

Amberg Tunnel

Measuring gives you perspective



Why choose Amberg Tunnel surveying solutions?



Cooperation



Ease of use



Modularity



Innovation



Swiss quality

AMBERG TUNNEL

Measuring gives you perspective



Tunnel construction

Modern tunnelling is subject to numerous demands: Tunnelling companies must keep costs low, finish projects in less time and still keep up with the high quality and safety standards.

Subsequently the main goal is always to optimise the tunnel excavation process and workflows. Efficient, cost-effective surveying solutions are needed, without placing precision and safety at risk. Equipment needs to be tailored optimally to specific project requirements and be usable by the tunnel crew on site.

The Amberg Tunnel product portfolio offers the customer an innovative and reliable solution.

Amberg Tunnel surveying solution

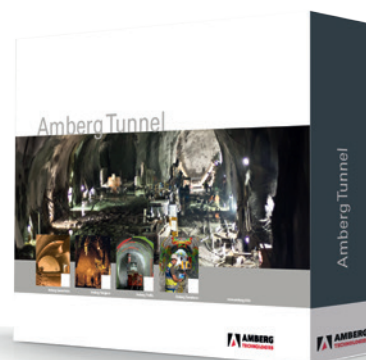
The Amberg Tunnel surveying solution from Amberg Technologies supports tunnelling in all construction phases. The system solutions under the umbrella name of Amberg Tunnel combine precise measuring instruments with task-specific software. Significant improvements in efficiency are realised, especially in tunnel navigation, tunnel profile measurements, tunnel scanning, geotechnical analysis and as-built tunnel analysis.

Why Amberg Tunnel?

- One software package for heading guidance, excavation control and surveying of the inner lining for the entire tunnel construction process as well as maintenance
- Illustrated, intuitive and easy-to-understand workflows
- Measurements can be made by the tunnelling crew, enabling them to work independently
- Over 35 years of experience in the development of efficient tunnel surveying solutions
- Complete integration into the construction and maintenance process – from planning to direct data exchange
- Customised system configuration according to your requirements

Optimised to meet your needs

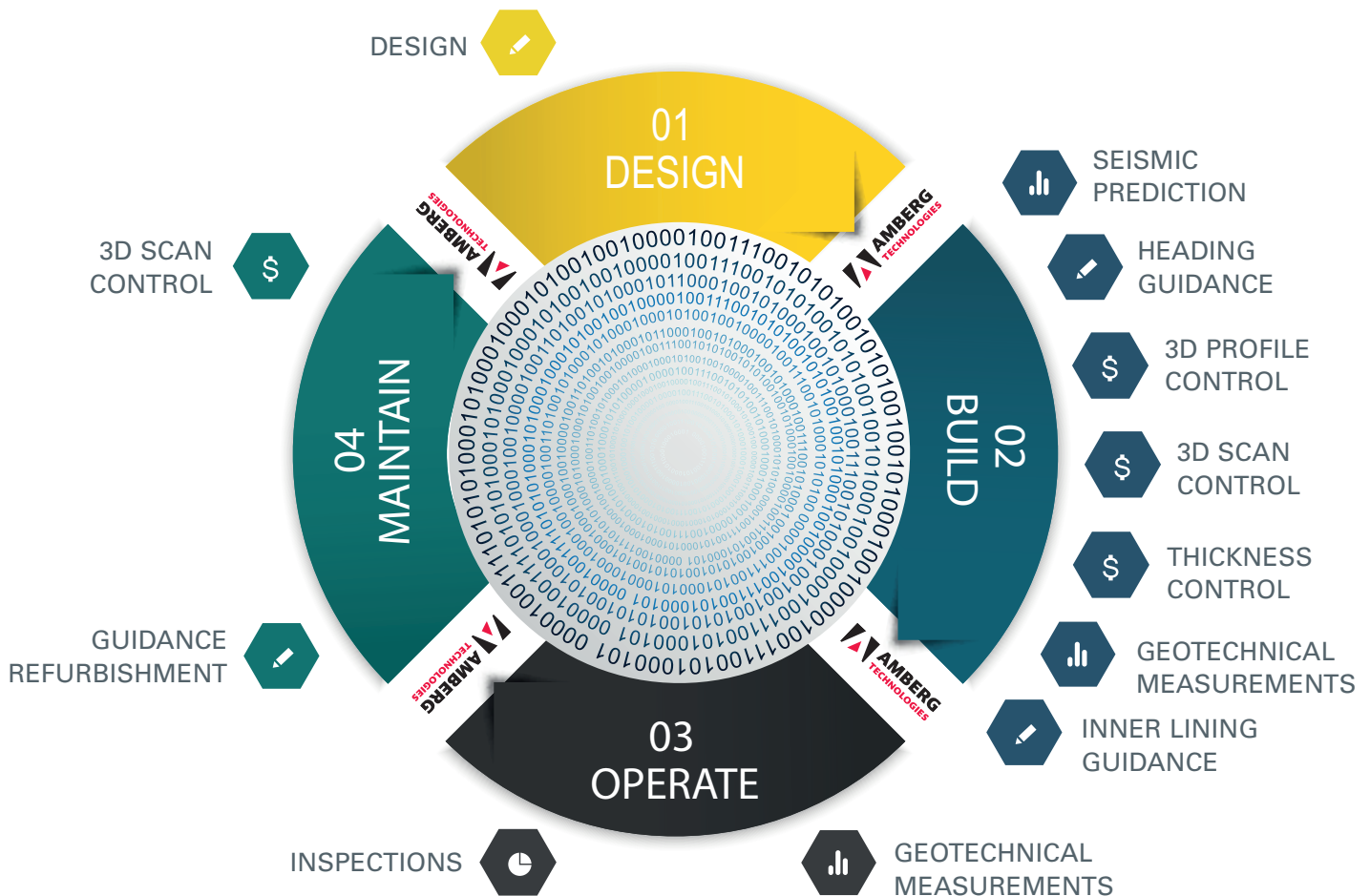
- Ease of use – minimum installation and training time needed
- One platform – all surveying and geotechnical tasks in a tunnel project available on site and in the office
- Real-time – scan data processing in real-time and direct stake out of critical areas in the tunnel heading
- Innovative – BIM compatible: Measuring and analysis in 3D



