TEC-1435 Track Gauge

The track gauge is designed for measurements of track geometry. Gauge readings are recorded automatically in its electronic memory in real time as the gauge travels along the track. The operator can see measured values of the track gauge, cant, and the actual mileage on the display during measurements. The large size foil keyboard makes it possible to input information on track faults discovered. One can mark location, e.g., of the broken weld or rail, need to replace the sleeper or missing bolts.

1. Main track gauge technical specifications:

- mileage measurement increment: 0.5 m
- gauge - range: 1420÷1485; resolution: 0.1 mm
- cant - range: ±200 mm; resolution: 0.1 mm
- vertical irregularities - range: ±4 mm / 1 m; resolution 0.1 mm
- horizontal irregularities - range: ±5 mm / 1 m; resolution 0.1 mm

2. Software for the PC platform, supplied with the track gauge makes it possible, among others, calculation of the track gauge gradient, track twist, and recalculation of the measured vertical and horizontal irregularities to 10 m long chords. Tabular printout of the measurement results is possible, with marking the mileage values where faults observed by the operator occurred, printout of the measurement results as plots, and also calculation of the synthetic indices W5 and J, employed - according the Polish State Railways - for evaluation of the track geometry quality. Delivery of the software for processing the track gauge measurement results according to requirements of other railways is also possible.

The gauge has many operational advantages. Low weight (about 20 kg) makes fast removal from the track possible to let the train pass, next, immediate continuation of the measurements is possible without any calibration. The track gauge may be folded easily and transported even in a small car. The gauge electronic memory can store up to 15 km of the track length measurement results, which is equivalent to the single shift measuring capability of the gauge.

