



GEDO NovaTrack

INTELLIGENT TRACK DESIGN

The Trimble GEDO systems are fast and efficient tools to measure, record and document detailed information about existing track. With Trimble GEDO, you can quickly survey existing lines or carry on pre-measurements for tamping based on design alignment data. In a single operation the Trimble GEDO captures the 3D coordinate position of the track, together with gauge and cant. When in combination with design alignment, Trimble GEDO provides real-time information about as-built track quality and offsets from design.

TRIMBLE GEDO SYSTEM

Trimble GEDO is a suite of tools for measurement, recording, analysis and applications for railway track location, construction and maintenance. Specially tailored for railway tasks and processes, Trimble GEDO solution hardware and software streamlines work in the field and office. The system uses standard techniques and data formats to share information with leading applications for railway track design and maintenance.

DESIGN BASED ON AS-BUILT

Today's requirements for as-built track quality evaluation, speed increase or routine tamping applications are raising the standard for alignment data consistency and quality. This includes track element definitions and connectivity to geodetic reference system.

However, often due to irregular maintenance or incomplete alignment definition, track position is affected by deformations and structure sediments. This leads to situation when alignment needs to be recreated and optimized to fit with the existing track position.

INTELLIGENT APPROACH

To solve this, from first sight complex alignment recreation riddle, Trimble GEDO technology brings fast and efficient solutions for recording detailed information about existing tracks. In the continues workflow, Trimble GEDO NovaTrack software automatically processing and analysing GEDO track measurement data, including coordinates, cant and gauge, and creates best fit alignment element solution.

SMART FEATURES

Trimble GEDO NovaTrack calculation engine contains several advanced algorithms for track alignment element representation and approximation. This includes element position approximation using curvature and direction methods, plus automatic sequence formation of alignment design elements - transition curves, circular arcs and straight lines.

Automatic process

Trimble GEDO NovaTrack statistical engine covers regression analysis of track measurement data and conversion into alignment elements. It offers several scenarios for alignment element adjustment to match as-built track position. Using robust regression methods, optimal alignment calibration process adjust parameters of individual alignment elements.

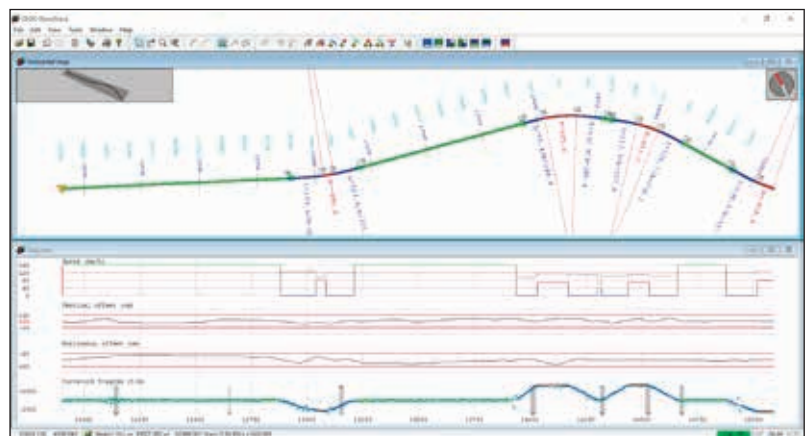
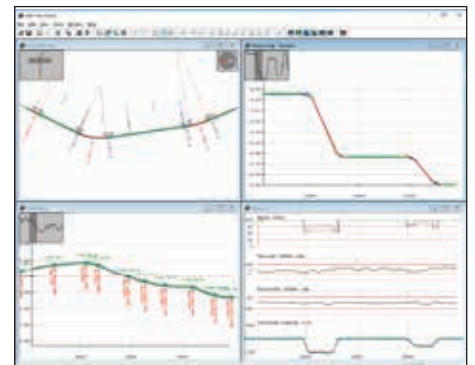
Interactive tools like Alignment-via-Diagram brings intuitive assistance during complete element adjustment process. For the quality evaluation and result acceptance, calculated data is continuously streamed to data view-ports. Calculated alignment element definitions and sequence are automatically back transferred to alignment absolute position.

Data exchange

New alignment data in horizontal, vertical and cant alignment element definitions is exported directly into GEDO alignment file formats. This simplifies direct import of alignment information into Trimble GEDO Office, Trimble GEDO Scan Office software as well in the field application Trimble GEDO Track and Trimble GEDO Vorsys.

