AMBERG TECHNOLOGIES

Amberg Tamping

Innovative surveying solutions for rail works

3D tamping surveying solutions for ballasted track works

The mobile measurement systems from Amberg Technologies let you record track position errors quickly and efficiently in the construction and maintenance of ballasted tracks. Whether on high-speed lines or railway station tracks, Amberg Tamping always delivers correction data of the highest quality.

Amberg Tamping – innovative and fast

Railway operators require proper track geometry in order to economically utilise their networks. Railway track construction and maintenance therefore represent substantial expense items in infrastructure management. Powerful means of production and flexible procedures help to reduce the expense. Amberg Tamping offers innovative tamping surveying solutions which accelerate the surveying process and deliver high-quality correction data.

Tamping surveying with exceptional efficiency

The Amberg Tamping solution is a mobile surveying solution, 'portable' in the strictest sense of the word, which allows the measurements made in the run up to the actual maintenance work to be flexibly integrated into normal operations. Maintenance of way using the tamping machine can be effortlessly performed without waiting times. Up to 4 km of track per hour can be surveyed thanks to the use of kinematic surveying methods.

Why Amberg Tamping?

- Complete integration into the construction and maintenance process – from planning to direct data exchange with a tamping machine
- Combines robust, high-precision measuring sensors with measurement procedures ideal for job sites
- Customised system configuration according to specific project and customer needs
- Accepted and authorised measuring process for use on high-speed lines

