

Le chariot mesure la géométrie de la voie et enregistre les résultats des inspections visuelles de l'état de la voie. Les irrégularités dans deux plans (versins horizontal et vertical) par rapport au deux rails sont mesurées à l'aide d'un système inerte innovant composé de gyroscopes semi-conducteurs et d'accéléromètres de pointe. Une nouvelle méthode de mesure des irrégularités horizontales et verticales permet d'obtenir des résultats de mesure hautement précis.

Calculated values correspond to measurements performed using a wire versine meter or measurements made by state-of-the-art measurement cars. The trolley is easy to use and has a modular design enabling its transport by one person and fixing on a track in less than 5 minutes. In addition, the possibility of using the trolley on any track gauge significantly increases work productivity. Track geometry measurement results such as values of width, cant, horizontal and vertical irregularities, covered distances and GPS positions are recorded in the device memory on a real-time basis. The trolley can be easily and quickly (ca. 26 kg in weight) removed from a track to allow the safe passage of trains.

Measurements can be instantly resumed without calibration or zeroing.

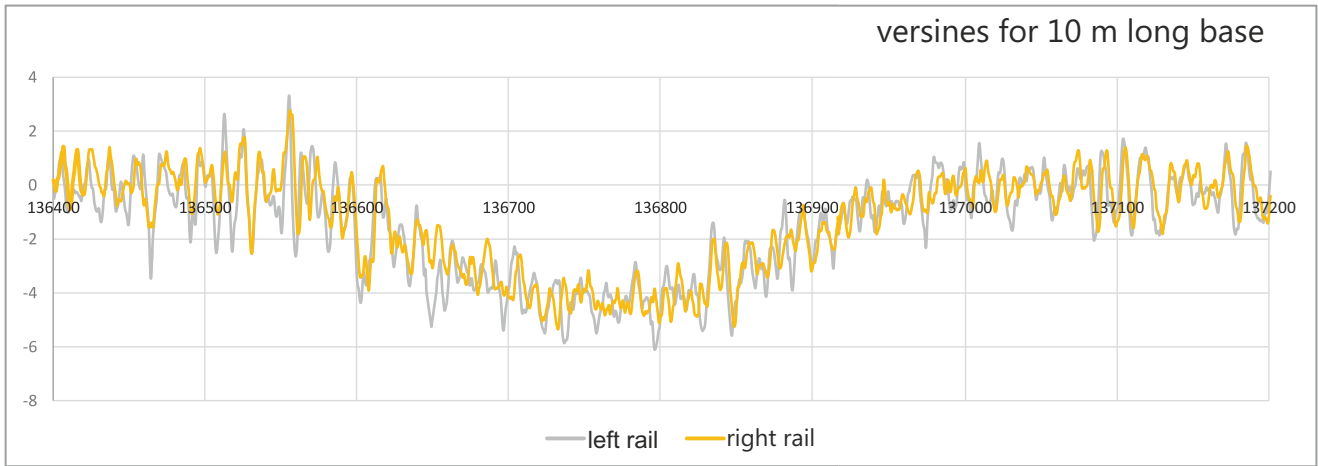
The TEC trolley meets the requirements of the EN 13848-4 standard. Measurement results generated by the trolley are consistent with the requirements of the Polish Railway Lines (PKP PLK).

The trolley is provided with a colourful backlit display and a comfortable keyboard (typical of other GRAW products). Measurement results and information about exceedings of allowed values are perfectly visible even at night. Dedicated keys of typical defects facilitate the recording and annotation of cracks in welds or rails, missing bolts, sleepers requiring replacement etc.

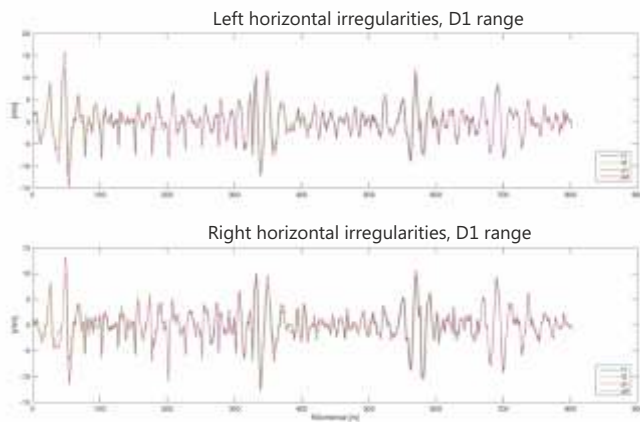
Track meas.		11.9V08:03	
① Gauge [mm]	② Kant [mm]		
1440.9	62.5		
④ Vertical [mm]	⑤ Horizontal [mm]		
2.91	0.58		
⑦ Mileage [km]	⑧ Distance [mm]		
0.0000	0.0000		
Fix:1	Sat:7	UTC:161127	v:0.0 m/s
La5030.2705	Lo1935.4861	Al41.0 m	
Pause meas.	End meas.	Show profile.	