SURVEYING FOR TUNNELLING PROFESSIONALS

Amberg offers solutions for all tasks involved in tunnel surveying – no matter how demanding and complex they are

The Amberg Tunnel surveying solutions support tunnelling in all construction phases. System solutions combine precise measuring instruments with task-specific software to significantly improve efficiency in tunnel construction and maintenance projects. A high degree of automation in measurement tasks, constant integration of customer feedback and innovative products are the foundation of our success.



3D PROFILE CONTROL

Tailored to your profile analysis needs – transforming your data into simple, meaningful and relevant reports

3D SCAN CONTROL

Adding value to your scan data in terms of point cloud analyses with quick and fast data transfer to the office

DESIGN

Comprehensive services for your underground project such as feasibility analysis, project design, invitation, to tender, etc.

GEOTECHNICAL MEASUREMENTS

Efficient and cost-effective observation and evaluation of deformations and settlements in construction and operational maintenance

HEADING GUIDANCE

Enables your tunnel crews to excavate and build as closely to the design as possible, saving material costs and minimising risks and downtimes

INNER LINING GUIDANCE

Guide your formwork with optimised positions and configurations to attain the required concrete thickness and save concrete

INSPECTIONS

Continue inspection of tunnel infrastructure for tunnel maintenance and risk analysis of problematic tunnel areas

LAYER THICKNESS CONTROL

Innovative system for layer thickness control to keep spray concrete costs low

REFURBISHMENT GUIDANCE

Simulation of existing tunnel models for new train types or new security standards and optimisation for minimised refurbishment work

