公益財団法人 鉄道総合技術研究所
Railway Technical Research Institute

Creating sustainable railway systems

The Railway Technical Research Institute (RTRI) was established on December 10, 1986, as a foundation to take over the research and development functions stipulated in Article 11, Paragraph 1 of the Japanese National Railways Reform Act (Law No. 87 of 1986). RTRI commenced full-scale operation on April 1, 1987, following the division and privatization of the Japanese National Railways, and was reorganized as a public interest incorporated foundation on April 1, 2011.

RTRI is continuously conducting the full scope of research and development, ranging from basic to applied topics including rolling stock, civil engineering, electrical engineering, information and communication technologies, materials, environment, and human sciences. Through these ongoing efforts, RTRI is contributing to the advancement of railways as well as the enhancement of academic and cultural development.

Message from the President

The challenges facing our society, such as intensifying climate change, the increasing frequency of large-scale natural disasters, and the growing need to achieve carbon neutrality (by 2050), are becoming ever more serious, apparent, and complex. Railways are currently facing urgent issues, such as labor shortages, aging infrastructure, and many hurdles that need to be cleared to ensure the continued operation of regional railways. At the same time, rapid advances are being made in science and technology, particularly in digital fields such as AI and automatic train operation, as well as in decarbonization technologies.

In response to these circumstances, RTRI has formulated its new five-year medium-term plan, “RESEARCH 2030,” which will be implemented from fiscal 2025. This plan is designed to realize our vision: “to develop innovative technologies for better railways that can contribute to the building of a happier society.”

Under the banner of "creating sustainable railway systems," we are vigorously promoting research and development activities to create innovative technologies aimed at realizing the ideal form of future railways that are safe, secure, smart, environmentally friendly, and sustainable. At the same time, we are committed to executing each project to the best of our ability.

President
渡辺郁夫
Ikuo WATANABE

Chairman
Masao MUKAIDONO

President
Ikuo WATANABE

Overview of RTRI

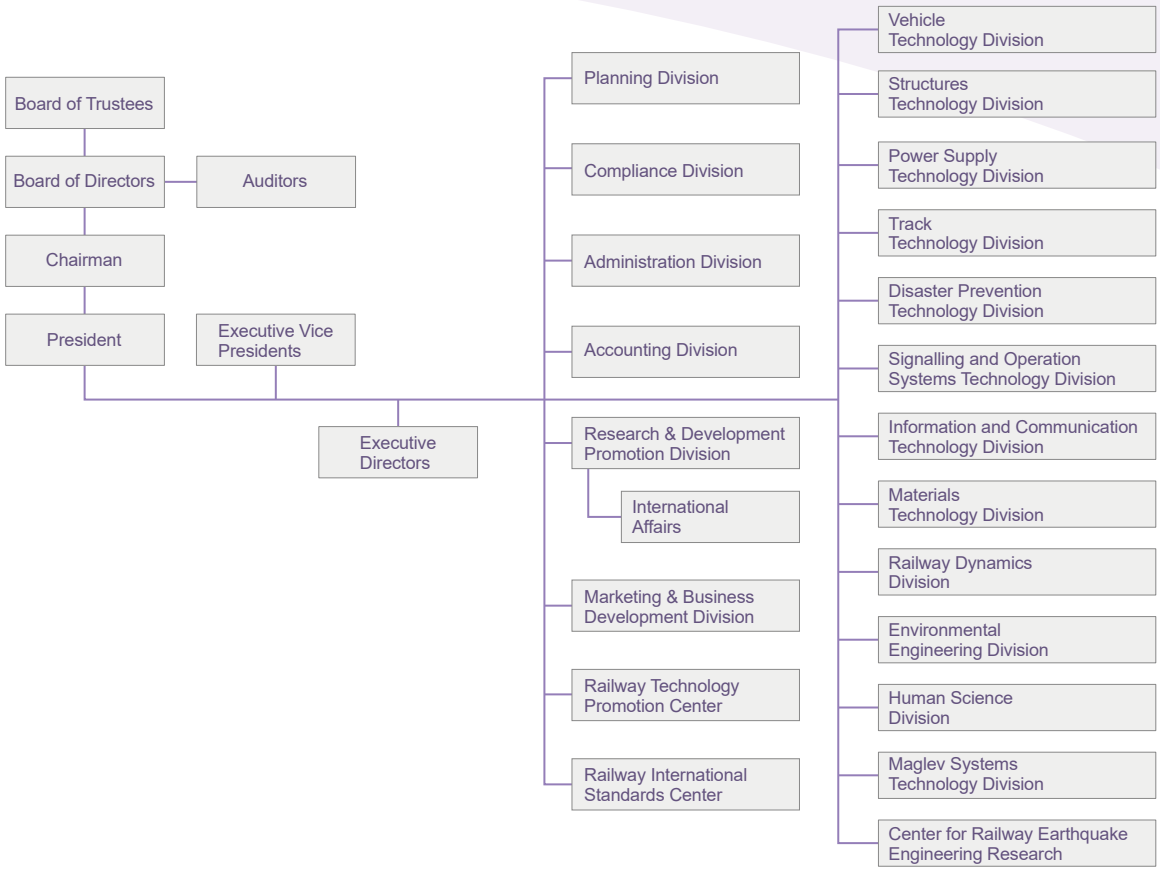
Name　Railway Technical Research Institute（RTRI）