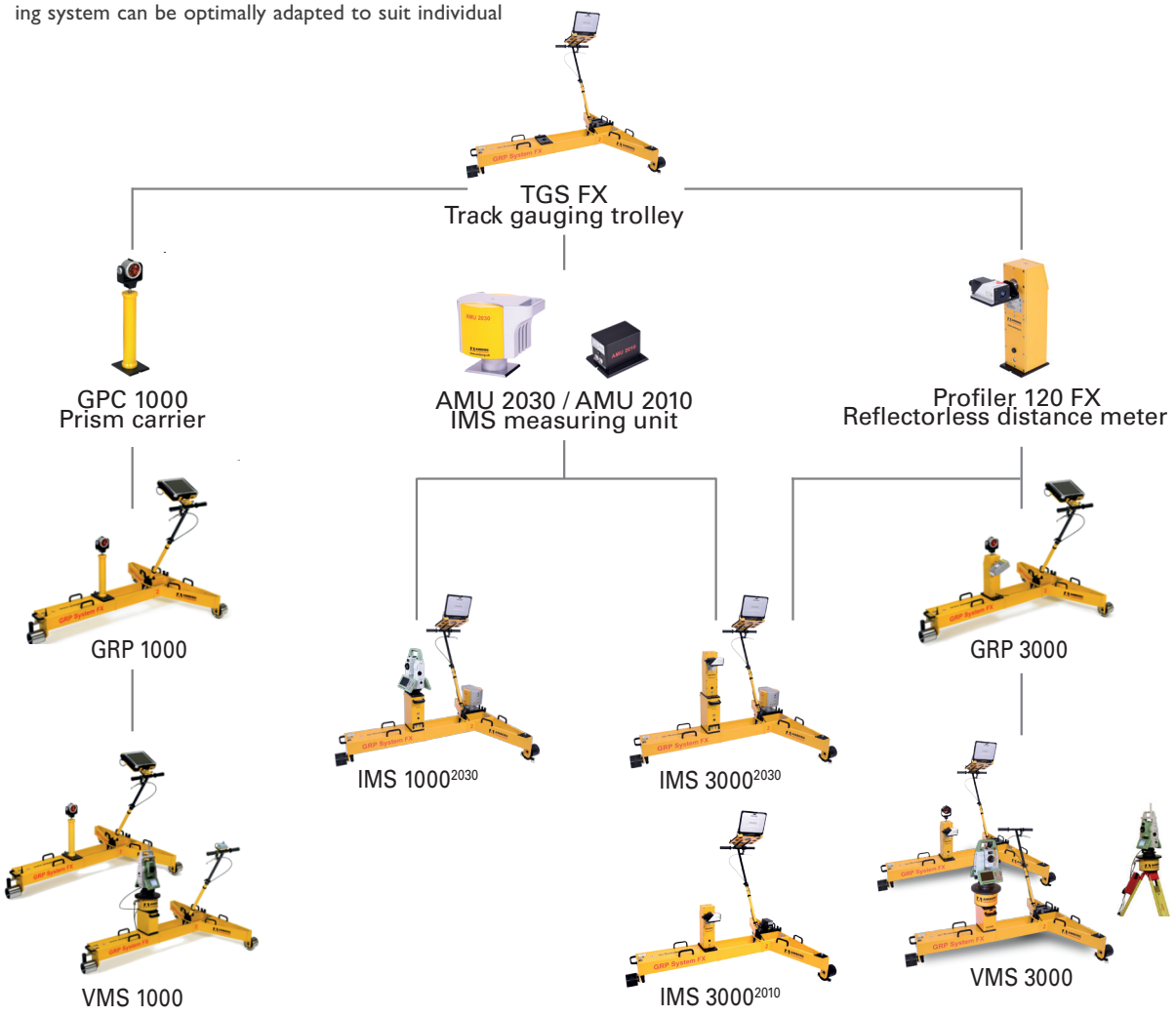
Optimised to meet your needs

- Central data management for project and measurement data
- Basic data taken from track layout plan or digital track database
- Lift and slew values either in real-time or as correction data for the tamping machine
- Powerful tamping data editor for more extensive correction data preparation
- Comprehensive logging and track documentation

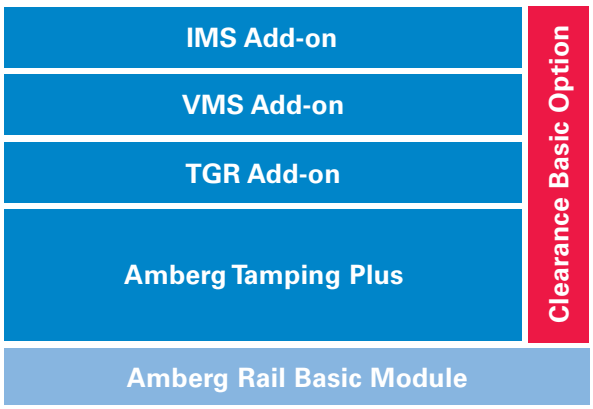
Amberg Tamping – modular, economical, compatible

Amberg GRP System FX

Amberg GRP System FX is the proven, universal system solution for surveying precise track geometry and track environment data. Thanks to the modular design the surveying system can be optimally adapted to suit individual and project requirements. The system is easy to transport, allowing surveying to be easily integrated into railway construction processes.



Amberg Tamping Software



- **Clearance Basic Option**
  Automated clearance surveying and analysis
- **TGR Add-on**
  Track geometry record module for comprehensive reporting
- **IMS Add-on**
  Data acquisition with IMS measuring module
- **VMS Add-on**
  Data acquisition with VMS long-chord measuring module
- **Amberg Tamping Plus**
  Application module for tamping surveying and correction data preparation for tamping machine
- **Amberg Rail Basic Module**
  Project data management and general user settings

What is your measuring system of choice?

Amberg Tamping IMS

Inertial 3D high-performance method

- The one-trolley system for unlimited long-chord surveying
- Inertial high-performance mode with unrivalled mm precision
- Unique combination of kinematic and on-demand single point surveys
- Measuring speed up to 4 km/h
- Unlimited use by day and night, rain and bright sunshine – no line of sight requirements
- Successful system operation without geodetic skills
- Minimised personell and work safety requirements

Amberg Tamping VMS

Digital long-chord method

- The flexible long-chord measuring system – operated either as two-trolley or single-trolley system
- Highest performance thanks to reliable automatic target tracking, self-levelling function and motorised fixed point surveying
- Absolute accuracy of 1 mm at the control point
- Actual track to design deviations optionally point by point in real time or per chord section
- Kinematic surveying with marker function or pure single point stop&go mode at operators choice
- Measuring speed up to 2.5 km/h (two-trolley-mode)
- No geodetic skills required