SEISMIC PREDICTION

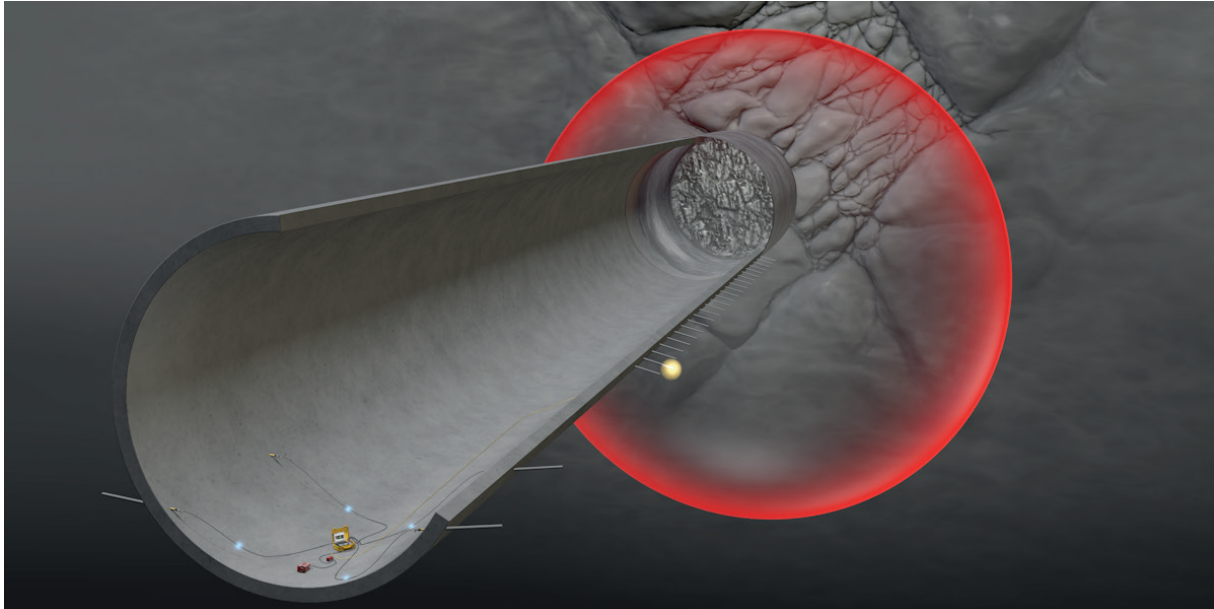
Provides advanced notice of geological uncertainties in the rock mass for efficient risk management

AMBERG SEISMICS

See ahead – build safer with Amberg Tunnel Seismic Prediction (TSP)

Today, successful tunnel builders don't leave a safe and fast tunnelling to chance. They rely on TSP and avoid a costly decrease of production efficiency usually related to unforeseen geological hazards. TSP provides advance notice of geological uncertainties in the rock mass and is the key factor for efficient risk management.

- Very high suitability for use on construction sites: Malfunctions are reduced to a minimum
- Sophisticated, automated 3D data processing and visualisation: Precise and reliable information is illustrated for everyone
- Timely results: Valuable information come in when the right action has to be taken



AMBERG NAVIGATOR

Touch and build – optimise tunnel construction by reducing costs and time

Tunnel heading guidance and control has never been as easy as with Amberg Navigator. The Amberg Navigator tablet is operated by the tunnelling crew or surveyor on site. The tasks arranged in the Amberg tablet software based on the project-specific applications provide fully automatic control of the total station, laser scanner or Leica MultiStation according to the tasks selected.

- One platform: One software platform for all surveying and geotechnical work steps in a tunnel project
- Scan in real-time: Real-time scan data processing in the tunnel heading and direct stake out of critical areas
- 3D and BIM: Measurement and analysis in 3D – BIM compatibility

