NAVIGATE
Tunnelling

TUnIS Navigation Gripper is a navigation system specially designed for Gripper TBMs. Based on a total station and a target unit, mounted inside the TBM shield, the navigation system determines the precise 3D TBM position. The system is equipped with additional sensors and software modules to comply with the tough conditions of hard rock tunnelling.

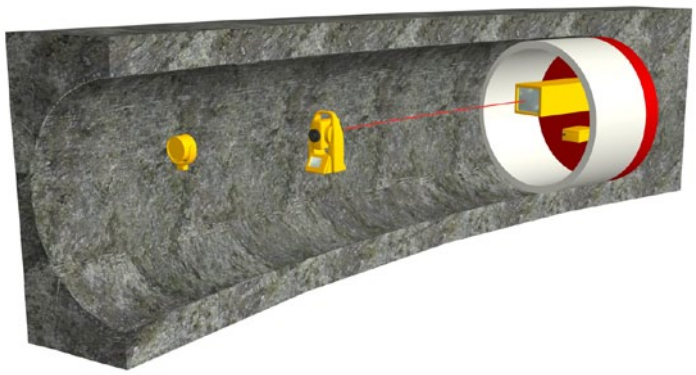
TUnIS Navigation Gripper

TUnIS Navigation Gripper determines and calculates all necessary data and information for navigating the TBM along the tunnel axis.

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 calculation. The external 2-axis inclinometer is specially designed to comply with tough conditions of Gripper TBMs (vibrations in the shield during advance).

The high information content of the indicated data ensures an optimal control of the machine position, in order to keep 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.



TUnIS Navigation Gripper schematic

TUnIS Navigation Gripper

It is also possible to visualize the tunnel boring machine as on a top view or a side view. The background pictures representing aerial and satellite image as well as drawings.

Advantages

- Determination of position in real time
- Space saving installation of components because of active target unit
- Easy handling of relocating the total station minimize working time

Features

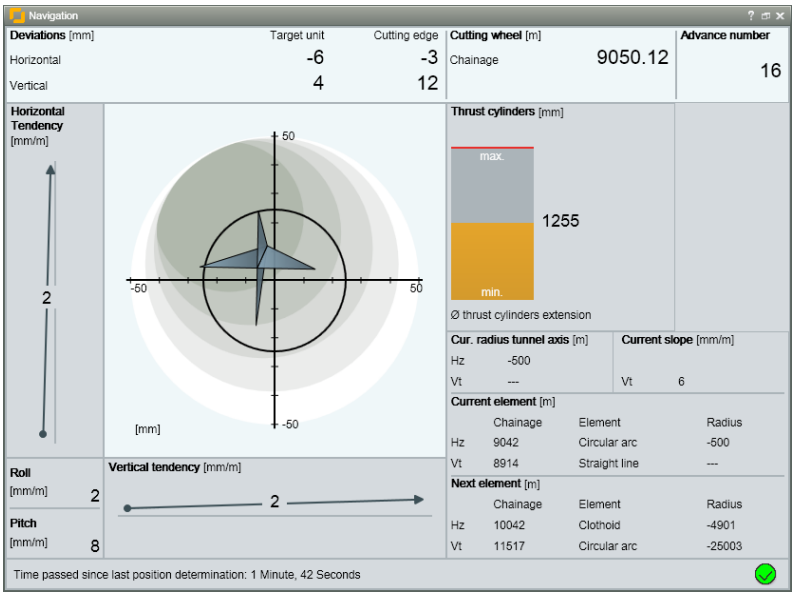
- Precise automatic calculation of TBM-position
- Continuous and permanent visualization of positions
- Redundant advancing system by navigating through thrust cylinders
- Software routine for relocating total station
- SPS connection for various types/producers

Options

- TUnIS Navigation Office
- Information System IRIS.tunnel
- Telecommunication System TCS

Thereby possibilities are given to visualize the progress of the project in relation to configurable views and to realize critical project situations graphically.

Another mode of visualization is the display as “Track Chart” which shows all calculated positions of the Gripper shield. The visualization can be used to analyze the machines’ drift , which can be used to compensate the steering and in ring selection.



VMT GmbH | Stegwiesenstraße 24 | 76646 Bruchsal | Germany
t +49 7251 9699 0 | www.vmt-gmbh.de