Complete
Instrumentation Solutions

Newsletter

Preventing the flaws that could lead to catastrophic failures.

Railways

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Railways

Main Features

High Speed Train Derailment Simulation System

1. Specimen Speed and maximum Roller Speed is 330 km/hr.
2. The Drive Unit has power of 762 kW.
3. Max. Speed of Drive Unit is 1250 rpm.
4. Balancing Quality (VDI 2060): Q 2.5
5. Max. Estimated weight of wheelset and cross-bar: approx. 7 ton.
6. Roller Brake: 8,000 Nm

Multi-axial Fatigue Testing for Rail Fastening System & Components

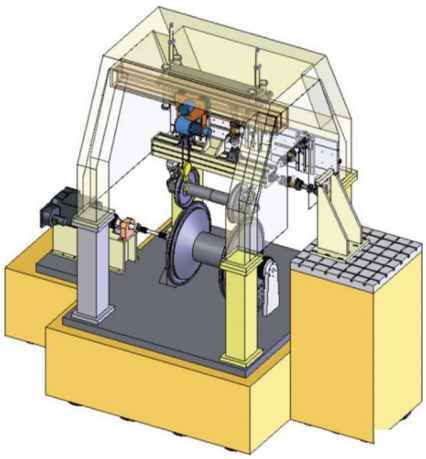
1. Static Force Rating: +/- 250 kN, +/- 100kN, +/-50kN, +/-25kN.
2. Dynamic Force Rating: +/-200kN, +/-80kN, +/-40kN, +/-20kN.
3. Dynamic Displacement of +/- 75mm.
4. Temperature range of environmental chamber is -20°C - 100 °C.
5. Frame Natural Frequency is 20Hz.
6. A control software is provided for test analysis.

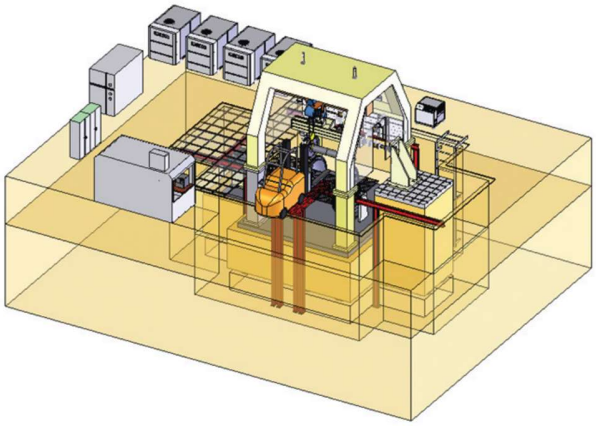
High Speed Train Derailment Simulation System

This testing system is to investigate the properties of rail vehicle that influence the train behavior after one of the wheel sets has derailed.
A mathematical model and natural experiment were carried out to investigate accelerations and displacements on the train body after the derailment. The system is composed by 2 rigidly coupled rollers having a diameter 2100mm and bearing two rail rings with rail profile; the rollers are driven by AC servo-motor. The actuator system is composed by two vertical actuators, one lateral actuator, and three longitudinal actuators. The Drive unit is composed by the AC servo-motor and telemetry type torque transducer. Dynamic system controlling software, Sabio-DE is used for test analysis and it has a supplementary module for safety features.

Multi-axial Fatigue Testing for Rail Fastening System & Components

Multi-axial fatigue testing system is used for rail fastening system & components-a hydraulic actuating system to test the static and dynamic performance of a rail fastening system & components in laboratory. The testing system should be composed of hydraulic actuators [250kN (2sets), 100kN (2sets), 50kN (1set), 25kN (1set)], test bed, U-frame, portal frame, side frame. U-frame should contain two 250kN and one 100kN hydraulic actuators. The other hydraulic actuators should be installed in portal frame and side frame.





Railways

Boretest

The Boretest is able to test the complete axle from just one side of the train with practically 100% of the axle being inspected at once providing a cost, time and space effective solutions.

Transported on a forklift truck, the Boretest is easily maneuvered between inspections and is teamed up with a simple set-up system removing the need for complicated calibrations prior to the inspection.
Through a complete user-friendly software package the Boretest plots and records the results of every inspection for further analysis and archiving including the calibration of the system, again highlighting the efficiency of the unit. During the inspection both 'A' and 'C' scans can be viewed in real time.

By utilizing different straight and angular beam transducers, up to 10, to maximize the probability of detection, the Boretest has the ability to accurately inspect rapidly within a short time frame. Actual inspection time is less than 25 minutes.

Ultrasonic Rail Inspection Trolley

The ultrasonic testing procedure has proved to be the most suitable for detecting manufacturing and material fatigue defects occurring in rails and turnouts.

The small manual inspection trolley is extremely suitable to detect internal rail and welding defects due to its light weight, inspection options and special ease of operation.

