COMPANY GROUP

Measurement Instrument for Railway Transport

RIFTEK Group of Companies

The parent company,
Scientific and Production Company RIFTEK LLC was founded in 1993. The enterprise specializes in development and fabrication of optoelectronic instruments for measuring of geometrical quantities.

The group also includes:
RIFTEK TECHNO – metalworking enterprise, contract manufacturing;
RIFTEK-SMT – automated assembling of printed circuit boards (PCB), contract manufacturing.
RIFTEK-Russia – assembly plant in Russia.

The basic product line includes:
laser triangulation position sensors; 2D and 3D laser scanners; optical micrometers; absolute linear encoders; hardware and software systems for welding robots; specialized systems for measurement dimensions displacements and distance, thickness, diameter and etc.; **Measurement Instruments for Railway Transport**; software/hardware tools for video processing; machine vision systems.

RIFTEK products are delivered in more than 60 countries. Company has representatives in more than 40 countries.

RIFTEK company is certified according to ISO 9001:2015 in the field of management of quality of design and manufacture of optoelectronic measuring instruments.

We offer integrated solution to control and automation tasks – from sensing devices to multifunctional measuring and control systems.

PRODUCTS

Measurement Instruments for Railway Transport

Some of Our Customers

INTERNATIONAL

HITACHI

EUROSTAR™

SIEMENS

Talgo

STADLER

AMTRAK

Amsted Rail

Wabtec GROUP

ALSTOM

BOMBARDIER

USA & CANADA

NJ TRANSIT The Way To Go.

Metro Transit

GERMANY

DB Regio

KNORR-BREMSE

DB SCHENKER

AUSTRALIA

EDI RAIL
A DIVISION OF DOWNER EDI LIMITED

PRE PACIFIC RAIL ENGINEERING

Some of Our Customers

UNITED KINGDOM

abellio greateranglia

southeastern.

UNDERGROUND

EAST COAST

Balfour Beatty Rail

SOUTH WEST TRAINS

ScotRail
SCOTLAND'S RAILWAY

First Great Western

Chiltern Railways

COLAS RAIL

ARRIVA

Merseyrail

SPAIN

renfe

Metro

TMB Transports Metropolitans de Barcelona

INDIA

hyt

दिल्ली मेट्रो रेल कॉरपोरेशन लिमिटेड
Delhi Metro Rail Corporation Limited

INDIAN RAILWAYS
NORTHERN RAILWAY

OTHERS

SBS Transit
SINGAPORE

HKL HST
FINLAND

ISRAEL RAILWAYS
ISRAEL

RUSSIA

РЖД

And train and tramways depots of Austria, Czech Republic, Italy, Slovenia, Slovakia, Croatia, Germany, Bulgaria, Sweden, Norway, Holland, Belgium, France, Poland, China, Taiwan, Indonesia, New Zealand, Brazil, Peru, Chili, Mexico, Canada, South Korea and so on

Our Product

- Wheel diameter measuring gauge
- Railway wheel profile gauge
- Back-to-back distance measuring gauges
- Disk brakes profile gauges
- Rail profile measurement gauge
- Stand-alone automated systems for wheel sets control
- Real-time wheels geometry measurement systems
- Laser systems for Power Rail position dynamic control
- Equivalent Conicity calculation software

Wheel diameter measuring gauges

Measurements are made directly on wheel without wheel set roll-out.
The "three points" technique, without the complete wheel coverage.

SPECIFICATION

- measuring range: 400…1400 mm
- measurement error: ±0,2 mm
- indication resolution: 0,1mm or 0,01 mm
- number of measurement between battery charging: >1000
- Bluetooth interface for data transfer
- weight <0.5 kg
- in-built magnets to hold the gauge at any position on the wheel
- special model for measurement in restricted space
- data-base support

Wheel diameter measuring gauges
How it works

https://youtu.be/pMienHfBizg

Railway Wheel Profile Gauges

The laser profilometer is indented for contactless geometrical parameters measuring of the wheel flange (thickness, slope, height), rim/tire thickness and for taking full profile of the wheel roll surface

Standard and Long models

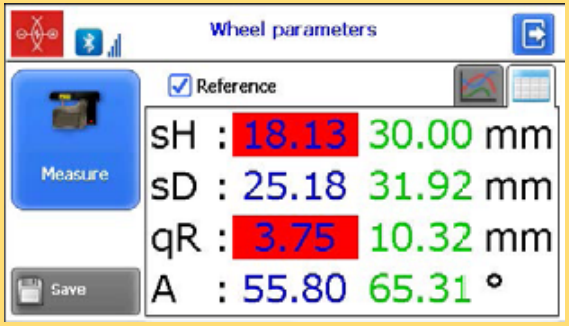
Short model

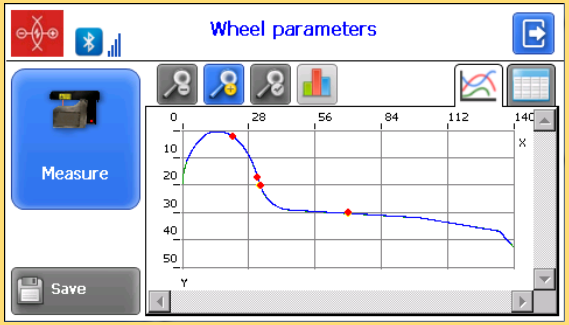
Super-short model

SPECIFICATION, Model 2017

- ranges: Sh-10…45, Sd-10…40, qR-0…25 mm
- rim thickness: 30…90 mm
- accuracy: ±0,03 mm
- measurement time 3 s
- number of measurement between battery charging: >6000
- PDA based handheld measurement instrument with memory of >100000 measurements
- real time wheel parameters and profile analysis
- software for wheel wear data base support
- special models cover all existing wheel types