Activities
(1) R&D of railway technologies and labor science
(2) Investigation of railway technologies and science
(3) Preparation of the drafts of railway technology standards
(4) Collection and release of railway-related documents, materials and statistics
(5) Publications and lectures to raise railway technologies and science
(6) Diagnosis, advice and guidance on railway technologies and science
(7) Drafting of original plans and proposals for standardization with regard to international railway standards
(8) Authorization of qualifications with respect to railway-related science and technology
(9) Commissioned testing and research projects in addition to the above
(10) Any other activities necessary to achieve the objectives of the nine aforementioned activities

Number of employees　534 people (As of April 1, 2025)
Number of qualified personnel: Doctoral: 207 / Professional Engineer: 97

Business scale (Operating revenue)　17.7 billion yen (FY2025 budget)

Organization (As of April 2025)



RTRI's Offices and Testing Stations

Gatsugi Anti-salt Testing Station

Murakami-shi, Niigata

RTRI is promoting the development of damage-proof trolley wire materials and tests/research to prevent corrosion from salt on feeder wires.

Shiozawa Snow Testing Station

Minami-Uonuma-shi, Niigata

A range of tests and research are conducted here in order to analyze phenomena on ice and snow and to develop measures to prevent snow damage.

Yamanashi Maglev Test Center

Tsuru-shi, Yamanashi

Miyazaki Test Center

Hyuga-shi, Miyazaki

Hino Civil Engineering Testing Station

Hino-shi, Tokyo

Tests and experiments in the field of track structures are conducted to promote research for reducing noise and vibrations and maintenance costs.

Shinjuku Office

Shibuya-ku, Tokyo

Kunitachi Headquarters

Kokubunji-shi, Tokyo

Kunitachi Headquarters serves as the base for the institute's activities, with research buildings, experimental facilities, and test tracks on a site of approximately 177,000 square meters.

Wind Tunnel Technical Center

Maibara-shi, Shiga

RTRI owns a large-scale low-noise wind tunnel that combines world-class low noise performance (75 dB in 300 km/h operation) with high wind velocity characteristics (up to 400 km/h). This wind tunnel is used for research and development aimed at reducing aerodynamic noise generated by high-speed trains and improving aerodynamic and noise characteristics.

Historical Background of RTRI

2025 Master plan “RESEARCH 2030” started

2021 High-speed wheelset dynamic load test facility completed

2020 Low-noise moving model test facility and high-speed pantograph test equipment completed

2019 World Congress on Railway Research 2019 (WCRR 2019) hosted by RTRI

2014 Center for Railway Earthquake Engineering Research inaugurated

2012 Took on the responsibility as the secretariat for the national mirror committee of ISO/TC269 (Technical Committee for Railway Applications)

2011 Accredited as a public interest incorporated foundation

2010 Railway International Standards Center was established. Took on the responsibility as the secretariat for the national mirror committee of ISO / TC17 (Technical Committee on Steel) / SC15 (Rail and Accessories Subcommittee)

2008 Large-scale shaking table completed

2004 Took on the responsibility as the secretariat for the national mirror committee of IEC (International Electrotechnical Commission) / TC9 (Technical Committee on Electrical Equipment and Systems for Railways)

2003 World speed record of 581 km/h for a manned train attained on the Yamanashi Maglev Test Line

1999 World Congress on Railway Research 1999 (WCRR'99) held at RTRI

1997 Running tests of Maglev trains started on the Yamanashi Maglev Test Line

1996 Large-scale low-noise wind tunnel started full-scale operation Railway Technology Promotion Center opened

1993 Brake test stand completed

1990 New rolling stock test plant completed

1987 RTRI made a new start as an independent foundation at a time when Japanese National Railways was divided and privatized

1986 Ministry of Transport authorized the establishment of RTRI as an independent foundation

1977 Miyazaki Maglev Test Center opened

1963 Labour Science Institute opened as part of the Japanese National Railways

1960 JNR hosted the Asian Railways Conference, as a summit meeting of top railway representatives of Asian nations

1959 RTRI moved to the current location near Kunitachi station

1957 Structure Design Office established

1957 Lecture entitled "a Newly-Projected Trunk Line Realizing the Dream- Tokyo to Osaka in Three Hours by Train" delivered at Yamaha Hall in Ginza, Tokyo

1949 When the Japanese National Railways was inaugurated, the Railway Technical Research Institute became a research wing attached to its head office

1942 Became the Railway Technical Research Institute

1920 Became the Research Office attached to the Minister's Secretariat of the Ministry of Railways

1913 Became the Research Office attached to President's Secretariat of the Railway Bureau

1907 Founded as the Imperial Railway Agency's Railway Research Center

Accredited as a public interest incorporated foundation

Ministry of Transport authorized the establishment of RTRI as an independent foundation

