

# Leica TMS Tunnel Measurement System



**Leica TMS – for a stronger team  
in tunnel construction!**

## Leica TMS Tunnel Measuring System

- Automatic setting out
- "24h surveyor" for non-stop tunnelling
- Spot-on results in real time
- Highly detailed inventory documentation
- Automatic evaluation routines

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- when it has to be **right**



# Tunnel scanning with Leica TMS Detailed tunnel documentation and analysis

## Leica TMS Tunnelscan

Thanks to the latest scanner technology, Leica TMS Tunnelscan produces tunnel documentation to a new high level of quality, at previously unknown measuring speeds. Optimal results for

- Complete profile checks
- Non-destructive layer thickness measurement
- Surface quality checks (undulation)
- Scaled image documentation on tunnel features, work stages and actual condition of structure
- Detailed dimensioning for optimised logistics and billing



## Leica TMS ScanControl

Using the Leica HDS4500 scanner for tunnel surveying, a typical measurement using the Amberg Positioning Method (APM™) provides:

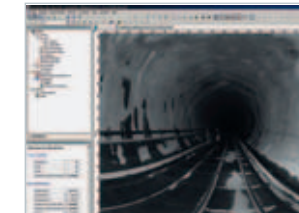
- 12.5 million measured points per set-up < 2 minutes
- 10 x 10 mm grid on the tunnel surface
- Up to 130 m tunnel surveyed per hour

## Leica TMS ScanCloud

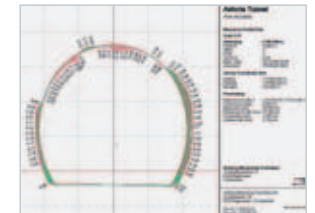
TMS ScanCloud enables automatic analysis of the geo-referenced scan data.

Scan data analyses with Leica TMS means:

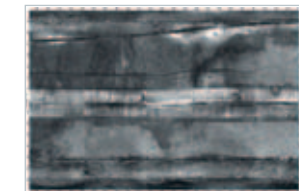
- Central project data in TMS Office
- Automatic evaluation routines
- Tunnel surface analyses using bar or sphere method
- Complete 3D tunnel image and geometrical documentation
- Colour-coded tunnel band mapping of the deviations from the theoretical project specifications
- Automatic determination of quantities including section by section concrete volume calculations



Visual check on raw data



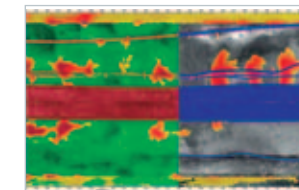
Single profile control



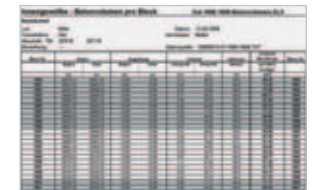
Scaled image documentation



Sophisticated data interfaces



Complete profile check



Calculation of quantities

# Leica TMS Tunnel Measurement System

New: Tunnel scanning module

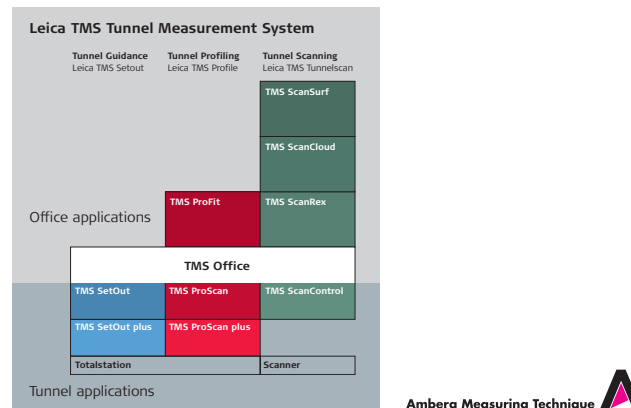


Leica TMS – The universal tunnel measuring system with powerful modules for

- Tunnel guidance
- Tunnel setting out
- Profile measurement
- Tunnel scanning
- Structure dimensions

- when it has to be right

**Leica**  
Geosystems



## Leica TMS Tunnel Measurement System

Developed as a result of the close co-operation between Leica Geosystems and Amberg Measuring Technique, the Leica TMS embodies a unique synergy of tunnel construction and surveying know-how. Practical software modules support demanding tunnelling works with maximum efficiency.



## Leica TMS Setout Automatic tunnel guidance

- Motorised laser functionality for automatic
  - Setting out of excavation profiles and blast pattern
  - Steel arch positioning and profile check
  - Setting out jetting and pipe umbrella
- Automated setting out of banquette, axis and height reference points



## Leica TMS Profile Flexible profile checks

- Automatic 3-D profile checks
- Flexible single profile measurements during tunneling
- Results available in real time
- Powerful reporting



## Leica TMS Tunnelscan Complete tunnel as-built analysis

- Complete profile check
- Layer thickness determination
- Tunnel surface analyses
- Scaled image documentation
- Determination of quantities