

Amberg Tamping VMS 3000

The long-chord track survey system for demanding track works



Innovation of a proven principle for track works

- Long chord method
- Combined survey of track and lateral distance offsets in one run
- Absolute accuracy 3 mm
- Greatest operational flexibility – thanks to twin-trolley mode and tripod mode option
- Integrated fixed-point measuring device
- Cost savings of 70% and more compared to manual / optical chord methods
- Safe digital data handling – from initial data input to final transfer of correction data
- Easy handling and flexible transportation

High performance for long track sections – twin-trolley mode

- 1st Choice for measurements during track closures
- Measuring performance of up to 2300m/h
- Length of reference chord of up to 250m
- Measuring system GRP 3000 consisting of precision sensors for gauge, superelevation and distance, Profiler 110 with prism and ruggedized notebook
- Measuring system GRP TSC with automatic tripod for quick and easy self-levelling of tachymeter
- LED lightening bar assuring safe work during night
- User friendly handling specially designed for track workers



Greatest flexibility under demanding project conditions – tripod mode

- Ideal for short track sections, e.g. turnouts, multi-track sections and projects with limited track access
- Length of reference chord of up to 400m
- Measuring system GRP 3000
- Tachymeter on tripod (with automatic self-levelling tribrach)
- Flexible measuring mode – as twin-trolley mode – complemented by Flex-Stop functionality
- Immediate measurement stop for rapid track clearance on demand – without impact on performance
- Modular system design allows upgrading at any time e.g. 2nd trolley and other survey applications

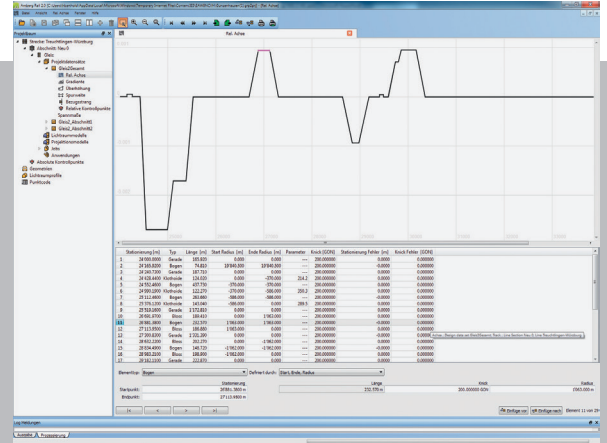


Easy to use, fully controlled, highly efficient – From preparation through to evaluation

Project data management

Simple and quick project data management

- Project setup and track data definition in only a few steps
- Smart input of track data coming from track layout plan or other analogue document
- Direct import of digital alignment data
- Data base model assures immediate access to data input, management and reporting
- Various interfaces for design data transfer
- Integrated track point calculator

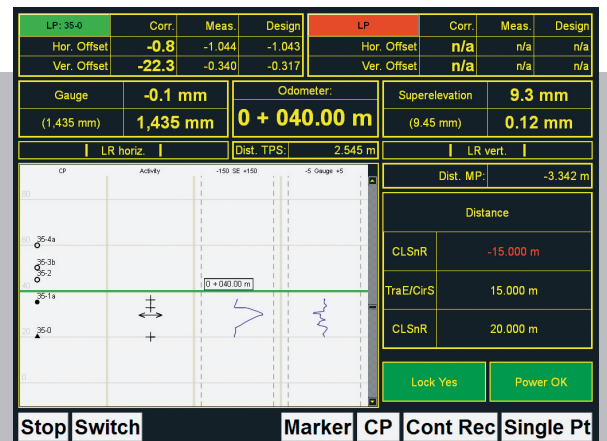


Project data input – intuitive, safe, efficient

Measurement

Tamping surveying with highest efficiency

- Easy measuring process – supported by big control screen for complete overview and control at any time
- Track and lateral distance offset survey in one run
- Real-time display of relevant track data
- Kinematic measuring mode
- Single point shots incl. code and note function for relevant track objects (e.g. synchro point, frog)
- Control point measurement including tie-distance control
- Different operation mode for optimal utilisation – during complete track possession or short access windows