RTRI moved to the current location near Kunitachi station

Lecture entitled "a Newly-Projected Trunk Line Realizing the Dream- Tokyo to Osaka in Three Hours by Train" delivered at Yamaha Hall in Ginza, Tokyo

Vision of RTRI

"We will develop innovative technologies to enhance the rail mode so that railways can contribute to the creation of a happier society"

— Missions —

We will accomplish the following three missions:

- To intensify research and development activities so as to improve railway safety, technology and operation, responding to customers' needs and social change.
- To develop professional expertise in all aspects of railways and, as an independent and impartial research body, to fulfill our tasks using the best science available in an ethical way.
- To pioneer cutting-edge technologies for Japanese railways and become a world-leader.

Master Plan RESEARCH 2030

Creating sustainable railway systems

(Japanese only)
For more detailed,
please visit our website.

We have formulated the Master Plan RESEARCH 2030, with a five-year implementation period from fiscal 2025 to fiscal 2029, to advance our activities for creating sustainable railway systems.

Basic Policies

(1) Improving safety with an emphasis on enhancing resilience against intensifying natural disasters

- R&D for enhancing the resilience of railway systems against natural disasters, preventing failures of ground and vehicular equipment, and taking countermeasures against their aging.
- Promoting diagnostic guidance on investigations of damage and causes of disasters and accidents, and proposals of their recovery methods and prevention measures.

(2) Improving productivity and decarbonization of railway systems

- R&D that contributes to the improvement of productivity and decarbonization of railway systems through the active use of cutting-edge Information and Communication Technologies (ICTs).
- Supporting the development of relevant laws, regulations, and technical standards, which are required for the social implementation of our R&D outcomes.

(3) Providing solutions to various issues in railway technologies by demonstrating the collective strength of RTRI

- Establishing interdisciplinary research systems ranging from basic research to applied development to provide solutions to railway-specific issues.
- Focusing our resources on the core technologies for R&D, which serve as a driving force to elucidate the real nature of various railway-specific issues and to find solutions for them.

(4) Enhancing the global presence of Japanese railway technologies

- Technical collaboration with overseas railway operators and research institutes for stimulating R&D activities.
- Strategically engaging in standardization activities as a base for international standardization.

(5) Creating a vibrant workplace where each employee can experience self-realization

- Creating a workplace that fosters well-being where diverse values are respected and each employee can experience self-realization.

R&D objectives and pillars

R&D aims

- Improvement of safety
- Improvement of productivity
- Harmony with the environment
- Improvement of convenience

Pillars of R&D

- Research and development for the future of railways

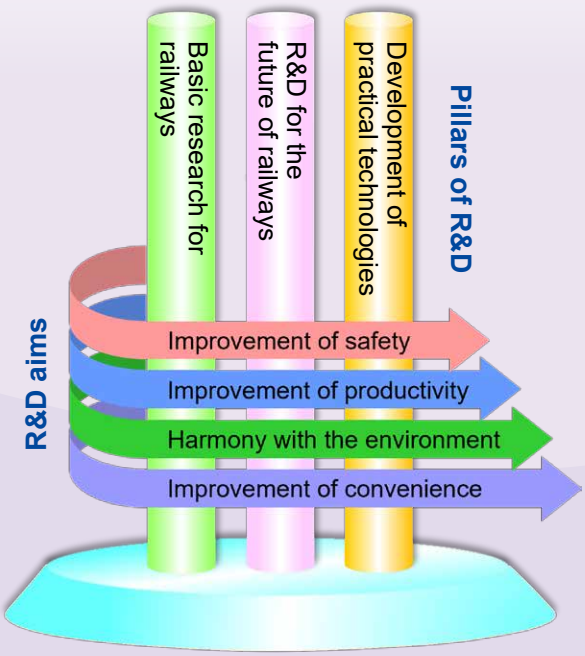
  Five major research themes implemented through project-based approaches, leveraging RTRI's integrated expertise to respond to railway operators' needs and social dynamics.

- Development of practical technologies

  Implementing projects for rapid resolution of various issues in railway operations to provide timely and accurate practical outcomes.

- Basic research for railways

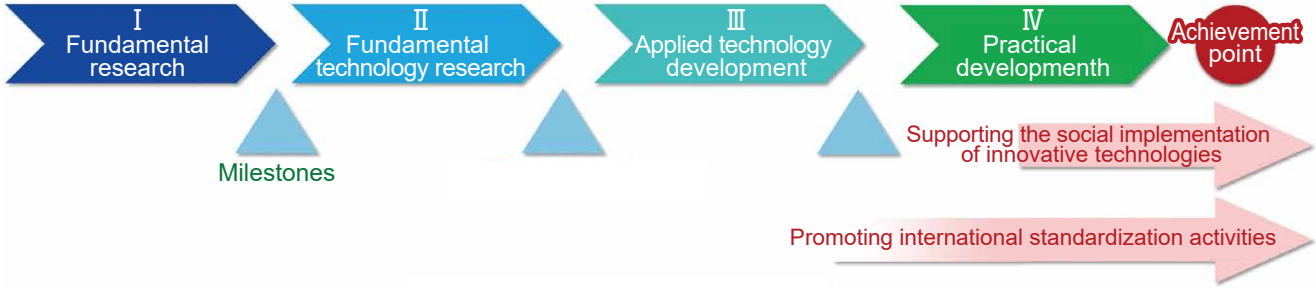
  Advancing challenging projects with high technical complexity such as elucidating railway specific phenomena.