Railway Wheel Profile Gauge
How it works





https://youtu.be/W4VuJW-YxhU

Back-to-back distance measuring gauge

IMR

IMR-L

- contactless measurement of back-to-back distance between railway wheels
- large numeric display
- Bluetooth interface for data transfer
- measuring range L+25 (IMR) or L+150 (IMR-L)
- measurement error ±0.1 (IMR) or ±0.3 mm (IMR-L)
- Indication resolution 0.1 mm or 0.01 inch

Back-to-back distance measuring gauge IMR-L Series How it works

https://youtu.be/JXPUzCThWOs

Disk brakes profile gauge

- PDA based handheld measurement instrument
- laser scanning and analysis of brake disks profile
- contactless measurement of disks wear parameters
- software for disks wear data base support
- wear measuring range -5…+5 mm
- scanning range 160 mm
- accuracy ±0.01 mm
- measurement time 6 sec

Rail profile measurement gauge

- PDA based handheld measurement instrument
- laser scanning and analysis of rail head profile
- contactless measurement of rail wear parameters
- software for rail data base support

SPECIFICATION

- railhead vertical wear -5.0…+14.0 mm
- lateral railhead wear -5.0…+18.0 mm
- reduced railhead wear up to 14.0 mm

Rail profile measurement gauge
How it works

https://youtu.be/aIq5rk9AOhA

Wheel and Rail Wear Management

RIFTEK's Measurement Instruments for Railway Transport

Bluetooth Connection

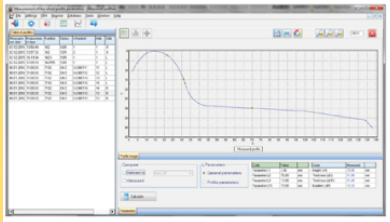
RIFTEK's PDA

Win Rugged Tablet

PC

Wheel and rail wear management. Analysis and Planning

RIFTEK's Data base



A.U.R.A. from NEM Solutions

Laser systems for Power Rail position dynamic control

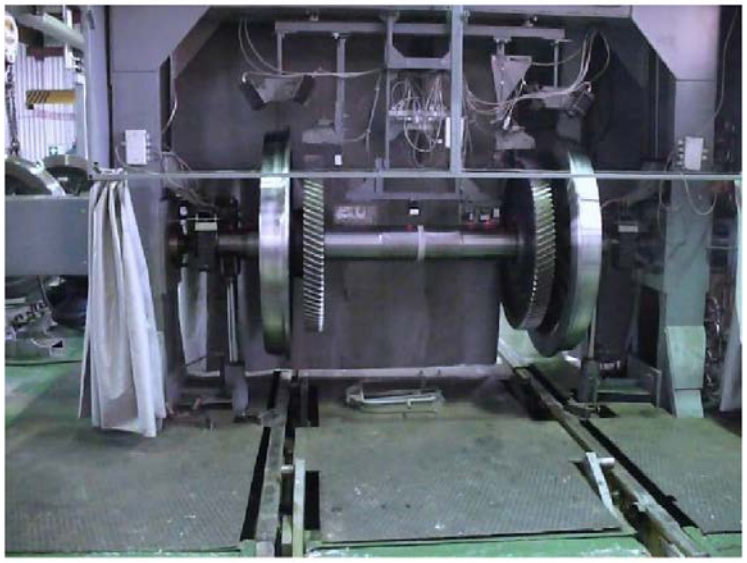
The system is intended for investigation of interaction between Power rail and Current collector

- contactless control of power rail vertical position by triangulation laser sensors
- ±0,5 mm accuracy
- 0,5 m measurement range
- 9000 measurement/s

https://youtu.be/7kUCf7m6vRA

Automated systems for wheel sets control

Contactless laser measurement of all geometric features of wheel sets



Body shaft parameters

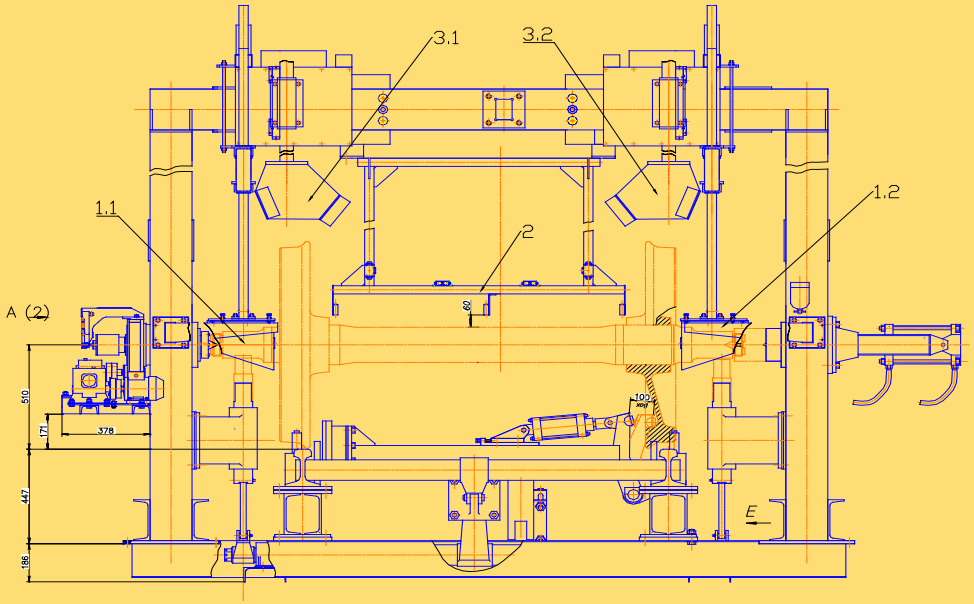
are measured by Laser point triangulation sensors set 2.