The trolley control panel can be removed, facilitating the overview of results after the completion of measurements. The transfer of data to a PC is performed via a USB Pendrive.

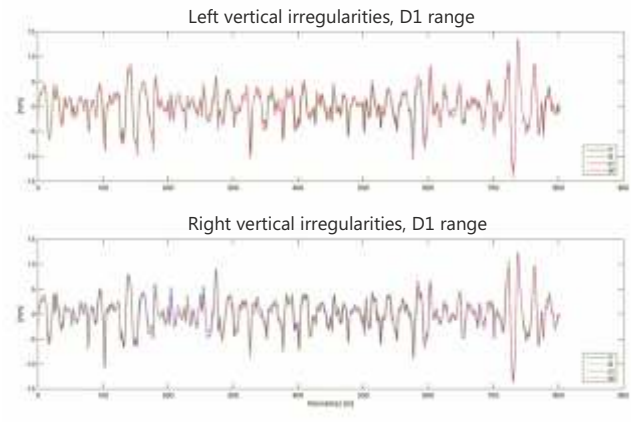
The trolley is supplied with the GeoTEC System software (for PCs) enabling, among other things, the graphic presentation and comparison of measurement results as well as the printing of measurement reports or calculating typical track quality factors. Measurement results are also available in the tabular form containing track defect locations. Measurement data can be exported in MS Word, MS Excel and PDF formats.



Screenshot of PC data processing software delivered with the trolley



Horizontal irregularities - range D1



Vertical irregularities - range D1

Numeric data report

Measurement data: 09.06.2015 09:11:34
 Line: 1 (1)
 Track: 1
 Parameter tolerances: 80 km/h



Mileage [km]	Gauge [mm]	Cant [mm]	Twist [mm]	Gradient [mm]	Hor. irr. L. [mm]	Hor. irr. R. [mm]
0.0123	-1.5	5.3	-1.8	1.8	-1.3	-1.0
0.0125	-0.7	5.0	-0.8	1.1	-0.6	-0.7

0.0178	1.7	4.4	-0.7	-0.1	2.7	0.3	3.8	3.7	5.0	3.3	4.9	1.6
0.0180	1.6	4.1	-0.5	-0.2	2.6	0.3	3.9	3.7	5.0	3.3	4.6	1.4
0.0183	1.5	3.5	-0.4	-0.6	2.2	0.3	3.9	3.8	4.6	3.1	3.8	1.1
0.0185	1.6	3.0	-0.3	-1.6	1.8	0.3	4.0	3.9	4.0	2.7	3.0	0.7
#0.0188	1.6	2.9	-0.8	-2.5 #	1.2	0.4	4.0	3.9	3.3	2.0	2.7	0.4
#0.0190	1.4	2.8	-1.0	-3.3 #	0.6	0.4	4.1	4.0	2.9	1.3	3.1	0.4
#0.0193	0.9	2.6	-1.4	-3.2 #	0.0	0.4	4.1	4.1	2.9	0.4	3.7	0.7
#0.0195	0.0	2.6	-1.3	-2.2 #	-0.5	0.3	4.2	4.1	3.3	-0.3	4.4	1.1
0.0198	-0.9	2.7	-1.9	-0.7	-0.9	0.2	4.2	4.2	3.6	-0.8	4.5	1.2
0.0200	-1.9	2.9	-2.2	0.8	-1.2	0.1	4.2	4.2	3.5	-1.0	4.0	0.4

The trolley was examined by the independent railway scientific research body: Railway Institute, Railway Track and Operation Division in Warsaw.



Trolley specifications:

Measured parameters:	Track gauge, cant, vertical irregularities, horizontal irregularities
Measurement increment:	0.25 m
Ranges:	Track gauge: $-15 \div +50$ mm of the nominal value Cant: ± 200 mm Horizontal and vertical irregularities: full range
Accuracy:	Track gauge: from ± 0.5 mm Cant: ± 1.5 mm Vertical irregularities: ± 1 mm / 10 m Horizontal irregularities: ± 1 mm / 10 m
Operating conditions:	Temperature: $-20 \div +45$ °C Humidity: $15 \div 85\%$, no condensation
Memory capacity:	430 km (measurement speed 1.5 m/s)
Weight:	26 kg
Optionally available	Replaceable batteries making continuous operation possible
Availability:	The trolley is available for all track gauges, e.g.: 914, 1000, 1067, 1435, 1520, 1524, 1600, 1668, 1676 mm
Continuous work:	Replaceable batteries making continuous operation possible (about 3 hours with one set of batteries)
Calculated parameters:	Width gradient Track twist Horizontal and vertical irregularities on a chord of up to 25 m Alignment in D1 range Longitudinal Level in D1 range
Data formats:	PDF, MS Word, MS Excel,

Functionality:

- » Trolley records the measurement route using the on-board GPS receiver
- » Display legible even in direct sunlight, as well as in the tunnel; visual signalling of exceedings
- » Transferring of the measurement data to the PC via a USB Pendrive
- » Software for printing measurement reports, archiving and comparing measurement results



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