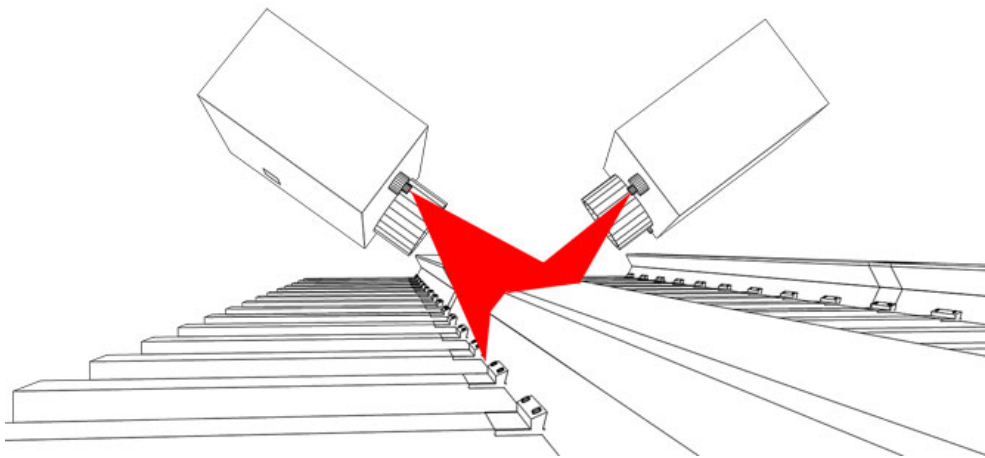


Laser Measurements

Rail Profiling, Plate Cutting and Grooved Rail analysis

Rail Vision's rail profile measurements are calculated using laser superimposed images of rail head and side. Specialist cameras are used to automatically determine in hardware a 3D profile of the rail surface which is compared with ideal rail profiles to determine surface and side wear. Rail profile and plate measurements are made at high speeds using TrackVue system. The measurements can be made at any time of the day and under any weather condition. Profile images, data, charts and exception reports are available in real-time.



For rail profiling, the following parameters are measured: Vertical rail wear, Gauge rail wear, Gauge and field lip, Side rail wear, Field rail wear, Cross-sectional area, and Head surface defects. The measurements are indexed using a GPS device sampling at 10Hz resolution which is interpolated to yield accurate readings at up to 50Hz. The measurements are sampled between 10-20 cm apart on the rail surface if the speeds are higher than 50 km/hr, but data is sampled closer at lower speeds.

Rail Vision further provides laser based plate cutting measurements for wooden sleepers. Steel plates that fix to the base of the rail on wood sleepers to hold them often sink into the wood sleeper because of sleeper deterioration over time caused by heavy traffic and weather conditions. Automated camera based laser measurements are made by TrackVue on plate height over or below sleeper level to grade sleeper quality. This information is further integrated with other sleeper measurements made through linescan imaging on sleeper condition including whether the sleeper is broken, rotten and has any wheel cuts. Sleeper assessments can be used to determine which ones should be replaced, and to correlate these findings with track strength measurements. Rail Vision also provides laser measurements for grooved rail assessment on tram networks, and bespoke measurements on other parts of the track and live rail. Abnormal wear on the grooved rail can lead to accidents and our system can be used to measure such defects.

Laser data captured by TrackVue is stored into a Microsoft SQL database, the contents of which can be easily interfaced or transferred to any other end-user databases. Rail Vision Enhanced Visual Inspection software is used to view and analyse laser 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.

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