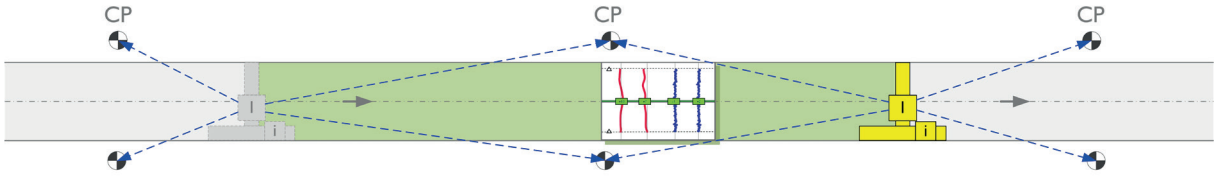
Amberg Tamping GRP

Geodetic 3D method

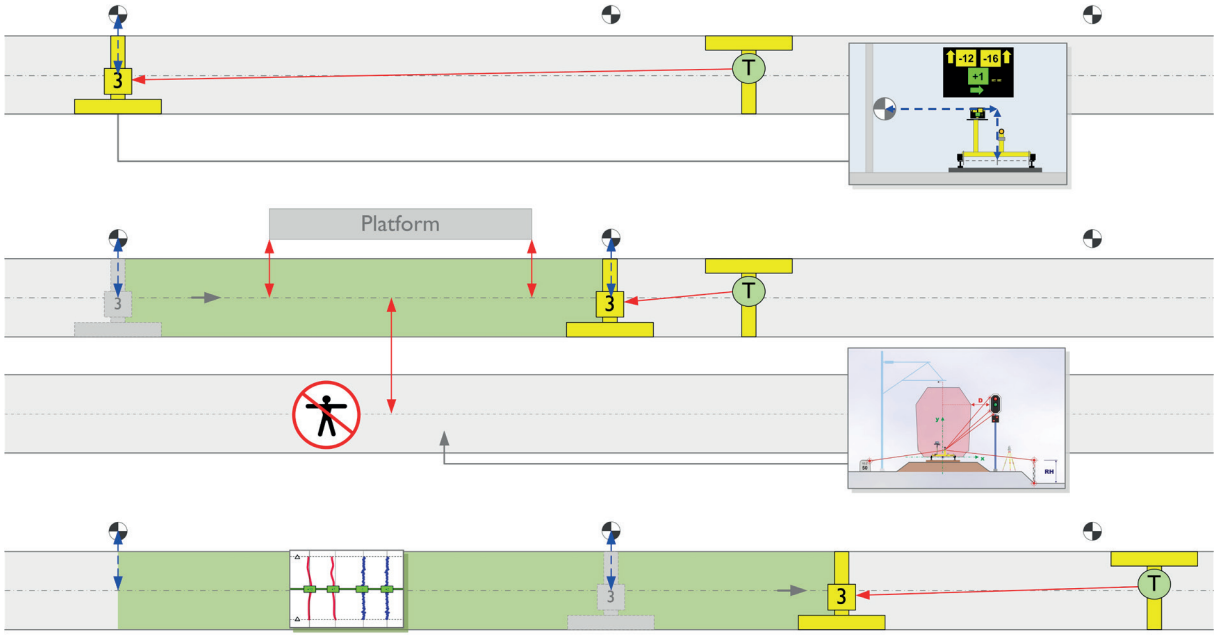
- The universal measuring method with highest geodetic reliability on site
- Absolute track position accurcay of up to 1 mm in real-time
- 3D positioning either by means of total station or GNSS – according to accuracy and performance requirements
- Operation either in stop&go or kinematic mode
- Measuring speed up to 1 km/h (min. two total stations)
- Geodetic basic skills required for total station setup