Wheel parameters

are measured by 2D Laser triangulation sensors sets 3.1. and 3.2.

Shaft parameters

are measured by using of scanning Optical micrometers sets 1.1., 1.2



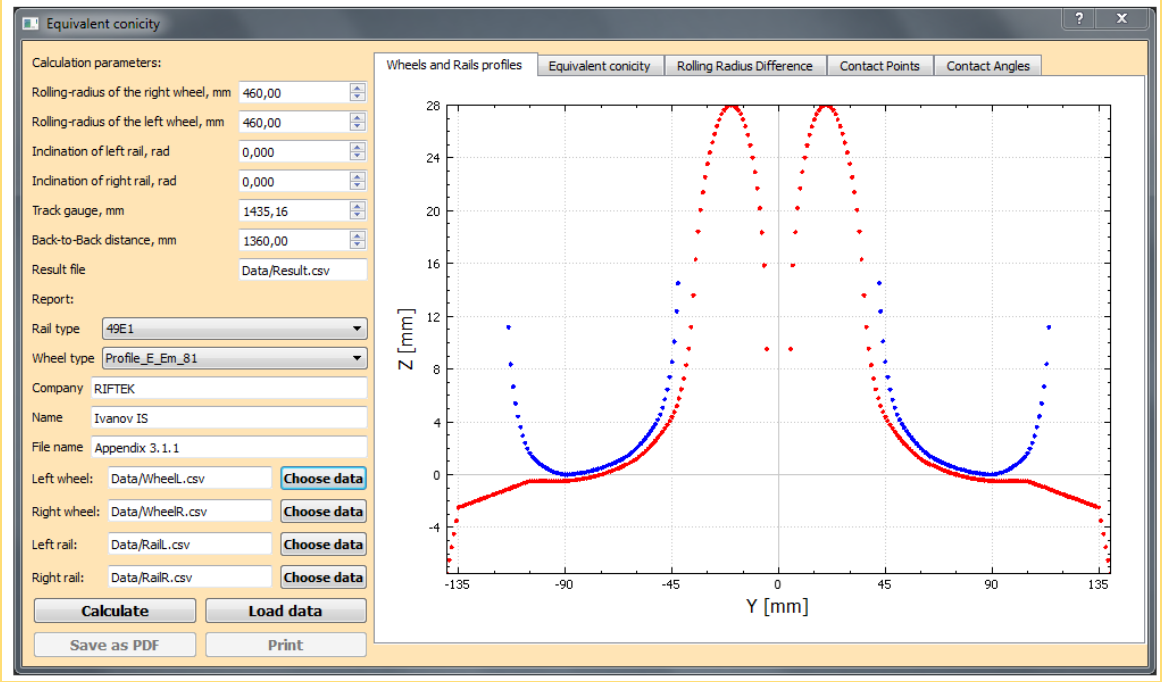
Automated systems for wheel sets control
How it works

https://youtu.be/Uk-BNojDvMw

The software for Equivalent Conicity calculation

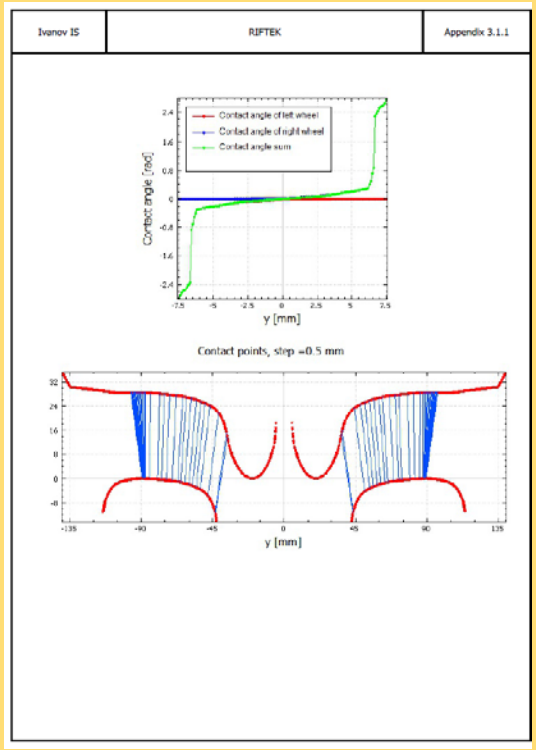
The equivalent conicity is a parameter that is used when investigating dynamic interaction between vehicle and track. The parameter describes wheel-rail interaction and contact geometry behaves.