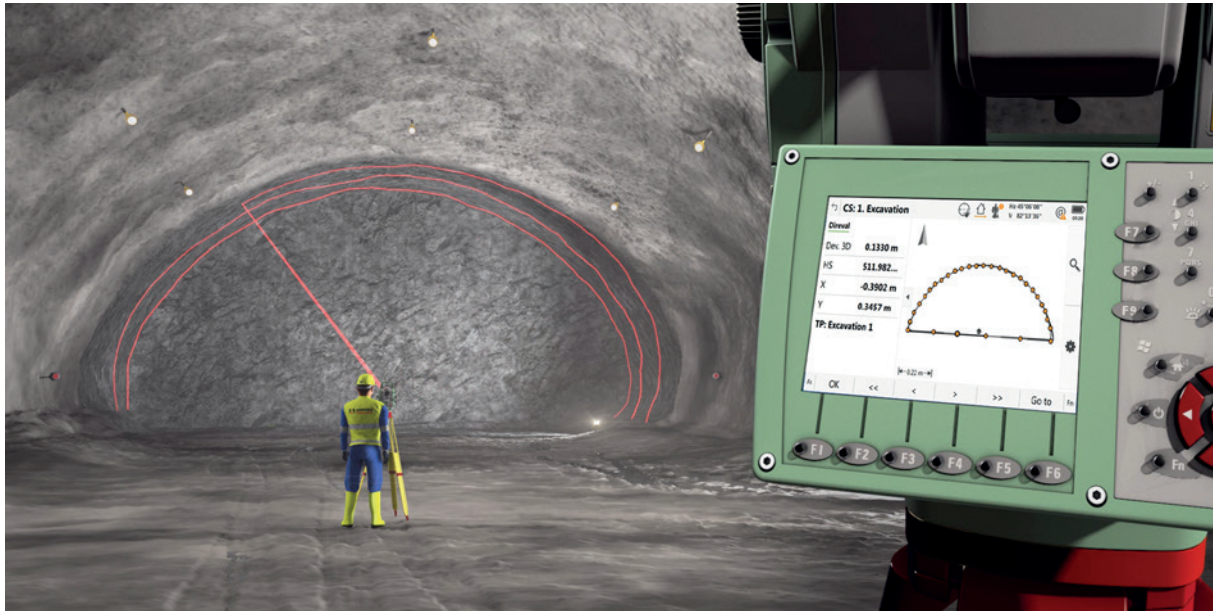


AMBERG APPLICATIONS

Making surveying faster and simpler with the flexibility to react to outside influences

Amberg Applications makes surveying tasks in tunnel construction faster and simpler. Fast responsiveness to changing conditions on site empowers the user to react and adapt immediately. Amberg Applications covers the automatic stake out and automatic 3D profile measurements modules. They come with the free set-up feature, allowing you to automatically set up a total station.

- Powerful on-board application for Leica Viva and Captivate total stations
- A seamless workflow with the Amberg Profile module is guaranteed
- Trouble-free data transfer of project data and measurements from the tunnel to the office is ensured

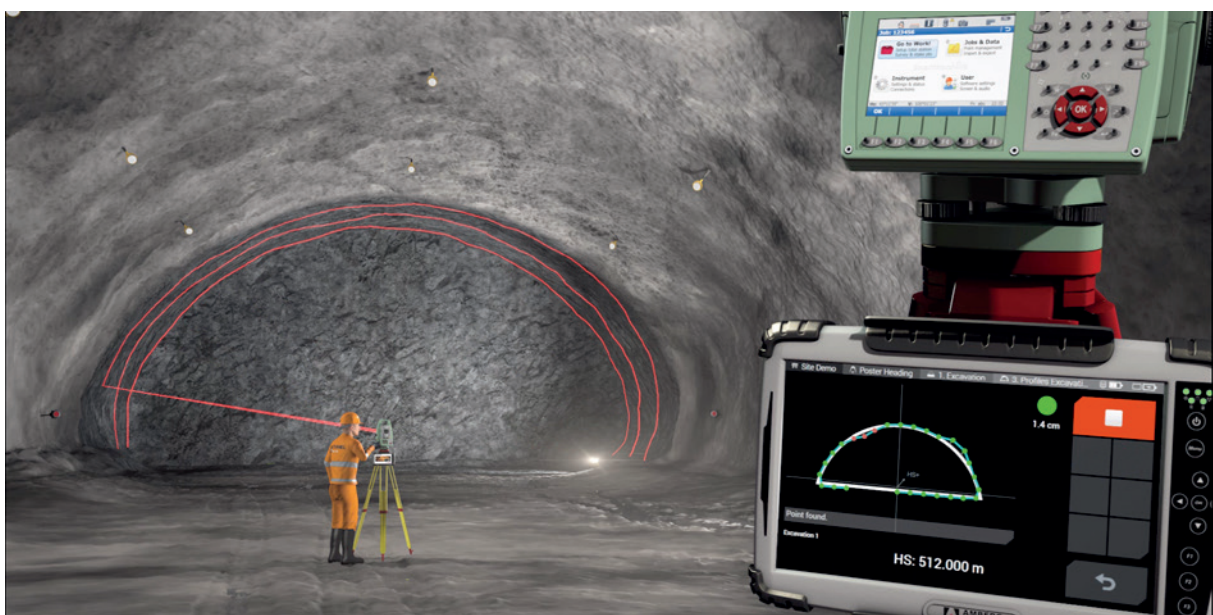


AMBERG PROFILE

Transforming your surveying data into simple, meaningful and relevant reports

It has never been easier to transform tunnel measurements into reports. The Amberg Profile office software is able to transform the measurements from total stations into reports tailored to meet your needs. A seamless workflow is guaranteed by using Amberg Navigator or Amberg Applications for making the measurements.

