

NAVIGATE Tunnelling

TUnIS Navigation TBM^{Laser} is a navigation system for EPB-Shield, Mix-Shield and Hard Rock TBM which determines and calculates all necessary data and information for navigating the TBM along the tunnel axis. Based on a total station and a target unit, mounted inside the TBM shield, the TUnIS Navigation TBM^{Laser} determines the actual TBM position.

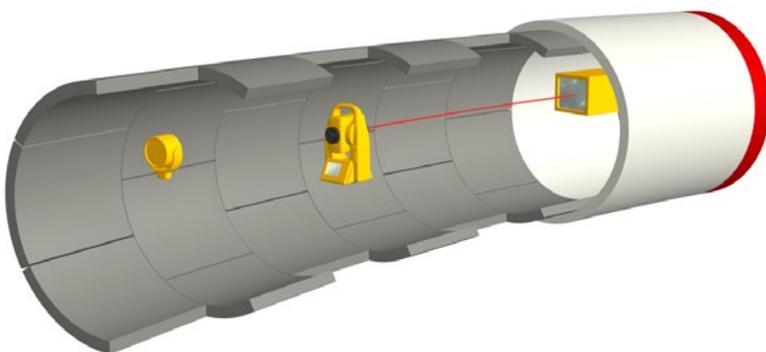
TUnIS Navigation TBM^{Laser}

The system furthermore provides full documentation of the advance-data in a database. This database is the basis for reports, data exports (XLSX, CSV) or other analysis.

All hardware components are designed for the demanding use in a tunnel. A visible laser beam (Class 3R) between the total station and the target unit is used for the calculation.

The high information content of the indicated data ensures an optimal control of the machine position to guarantee an even advance with small deviations from the designed tunnel axis. The position and tendencies are continuously indicated to the shield driver. Thus control of vertical and horizontal curves is precise and simply to realize at each time. The TUnIS navigation system allows the navigation by thrust cylinders temporary which prevents loss of production time.

*TUnIS Navigation
TBM^{Laser} schematic*



TUnIS Navigation TBM^{Laser}

A significant assistance offers a TUnIS software routine for automation and reporting the relocating of the total station.

This procedure is of big advance especially in machines with limited or small laser windows as even at short-time interrupts of the laser beam it is possible to calculate the position and indicate it to the machine driver continuously.

Advantages

- Determination of position in real time
- System stability and increase of precision by redundant advance system
- Space saving installation of components because of active target unit
- Easy handling of relocating the total station minimize working time

Options

- TUnIS Ring Sequencing
- TUnIS Navigation Office
- Information System IRIS.tunnel
- Ring Convergence Measurement System RCMS
- Ring Documentation System SDS
- Semi-automatic tail skin clearance Measurement System GAPtrix
- Automatic tail skin clearance Measurement System SluM
- Grout Pressure Sensor System GPSS
- Telecommunication System TCS

Features

- Field of application: Large tunneling with TBM (EPB-Shield, Mix-Shield and Hard Rock TBMs)
- Precise automatic calculation of TBM-position
- Continuous and permanent visualization of positions
- Redundant advancing system by navigating through thrust cylinders

