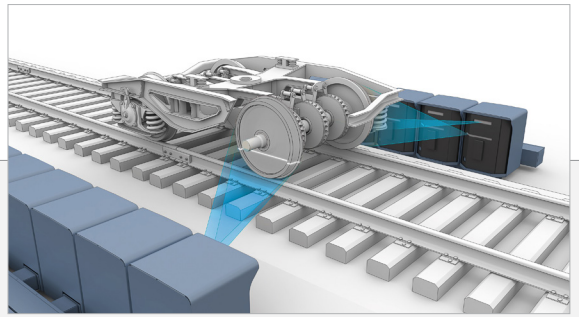
BOOST OPERATIONAL EFFECTIVENESS

Empower your workforce and optimize the life cycle of critical assets with web-based access to data visualization, alarm management, and analytics.



Solutions Showcase **Machine Vision**

Wayside Inspection



WHEEL SURFACE INSPECTION

TreadView®

Shelled and spalled tread

Major scrapes, dents, and gouges

Broken/missing wheel sections

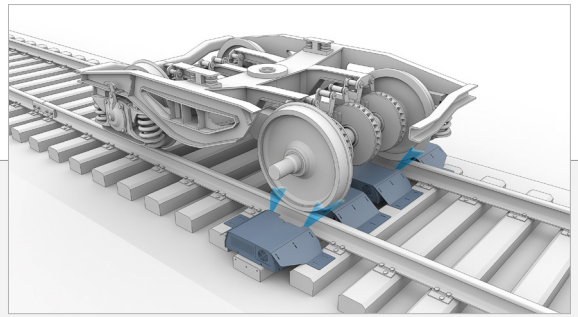
Shattered rim

Broken /damaged flange

Wheel flats and slid flats

Built-up tread

Tread groove



WHEEL PROFILE MEASUREMENT

WheelView®

Full wheel profile

Flange height

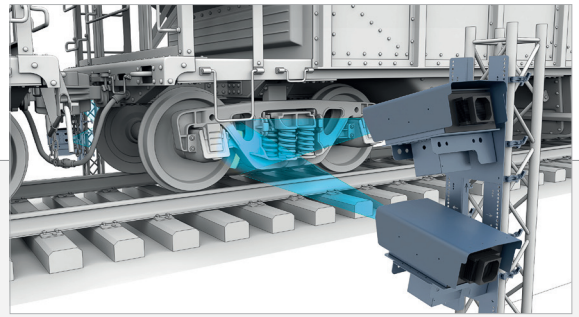
Flange width (thickness)

Flange slope

Tread hollow

Rim thickness

Back-to-back (B2B)



BRAKE INSPECTION AND MEASUREMENT

BrakeView®-Shoe

Shoe thickness in top and bottom positions

Shoe wear profile

Shoe position with respect to the wheel surface

Missing key detection

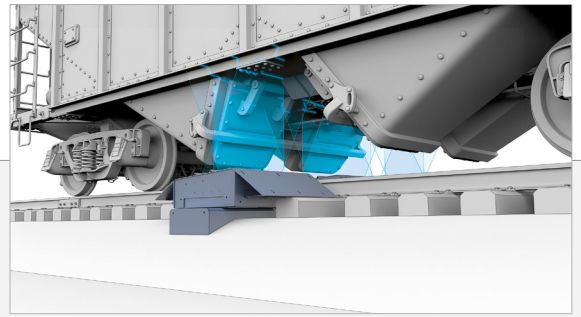
Missing shoe detection

Shoe securement key length

Example measurements and inspection

Solutions Showcase **Machine Vision**

Wayside Inspection



RAILCAR STRUCTURAL
COMPONENTS + UNDERCARRIAGE

CSCView®

Floor support inspection

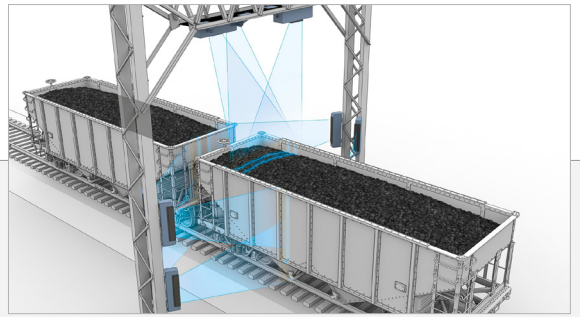
Center sill crack detection

Brake beam inspection

Missing bolt(s) detection: coupler and draft gear carrier plates

Missing knuckle pin detection

Missing uncoupling lever detection



FULL SCALE TRAIN IMAGING & INSPECTION

TrainView®

Wagon tag identification

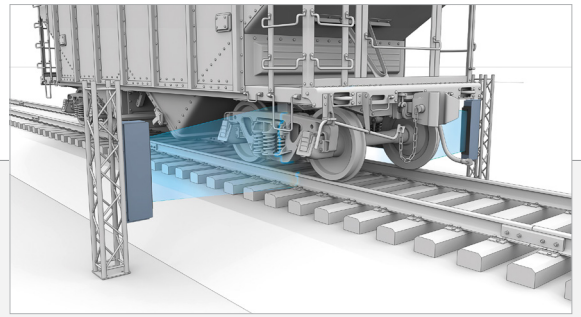
Missing/damaged reflective decals detection

Missing label holder detection

Missing brake wheel detection

Missing/broken shedding shields detection

Bent top chord detection



PANTOGRAPH INSPECTION

TruckView®

Wedge height

Bolster height

Spring nest height

Spring inspection

Missing bearing cap and cap bolts

VTA valve inspection

Missing R-clip and clevis pin detection

Example measurements and inspection

Solutions Showcase
Acoustic, Thermal, and Vibration Monitoring

Wayside Inspection

BEARING ACOUSTIC MONITOR

RailBAM

Axle bearing faults

Beam forming technology

Multiple bearing classes

Axle count

Aar rules compliant

Early and consistent fault detection

Fleet-wide data

IB variant targets:

- Inboard axle journal
- Gearboxes
- Suspension/u-tube bearings
- Traction motors

WHEEL CONDITION MONITOR

WCM®

Wheel impact detection

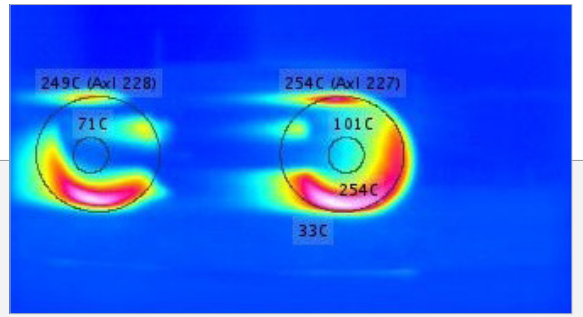
Weight measurements for wheel, axle and vehicle

Reporting overloading at different levels

Vehicle end-to-end (ETE) and side-to-side (STS) imbalance

Detection and reporting of poor wheel load distribution

Detail surface defect detection via imaging systems (optional)



ANALYTICS APPLIED TO THERMOGRAPHIC IMAGES

ThermalCAM

Generates thermographic images of trains

Outputs bearing and wheel temperatures allowing hot/cold wheel detection

Provides an image and a wider field of view compared to traditional HBWD devices, allowing temperatures of other components to be measured

Application exists for hot tires/wheel hubs of mining trucks

Example measurements and inspection

Wabtec CORPORATION

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