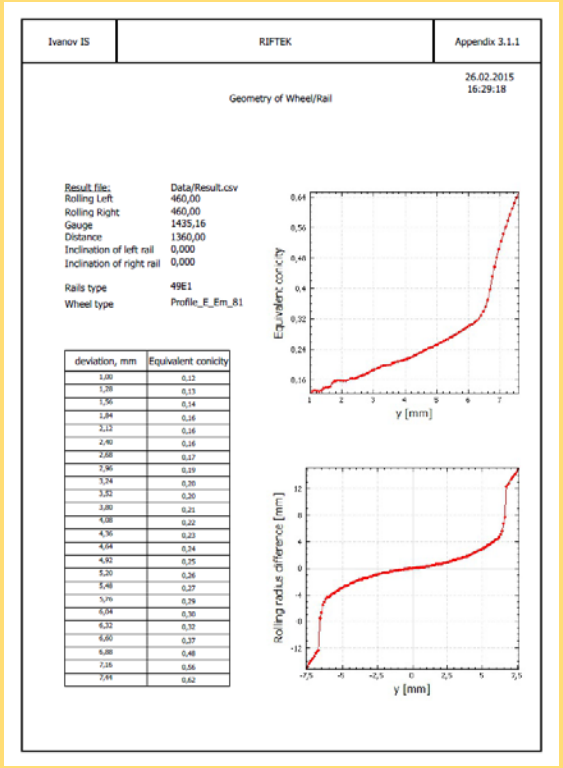
Main window of the program:



The software for Equivalent Conicity calculation

Input parameters for the program are profiles data from IKP-5 and PRP or from any tables with wheel and rail profiles.
The program generates graph reports on Contact points, Rolling radius difference, Contact angles, and Equivalent Conicity.

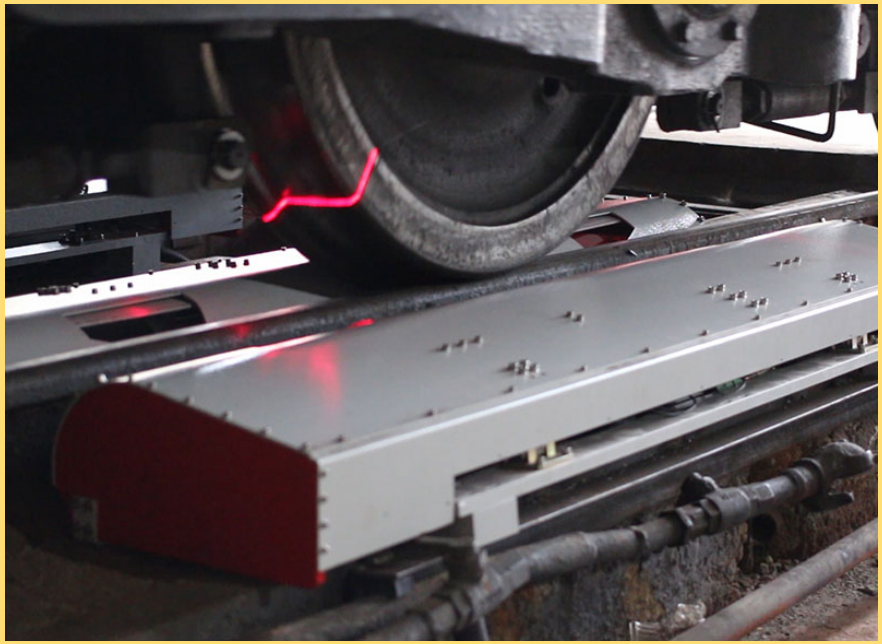




The program is available as plug-in to IKP-5 software and as independent one.

3DWheel
Real time wheels geometry measurement systems

The system is intended for contactless measurement wheel sets geometrical parameters of moving train and uses a combination of ten of fourteen 2D laser scanners, RF62x Series, mounted wayside in the track area (5 (7) pcs for every track side) and calibrated into one common coordinate system. A measurement cycle starts when an inductive sensor detects a wheel. As each wheel passes synchronized 2D laser scanners wheel profiles are taken at many sections of a wheel. All measurement readings for all the train wheels are sent through Ethernet to control computer for profiles reconstruction and dimensions calculations. Finally all data are collected in the host depot computer in wheel sets wear database.



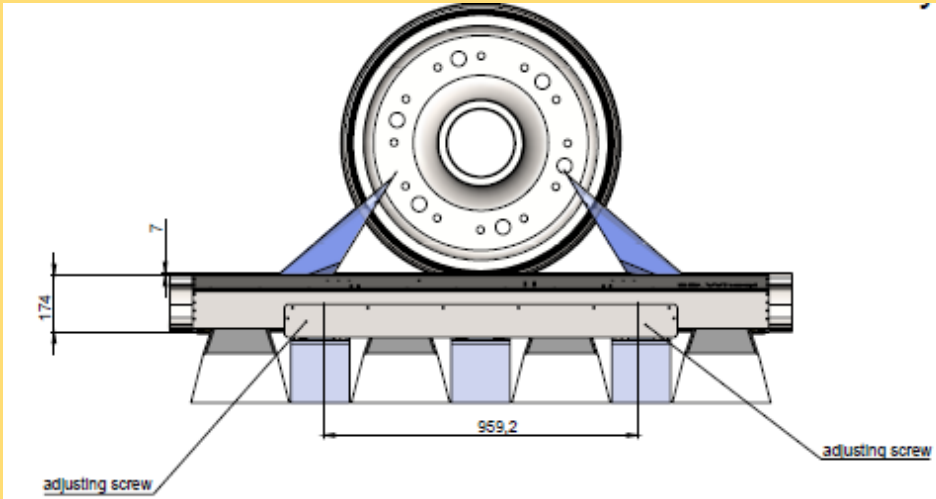
Accuracy:	
Wheel diameter	+/- 0,2 mm
Flange thickness, width, slope	+/- 0,1 mm
Rim width and thickness	+/- 0,1 mm
Back-to-back distance	+/- 0,1 mm
Train speed	
- 3DWheel-10	10 km/h
- 3DWheel-45 (from February 2019)	45 km/h
- 3DWheel-250 (from June 2019)	250 km/h