- Quick results for surveying and frequently repeated tasks
- Full 3D calculations also support complex projects such as power plant and power station construction
- Visualisation of the results in 3D for fast interpretation

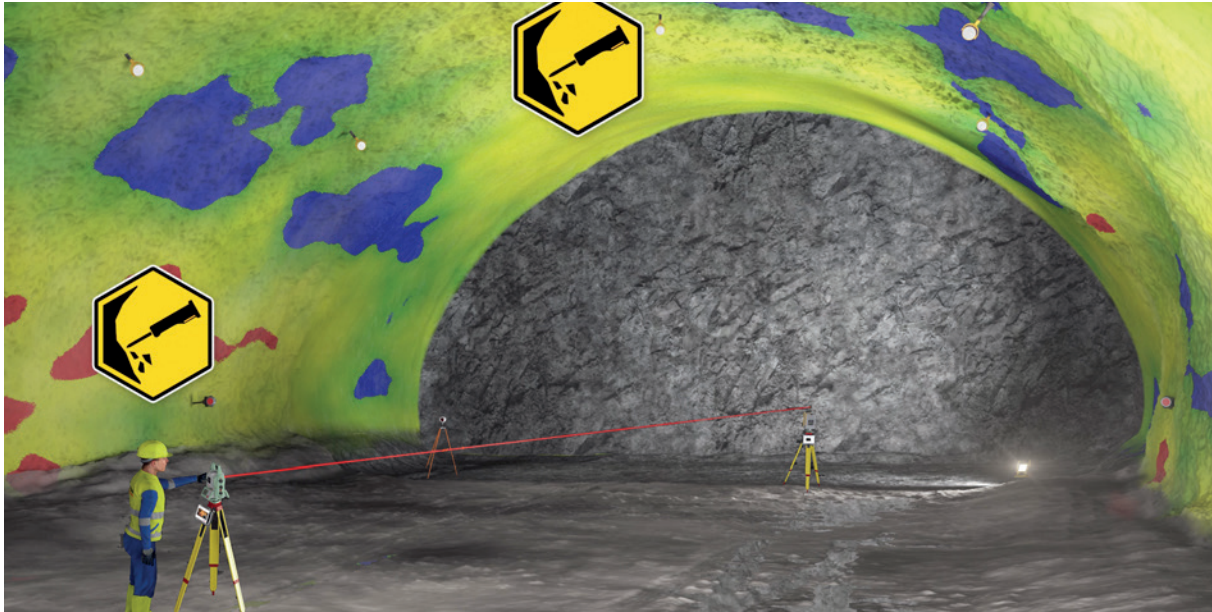


AMBERG TUNNELSCAN

The latest scanner technology brings tunnel documentation to the next level

Amberg Tunnelscan is the powerful data collection and evaluation software for laser scanner measurements in tunnel projects. Together with the high-performance imaging scanner from Amberg Technologies, it forms the most powerful system solution on the surveying market for as-built tunnel documentation and analysis.

- Record the geometry and image of the entire tunnel structure during each construction phase
- Determine all areas of under and overbreak as well as calculated volumes
- Unique measuring speed at high data density – more powerful than all conventional methods