Advancing R&D

1. Principles of R&D projects

- Covering the full scope of R&D, from basic research to applied development.
- Setting accurate achievement points and milestones based on the phase of the R&D projects.
- In the phase of practical development, engaging in the formulation of laws, regulations, and technical standards necessary for the social implementation of innovative technologies.
- Setting R&D projects in consideration of their deployment in the international standards development.



Setting R&D goals and roadmaps

2. Sophistication of core R&D technologies that will serve as the driving force for pursuing the essence of railway issues and their solutions.

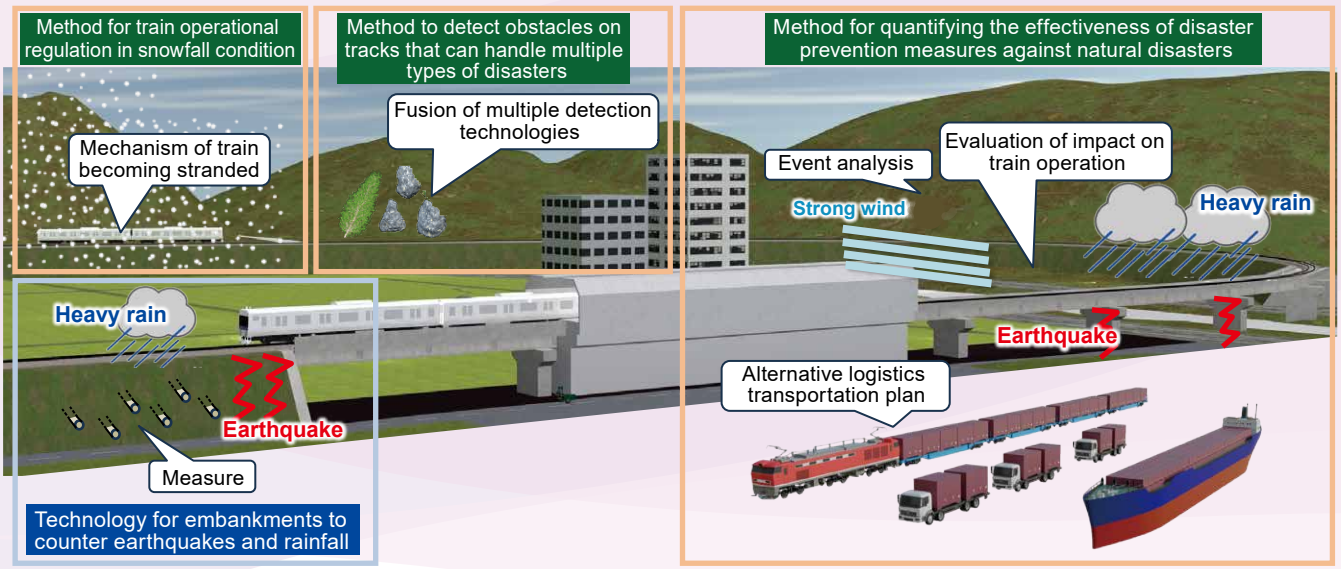
3. Creating new values, enhance the quality of R&D outcomes, and shorten development timelines by promoting technical collaboration, as well as data collaboration and sharing, across different technical fields and railway companies.

R&D for the Future of Railways

We will set and address major project-based R&D themes that meet the needs of railway companies and social trends, through which we can demonstrate RTRI's comprehensive technical strength by utilizing our high capabilities and distinctive research areas.

