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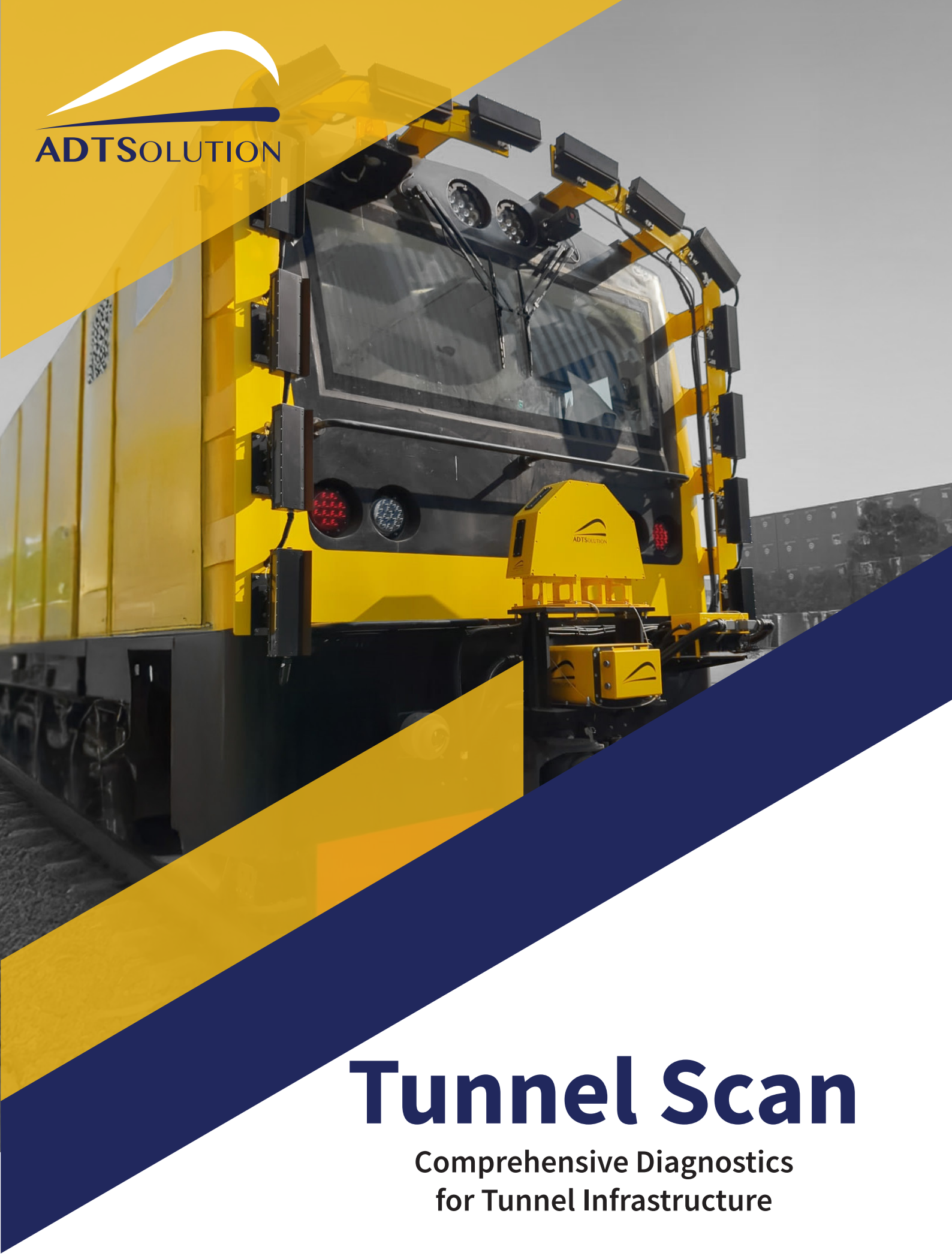
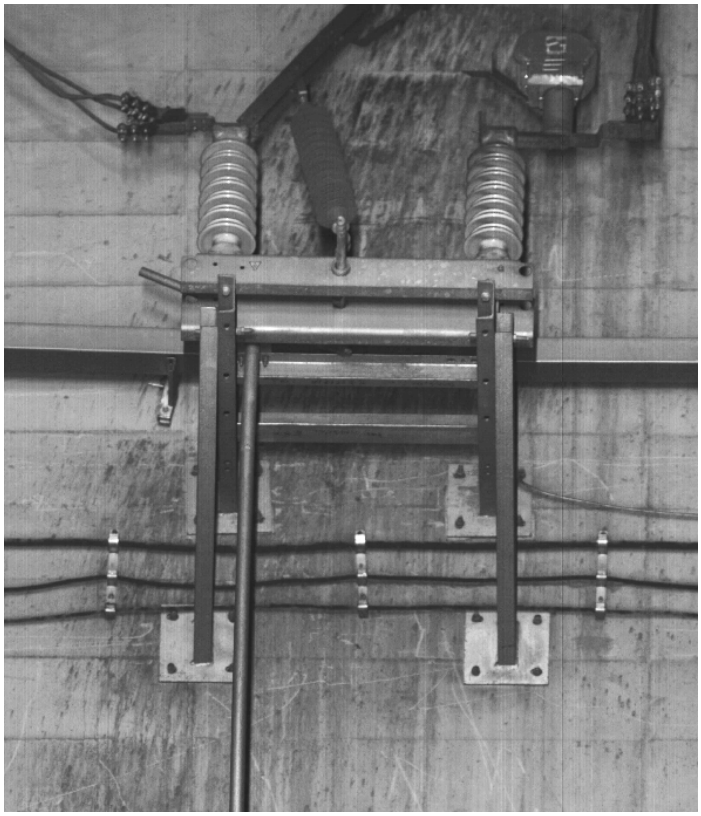