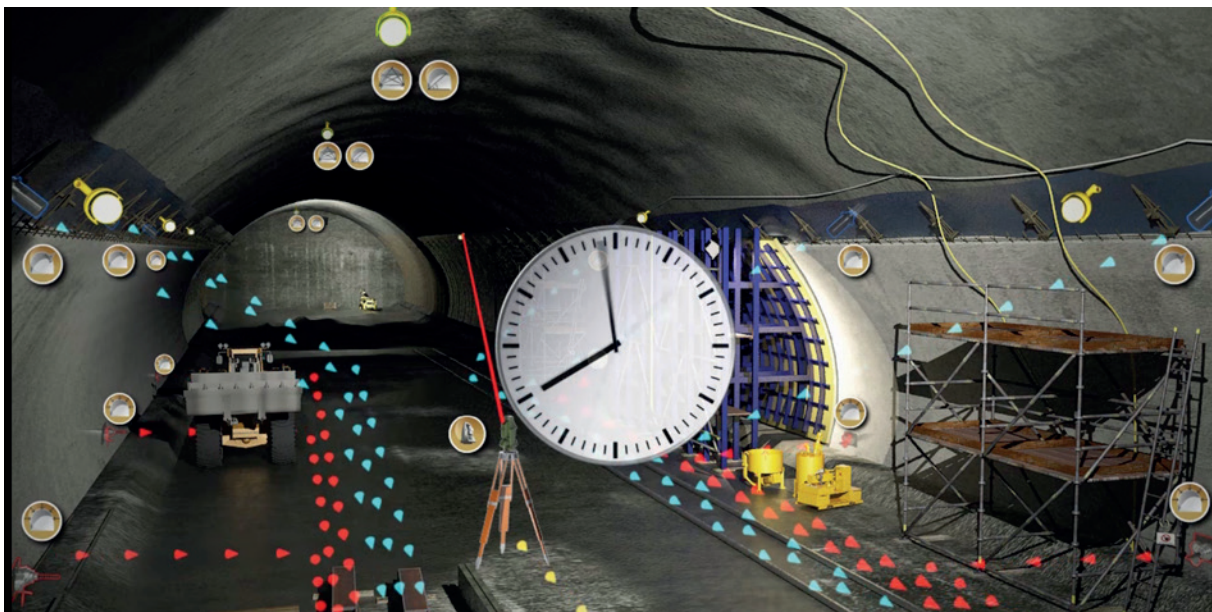


AMBERG GEOTECHNICS

Recognising hazard zones and deformations in underground construction

The Amberg Geotechnics software application is an indispensable tool for surveyors and geotechnical engineers working on underground construction projects. This comprehensive software solution allows efficient and cost-effective observation and evaluation of deformations and settlements in tunnel construction as well as in operation and maintenance.

- Data flow from importing to reporting without manual post-processing
- Multi-vendor-capable data import and automatic point allocation without input of point ID
- Recognise risks and hazard potentials quickly, clearly and comprehensively



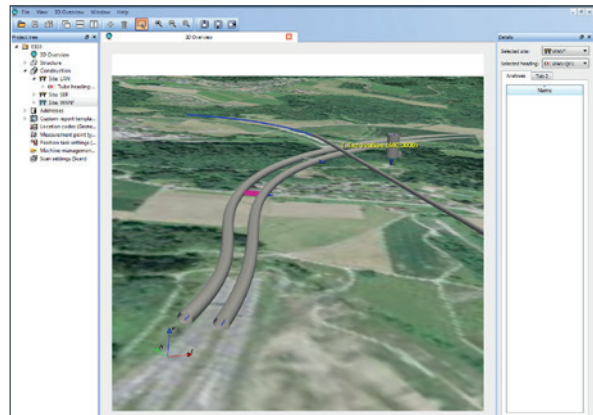
AMBERG TUNNEL SOFTWARE PORTFOLIO

The modular platform for effortless work and analysis

One software package for the entire tunnel construction process and maintenance. The use of Amberg Tunnel reduces the number of software packages involved in the work procedure, resulting in license cost savings and reduction of training time needed.

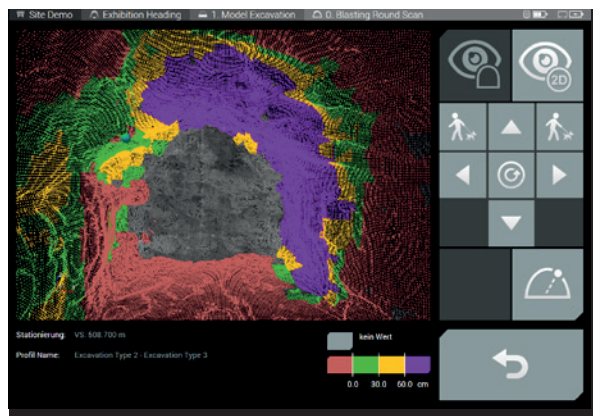
Project definition in 3D

- User-friendly, simple handling concept for design data
- Fast and easy definition of complex tunnel geometries with direct graphical feedback
- Flexible data transfer of design data from third-party suppliers
- Manage several construction stages in one Amberg Tunnel project
- Supports tube and shaft headings in one Amberg Tunnel project
- Visualisation of tunnel definition in 3D