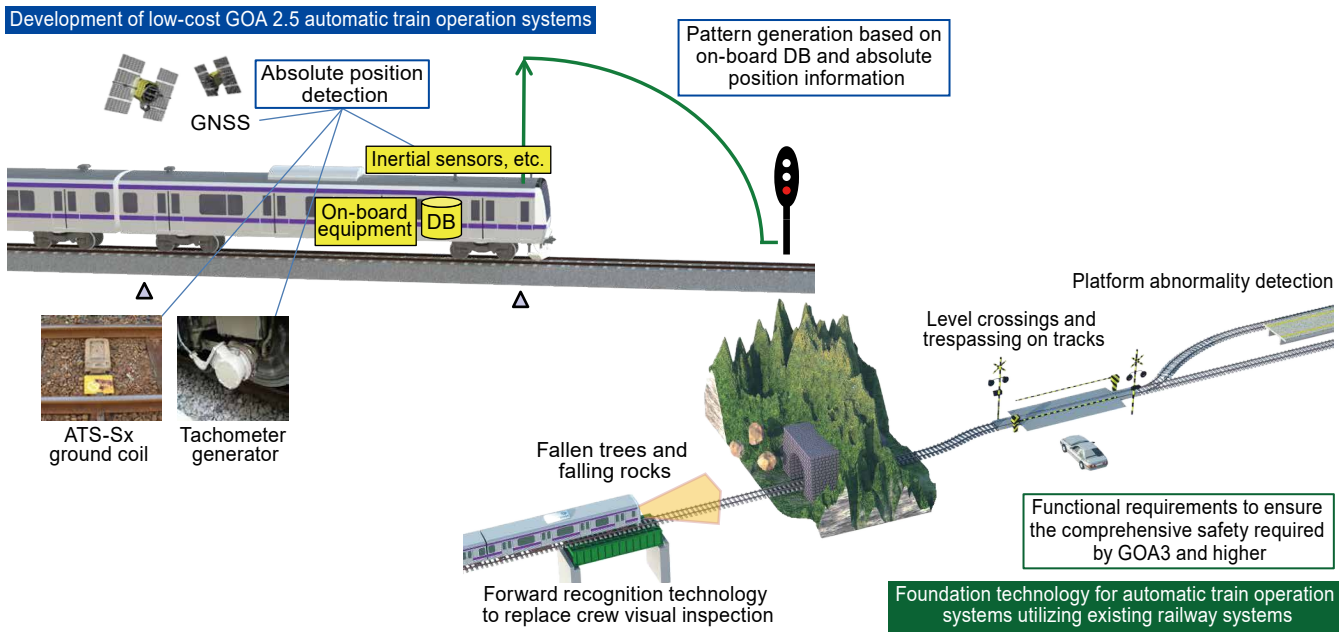
Enhancement of resilience against intensifying natural disasters

We aim toward the development of quantification methods for evaluating effects of disaster prevention measures against natural disasters, and sophistication of tangible and intangible measures in order to contribute to enhancing resilience of railways against increasingly severe, widespread, and frequent natural disasters.



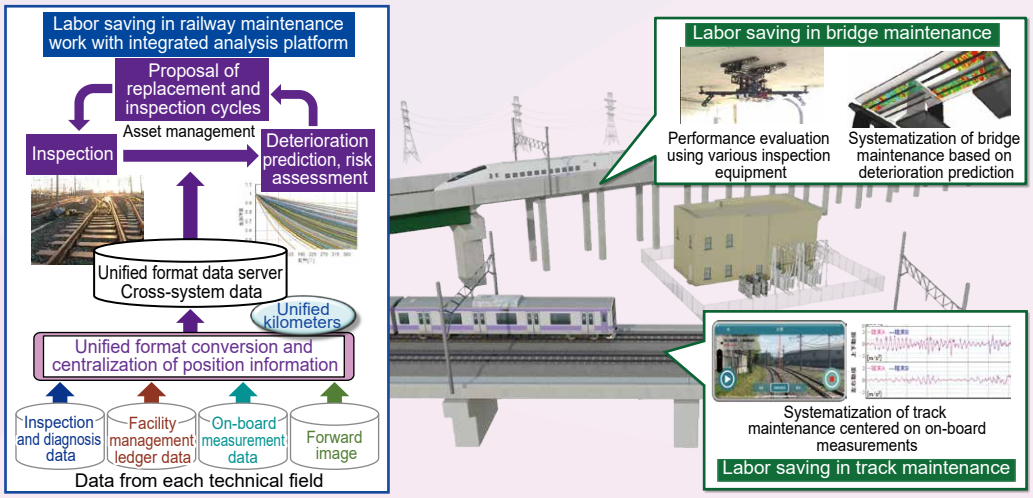
Sophistication of automatic train operation

We aim to achieve widespread adoption of automatic train operation systems by reducing costs through the development of elemental technologies for train control and train forward recognition, and by supporting the establishment of national technical standards necessary for their social implementation.



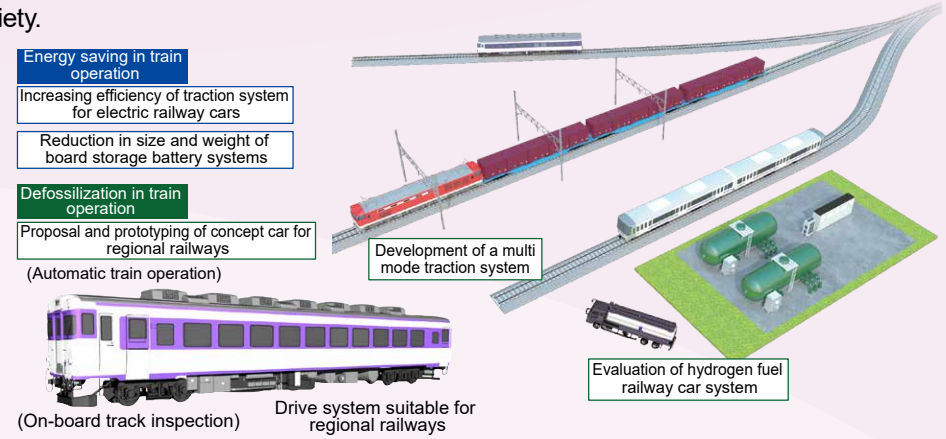
Labor saving in maintenance

We aim to establish a maintenance system that can achieve both safe and stable operation and labor saving by developing maintenance methods and elemental technologies and by supporting the develpoment of technical standards and other frameworks necessary for social implementation.



