Faro Short Story

Firm:	Intermetric
Department:	Geoinformatik
Application:	Tunnel Construction
Area:	Surveying
Technology:	Profile scanning

Faro Product:
- 3D Laser Sanner LS

FARO: User Story

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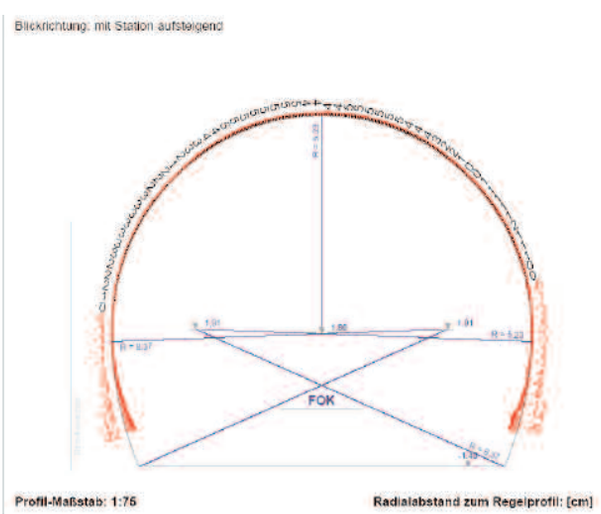
Profile surveying with a 3D Laser Scanner

Application:

Intermetric, employing approximatly 100 surveyors, is one of the largest Geotechnic and Geoinformatic firms in Germany. The standard tools of the trade include tachymeter, GPS receiver and digital level.
In the construction of tunnels the use of 3D Laser Scanners is becoming ever more popular. The application spectrum includes the complete capture to the lining of the tunnel and reconstruction planning through analysis of the profile and the strata excavation, shotcrete application and the internal form. For these applicatins the 3D Laser Scanner from FARO has proved ideal.
A line and profile analysis provides accurate information for the Geoinformatic department allowing algorithm calculation to be developed, which enables a raional analysis of the results of the scan data.



Justification for the use of the scanner:

Only a 3D Laser Scanner is capable of capturing entire object surfaces and profile in such a short time. In addition features such as niches, stalactites even the labelling can be recorded.
With a resolution from 6000 x 6000 points at 120,000 points per second a 4 minute scan captures over 30 million points. Each scan capturing on average 25m of tunnel. During the scan reflectivity data is also captured displaying a 2D image similar to a black and white photograph, as seen below. This is independent to the amount of light available in the tunnel.
Through the use of reference spheres multiple scans can be registered allowing a longer section of tunnel to be captured and the profie of the entire area analysed.

Advantages:

The system can easily be transported, set up and is operational within minutes. The complete system can be transported by hand and the scanner walked from one scan position to another. Therefore every 25 metres a new scan can be made. Through the use of the battery pack the scanner must not be shut down after each scan further speeding up the process, also allowing scans to be made away from a mains power source. This high speed data capture means that disruption to the construction of the tunnel is minimal and that many scans can be made and registered together allowing lenghty profiles to be assessed.

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