Key Benefits:

- ▶ Full compatibility with Trimble GEDO track measurement systems
- ▶ Automatic and semi-automatic reverse calculation of alignments
- ▶ Advanced measurement analysis and error filtering using heuristic regression methods
- ▶ Formation of alignment elements from curvature and direction diagrams
- ▶ Calculation and graphics update on-the-fly
- ▶ Calculation of cant and speed parameters for individual track elements
- ▶ Support of user defined rules for geometry, speed and cant limitations

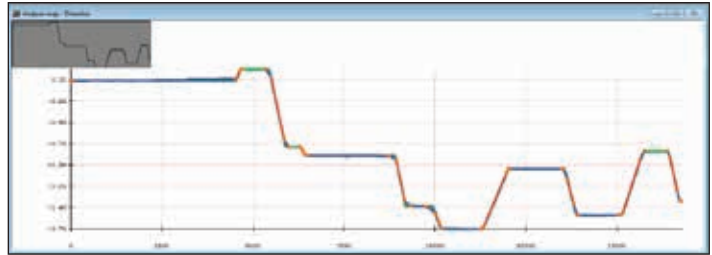


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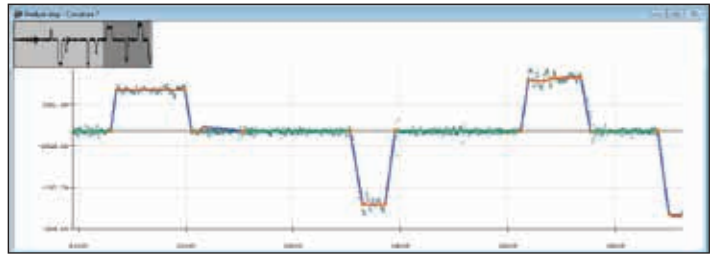
Cant and speed calculation

| Requirements | Given speed | Speed | | | | | | | | | | |
|--------------|-------------|-----------|----------|----------|---------|---------|---------|-----|-------|-------|-----|---|
| M1 | From | To | R1 | R2 | L | H1 | H2 | V | H1 | H2 | v | g |
| 1 | 11995.854 | 12980.858 | 0.000 | 0.000 | 974.787 | 0.000 | 0.000 | 168 | 0.000 | 0.000 | 160 | |
| 2 | 12680.858 | 13036.244 | 0.000 | -365.770 | 165.593 | 0.000 | 191.000 | 125 | 0.000 | 0.000 | 0 | |
| 3 | 13036.244 | 13084.262 | -365.770 | -365.770 | 48.628 | 36.900 | 150.000 | 108 | 0.000 | 0.000 | 25 | |
| 4 | 13084.262 | 13211.508 | -365.770 | 0.000 | 127.827 | 181.000 | 0.000 | 128 | 0.000 | 0.000 | 0 | |
| 5 | 13211.508 | 13934.966 | 0.000 | 0.000 | 723.657 | 0.000 | 0.000 | 168 | 0.000 | 0.000 | 160 | |
| 6 | 13934.966 | 14035.406 | 0.000 | 623.827 | 95.440 | 0.000 | 79.000 | 95 | 0.000 | 0.000 | 0 | |
| 7 | 14035.406 | 14460.001 | 623.827 | 623.827 | 158.395 | 150.000 | 150.000 | 115 | 0.000 | 0.000 | 70 | |
| 8 | 14460.001 | 14591.863 | 623.827 | 0.000 | 102.981 | 119.000 | 0.000 | 119 | 0.000 | 0.000 | 0 | |
| 9 | 14591.863 | 14519.751 | 0.000 | 0.000 | 10.886 | 0.000 | 0.000 | 40 | 0.000 | 0.000 | 40 | |
| 10 | 14519.751 | 14437.095 | 0.000 | 611.106 | 117.344 | 0.000 | 112.000 | 105 | 0.000 | 0.000 | 0 | |
| 11 | 14437.095 | 14532.784 | 611.106 | 611.106 | 95.689 | 180.000 | 180.000 | 118 | 0.000 | 0.000 | 70 | |

Calculated and user defined speed and cant



Alignment element definition using Direction Diagram



Alignment element definition using Curvature Diagram

To learn more:

To learn more about the Trimble GEDO track measurement & scanning solutions, please visit www.trimble-railway.com or contact your local authorized Trimble Track Survey & Scanning distributor.



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