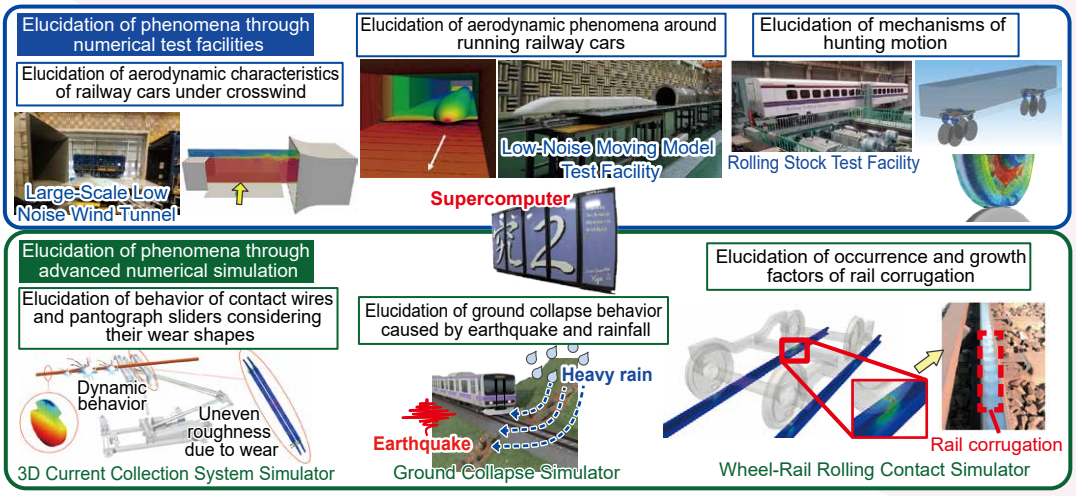
Decarbonization of railway systems

We aim to develop elemental technologies that contribute to reducing CO_2 emissions particularly from rolling stock and support the social implementation of such technologies to contribute to the realization of carbon neutrality by 2050 and a decarbonized society.



Elucidation of railway-specific phenomena through simulation

We aim to elucidate mechanisms of railway-specific phenomena using numerical test facilities and advanced numerical simulations in order to sophisticate the core technologies that will be the driving force for pursuing the essence of railway issues and their solutions.



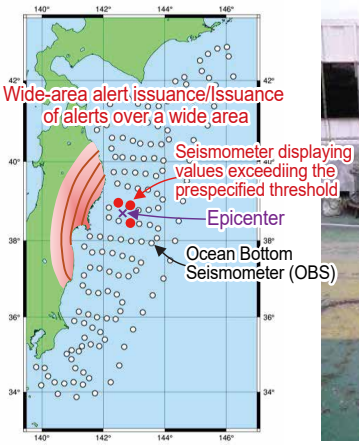
Improvement of Safety

RTRI has been conducting R&D to improve railway safety even further.

Disaster-resistant systems against rain, wind, snow and earthquakes

Early detection of huge earthquakes

When an earthquake actually occurs, if the observed values of the multiple OBSs exceed the thresholds, the system for detecting huge earthquakes determines that it is likely to be a huge earthquake. In the case of a huge earthquake, the system issues warnings more quickly and over a wider area than conventional methods.



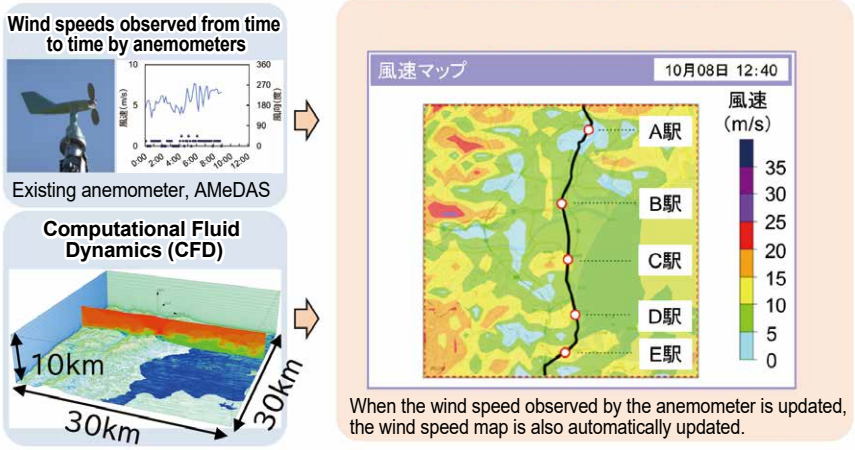
System for detecting huge earthquakes

Provided / Released by the National Research Institute for Earth Science and Disaster Resilience

Creation of dynamic wind maps

This system creates time-varying dynamic wind maps showing the maximum instantaneous wind speed by combining observation data from an anemometer with the results of a previously conducted CFD analysis.

