Amberg Tunnelscan
Datasheet

Adding value to your tunnelling scan data

Amberg Tunnelscan turns scan data with ease into meaningful results. A detailed as-built analysis of the bare rock after every advance, thickness of shotcrete or undulation analysis are deliverables required for every construction site. Amberg Tunnelscan will produce all these and other tunnel specific reports.

This office software covers your complete workflow. First step is data import from Amberg Navigator or any other scanning system. Then it repositions the point clouds, applies intelligent filters and analyses the data. You can display all the results in 3D and export them in various formats.
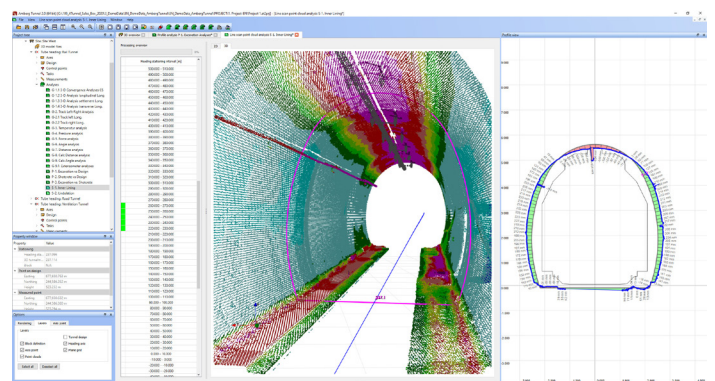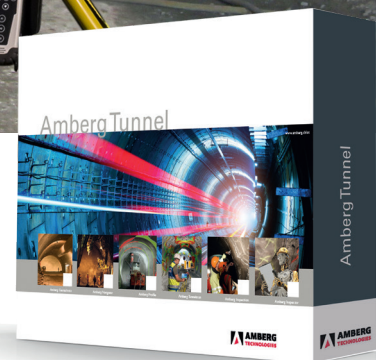
Modules:

Amberg Tunnelscan Basic
- APM positioning
- Intelligent filtering of point clouds
- Line scan analysis

Amberg Tunnelscan Plus
- All basic features
- Blast round scan, layer thickness and undulation analysis
- Reposition with checkerboards, sphere targets and cloud to cloud.

Stress-free point cloud processing

Amberg Tunnelscan
System Overview

Basic functions and features
Manage complex tunnelling projects within one Amberg Tunnel project (multiple axes and construction stages)
Data organized in construction stages (theoretical profiles, sections, transverse slope and blocks)
Support for all underground projects (incl. inclined tunnels (e.g. hydro-power projects) and vertical shafts)
Define theoretical profiles vertically or inclined relative to longitudinal profile
Comfortable and interactive project data input with direct graphical visualisation
Comprehensive import of project design (e.g. Cremer, LandXML, DXF, ASCII, TUN (SBG) or IFC)
Comprehensive profile editor for simplifying routine tasks (blow-up function, mirroring, drag and drop, split, etc.)
Support for transition zones between various profile geometries (linear or centroid-based interpolation)
Graphical visualisation of project geometry data in the 3D viewer
Automatic project data consistency testing on input
Axis calculator to transform absolute coordinates to axis coordinate system (2D / 3D) and back
Export axis and design for independent check (ASCII, PTS, OBJ, PLY)
Management of the control points for each drive, including history and quality checks
Project-specific adaptation of units (e.g. meters, international and US feet) and the display of decimal places
Integrated address management for personalised reports (e.g. contractor or client)
Construction progress logging for each construction stage
Project export to Amberg Navigator tablet (USB, Cloud), Amberg Applications, Leica RoadRunner, PPS, LandXML

Functions for point cloud measurements and analysis	Basic	Plus
Automatic data synchronisation with Amberg Navigator Tablet for trouble-free data transfer for scan data (requires Scanning task on Amberg Navigator)	√	√
Import point clouds from all common scan data formats PTS, PCD, LAS/LAZ, E57	√	√
Import scans directly from scanners Z&F (*.zfs), Faro (*.fls), Leica MS, BLK360, RTC360	√	√
Management of measured point clouds for each construction stage	√	√
3D visualisation of point cloud with reflectivity, true colour or "high contrast" colour layer	√	√
Repositioning based on control points updates	√	√
Repositioning of APM Scans with automatic target recognition of the TPR100 Scan sphere	√	√
Repositioning of scans with checkerboards and sphere targets		√
Repositioning of scans with Cloud to cloud algorithm		√
Distance filter relative to the scanner position (inside or outside of range)	√	√
Filter point cloud based on tunnel stationing (inside or outside of range)	√	√
Filter points based on distance from the tunnel surface (e.g. cleaning pipes and reflections)	√	√
Resampling of point clouds to get a homogeneous point cloud	√	√
Batch filter (distance, stationing and resampling) can be applied for multiple scans	√	√
Processing overview editor with intelligent slice management (recognize which slice must be processed after changes on design or new measurements available)	√	√
Line scan analysis: Analysis of 3D scan in comparison to the design data	√	√
Blast round scan analysis: Analysis of a scan after every advance. Comparison to the design data with automatic classification (e.g. bare rock and sprayed concrete) of the point cloud		√
Layer thickness analysis: Analysis of measured 3D scans compared to measured 3D scans of another construction stage		√
Undulation analysis: Analysis for quality checks of the shotcrete before waterproofing membrane will be applied. Parameters of the Bar method are set based on project requirements		√
High resolution image analysis: Converts scan data into images projected on tunnel surface. Images can be used for documentation and tunnel inspection.		√
Automatic profile extraction (snapshot, regular interval or based on a specific file list) from point clouds to Amberg Profile module	√	√
Colourised 2D area maps and 3D view for all point cloud analyses	√	√
Comprehensive numerical reports for over/under break volume and measured volume	√	√
Export point clouds analysis results to PTS or LAS	√	√

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