Overview of measuring methods

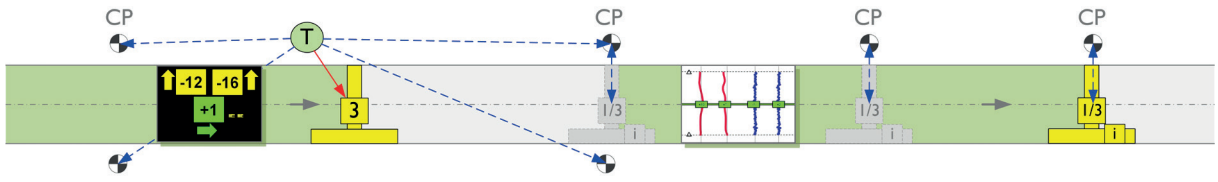
IMS Multi CP-Mode



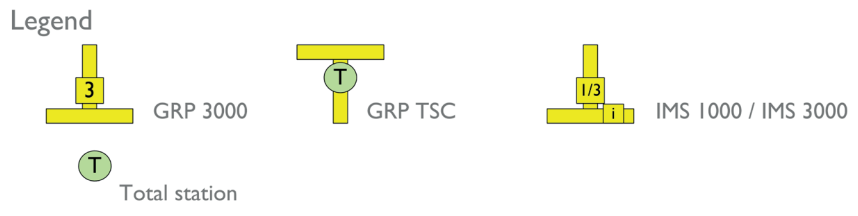
VMS Digital Long-Chord Method



GRP Geodetic 3D Method

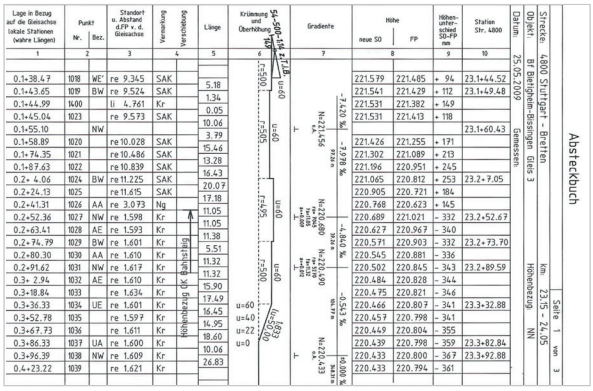


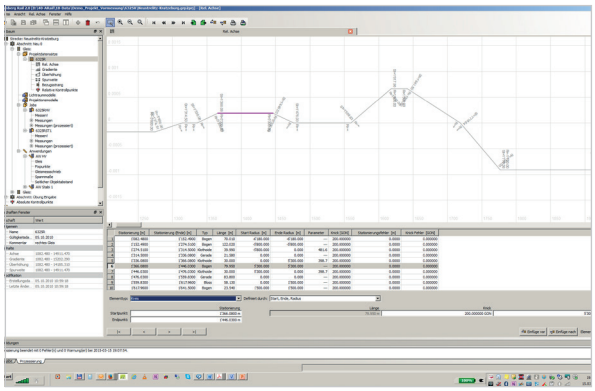
IMS Single CP-Mode // Relative CP-Mode



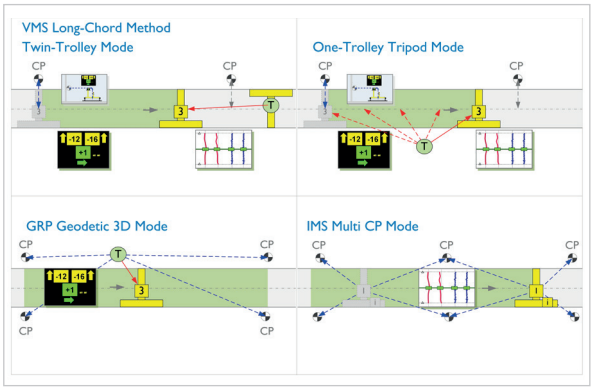
Surveying made easy

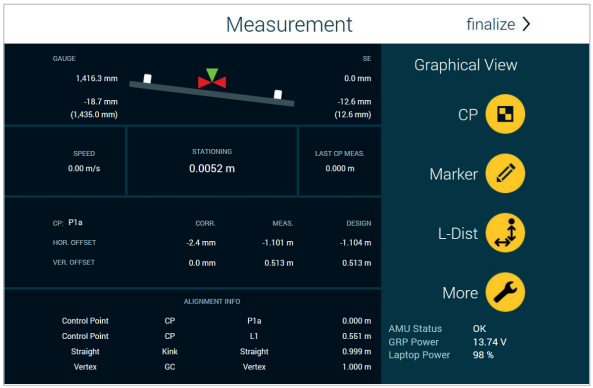
Step 1: Preparation





Step 2: User-guided surveying





Efficient project data management

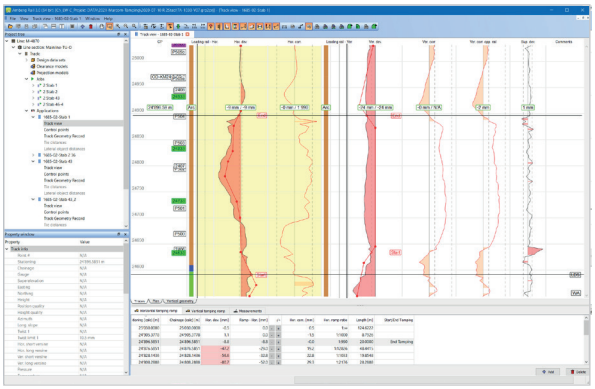
Logical and efficient management of survey data in a project is a central issue in the Amberg Rail solution. Among other things, this is achieved via the management of various track conditions. Survey data are allocated directly to the corresponding tracks.

