

Automated Train Wheel Inspection System (WIS)

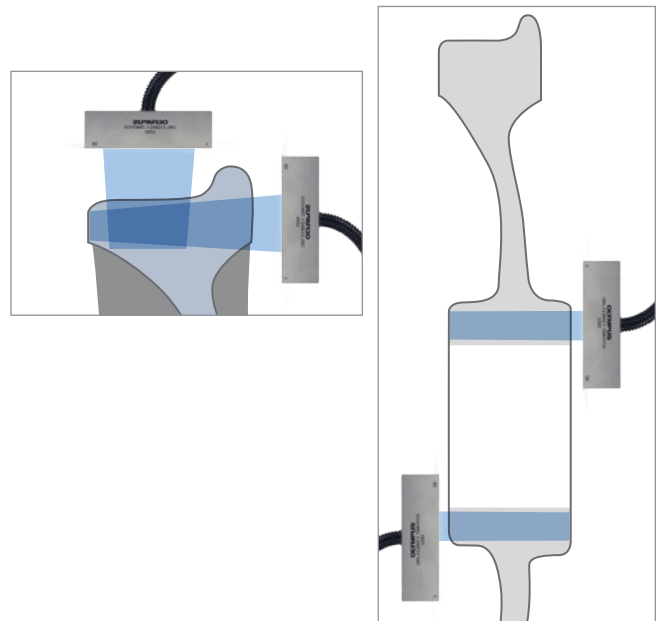


Train wheels are made of one of several accepted steel grades with the required hardness and using two main manufacturing processes: forging or casting. Train wheels have different diameters, profiles, and weights, depending on the railroad they are to be used on. To help prevent railway accidents, the requirements and standards governing the quality of railway wheels are increasingly demanding.

Olympus' fully automated Wheel Inspection System (WIS), featuring ultrasonic phased array probes, enables manufacturers to inspect train wheels in under a minute. The WIS is built to meet the most stringent international standards and inspection requirements in wheel manufacturing. The Wheel Inspection System simultaneously inspects the tread and the face of the rim as well as the inner and outer faces of the hub.

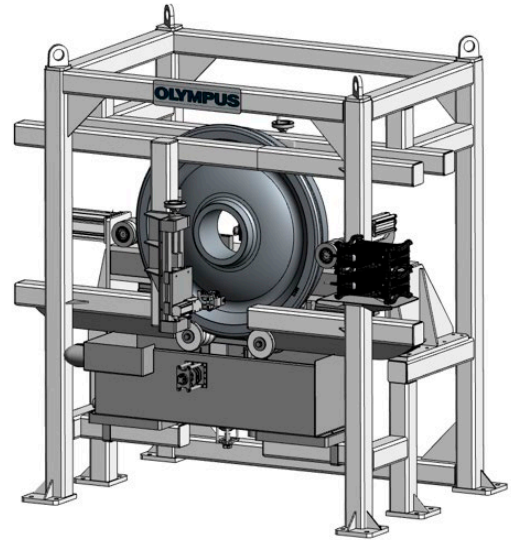
The system detects the typical defects found in train wheels:

- **Rim face volumetric defects**
Equivalent to 1 mm–3.2 mm diameter flat-bottom holes (FBHs) with a near-surface resolution of 5 mm–6 mm
- **Rim tread volumetric defects**
Equivalent to 1 mm–3.2 mm diameter flat-bottom holes (FBHs) with a near-surface resolution of 5 mm–6 mm
- **Hub inner and outer face defects**
Equivalent to 2 mm diameter flat-bottom holes (FBHs) with a near-surface resolution of 5 mm–6 mm



WIS Automated Solution Advantages

- Dedicated software for simplicity of use
- Instrument scalability for improved productivity
- I/O OPC for exchanges with the production line
- Rollers remain out of the water, preventing wearing and simplifying maintenance operation
- Stability of the wheel handling mechanism optimizes the inspection cycle time
- Retaining arms avoid shock to the rollers, minimizing misalignment and frequent mechanical adjustments
- Onboard electronics reduce the probe cable length



System Performance

Standard Product Range	Type	Cast steel wheel Forged steel wheel
	Diameter	60 cm–124 cm (24 in.–49 in.) wheels
	Speed	Typically 100–200 mm/s (4 in.–8 in./s)
	Coverage	Rim from tread and one face Hub inner and outer faces (option to inspect the web upon request)
Data Presentation	Real-Time Inspection Results	C-scan, A-scan, B-scan, and alarms
Inspection Modes	Typical Inspection Modes	Longitudinal waves
Detection Capabilities for Typical Reference Defects	Repeatability	Volumetric defects: 1 –3.2 mm diameter flat-bottom hole (FBH) with a typical dead zone of 5–6 mm
	Standards	EN13262, ISO5948, AAR M-107/M-208
Reporting and Data Storage	Report Types	Inspection, calibration, and calibration-check user-configurable reports
	Storage	Real-time database inspection data storage

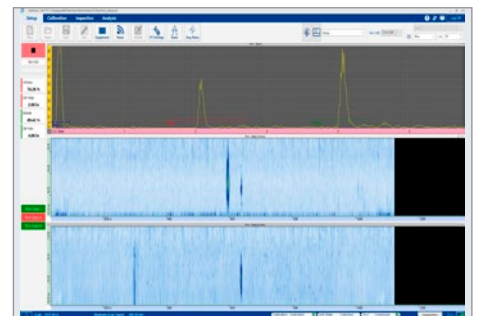
This solution is powered by



FOCUS PX Acquisition Units



Olympus' Phased Array Probes



RailView Software

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OLYMPUS

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