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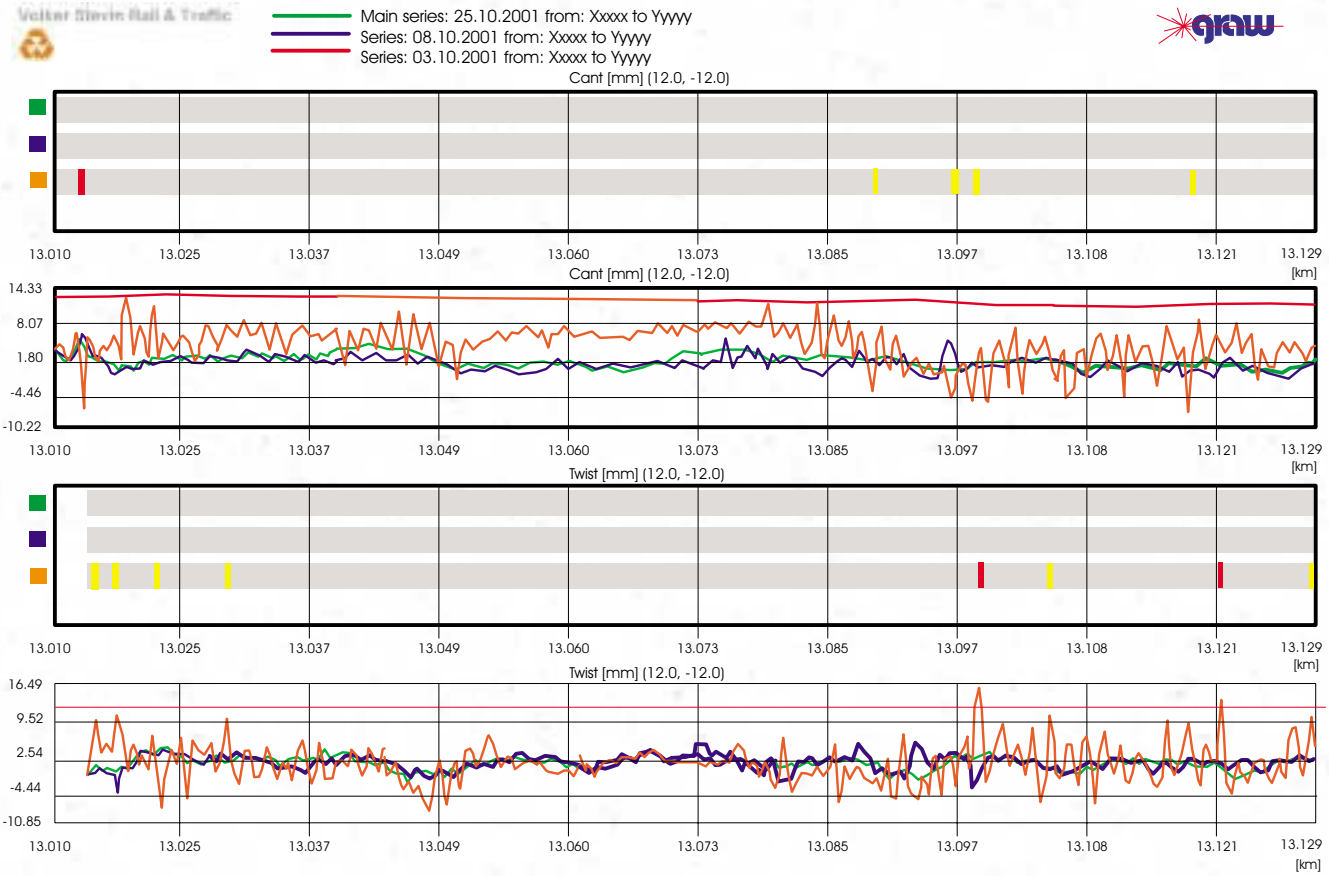
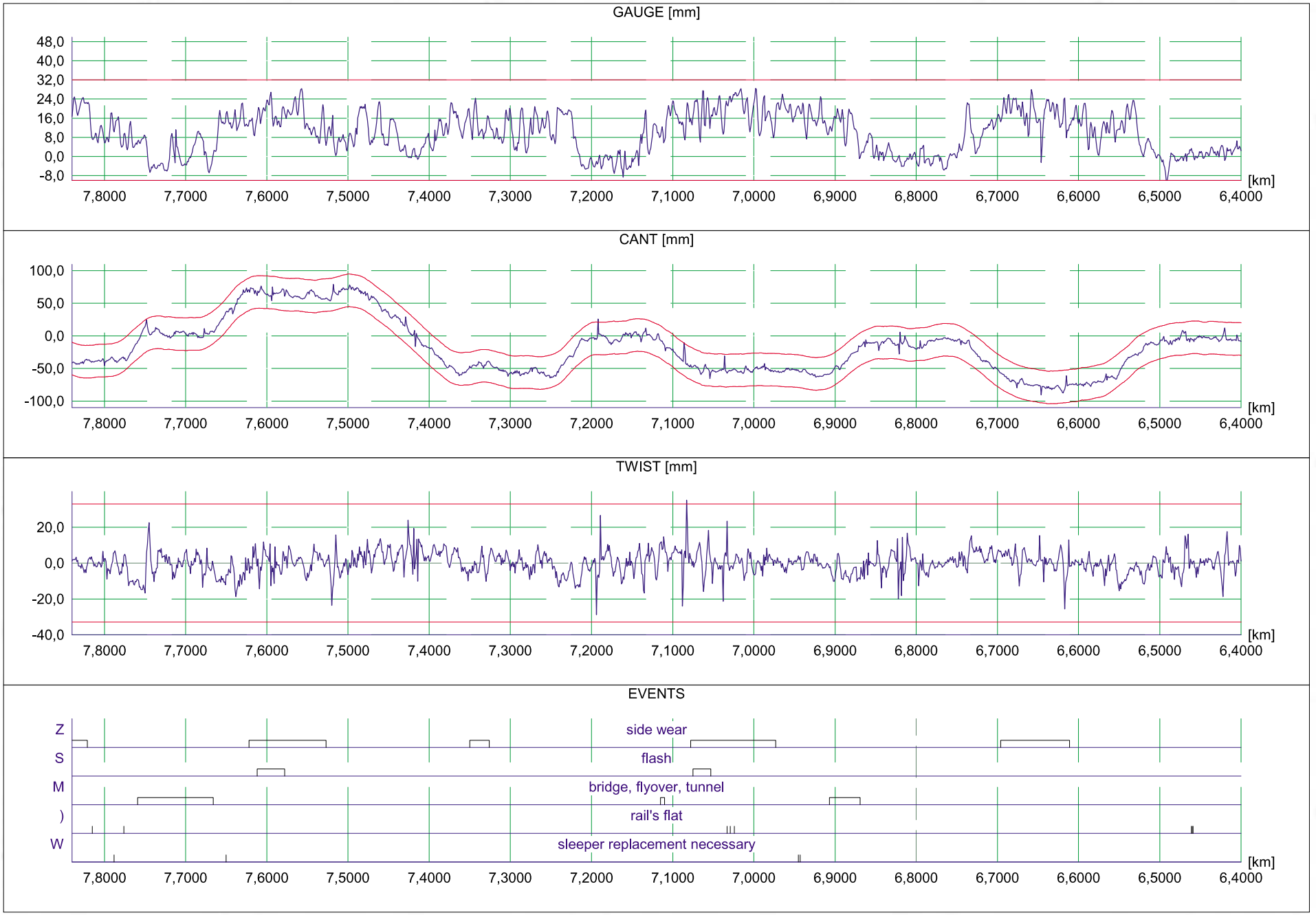
TEC-1435 Track Gauge