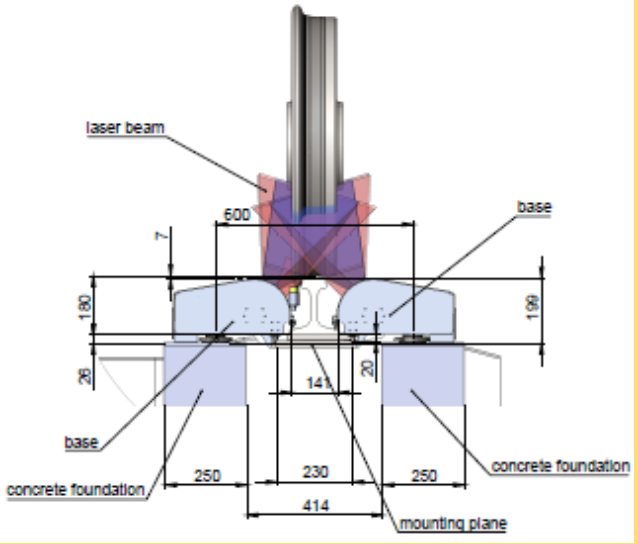
Real time wheels geometry measurement systems
How it works

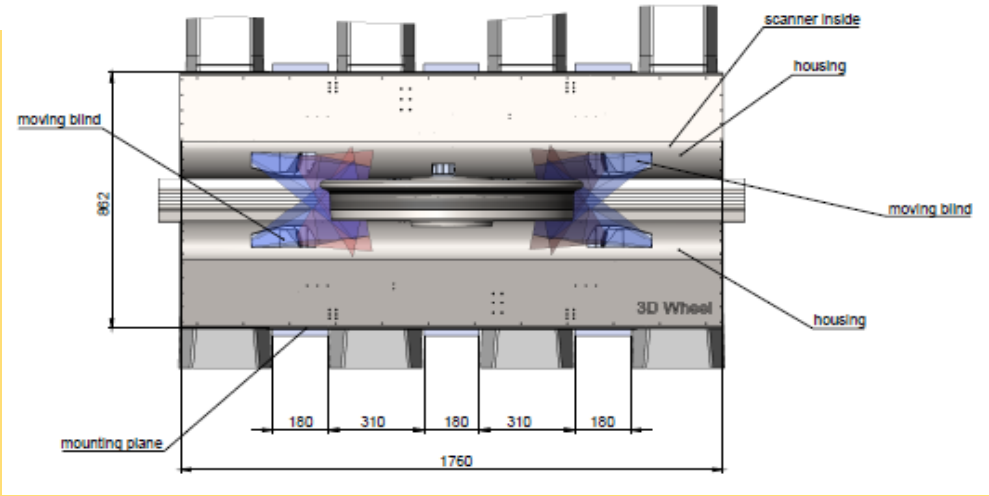
https://youtu.be/i4GXCuHEunA

- Real-time measurement of moving train wheels
- Easy installing at any type of rail infrastructure
- Incorporating the latest video and laser technology
- Eliminates manual measurement error
- 24/7 operation
- Two types of the system:
  for trains
  for tramways
- Combination of 2D Laser scanners with different wavelength

