

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
FSC 6100-SRmF6
FSC 5100-SRSF1

Total Stations Leica TS50, TM30,
1200 Series

Carts Hand Cart
Rail Vehicle
Car

Software

Geoman Geometry Manager
ACQ Data Acquisition
Dibit 7/8 Data Processing
Analysis Visualisation
Tools additional Tools

OUR STRENGTHS

More than 2000 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.

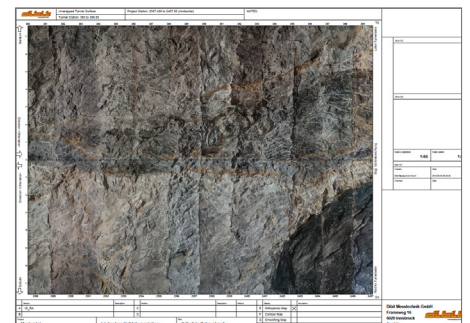
Speed up to 100 km/hour

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

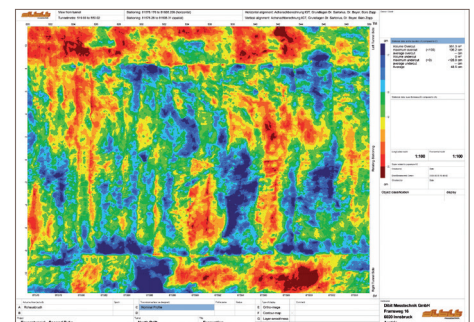
Easy Handling

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

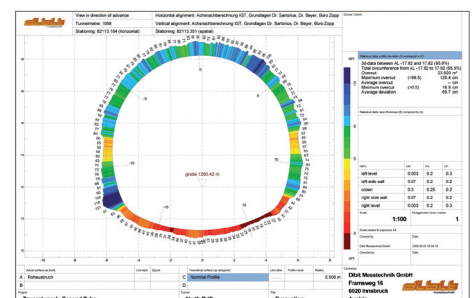
RESULTS



Ortho images



Contour maps



Cross sections



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FSC 6100-SRmF10



FSC 6100-SRmF6



FSC 5100 SRSF1



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
- ☐ combination with laser scanner pulse method (optional)
- ☐ high-speed digital cameras
- ☐ IMU unit
- ☐ recording range from 1 to 30 m
- ☐ absolute measuring accuracy: 8 mm
- ☐ recording efficiency: up to 100 km/h
- ☐ image resolution tunnel surface: 1 x 1 mm
- ☐ geometry resolution tunnel surface: 2 x 2 mm
- ☐ thermal unit (optional)
- ☐ track width measuring unit (optional) linearity deviation 0.2 mm

The hybrid scanning system „Altira“ FSC 6100-SRmF6 is a combination of line-scan laser and high-performance digital cameras. Equipped with dynamic sensors, this system is ideally suited for use in smaller tunnels, cross passages or escape routes. But it can also be used on light and flexible trolleys and on any kind of carrier platforms on motor vehicles and push-vehicles (trailers, support arms, consoles, etc.).

Advantages

- ☐ lightweight and robust
- ☐ flexible applicable
- ☐ easy assembly
- ☐ high-resolution tunnel surface documentation with color images

Technical Data

- ☐ photogrammetric measurement unit
- ☐ laser scanner pulse method
- ☐ high resolution digital cameras
- ☐ IMU unit
- ☐ recording range from 1 to 10 m
- ☐ absolute measuring accuracy: 8 mm
- ☐ recording efficiency: up to 15 km/h
- ☐ image resolution tunnel surface: 1 x 1 mm
- ☐ geometry resolution tunnel surface: 2 x 2 mm
- ☐ thermal unit (optional)
- ☐ track width measuring unit (optional) linearity deviation 0.2 mm

The dibit handheld scanner system FSC 5100-SRSF1 is optimized for comprehensive surveys of tunnel drives, especially of excavation. The combination of the high-resolution digital color-camera and efficient processing software enables the implementation of tunnel scans at the tunnel face with highest possible mobility.

Advantages

- ☐ highest mobility and easy handling
- ☐ very short recording time
- ☐ high profile precision ± 5 mm
- ☐ high-resolution documentation of excavation and geological conditions with color-images

Technical Data

- ☐ monoscopic photogrammetry-system
- ☐ digital color-camera with fisheye lens, extrem wide-angle field of view
- ☐ 16 megapixel, contrast ratio 1 : 4096 (12 bit)
- ☐ recording distance from 1 to 20 m
- ☐ absolute measurement accuracy ± 10 mm
- ☐ true-color and high resolution up to 1 mm
- ☐ set up and measurement time at the tunnel face are reduced to 2 minutes