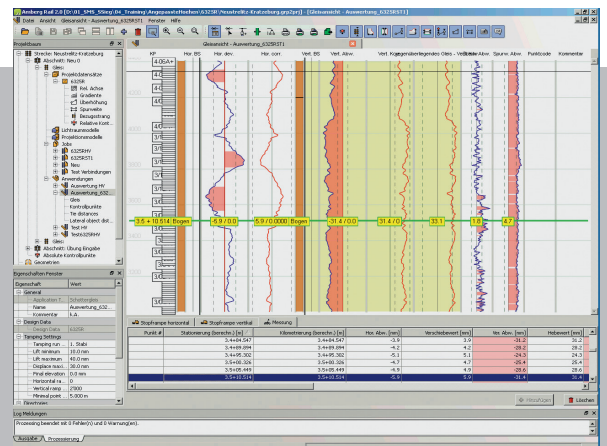


Screen display – clear, meaningful, ergonomic

Evaluation

Automatic evaluation and correction data calculation

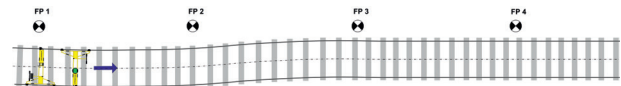
- Automatic linking and analysis of measuring sequences
- Clear display of results of actual / nominal track comparison including tolerance levels, cross level, point and code info
- Comprehensive evaluation tool for determination of correction values, lift and slue (shift), including ramping, check of possible ramp slope, maximum lift and slue correction
- Actual / nominal fixed-point check
- Comprehensive documentation and export of results including tamping data files
- Lift & slue report for machine driver



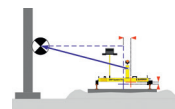
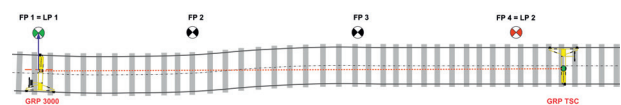
Graphical data analysis – all details at a glance

Innovation of a proven principle for track works: The VMS long chord method

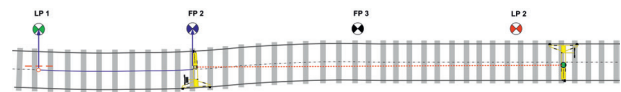
Twin-Trolley Mode



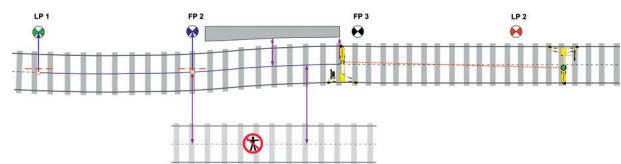
GRP TSC trolley moves to the end of the first section. Preparing the laser tachymeter within seconds by pushing one button.



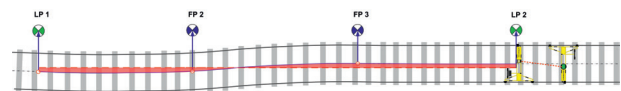
Start of chord measurement: Initial lift and slue calculation at fixed point LP 1 with GRP 3000



Kinematic track recording at walking speed. Survey of synchro points, other POI and additional fixed-point measurements possible at any time.

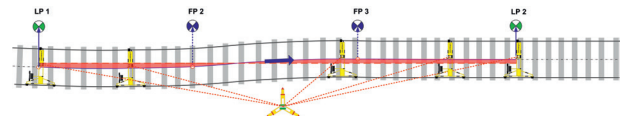


Optional: Non-contact measurement of parallel track distance, platform offset or position of contact wire.



Complete actual/nominal comparison at the end of the measuring section.