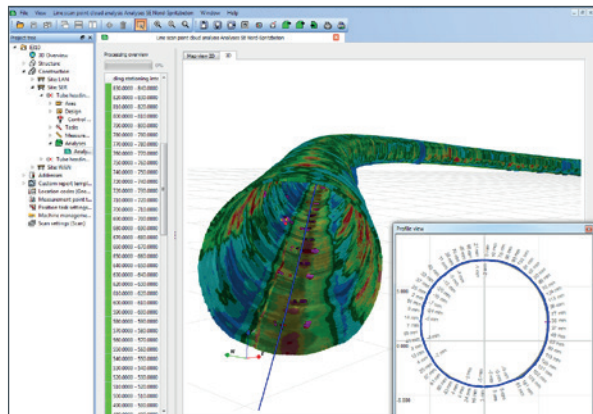
Measurements with ease

- Amberg Navigator – measurements with ease on a tablet with an intuitive operating system
- Amberg Applications – the powerful on-board applications for Leica instruments
- One tablet which controls laser scanners and total stations
- Turn scan data into results directly in the tunnel and can perform immediate stake out of critical areas
- Every task can be called up by the tunnelling crew or surveyor at the tap of a finger



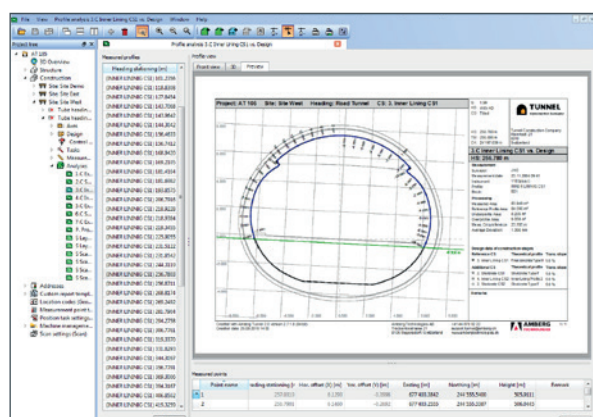
Effective analysis

- Effective data synchronisation of measurements with Amberg Navigator, Amberg ScanControl and Amberg Applications
- Comprehensive and open data import interface for measurements from different third party suppliers
- Analysis of measurement data in 2D and also in a comprehensive 3D viewer
- High degree of automation thanks to an intelligent database structure and intelligent algorithms



Automation for reporting

- Visualisation of the results in 3D for fast interpretation
- Flexible report generation based on project-specific requirements
- Comprehensive graphical and numerical analysis options
- Export functionality to a BIM software
- Free data-viewer software with basic functionalities available



SWISS EXPERTISE – IMPLEMENTED WORLDWIDE

Whether it's a subway tunnel in London, the Gotthard Base Tunnel in Switzerland or the world's largest sub-sea road tunnel in Norway: Construction and maintenance projects of this kind are the ideal platforms for the high quality, precision and efficient tunnel surveying systems from Amberg Technologies.



AMBERG TUNNEL – TUNNEL SURVEYING SOLUTIONS FOR PROFESSIONALS

With more than 35 years' experience in the tunnelling surveying business and an established partner network with more than 30 partners around the world, Amberg Technologies is the leading provider of surveying solutions for underground projects. A high degree of automation, close cooperation with our customers and innovative products are the foundation for our success.



“The use of Amberg Tunnel makes it possible for personnel from other sectors to carry out simple, routine surveying tasks reliably, efficiently and independently.”

Jürgen Wilhelm, Surveyor Engineer, Marti IAV Solbakk DA, Norway

“The Amberg Navigator tablet solution with the big screen allows us to see the measured 3D profile information clearly. Furthermore, the ability to position the instrument without knowledge of the control IDs is a plus and greatly simplifies the workflow.”

Olivier Gauche, Surveying Engineer, Eiffage Travaux Publics, France



Amberg Technologies has been developing specialised system solutions for the infrastructure industry for more than 35 years. The unique combination of systems development experience and industry know-how results in measurement systems characterized by precision instruments, practical system design and powerful software. Amberg Technologies' solutions have gained the trust and recognition of tunnelling and railway industry experts thanks to a worldwide service and support network.

Why choose Amberg Tunnel surveying solutions?



Cooperation



Ease of use



Modularity



Innovation



Swiss quality

Amberg Technologies AG
Trockenloostrasse 21
CH-8105 Regensdorf
Switzerland

Tel. +41 44 870 92 22
info@amberg.ch
www.amberg.ch/at

