

## DIBIT TSC - TUNNEL SCANNER

In 1998 the photogrammetric dibit tunnel scanner system (FSC) revolutionized tunnel surveying. Since then, the system has been continuously developed and improved. The hybrid scanning technology (HSC) originated from the fusion of the laserscanner technology (LSC) in 2003 with the photo technology resulting in today's latest state of the art. Within a

few seconds, a high performance laserscanner, combined with a high-resolution color-camera records the tunnel surface with a grid size from 1 x 1 mm. From this data, the efficient dibit software calculates highly precise true-color textured 3D-models of the scanned tunnel surfaces.



### COMPONENTS

The applied hard- and software components are superbly coordinated. The hardware consists of modular components. It operates in combination with Leica total-stations and the dibit acquisition-software (ACQ).

A variety of system carts allow the use of the tunnel scanners in almost every tunnel environment.

With this modularity and flexibility, projects can be executed with precision at a reasonable price.

#### Hardware

Scanner Modules	FSC 6100-SRmF10 LSC 4200-MRsF1 LSC 4100-SRmF2
Total Stations	Leica TCA1000, 1100, 1200 Series
Carts	Hand Cart Rail Vehicle Car

#### Software

Geoman	Geometry Manager
ACQ	Data Acquisition
AutoDTS	Data Processing
Analyse	Analysis
VISU	Visualisation
Tools	additional Tools

### OUR STRENGTHS

More than 500 Kilometers of Tunnel Scanned

The quality of the system in conjunction with comprehensive know-how and many years of field experience has provided desired results to customers worldwide.

Resolution up to 1 mm

The high data resolution produces a sharp ortho-image of the tunnel surface.

Precision up to 5 mm

The high precision of the 3D-model in lateral and radial direction allows for an exact analysis of as-built components.

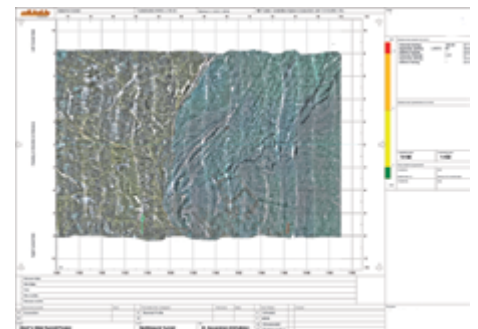
Speed up to 3000 m/hour

The fast pace of the recording process allows for full area recordings of the tunnel surface with minimum downtime.

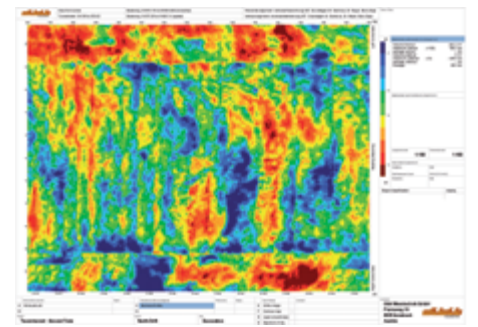
### Easy Handling

The easy handling of the system components enables customers to accomplish measurement on their own.

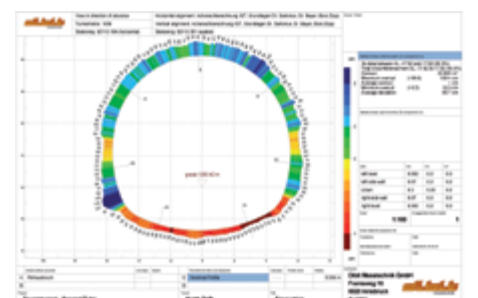
### RESULTS



Ortho images



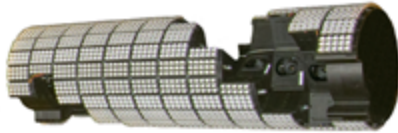
Contour maps



Cross sections

## DIBIT TSC - TUNNEL SCANNER

FSC 6100-SRmF10



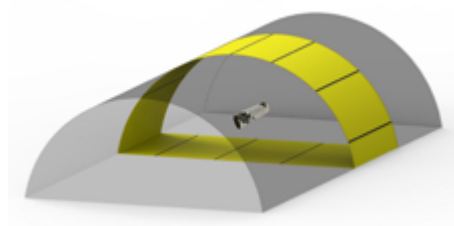
The photogrammetric measuring system FSC 6100-SRmF10 is designed for high-speed survey in tunnel structures. During a continuous movement, the system takes photos of the tunnel surface in a 360-degree-locking manner. High-speed cameras of the latest generation enable a 3D reconstruction, respectively texturing of entire tunnel structures with an unprecedented speed and precision.

### Advantages

- ☐ highest survey performance
- ☐ high-resolution tunnel surface documentation with color-images

### Technical Data

- ☐ photogrammetric measurement unit
- ☐ optional combination with laser scanner pulse method
- ☐ high-speed digital cameras
- ☐ recording range from 1 to 30 m
- ☐ global measuring accuracy:  $\pm 10$  mm
- ☐ recording efficiency: up to 80 km/h
- ☐ resolution: 1 x 1 mm



LSC 4200-MRsF1



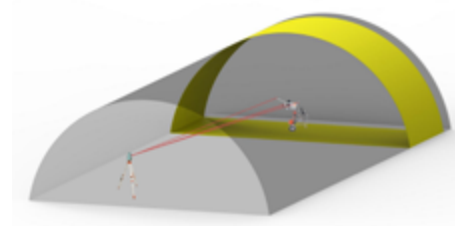
The laserscanner 4200-MRsF1 is optimized for a variety of in-situ assessments. The combination of laserscanner (geometric data) and digital color-camera (surface documentation) allows for a large number of calculations, visualizations and data analysis.

### Advantages

- ☐ optimized relation between precision and recording efficiency
- ☐ short recording time and easy handling
- ☐ quick-processing and instant data treatment on site
- ☐ high precision due to positioning of the scanner module by total station
- ☐ high-resolution tunnel surface documentation with color-images

### Technical Data

- ☐ laser scanner impulse method
- ☐ digital color-camera up to 24 megapixels and a contrast ratio of 1:16383 (14-bit)
- ☐ recording range from 2 to 20 m
- ☐ global measurement accuracy:  $\pm 5$  mm
- ☐ recording efficiency: up to 250 m/h
- ☐ resolution: up to 1 x 1 mm



LSC 4100-SRmF2



The laserscanner 4100-SRmF2 is optimized for use on roads or rails for a variety of in-situ assessments. The combination of high-resolution laserscanner, digital color-camera and dynamic sensors allows for the continuous recording of the tunnel surface during constant movement of the scanner system through the tunnel.

### Advantages

- ☐ high recording efficiency
- ☐ high profile precision:  $\pm 5$  mm
- ☐ high-resolution tunnel surface documentation with color-images
- ☐ robustness and easy handling

### Technical Data

- ☐ laser scanner optical transmitter
- ☐ three 36 megapixel digital color-cameras with contrast ratio of 1:16383 (14-bit)
- ☐ recording range from 1 to 20 m
- ☐ global measuring accuracy:  $\pm 10$  mm
- ☐ recording efficiency: up to 3000 m/h
- ☐ resolution: up to 1 x 1 mm