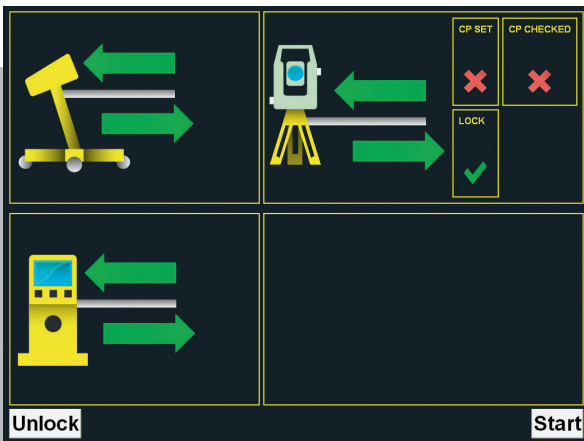
Tripod Mode



Identical sequence of operation for tripod mode – combined with higher flexibility for track access and high productivity at turnouts and multi-track sections.

Lage in Bezug auf die Gleise (siehe Gleiseplan)	Parti	Ständer	Ständer	Ständer	Länge	Kürzung	Gravitate	Höhe	Höhe	Station	Datum	Strasse
1	2	3	4	5	6	7	8	9	10	11	12	13
0.1-28.4.7	018	ME	re 9.315	SAK				2215.79	221.485	94	23.14.44.52	4300
0.1-43.65	019	BW	re 9.524	SAK	5.18			2215.44	221.429	102	23.14.47.48	4300
0.1-44.99	040	U	re 4.741	Kr	1.34			2215.91	221.382	149		4300
0.1-45.04	023	re	re 9.573	SAK	0.05			2215.91	221.413	118		4300
0.1-55.10		NW			10.06						23.14.40.43	4300
0.1-58.89	020	re	re 10.028	SAK	3.79			2214.26	221.255	171		4300
0.1-74.35	001	re	re 10.488	SAK	15.46			2213.02	221.089	219		4300
0.1-87.63	022	re	re 10.239	SAK	19.28			2211.06	220.951	245		4300
0.2-1.04	024	BW	re 11.225	SAK	16.43			2210.65	220.812	253	23.2.7.05	4300
0.2-24.13	025	re	re 11.645	SAK	20.07			220.905	220.721	184		4300
0.2-41.31	026	AA	re 3.073	Ng	17.88			220.768	220.423	145		4300
0.2-52.36	027	NW	re 1.598	Kr	11.05			220.689	221.021	332	23.2-52.67	4300
0.2-63.41	028	AE	re 1.593	Kr	11.38			220.677	220.967	340		4300
0.2-76.79	029	BW	re 1.601	Kr	11.38			220.571	220.903	332	23.2.73.70	4300
0.2-80.30	030	AA	re 1.610	Kr	5.51			220.545	220.881	336		4300
0.2-97.62	031	NW	re 1.617	Kr	11.32			220.502	220.845	343	23.2-89.50	4300
0.3-2.94	032	AE	re 1.610	Kr	15.80			220.484	220.878	344		4300
0.3-18.84	033	re	re 1.634	Kr	17.49			220.475	220.871	346		4300
0.3-26.33	034	UE	re 1.601	Kr	16.45			220.466	220.863	341	23.3-32.88	4300
0.3-32.28	035	re	re 1.597	Kr	14.95			220.457	220.798	341		4300
0.3-47.73	036	re	re 1.611	Kr	18.60			220.449	220.804	355		4300
0.3-46.33	037	UA	re 1.600	Kr	18.60			220.439	220.798	359	23.3-42.84	4300
0.3-56.39	038	NW	re 1.609	Kr	10.06			220.433	220.800	367	23.3-42.88	4300
0.4-23.22	039	re	re 1.621	Kr	26.83			220.433	220.794	361		4300

Doesn't mind whether it is analogue or digital project data



Clear structured survey process – the key for highest productivity

Kontrollpunkte B

Datum: 2010/10/09 Mess. Instr. Typ: QRF
 Mess. Datum: 00.10.2010 Strecke: Neu
 NL: Berlin Gleis: 632
 BS: von Stationen: zu Stationen: 14
 NB: Nord Messbereich: 14
 Instrument Nr.: 3287