Real time wheels geometry measurement systems. Design for trains

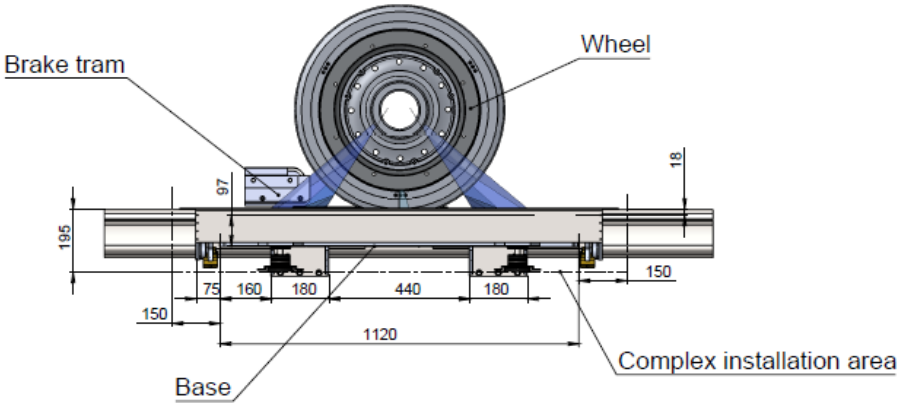


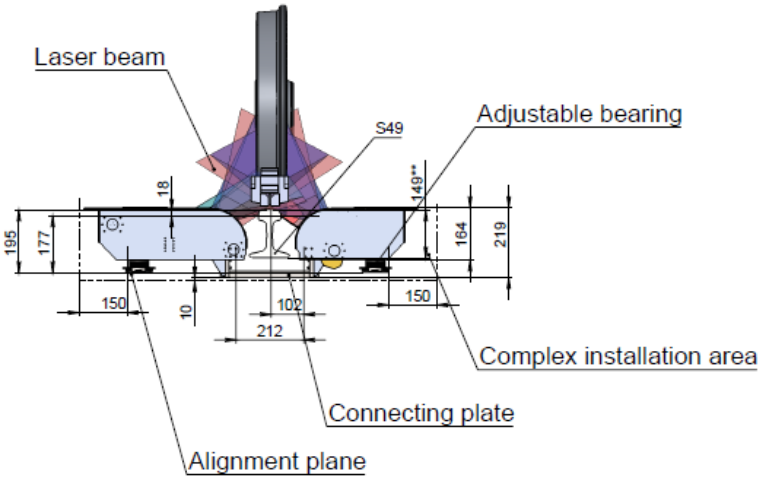


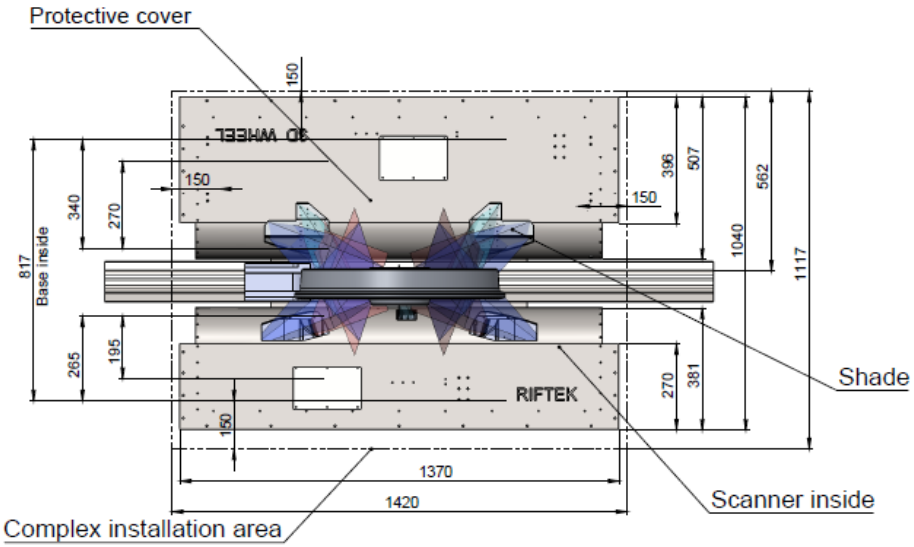


- system for trains
- 10 pcs of 2D laser scanners with RED and IR wavelength

Real time wheels geometry measurement systems. Design for tramway

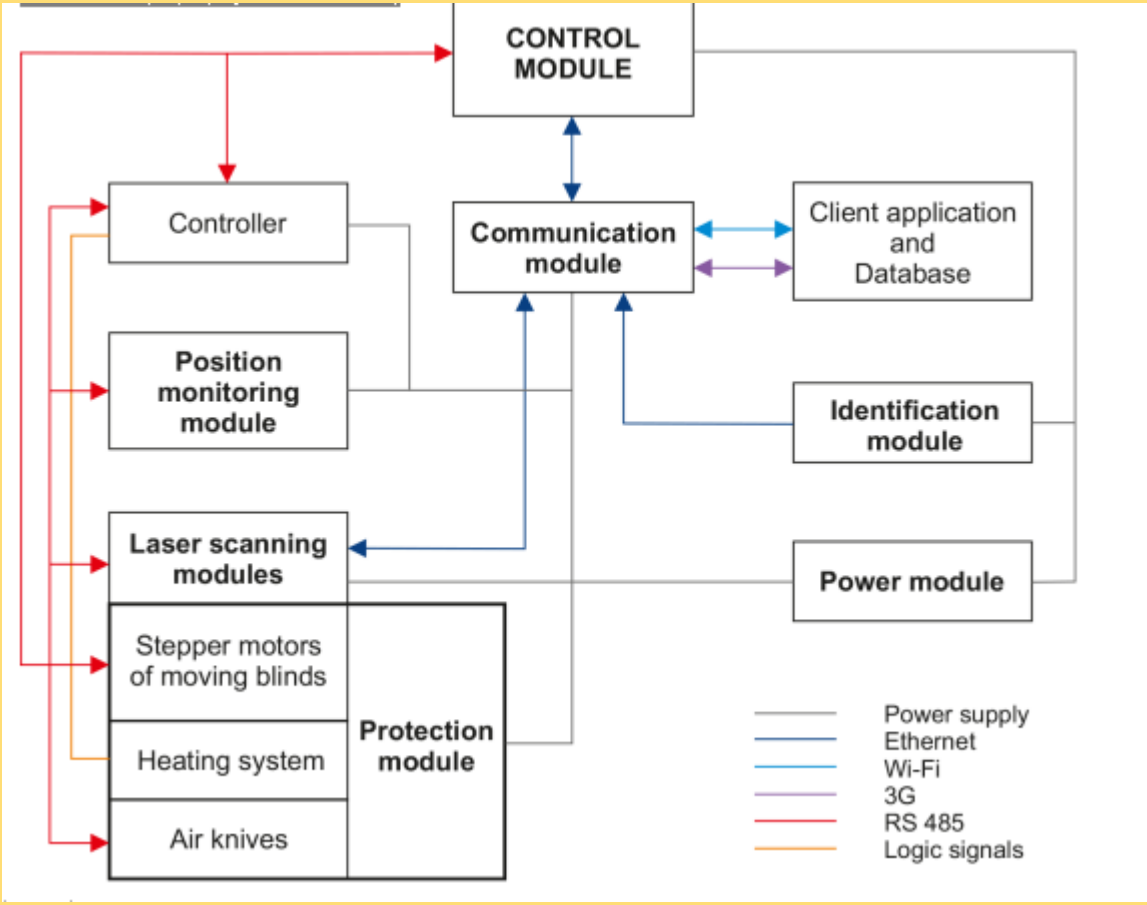






- system for tramways
- 14 pcs of 2D laser scanners with RED, BLUE and IR wavelength

Real time wheels geometry measurement systems. Structure



Real time wheels geometry measurement systems. Structure

The main modules of the 3DWheel system are as follows:
1) **Laser scanning modules**. These modules are intended for scanning of the wheelset. They contain 2D laser scanners RF625 Series mounted wayside in the track area and calibrated into one common coordinate system.
2) **Air conditioning and protection module**. It is intended to maintain a stable temperature inside laser scanning modules, and for mechanical protection of laser scanners against any possible damage and contamination.
3) **Position monitoring module**. It is intended to monitor the position of the rolling stock relative to the laser scanning modules. This module contains inductive sensors mounted wayside in the track area, which run the scanning process when the rolling stock is detected.
4) **Identification module**. It is intended to identify the rolling stock number (car number) and the wheelset number. The module contains the video and/or RFID registration system.
