

Laser Tunnel Scanning System

LTSS

Automated 3D Inspection of Tunnel Linings

- 1 mm resolution images and 3D data

- Scanning speeds up to 50 km/h

- Measurement of concrete slab alignment

- Full vault scanning

- 100 times faster and 10 times more accurate than LiDAR scanning

- Measure tunnel features with sub millimeter accuracy

- Detection of cables, light fixtures and other tunnel hardware



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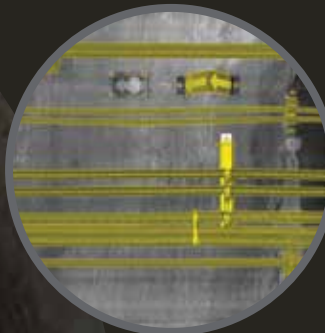
LTSS

The **Laser Tunnel Scanning System (LTSS)** uses multiple high speed laser scanners to acquire both 2D images and high resolution 3D profiles of tunnel linings. This system can scan a full tunnel vault (24 m) at 1mm resolution image and 3D data at acquisition speeds up to 50 km/h.

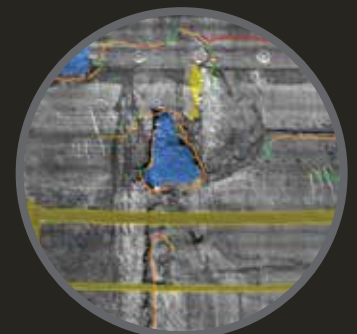
Once digitized, the tunnel data can be viewed and analyzed online by operators using high-resolution 3D viewing and analysis software that allow the high precision measurement of virtually any tunnel feature. Automatic analysis software is available to detect cables, cracks and chips.

Using the LTSS, vaults are scanned in two passes; one half of the vault is imaged while scanning in one direction of travel and the other half is imaged while driving in the opposite direction. The two passes are automatically stitched together.

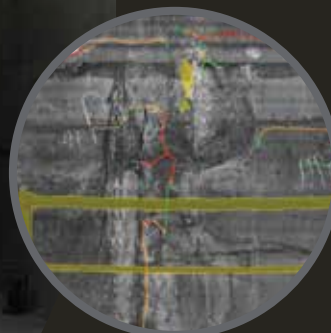
The LTSS technology has been used successfully to scan a variety of tunnel systems around the world including the London Tube in the United Kingdom, and the 28 km long Guadarrama high-speed TGV rail tunnel in Spain which was scanned at a resolution of one millimeter (x,y,z) in just three hours.



Hardware Detection



Chip Detection



Crack Detection