Nr.	Stationen	KP Nr.	P	H	projekt.	gemessen
	Nr.				Mor.	hoh.
		Entfernung			OS	OS
1	01	19.500	807	<	-3.782	-3.717
		80.800	0	>	0	0
				>	-3.784	-3.749
				>	0	0
				>	-3.737	-3.731
				>	0	0
				>	4.281	4.377
				>	0	0
				>	-3.754	-3.736
				>	0	0
				>	4.580	4.285
				>	0	0
				>	-3.739	-3.743
				>	0	0
				>	4.530	4.527
				>	0	0
				>	4.422	4.416
				>	0	0
				>	4.458	4.443

Abfahrtsplan

Datum: 2010/10/09 14:42:17

Strasse	Station	Abfahrtsplan	Reihe
011101303	1	<	1
011101304	2	<	1
	3	<	1
	4	<	1
	5	<	1
	6	<	1
	7	<	1
	8	<	1
	9	<	1
	10	<	1
	11	<	1
	12	<	1
	13	<	1
	14	<	1
	15	<	1
	16	<	1
	17	<	1
	18	<	1
	19	<	1
	20	<	1
	21	<	1
	22	<	1
	23	<	1
	24	<	1
	25	<	1
	26	<	1
	27	<	1
	28	<	1
	29	<	1
	30	<	1
	31	<	1
	32	<	1
	33	<	1
	34	<	1

Numerous output options – from printout through to digital data

Amberg Tamping VMS 3000

System performance and technical data

Systemkonfiguration	
System configuration	1000, 1067, 1435, 1520/24, 1600, 1668/76
Amberg GRP 3000	
Gauge measuring range ▪ for nominal gauges	-25 to +65 mm
Cross level (cant) ▪ at 1435 mm	+/- 260 mm
Fixed-point measuring device Profiler 110 FX	
Fixed-point distance	< 20 m
Weight ▪ incl. computer, batteries	30 kg
Amberg GRP TSC	
Self-levelling tribrach ▪ time	< 5 s
Weight ▪ incl. total station, batteries	33 kg
Total station	
Leica total station ▪ motorized, ATR ▪ radio modem	MS50, TS50, TS30, TS15
System accuracy	
Survey of track position and height ¹⁾	
▪ Stop & Go mode	+/- 1 mm
▪ Kinematic mode	+/- 3 mm
Crosslevel	
▪ Stop & Go mode	+/- 0.5 mm
▪ Kinematic mode	+/- 1 mm
Fixed-point measurement ▪ relative to track axis ▪ at 5 m distance	+/- 3 mm
Measuring frequency	
Track geometry ▪ 3D track position, gauge, crosslevel	
▪ Stop & Go	< 5 s / measurement
▪ Kinematic	< 7 measurements / s

Environmental specifications	
Working temperatur range	- 10° to +50°
Humidity ▪ non-condensing	< 80 %
Typical performance	
Twin-trolley mode	1000–2300 m/h
Tripod mode	700–1100 m/h
Tamping data (lift & slue)	
Tamping data preparation ▪ Correction data calculation incl. ramping	< 15 min/500 m
Tamping data formats	Plasser WinALC, ALC CGV5 Framafer BAO3 Matisa
System approvals	
CE Conformity	EN 61326-1:2013 EN 61000-6-2:2005 EN 61000-6-4:2007/A1:2011 EN 60825-1:2014 EN 13848-4 Directives 2014/30/EU Directives 2014/35/EU Directives 2011/65/EU
GRP System FX approvals from	Network Rail / London Under- ground (UK), Deutsche Bahn (DE), SBB (CH), SNCF (FR), ÖBB (AT), RFI (IT), Adif (ES), ProRail (NL), Infrabel (BE)
Extract of references	
Amberg's railway surveying solutions have proven their high performance all over the world. Demanding projects have been successfully realised in e.g. Germany, Austria, Belgium, the Netherlands, Denmark, France, Italy, Spain, Greece, Turkey, Australia, United Kingdom, Saudi Arabia, UAE, Korea, USA, PR China.	

¹⁾ Depending on e.g. chord length, atmospheric conditions, control point quality, positioning sensor and project conditions.