Tunnel Scan

Comprehensive Diagnostics for Tunnel Infrastructure

The Tunnel Scan (TS) System takes railway tunnel inspection to a new level of information quality and completeness, providing high-resolution imaging and 3D profiling in a single pass.

The TS system scans tunnel walls with 1 mm resolution, both longitudinally and transversally, at speeds up to 60 km/h. The entire structure is captured in one sweep, ensuring efficient and complete data acquisition.



Performances

Max speed	**Up to 60 km/h**
Sampling Step	**1 mm**
LED Light	**1600 W**
Vision System	**18000 pixel**
Max Target Distance	**9 m**

Advanced Lighting System

The lighting system, developed specifically for tunnel inspection, consists of high-power LED bar lights arranged along the vehicle's profile.
This configuration ensures uniform and high-quality illumination, enabling clear image acquisition even at high speeds and in low-visibility conditions.

ADTS Srl
Via Antonio Pacinotti, 24 - 30033 Noale (VE) - Italy
info@adts.it - www.adts.it

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AI-Powered Analysis

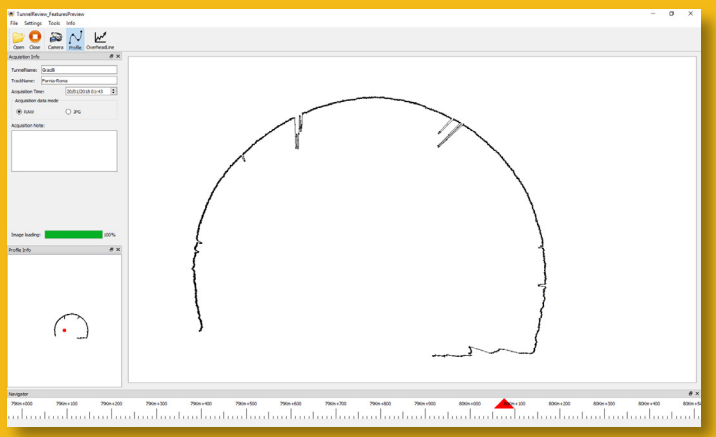
By combining high-speed linear cameras, laser scanners and AI diagnostics, the system automatically detects and classifies:

- Water leakage and wet surfaces
- Cracks
- Aggregate exposure
- Pop-outs
- Joint percolation
- (Optional) Thermal anomalies via the Thermal Inspection System (TIS)

Structural Measurement and Profiling

TS performs a full 360° scan of the tunnel's transverse profile, allowing:

- Automatic clearance and gauge analysis
- 3D reconstruction of internal tunnel surfaces
- Early detection of potential structural threats through data correlation



Applications

- Railway tunnels
- Metro systems
- Bridge underpasses
- Undeground passages and galleries

Compatible with both rail-bound vehicles and road-rail vehicles.

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