5) **Control module**. It is intended to coordinate the operation of all modules of the system, to gather data, to create a mathematical model of the wheel profile, to calculate required geometrical parameters, and to generate reports to sent to the operator.
6) **Communication module**. It is intended for remote access to the 3DWheel system in order to test it, to change settings, or to transmit data to depot.
7) **Power module**. It is intended to provide a stable power supply of all 3DWheel modules. It guarantees the uninterruptible power supply for 60 minutes in a case when an external mains voltage is lost.

The 3DWheel system operates as follows:
The **Position monitoring module** detects the rolling stock.
When the rolling stock is detected, the **Control module** turns on the **Laser scanning modules**, opens the protective blinds, and turns on the Air Knife system.
The **Identification module** recognizes the rolling stock number.
The **Position monitoring module** detects the wheels, and the **Laser scanning modules** start the scanning process.
The **Laser scanning modules** are taking the wheel profiles, when the rolling stock is going through the control area.
Data gathered from all scanners are transmitted to the **Control module** for calculation of geometrical parameters of the wheels.
The received data are grouped and the **Communication module** sends them to the client application and to the database.

Real time wheels geometry measurement systems

RIFTEK's laboratory

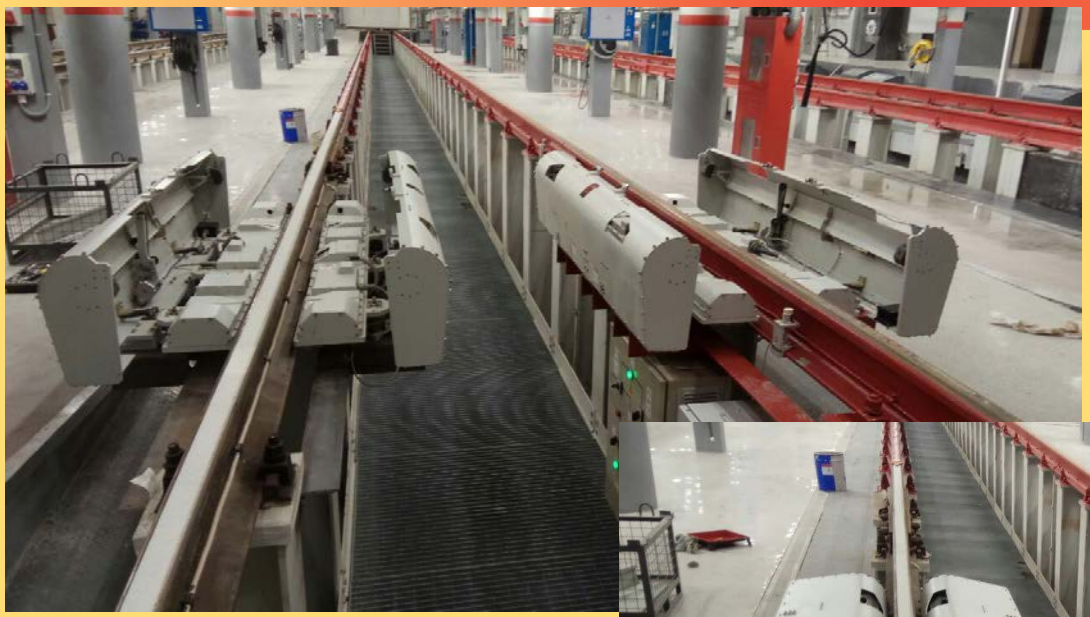
Real time wheels geometry measurement systems

Outdoor installation.

