GEKON 3D

Corrugation and rail profiles measuring trolley

The Gekon 3D is a measuring equipment designed for contactless corrugation measuring of both vignol and grooved rails. GEKON 3D can be used for evaluation of railhead surface microgeometry evaluation.

GEKON 3D is equipped by two 3D cameras using triangular principle are applied for non-contact continuous scanning of the rail profile.

GEKON 3D is composed of manually driven trolley and measuring computer, which serves as a data-logger and it can also evaluate the measured data. Trolley is light and compact. It can be removed from the track and returned back within seconds. Measurement can be done on an operated track.

TROLLEY DESIGN

The GEKON 3D trolley consists of a hand-operated measuring unit and external computer (tablet or notebook).
The measuring trolley includes laser sensors with the necessary drive and electronic units that transfer the acquired data to a computer. The correct position in the rail is ensured by wheels and rollers on both sides and a beam equipped with springs.

The complete trolley is lightweight and compact. It is very easy to remove the trolley and return it to the track in a few seconds. It is therefore possible to take the measurement on the track during uninterrupted traffic.

MEASURING PRINCIPLE

The GEKON 3D is equipped with measuring software Krab OnBoard 2.0. During the signal processing the following operations are performed:

- filtering of outlying peaks
- filtration by 375 mm wheel radius filter

After the measuring, collected primary data are transferred from the measuring computer into any PC computer.

Krab OnBoard 2.0 main page

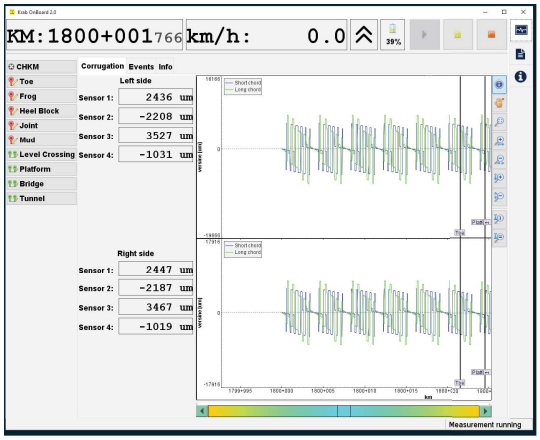
Rail profilemeter specifications

3D cameras using triangular principle are applied for non-contact continuous scanning of the rail profile in regular step 0.25m.
The rail head wear is calculated and displayed in real time as well as the shape of the rail head. Both rails or only one rail can be measured simultaneously depending on chosen configuration.

Measured rail profiles are stored at the same file as the track geometry data. Evaluation software displays the rail profiles simultaneously with the track geometry data. Rail profiles can be also exported to DXF.

Evaluation software Gekon 11 computes all filtered data using following blocks for signal processing:

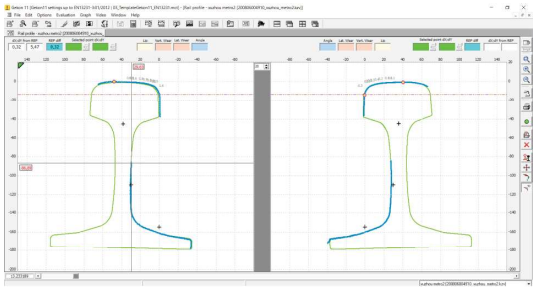
- calculation of the rail head longitudinal shape in ranges D1 - D5
- calculation of half overlap average spectrum
- calculation of peak-to-peak values
- calculation of effective (RMS) values



Krab OnBoard 2.0 running - measured signals

On board computer

The GEKON 3D stores the acquired data into an on-board computer in special format. The software installed in the on-board computer images the measured signals during the data acquisition and rail profile graphs.



Gekon 11 evaluation software - rail profiles

THE BASIC TECHNICAL DATA

Sensing range	Running edge, rail head, rail foot partly
Reference resolution	12µm
Rail profile accuracy	0.3mm (depending on rail surface)
Number of points per profile	640
Profiles sampling step	25cm
Laser power	8mW (2M laser class)
Operating temperature	-20 to 50°C
Data transfer interface	Wireless ethernet (Wi-Fi)

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