



TUNNEL GUIDANCE & HEADING SURVEYS

FIELD OF APPLICATION:

The demanding task of controlling tunnel and shaft heading comprises all the surveying required for the construction of underground and mining structures.

In conventional excavation methods such as NATM for instance, this work comprises the on-going establishment of the exact excavation profile at the heading face and planning the positioning of support such as tunnel arches, anchors etc., using alignment or motor lasers.

For machine-based tunneling, guidance systems

for TBMs and road headers need to be deployed in order to maintain tunnel drives of highest accuracy.

GEODATA offers complete packages and services and provides customer-suited solutions for conventional tunnel guidance and machine guidance.

FACTS:

- Supplier of Personell, Hardware & Software
- Many Years of Experience in Conventional Tunneling and Machine Guidance
- Supply and Maintenance of TBM and Roadheader Guidance Systems
- Synergies with Construction Surveys and Optical 3D Displacement Measurements
- Highly Skilled & Experienced Surveying Personnel



Conventional Tunnelling - Alignment Lasers

Geodetic measurements and analyses are continuously performed during tunnel heading control and surveying, in order to provide positioning and directional specifications for the work directly at the excavation face. In conventional tunnel drives, alignment lasers are deployed for this purpose. These lasers are

installed in the tunnel, calibrated, secured and continuously advanced as driving advances. They generate axis-referenced laser spots directly at the working face and are also utilised by the heading team for various tasks such as positioning of arches, for instance.



TALOS - Motorlaser System

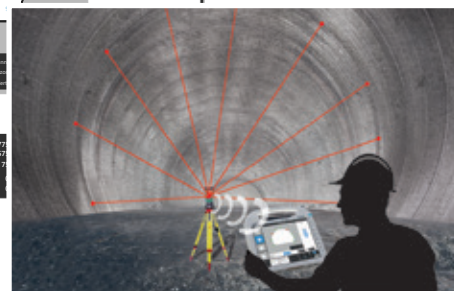
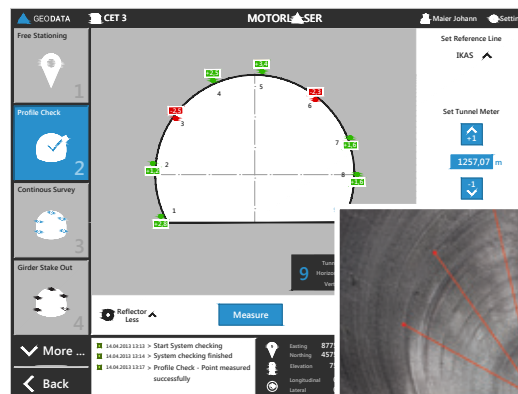
The TALOS motorlaser system consists of easy-understandable software and tunnel-proof hardware to form a simple yet intuitive solution for conventional guidance.

The fundamental idea is to provide a system which only requires minimal knowledge of basic surveying principles and therefore can be used by tunnel personnel without the

presence of a surveyor.

TALOS can be used for stake-out operations to adjust supporting girders and pipe umbrellas, for quick and easy profile checks and several additional operations.

All functions are controlled by the state-of-the-art software which allows touchscreen operation and data analysis on the fly.





TAUROS for Roadheaders

With machine-based drives, our proven control guidance systems (TAUROS) can be used, by which the spatial position and orientation of complex heading machines such as roadheaders.

aurus for roadheaders is a guidance system which is jointly developed by Sandvik and Geodata.

In contrast to other roadheader guidance systems, all hardware and software components are highly integrated into available roadheader on-board components. This deep integration of the guidance system into the general machine control system yields a variety of benefits for the customer.



TAUROS for TBMs

Successful tunneling with TBMs demands a guidance system of the best quality and the highest achievable accuracy.

TAUROS TBM is a brand-new development by Geodata which offers just that – and much more.

TAUROS TBM is built up modularly. It can be used on Single Shield TBMs as well as Double Shield TBMs by adding

the robust camera measurement unit. The fully automatic tail skin clearance (TSC) measurement system in combination with the ring sequencing module enable the automatic calculation of the best fitting ring and ensure an optimum ring sequence, therefore saving time and reducing the risk of damages to the shield.





OUR SERVICES

GEODATA offers the full range of construction surveying services and equipment, and is a specialist for underground construction survey. We provide experienced surveyors capable to carry out all kinds of engineering survey for construction, working in flexible schedules providing our service on a daily or weekly basis or as continuous operations. We use state of the art surveying equipment such as robotic total stations, digital levels and GNSS-sensors and also

produce and offer automatic setting out systems, targets and marking material. All survey data is processed by EUPALINOS, our dedicated software tool for construction surveying. GEODATA offers construction site survey services for all projects, large and small, national and international. One of our core competencies is the execution of total projects, i.e. we see ourselves as a provider of integrated construction site surveys and products.



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