



Felix, the mobile robot
for railway switches & crossings
dimensional measurements

Felix is the first **certified** mobile robot for the automatic inspection of railway switches and crossings (S&C). Developed by Loccioni **Research for Innovation** and RFI (Rete Ferroviaria Italiana) with the objective **to increase railway switches reliability, guarantee railways safety and solve maintenance planning problems**.

Felix is able to monitor S&C as well as tracks status: it is equipped with profilometers to create 3D reconstructions of the inspected parts.

THE SYSTEM

Felix performs the automatic inspection of S&C and wearing components, by scanning the inspected segment. The system stores, processes and displays in **real time** all measurements, creating specific reports. It **improves the quality of measurement, makes surveys objective and avoids errors in data acquisition and data transfer phases**. During the survey, Felix is remotely managed with a tablet and a handheld remote control unit, ensuring greater safety to the operators.

Felix is self-propelled and it can analyze several switches in sequence. Speed and minimum scanning pitch can be set on customer requirements.

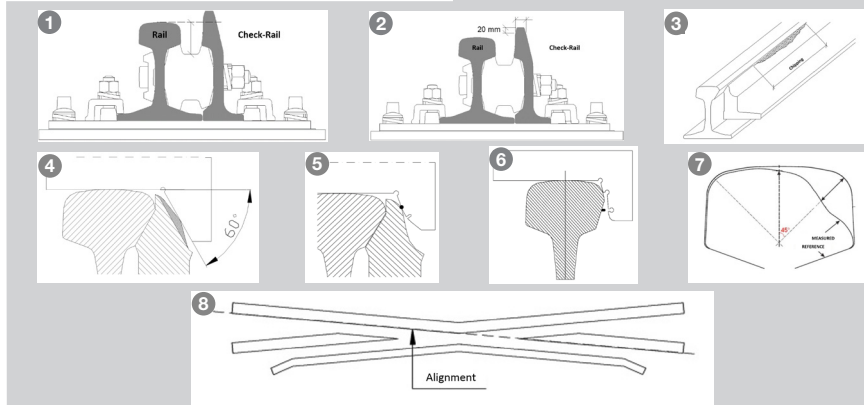
Felix brings innovation to railway maintenance processes, facilitating and improving them. The automatic measurement process makes it **faster** and **easier** to perform diagnosis and quality control, with a significative impact on **operators and, ultimately, final users safety**.

MEASURES

- > Track gauge
- > Superelevation
- > Twist
- > Crossed distance
- > Characteristic distances of S&C
- > Clearances
- > Flangeway gaps
- > Free wheel passage

- 1. Break-space depth
- 2. Check-rail thickness
- 3. Chipping of blade rails
- 4. Wear of blade contact side
- 5. Wear of blade's toe
- 6. Wear of stock-rail
- 7. Wear 45°
- 8. Crossing nose alignment