This research was conducted in collaboration with Toshiba Energy Systems & Solutions Corporation.



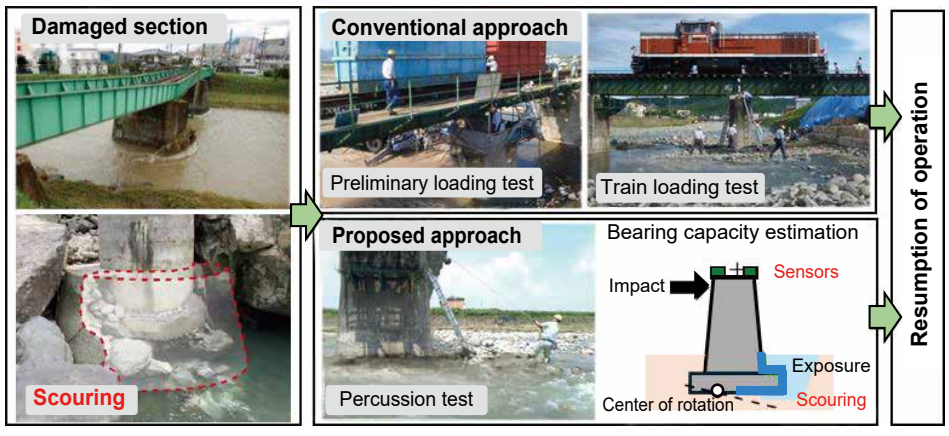
When the wind speed observed by the anemometer is updated, the wind speed map is also automatically updated.

Time-varying dynamic wind map

Emergency diagnosis for scour damaged bridges

In the event that a bridge pier foundation is damaged by scour caused by heavy rainfall, the usability of the pier is assessed by diagnosing the vibrations of the pier measured from impacts delivered by a heavy weight, without conducting on-site load testing.

Part of this research was commissioned by the Ministry of Land, Infrastructure, Transport and Tourism's Railway Technology Development and Promotion Program.

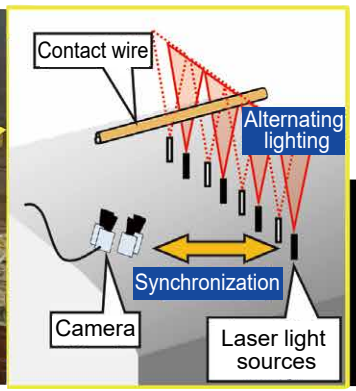


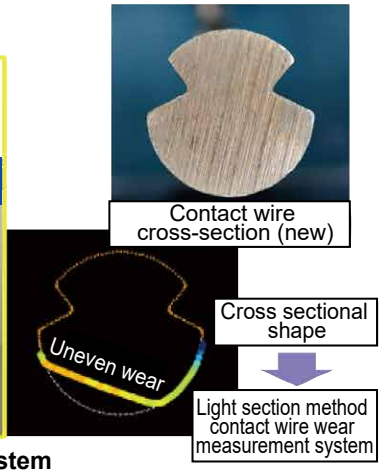
Systems resistant to accidents and failures

Measurement of wear conditions of contact wires from running vehicles

An onboard camera and laser light emitted from onboard light sources automatically measure the wear of contact wires, including the condition of areas with uneven wear, while running at speeds of up to 360 km/h.

Wear measurement device mounted on the roof



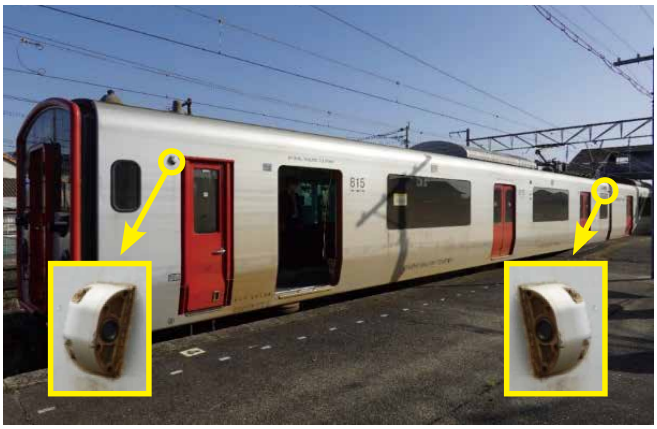


Proposed system

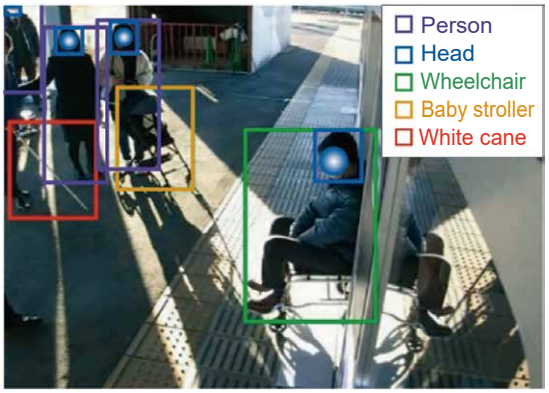
Improvement of train operation safety

Detection of passengers approaching vehicles

By processing images captured by side-mounted cameras with AI, the system detects persons, wheelchairs, and other objects approaching the vehicle, and promptly notifies train operators/ the crew.



