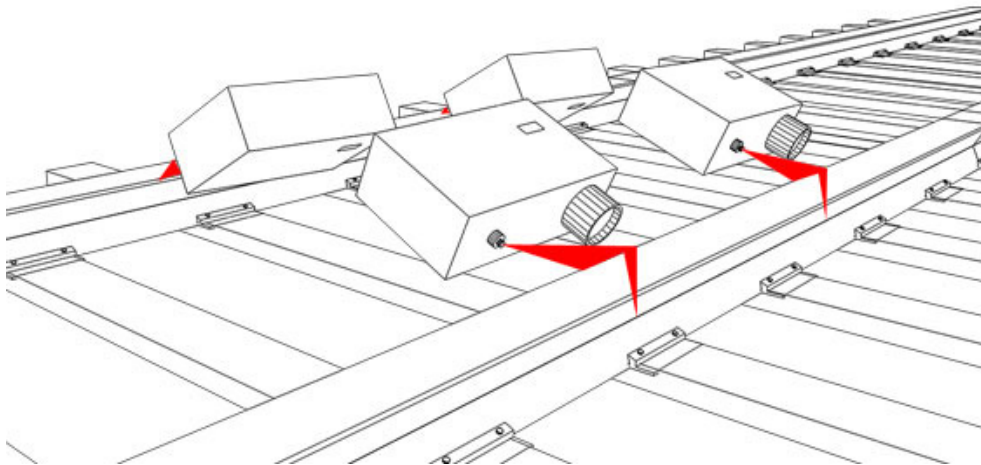


## Track Geometry Measurement System

Track geometry measurements are important to understand rail track stability when put under vehicle load. Our geometry systems use non-contact sensor technology to make high speed measurements reducing the overall time taken to make maintenance decisions. Rail Vision's track geometry measurements are based around readings taken from laser and inertial sensors and can be cross-referenced with image data and defects found through automated image analysis. These systems are designed for straightforward installation inspection vehicles and the latest systems have been innovated to be used with a range of vehicle sizes. These systems when installed on a chosen vehicle provide the same benefits to the end-user as having a dedicated geometry measurement vehicle but without major capital investment or maintenance cost. The measurements can be made at any time of the day and under any weather condition. Strip charts and exception reports are available for most measured features in near real-time.



The following track geometry parameters are measured: Gauge, Vertical profile, Horizontal profile, Super-elevation (cant), Twist, Curvature, Tilt, and Inertial measurements. The measurements are indexed using a GPS device sampling at 10Hz resolution which is interpolated to yield accurate readings at up to 50Hz for the vehicle speeds up to 80 km/hr. Track geometry data is recorded into a Microsoft SQL database, the contents of which can be easily interfaced or exported to any other end-user databases. The raw analysis is displayed on-board the vehicle and post-processed results are provided both as digital and printed strip-charts. The user can set appropriate exception thresholds for each measurement and the system will generate a report showing track area locations that need attention.

Rail Vision offers certain innovative geometry systems in collaboration with its partners which vary in specification and pricing. The output of these systems is channelled through Rail Vision's Enhanced Visual Inspection (EVI) software that not only provides data manipulation and analysis tools for track geometry data, but also allows for the import of track image analysis, rail profiling and other data sets. It is therefore possible to correlate geometry defects with image analysis results, and review the relationship between geometry defects and visible track defects (e.g. whether track areas with geometry defects are associated with excess number of missing fasteners). EVI software is used to review and analyse track geometry measurements, generate exception reports, compare data with historic runs, and evaluate measurements using a range of data mining tools with the objective of performing predictive maintenance. The analysis can also be viewed against the backdrop of rail route maps which help with visualising clusters of defects, and cross-referencing with other measurement defects.

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