The frame and the water tank of the newly developed small trolley are made of aluminum therefore the trolley is light. The water tank is built together with the frame, positioned at the bottom resulting in an even lower centre of gravity for the trolley thus providing more stability. The height of the handgrip of the small trolley is adjustable for the sake of comfortable operation. The amplification values of the ultrasonic testing heads can be adjusted and saved separately.

Main Features

Boretest

1. The complete axle is inspected from one side of the train in a very short time.

2. The system is transported on a forklift truck.

3. Able to inspect different type of axles within a renge.

4. The results of every inspection are recorded for further analysis and archiving including the calibration of the system.

5. Practically 100% of the axle is inspected utilizing different angular probes to maximize the probability of detection.

Ultrasonic Rail Inspection Trolley

1. Dimensions: height: 88 cm, length: 70 cm, width: 26 cm.

2. Measurement period: approx. 8 hours with one charge.

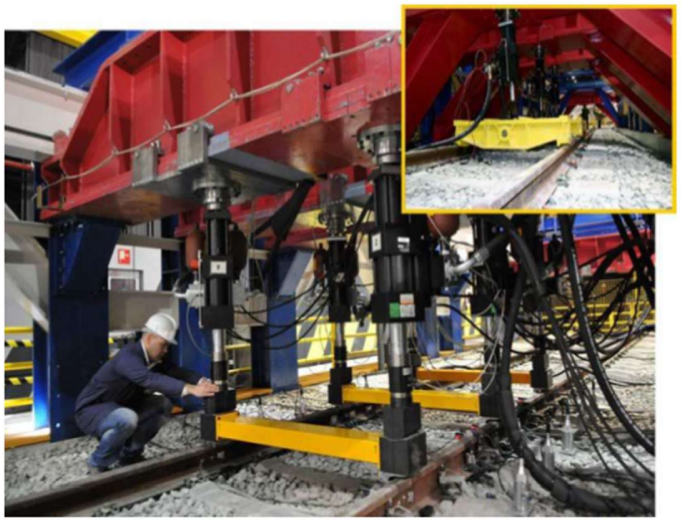
3. Operating temperature: 0- +40°C

4. No. of amplifying channels: 9 channels.

5. Measuring methods: pulse, echo, mirror and shadow.

6. Data storage in non-volatile memory format B scan, with track section data and optionally GPS coordinates.

Railways



Track Box System

Our Track Box System stems from the need of Indian government to modernize its network of transport infrastructure, particularly rail, with the intention of placing at the technological forefront of transport in Central Asia at level of the geopolitical importance of India.

Safety is the foremost in the field of Railways as it becomes a major sector in transportation whether in freight or passenger. Technology should be in place to conformity with the safety which enhances our importance in the said field.

In essence for conclusive political and social benefits we place our importance because of two reasons:

1. Safety assurance for Indian railway network, which will avoid potential accidents due to the lack of enough quality control of the materials used in the construction and/or renovation of railroads in the country.

2. Have the best and most complete Centre in the area for railway component homologation to train a new generation of Engineers in this field, ready to face the new challenges and future of Indian Rail network.

The track box has the following applications:

- Test on the ballast track and slab track.
- Test with passenger, freight and mixed train.
- Static, quasi-static and dynamic test.
- Tests of fatigue in superstructure elements.
- Vibration propagation test.
- Sleeper lateral resistance test.

This system for detecting flaws which will become a major stride assuring safety and preventing accidents. These are the following test which will be helpful into the detection of flaws:

- Determination of fatigue curve of ballast and sub ballast material.
- Analysis of optimum thickness of bituminous sub ballast.
- Study of the propagation of vibration through the track bed and embankment.
- Study of the effect of fouling with sand in the behavior of ballast layer.
- Homologation tests of prototype of a slab track.

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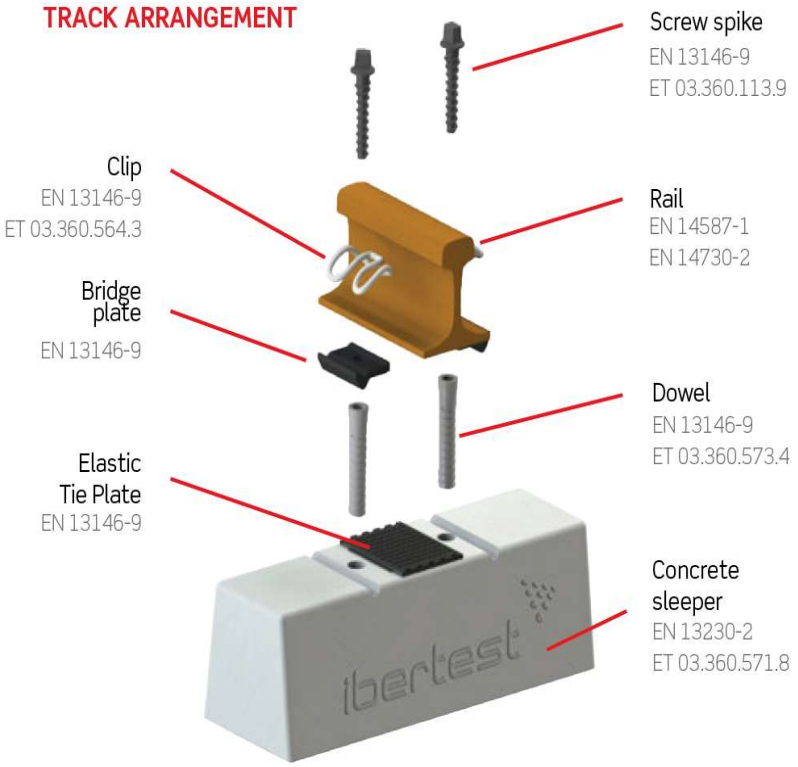