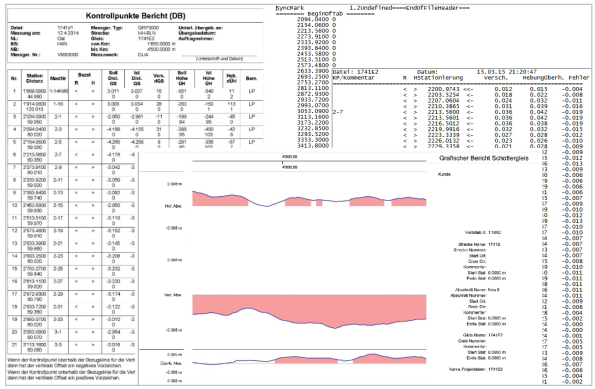
Practical measuring procedures

In Amberg Rail, surveying procedures are controlled by defined processes with the aim of eliminating surveying errors. They are adapted to the various applications using simple and clear masks on the touchscreen.

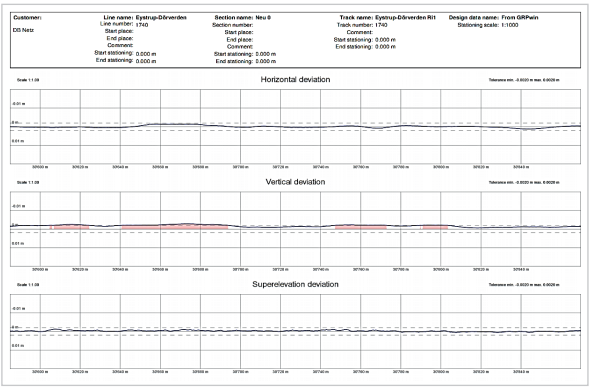
Step by step to the results you need

Step 3: Data analysis and reporting





Amberg Track Geometry Record (TGR)



Processing, analysis and preparation

Amberg Rail offers

- simple processing and evaluation of survey data
- automatic merging of single track survey sections
- interactive correction data preparation for tamping machine
- data interfaces to tamping machines of Plasser, Matisa, Harsco

National norms and customer specific requirements can be integrated into the existing solution.

Sophisticated track geometry analysis

The Amberg TGR module “Track Geometry Record” offers the user numerous options for protocoling the results of the track geometry analysis in the form of an established track measurement plot. The TGR module offers the analysis and visualisation of more than 80 separate track geometry parameter.

Amberg Tamping
Technical specifications

Measuring unit	Method	Maximale measuring speed [m/h]	Typical project performance [m/h]	Typical accuracy R = Relative A = Absolute [mm]	Surveying team persons [number]	Typical performance per person [m/h]
Optical	Sighting	100	100	R +/- 3 A +/- 5	4	25
GRP 1000	Geodetic 3D	1000	600	R +/- 1 A +/- 1	3	200
VMS 1000 VMS 3000	Long-chord	2500	1300	R +/- 3 A +/- 3-5	3	430
IMS 1000 IMS 3000	Long-chord (Multi / Single)	4000	2500	R +/- 1 A +/- 2-5	2	1250

Amberg Rail Applications

Amberg Survey
Powerful measurement system for productive documentation of tracks and for targeted data transfer to facilitate planning tasks and further analyses.

Amberg Slab Track
End-to-end measurement solutions, optimised for the typical requirements encountered in the construction, documentation and maintenance of slab track projects.

Amberg Clearance
Modular system solution for automated clearance surveying with analysis and documentation suitable for railway applications.

Amberg Technologies has developed specialized 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 tunneling and railway industry experts thanks to a worldwide service and support network.

Amberg Technologies AG
Trockenloostrasse 21
CH-8105 Regensdorf
Switzerland

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

www.ambergtechnologies.ch

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