Cutting-edge test rig technologies for increased safety in rail transport.
RENK TEST SYSTEM.
Your reliable partner for test rig solutions.

RENK Test System GmbH (RTS) is one of the world’s leading providers of customized test systems used in development, production, and quality assurance. Based on its many years of experience, RTS develops innovative test rigs for nearly every area of application in drive technology.

Due to the steadily increasing demands that are being placed on driving comfort, safety, and speed in the field of railway technology, the requirements placed on the development of future transport solutions are becoming more complex all the time. Railway transport is playing an increasingly important role based on the growing demand for environmentally friendly modes of transport. This calls for the use of cutting-edge test system technology and reliable partners.

Our expertise extends from targeted consultation, concept creation and validation, development, and production up to the commissioning of the systems at the customer’s location, with subsequent training of the operating personnel. The entire product range is completed by needs-oriented service, and regular maintenance.
Wheel & rail contact test rigs. Keeping trains on the right track at all times.


A perfect interplay between the wheel, and the rail is required when heavy vehicles travel on tracks on a daily basis.

RENK’s wheel & rail contact test systems reproduce this interaction perfectly in the lab setting.

A wheel & rail contact test rig also offers diverse testing possibilities for all assemblies in the wheelset because all loads, and environmental influences are realistically mapped.

Selection of potential applications.

- Developing new materials, and heat treatment methods for wheelsets
- Analyzing curve squeal, and the influence of wheel absorbers
- Developing future braking systems
- Developing and calibrating diagnostic systems
- Analyzing lubricant distribution, and damage patterns
- Optimizing wheelset axles
- Monitoring running dynamic behavior

Wheel & rail contact test system
- Test rig electronics with real-time capabilities
- Wear-free AC motor drive concept for bogie, and rail wheels
- High-precision rail wheels for a realistic representation of continuous track
- Hydraulic load unit for controlled application of multi-axis dynamic loads (wheel vertical force, thrust, lateral force)
- Environmental simulation (rain, low temperatures, snow)

Simulated force effects
- Hydraulic cylinders make it possible to simulate movements, and forces in three planes (X: longitudinal movement = driving direction, Y: lateral movement = side-to-side motion, Z: axle load) as they occur in reality.

Interaction
A focus on wheel & rail contact

Simulation
Reproduction of realistic environmental conditions

Dynamics
Rapid control of multiaxial forces

Wheelset drive unit

Track wheel drive unit

Track wheels

Frame

Load unit

Wheelset

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Flywheel brake dynamometer. Modern rail vehicles require highly developed braking systems.

Proven solutions for your requirements. Reliable. Compact.

Ensure current test specifications are met.

A reliable braking system has always stood for driving safety. Flywheel brake dynamometers from RENK are designed for the optimization of existing braking systems, and development of future rail vehicles.

The type of braking system, and the way braking pressure is generated are adapted to the specific project. A key design characteristic of RENK brake dynamometers are the automatically switchable flywheel masses, which are used as standard. Controlled by test stand automation, this makes it possible to modify the simulated vehicle weight anywhere in the adjustment range without manual intervention even during a test run.

Flywheel brake dynamometers from RENK fulfill all the requirements for certifying them for the development of brake systems, and their components with current test standards by means of easy handling.

Possible certifications:
- UIC (international)
- TB (China)
- AAR (USA)

Flywheel brake dynamometer
- Test rig in accordance with internationally valid UIC standards
- Test rig electronics with real-time capabilities
- Wear-free AC motor drive concept
- Continuous mapping of the vehicle masses based on automatically switchable flywheel masses, and additional electrical mass simulation via AC motor
- Hydraulic, and pneumatic brake pressure generation
- Environmental simulation (rain, low temperatures, snow)

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Comprehensive testing. Realistic impact.

A test rig needs to reproduce operating loads, and environmental conditions in the lab in order to test the specimen in a reproducible way, and track operating states that actually occur. The more precise these analyses need to be, the more realistically the influences on the test specimen need to be regulated. And despite the highly complex technology that is often needed for this purpose, it’s essential that the test system operates smoothly, and safely.

Test rigs from RENK are developed with a targeted focus on the customer’s respective testing requirements. Thanks to our many years of experience in building, and operating our own test systems, we have a very precise knowledge of the expectations placed on this process.

Our capabilities cover the entire field of drive technology in the railway sector as well, extending from individual components to the vehicle as a whole.

We set standards, and work together with you to find the ideal solution in every scenario – and for every challenge.

Scope of supply for the railway industry at a glance.

- Wheel & rail system test rig
- Flywheel brake dynamometer
- Wheelset bearing test rig
- Bogie test rig
- Motor test rig
- Transmission test rig
- Cardan shafts test rig
- Coupling test rig
- Multi-axis roller test rig for railway vehicles
- Current collector test rig ("Third Rail")
- Multi-axis roller test rig for railway vehicles
- Testing the actual driving dynamics of railway vehicles, and their components by driving on highly dynamic single rollers.

Diverse
As different as your requirements

Creative
Approaches outside the box

Focused
Continually concentrating on the testing procedure

Wheelset bearing test rig
Test system for developing wheelset bearings as well as testing the suitability of relevant lubricants under multi-axis, dynamic loads, and in air-conditioned environments.

Current collector test rig ("Third Rail")
Test system for developing ground-level current collectors for urban rail transport in dynamic contact with the conductor rail.
Service at RENK Test System GmbH. Your partner for custom service concepts.

Extend the lifetime of your systems with tailored service solutions.

RENK Test System GmbH offers a wide range of specific services, tailored to the respective system.

Benefit from over 60 years of experience in test rig engineering.

Use our customized offer, based on our SSC service support contract (technical support, inspection, and maintenance).

Sophisticated test systems call for flexible automation.

The benefits of RDDS come into play with highly complex development test stands in particular.

Graphics editors for the control technology, and sequence managing are ideal for implementing all requirements in a flexible, customized way. This is also supported by the database-oriented organization of the test rig, and test process configuration, the flexible system structure via the client/server architecture, and the user-defined displays for visualizing.

One system for control, monitoring, storage, and visualization of your test procedure.

- Extensive options for adapting the test procedure via open system architecture
- System structure based on industry platform TwinCAT, and standard industry hardware
- Graphics editor for easy configuration of the test run with extensive library elements
- Test run management for subsequent reuse or modification
- Modifiable displays for visualizing measuring data as defined by user

RENK Dynamic Data System (RDDS). Automation system for test rigs.

- Flexible configuration
- Easy to use

RENK | Service
- Comprehensive
- Lifelong

RENK | RDDS
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- Raw data stored centrally for analysis, and individual assessments
- Automatic reporting for standard test programs
- Option to link to numerous standard software packages (e.g., for simulation and analysis)

Service Support Contract

- Inspection
  - Regular inspections
  - Determines condition of the system
  - Specifies scope of maintenance

- Technical support
  - By phone
  - In person
  - Remote maintenance

- Maintenance
  - Regular calibration
  - Condition-based maintenance/overhaul

One system for control, monitoring, storage, and visualization of your test procedure.
Follow the QR code, and discover more test system solutions from RENK.