Example of the measurement data analysis

Measurement data file of: 01.02.1999r., Route: ROG - RWS, Track: 1



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Measurement data file of: 07.06.1999r., Route: SZO-GL23 OD R3, Track no: 1

Tolerances:
-8,0 mm < Gauge < 10,0 mm
-2,0 mm < Gradient < 2,0 mm
-18,0 mm < Cant < 18,0 mm
-3,0‰ < Twist < 3,0‰
-16,0 mm < Vertical < 16,0 mm
-15,0 mm < Horizontal<15,0 mm

Events and defects filter: HMRDEFBPWLS)Y/Z;

	H - hectometer marker	W - sleeper replacement necessary	
	M - bridge, flyover, tunnel	L - fish bar bolts missing	
	R - crossover	S - flash	
	D - crossing	) - rail's flat	
	E - platform	Y - burr	
	F - precise measurement	/ - skewed sleepers	
	B - sleeper fixing bolts missing	Z - side wear	
	P - broken rail	; - broken weld joint	

KILOMETER	GAUGE	GRADIENT	CANT	TWIST	VERTICAL	HORIZONTAL	DEFECTS
[km]	[mm]	[mm]	[mm]	[‰]	[mm]	[mm]	HMRDEFBPWLS)Y/Z;
28,6800	-5,8	---	2,4	---	---	---	
28,6750	-7,1	1,3	2,3	0,0	-3,0	-198,5	
# 28,6745	-8,5 #	1,9	2,3	0,0	-2,7	-197,3	
# 28,6740	-9,4 #	2,3 #	1,9	0,1	-2,7	-196,7	
# 28,6735	-9,3 #	0,8	2,2	0,1	-2,6	-196,1	H
.....							
28,6700	-7,0	-0,7	1,1	0,2	-5,1	-194,2	F
28,6650	-1,3	-0,0	4,1	-0,6	5,0	-195,2	F
28,6600	-1,8	-1,7	3,4	0,2	1,2	-194,6	
28,6550	-2,7	0,3	4,4	-0,2	-4,3	-191,4	
# 28,6525	-3,6	-0,0	5,4	-0,6	-9,7	-189,1	
# 28,6510	-2,1	-1,5	3,5	-0,1	-1,4	-186,3	
.....							

Fragment of an exemplary listing of digital results of the track geometry measurements made with the TEC-1435 track gauge

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Measurement data file of: 07.06.1999r., Route: SZO-GL23 OD R3, Track no: 1

Synthetic assessment of track condition calculated for 100 [m]

Coefficient J limit: 6,2

			Standard deviation						Quality levels						
Section		CoeffJ	Gauge	Grad.	Cant	Twist	Vert	Horiz	Gauge	Grad	Cant	Twist	Vert	Horiz	5-elem
28,6800	28,6000	3.6	1.8	0.9	1.1	1.6	3.1	6.8	0.04	0.01	0.00	0.00	0.00	0.00	0.04
28,6000	28,5000	2.5	1.2	0.7	10.3	3.3	2.9	2.1	0.00	0.01	0.00	0.00	0.00	0.00	0.00
28,5000	28,4000	1.9	1.0	0.9	3.8	2.2	2.4	1.5	0.00	0.02	0.00	0.00	0.00	0.00	0.00
28,4000	28,3000	2.3	1.2	0.8	6.5	2.3	3.6	1.6	0.01	0.01	0.00	0.00	0.00	0.00	0.01
28,3000	28,2000	2.8	2.9	1.0	5.6	2.3	4.3	1.9	0.29	0.04	0.00	0.00	0.00	0.00	0.29
28,2000	28,1985	0.3	0.2	0.3	0.4	0.9	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Exemplary synthetic assessment of track condition generated by TEC-1435 software