

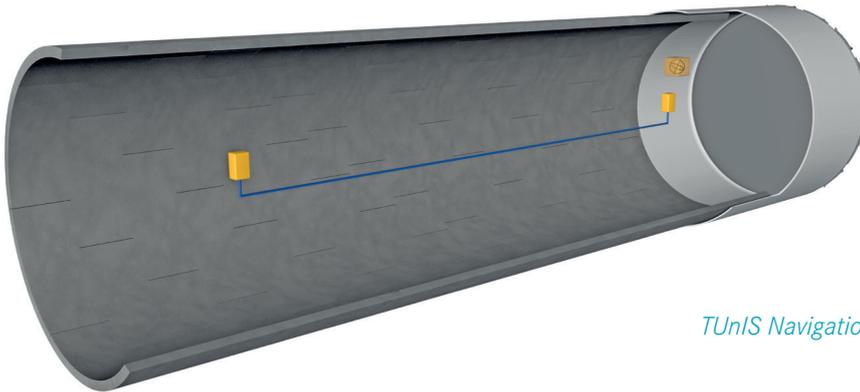
TUnIS Navigation TBM^{Gyro}

TUnIS Navigation TBM^{Gyro} is a navigation system for tunnel boring machines that is independent of machine type (EPB, mixshield, hard rock). The TUnIS Navigation TBM^{Gyro} measuring process is based on a gyroscope (gyro-compass) and is particularly suitable for tight alignment radii and where there is no laser window on TBMs with only a small diameter.

Precise position information in real time ensures optimum control of the machine position and thus a uniform shield run of the TBM with the smallest possible deviations from the tunnel axis. With a suitable navigation system, the shield operator receives a continuous display of position and tendency of the machine and countermeasures can be taken in the event of deviations.

TUnIS is the acronym for Tunnel and Underground Integrated Software Structure. TUnIS is a software platform for various measurement and navigation systems from VMT. In combination with hardware components tested on sites, TUnIS forms a proven system solution for navigating TBMs.

TUnIS Navigation TBM^{Gyro} is a special navigation system based on a gyro-compass that does not require a total station or a laser.



TUnIS Navigation TBM^{Gyro} system view

Also in the tightest curves and on small TBMs

For an alignment with small curve radii, when using an optical measuring system the sighting distance of the associated total station installed in the tunnel is very limited. The total station must therefore be moved frequently. These movements require personnel and hinder the working processes. That costs time and money.

The TUnIS Navigation TBM^{Gyro} solution based on a gyro-compass does not require a total station. It is therefore possible to continuously calculate the current TBM position even in tight radii without frequent manual interventions. Even machines with a small diameter and without a laser window can be reliably navigated with the help of TUnIS Navigation TBM^{Gyro}. Reduced space that makes the installation of a total station difficult or impossible plays no role with TUnIS Navigation TBM^{Gyro}.

Always precise and current

TUnIS Navigation TBM^{Gyro} determines the current advance position related to the planned tunnel axis with millimetre accuracy and in real time with the help of a gyro-compass and the dead reckoning method. By using non-wearing, fibre-optic gyroscopes of the most modern type without mechanically driven parts, a precise TBM position is possible in real time even affected by vibration and during the advance. A hydrostatic level is used for determining height. This works using the communicating pipes principle and is thus also not subject to any optical limitations.

TUnIS Navigation TBM^{Gyro}

Navigation system for EPB, mixed shield and hard rock TBMs

Precisely informed even under the most difficult conditions

Thanks to its functionality based on an optical gyroscope, the TUnIS Navigation TBM^{Gyro} determines the TBM position precisely even in very tight tunnel radii, with reduced space and also with machines without a laser window and with a small diameter. Frequent movement of a total station in tight curves is not necessary. This means less supervisory effort for the system and increases productivity.



Benefits

Universally deployable

- Even for very tight curve radii
- Even for machines without a laser window
- Even for TBMs with a small diameter

Simple-to-use software

- Assistant for control surveys
- Automatic drift calculation
- Assistant for moving the hydrostatic level

Compact system

- Space-saving, robust components
- Maintenance-free, optical gyroscope
- Gyroscope protection class IP68

Complete data storage and display

- Complete data storage in a database
- Data security with automatic backups
- High-performance modules for preparing data (incl. reports, track charts, navigation history)

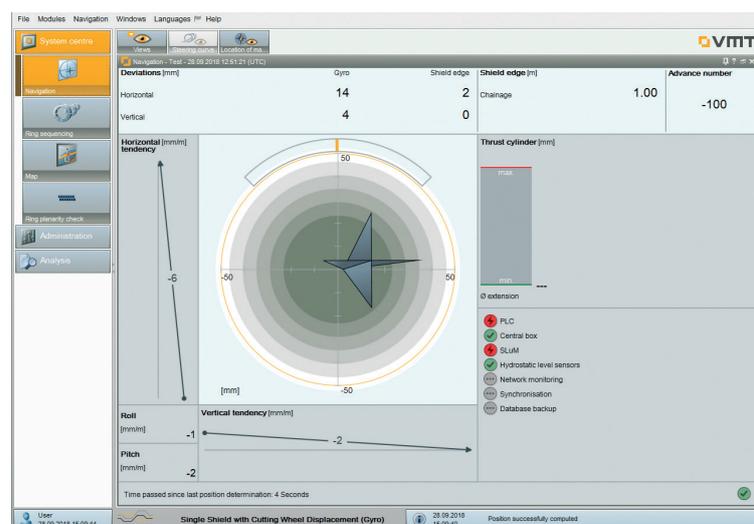
Efficiency in operation

- No total station installation necessary
- No repeated movement of a total station necessary
- Continuous, precise determination of the TBM ensures a uniform shield run with the lowest possible deviations and associated costs



Features

- Display of the deviations to the tunnel axis, if required to the actual machine axis or to the drift-corrected travel direction
- Calculation of a correction curve in the case of inaccurate driving and display of the TBM deviation to the correction curve
- Manual drift and chainage correction possible at any time
- User-specific display of the navigation screen
- Permanent and continuous display of the position data, even when affected by vibration and during the advance
- Support for various PLC types
- Modular and therefore easily adapted and scaled
- Robust hardware for the demanding use in the tunnel
- All system components from one source
- Comprehensive advice and worldwide service from VMT



VMT Germany | Headquarters
 t +49 7251 9699 0
 info@vmt-gmbh.de
 www.vmt-gmbh.de

VMT China | t +86 21 50750276 | info@vmt-china.com | www.vmt-china.com
 VMT Australia | t +61 1300 553 905 | info@vmt-tg.com.au
 VMT USA | t +1 253 447 2399 | info@vmt-us.com
 VMT Russia | t +7 812 677 79 74 | info@vmt-ii.ru
 VMT Singapore | t +65 659 057 19 | info@vmt-singapore.com
 VMT India | t +91 987 129 22 00 | info@vmt-india.com