new



ASSEMBLING IN 4 STEPS



1. Central handling module



2. Wheelset



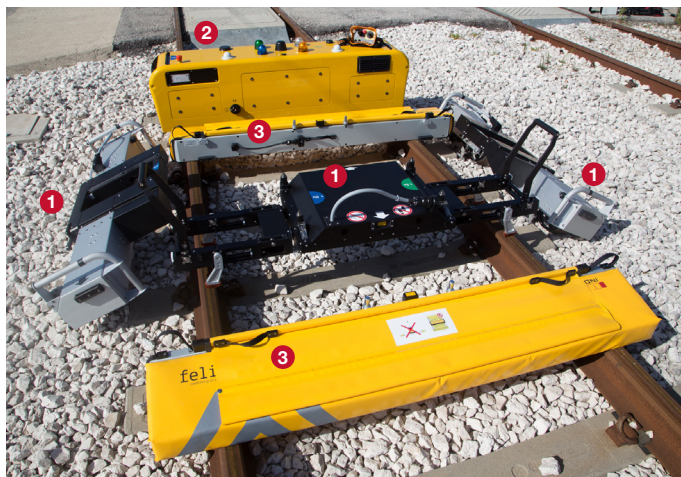
3. Instrumentation module



4. Safety bumpers

TECHNICAL FEATURES

- > Resolution: 0.1 mm
- > Minimal scanning pitch: 5 mm
- > 18 month metrological performances guaranteed after calibration
- > Transportation, assembly and measurement on site with 2 operators
- > 6 hours of continuous operation
- > Performs under any weather condition
- > Temperature range: -10 C° + 50 C°
- > IT platform interface through PC tablet for system diagnosis



- 1. Mobile platform
- 2. Instrumentation module
- 3. Safety bumpers
- 4. Remote control
- 5. Pc/tablet

MY FELIX

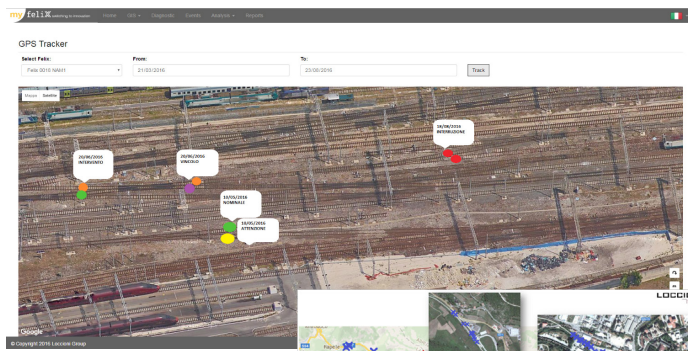
myFelix is the web-based service & support platform for:

Data analysis

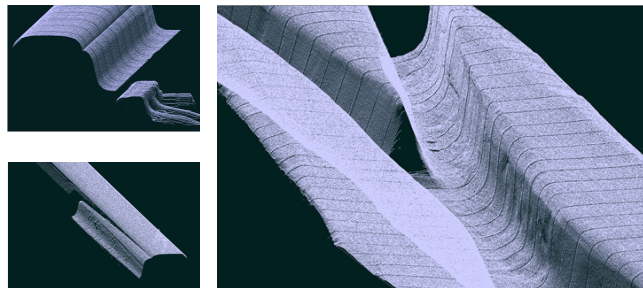
- > 3D reconstruction analysis
- > Zoom on critical points
- > Subsequent inspections comparison

Customer Care

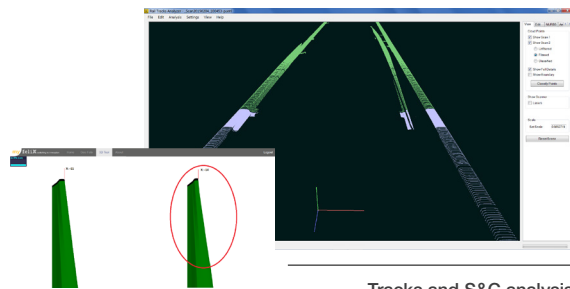
- > Remote support to operators
- > Spare parts management
- > Felix diagnostics control
- > Data and errors log backup
- > Geo-localization
- > Docs management



S&C tracking and Felix geolocalization



Raw data acquisition

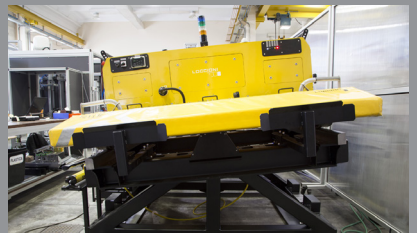


Tracks and S&C analysis

EUROPEAN NORMS & STANDARDS

Track geometry Quality **EN 13848**
Metrological & Statistical Requirements
EN 2859, EN 17025, EN 13005

Felix® is homologated in accordance to RFI technical specifications and certified by Bureau Veritas in Accredia® Laboratories



Static test bench



Dynamic test bench