- ASCO Rail, Poland.

- Turkey railways, Ankara. Installation in February. Train speed, up to 45 km/h

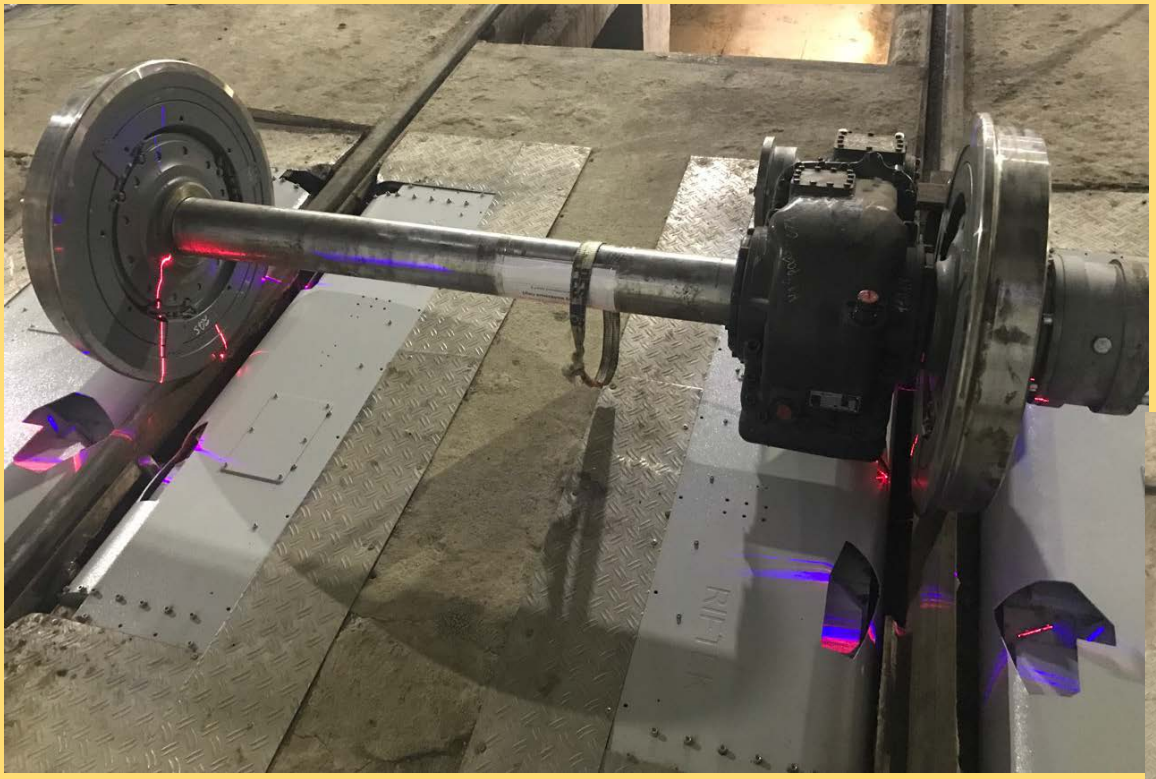
Real time wheels geometry measurement systems



Indoor installation

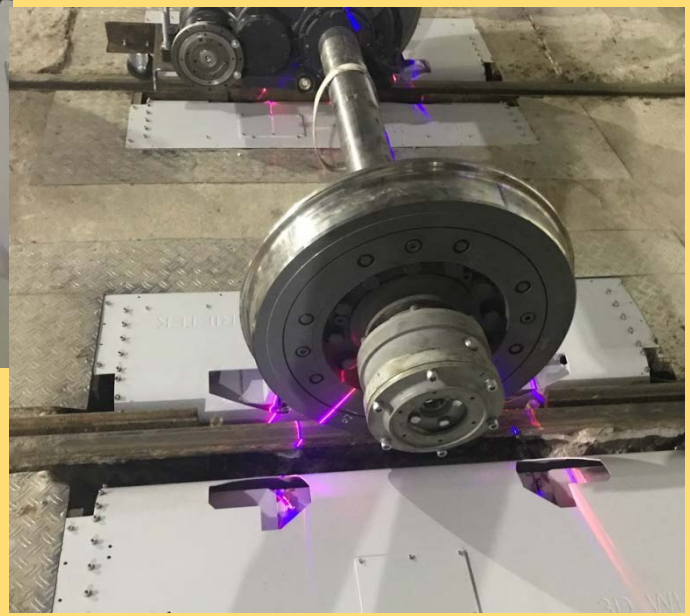
- Loco depot, St. Petersburg

Real time wheels geometry measurement systems



Indoor installation

- Tramway depot, Moscow



Real time wheels geometry measurement systems

Tramway depot, Moscow

https://youtu.be/JFRNjHPT2KQ

Real time wheels geometry measurement systems

Moscow depot
Tramway number recognition

https://youtu.be/yDdabqxqGOs

THANK YOU
FOR YOUR ATTENTION!

RIFTEK is represented in Italy by FAE s.r.l.

since 1976

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MEASURING SYSTEMS

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