



MEASURING ROBOT FELIX®

The mobile robot for automatic, 3-dimensional measurements of grooved and vignole rail track systems

Description

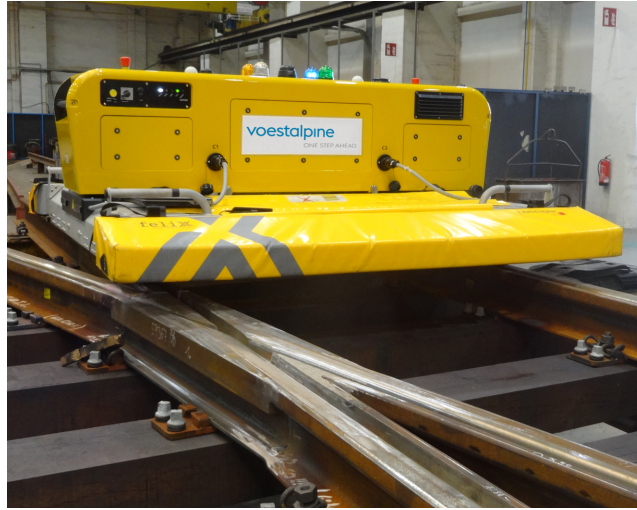
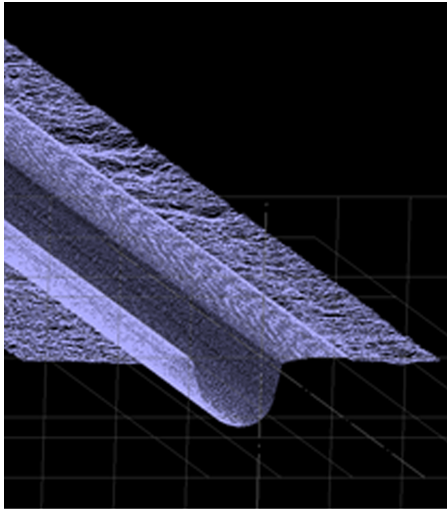
Felix® is the first mobile robot for the automated inspection of railway turnouts, crossings, expansion joints and tracks. It was developed with the purpose to increase the reliability and availability of railway turnouts, to ensure the running rail safety and to optimize the maintenance planning.

The automated measurement allows a faster and easier turnout diagnosis and quality control with a significant positive effect on compliance with the safety regulations of the operator and consequently an improved safety for the customer.

The system is modular and can be set up and operated by two persons. The robot is operated by a remote control with PDA (personal digital assistant) to ensure maximum of safety for the operator.

Benefits for Customer

- » automated and thus objective and reliable measurements
- » continuous measurement of all relevant parameters for comprehensive evaluation of track geometry
- » 3D reconstruction of the inspected sections possible
- » Export of various 3D formats
- » Superposition analysis of different scans and CAD model
- » Transportation and assembly: 2 workers
- » Weight: single module < 50 kg, total weight: robot (consisting of 6 modules) approx. 200 kg
- » Continuous working duration: 6 hours
- » Performing in any weather condition between -10 °C and +50 °C
- » Real-time access to the measurement data



SERVICE DESCRIPTION

Continuous measurements of the track geometry of grooved rail and vignole rail track systems

- » track gauge
- » groove width
- » groove depth
- » check rail gauge
- » check rail to check rail gauge
- » cant
- » cross level
- » twist
- » check rail and frog flangeway
- » contact geometry of switch rail, movable tip of acute and obtuse crossings
- » contact geometry of expansion tips in rail expansion joints
- » condition of materials
- » wear condition of stock and switch rails as well as switch rail tips
- » chippings and nicks at the switch rail
- » thickness of the check rail
- » 3D profile measurement

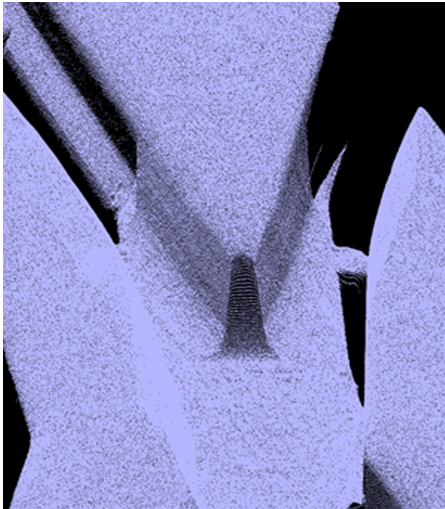
New turnout systems can be measured by Felix on customer request after pre-assembly in the turnout factory. These scans serve as a reference for later track geometry evaluations and wear analyses.

Specification of the robot

- » resolution: 0.1 mm
- » minimal distance between two cross-sectional measurements: 2 mm
- » maximum speed: 5 km/h
- » myfeliX software-system for onboard data processing: reports, evaluations and predictive analyses are available in real-time
- » geolocalization

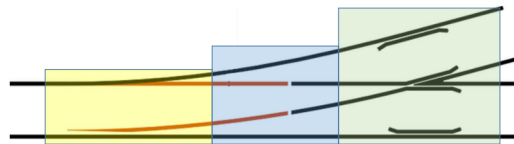
Conformity with norms and standards certified by external institutions

- » DIN EN 13848: Track geometry quality
- » DIN EN 13232: Switches and crossings
- » DIN EN ISO/IEC 17025: Testing and calibration laboratories
- » DIN ISO 2859: Sampling procedures for inspection by attributes
- » GISO/IEC Guide 98-3: Guide to the expression of uncertainty in measurement

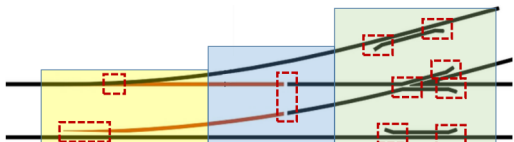


AUTOMATIC INSPECTION WITH FELIX®

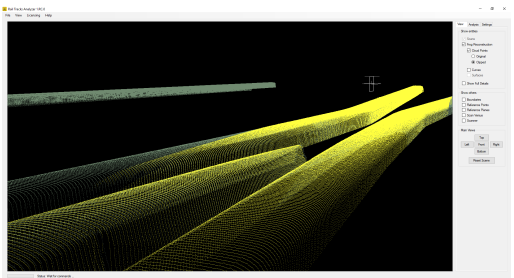
1. Automatic scanning of the different areas



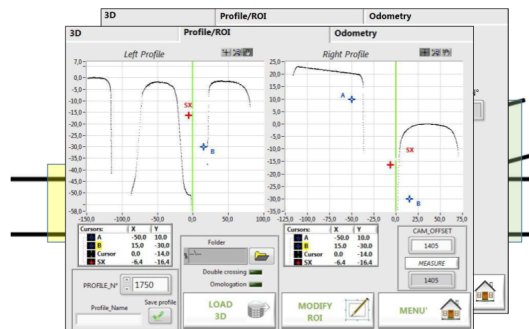
2. Identification of the characteristic areas



3. 3D reconstruction



4. Extraction of the measuring data



5. Real time report and data availability (via USB, Wifi or cloud)

