

TUnIS Navigation Rockbolter

TUnIS Navigation Rockbolter is a Total Station and sensor-based navigation system to precisely setting out anchors in the tunnel arch to reinforce the rock. The system determines the exact position of the drill rod and visualises it for the machine operator in real time. In combination with the specified anchor pattern cannot only drill each anchor starting at the correct position without any additional surveying work needed, but also set the drill rod precisely to the planned angle.

Many anchors, great time saving

Fan shaped arranged anchors over the whole tunnel profile add up over the complete length of the tunnel to an extremely large number. For each minute saved per anchor, this results in an immense multiplication effect.

Optimum alignment in space

Simply marking out the drilling points does not guarantee that an anchor placed also follows the direction specified by the planner. This is different when using the TUnIS Navigation Rockbolter: sensors exactly record the position of the drill rod in space and visualise it to the machine operator on a display together with the planned axis. Accordingly, the machine operator can align the drill rods quickly and precisely.

Maximum safety

Conventional measurement of the anchor points requires regular work under unsecured rock. When using the TUnIS Navigation Rockbolter, manual measurement of the anchor points are completely unnecessary, which means a considerable increase of occupational safety for each such project.

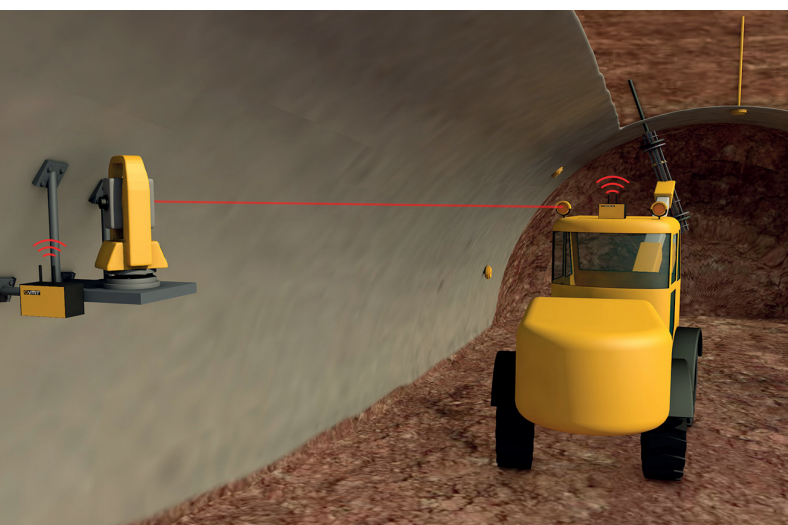


Benefits

- ▣ No downtime for regular measurement work
- ▣ No personnel costs for regular measurement work
- ▣ No endangering of personnel under unsecured rock
- ▣ Precise, 3-dimensional positioning and alignment of the drill rod compared to the planned nominal anchor
- ▣ Can also be used under difficult visibility conditions
- ▣ When used at the same time as the TUnIS Navigation Roadheader, the Total Station can be used for both systems but only need installing once
- ▣ When used at the same time as the TUnIS Navigation Roadheader, merging of the data from both systems
- ▣ Evaluation and archiving of all data in TUnIS CT Office

Support during planning

During preparation, the surveyor configures the required anchor patterns. To do so, they use the tunnel profile already available in TUnIS. The anchor pattern is then automatically transferred to the machine in the existing construction site network using the VMT cloud. Subsequently, the design data is immediately available on the TUnIS Navigation Rockbolter operators interface.



TUnIS Navigation Rockbolter

Total Station and sensor-based bolting rig navigation system for precisely setting anchors without manual measurement and marking.

Support of the work in the tunnel

During the work in the tunnel, a motorised Total Station mounted on the tunnel wall measures to 2 shutter prisms installed on the carriage or the cabin of the drill rig. In combination with a 2-axis inclinometer, in the first step the system uses this to determine the absolute position of the drill rig carriage. Using sensors attached to the arm of the drill rig (angle sensor, inclinometer, cable sensor), the system then calculates the exact position of the drill rod in space in the second step. On the operator interface of TUnIS Navigation Rockbolter the current position of the drill rod is shown in real time as well as the deviations to the planned anchor numerical and graphical.

Support for evaluation

As soon as the planned position of the drill rod is reached, this is recorded and transmitted from the machine to TUnIS CT Office. These data can be combined with the excavation data evaluated and archived.

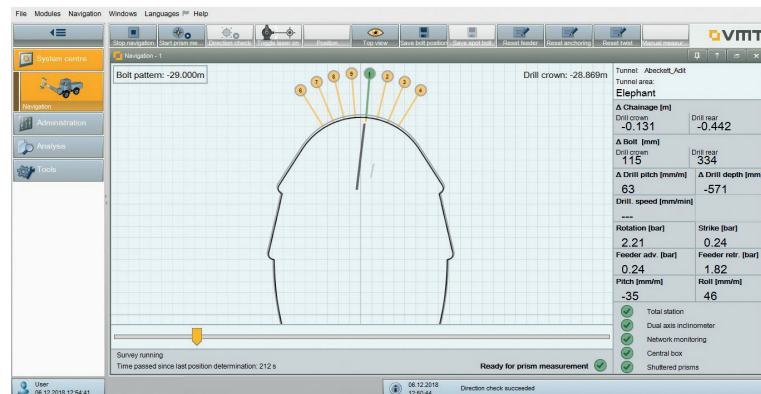
Strength together

TUnIS Navigation Rockbolter does not only create enormous time saving. The TUnIS Navigation Rockbolter also achieves its unique efficiency through its integration with TUnIS Navigation Roadheader and with TUnIS CT Office: When configuring the anchor pattern, you use the tunnel profile already recorded. In the tunnel you use the Total Station already available. For evaluation and documentation, you use the software platform TUnIS CT Office. And because all other data for your tunnel project are available in TUnIS CT Office, you can combine all these data with little effort.



Features

- Total Station-based position determination of the machine and sensor-based alignment of the drill rod
- Integration of the complex sensors directly through the drill rig manufacturer
- Proven and robust hardware (IP65-compliant)
- Module for configuring the anchor pattern using the tunnel profile in TUnIS CT Office
- Use of Total Station already installed in the tunnel
- Wireless data transfer to the machine
- Display on the machine in real time of the position and 3-dimensional alignment of the drill rod relative to the tunnel profile and to the planned anchors
- Display of the deviations between planned and actual position of the drill rod both graphically and numerically
- Saving of the final actual drilling positions
- Evaluation of the anchors within the excavation analysis module of TUnIS CT Office
- Management of multiple machines and tunnel advances
- Data archiving



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