All elements, individual and as an assembled unit, require quality assurance verification testing to International Standards

Railway infrastructures are continuously evolving by increasing the:

- Speed of trains
- Axles loads of trains
- Locomotives traction
- Density of traffic
- Harmful influences of the environment

This increasing demand put on the railway infrastructure, requires a greater improvement in the quality for each element of the rail infrastructure.

The **NRCRCT** as a Government Reference Independent Centre, will evaluate each supplier and/or producer for any railway network component and will be responsible for the homologation of each supplier under the premises of a high quality and safety, under the most advanced International Standards UIC, EN, ISO, etc.

NRCRCT

This project named as **NRCRCT (THE NATIONAL REFERENCE CENTRE FOR RAILWAY COMPONENTS TEST)** stems from the need of Indian Government to modernize its network of transport infrastructure, particularly rail, with the intention of placing at the technological forefront at level of the geopolitical importance of India.

Today, high speed is a great opportunity for railway operators wishing to become competitive against other transport systems such as air or road, for long distance travel. This transport offers users comfort and safety on their journeys, and is one of the most eco-friendly ways to travel.

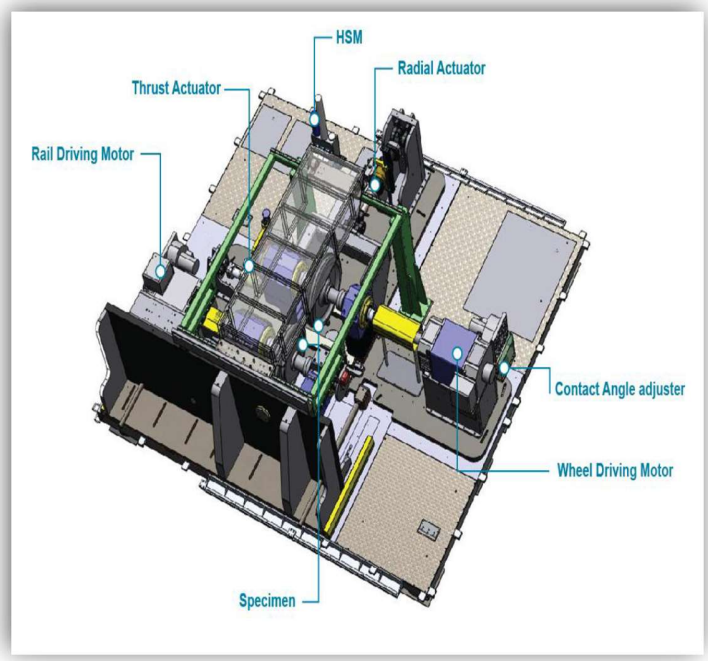
In addition, this Centre together with a close collaboration IIT's can perform the development and training of a new generation of Railway Engineers to face the future development of Indian railways network.

This Centre will be the state of the art of railway elements testing designed according to latest testing international standards and experience which will offer to future Indian Railways Engineers to have the best and most complete Centre in the Central Asia area.

Railways

High Speed Wheel / Rail Contact Simulation System

The high speed wheel & rail contacts emulation system is to analyze and measure all the matters between wheel and rail contact surface during the high speed rotation.
The system is organized by the main frame, wheel & rail disk specimen, wheel & rail driving motor, radial & thrust load actuator, contact angle & attack angle adjuster, EMG brake, environmental chamber, main control system, sensors, and etc. There are various test can be done by this system such as rolling contact test (RCF test), adhesive strength test, wear test, etc. from subway to high speed train. In addition, the system as environmental simulation equipment of water, oil, air, sand injection with temperature control (-30 ℃~80℃).



Combined Fatigue and Flexural Test on High Speed Rail Tracks

There is a variety of differences between conventional welding and the welding that is used on railway tracks: the composition, the types of stresses to which they are subjected, welding processes, etc. Each one of the test frameworks independently equipped with its own control system, data collection system, hydraulic unit and cooling system can be made available for and adapted to the different type of test to be conducted. However, it is also possible to arrange for combined facilities that involve two frameworks and one single hydraulic unit, control system, etc.

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