Side-mounted cameras



Detection results

Crew notification

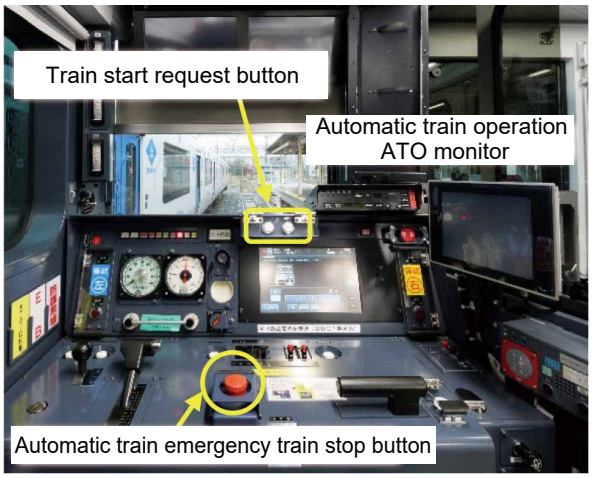
Improvement of Productivity

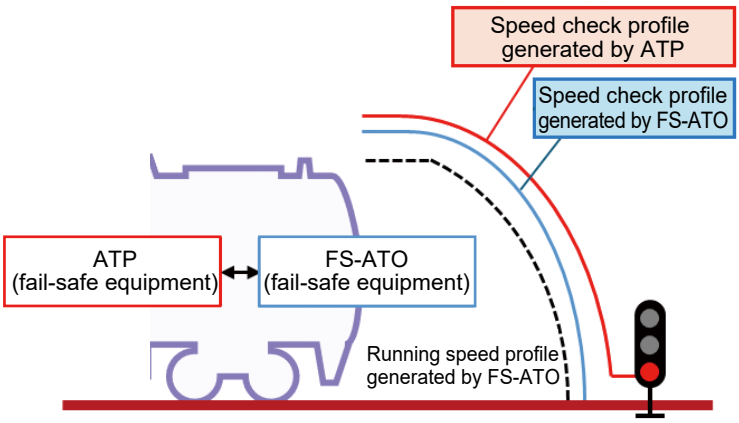
RTRI has been conducting R&D aimed at the improvement of productivity through the sophistication of automatic train operation as well as labor saving and cost reduction in maintenance and construction.

Cost-effective autonomous driving

Realization of GOA 2.5 automatic train operation systems

By utilizing existing ATP, which is intermittent type with continuous speed check, automatic train operation system could be realized without large capital investments. This system has been utilized for GOA2.5 (automatic train operation by staff without a train driver's license) on the JR Kyushu Kashii Line since March 2024.

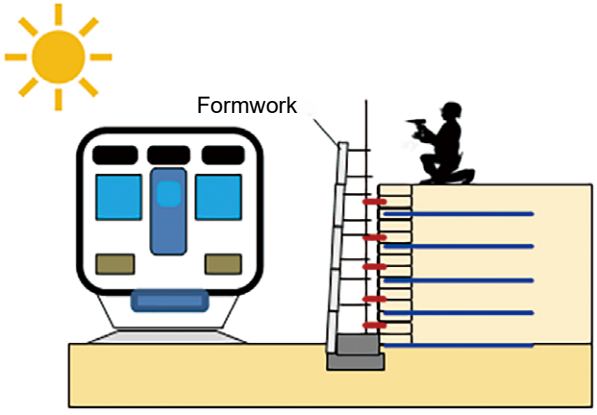




Reduction of labor and cost in construction work

Back-side construction method for retaining walls applicable to narrow areas

RTRI has developed an efficient and cost-effective construction method (permanent formwork method) for vertically constructed retaining walls (RRR method) using reinforcing material. This method enables the installation of formwork from the rear side (embankment side) of the concrete wall. Daytime construction is possible even when the construction site is close to the railway tracks.



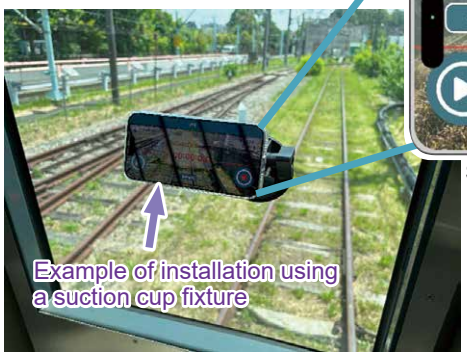
Lightweight buried formwork
(Construction process viewed from the rear side)

Part of this research outcome was obtained from a joint research project with Okasan Livic Co., Ltd. and Enbine,Inc. .

Labor saving and cost saving in maintenance

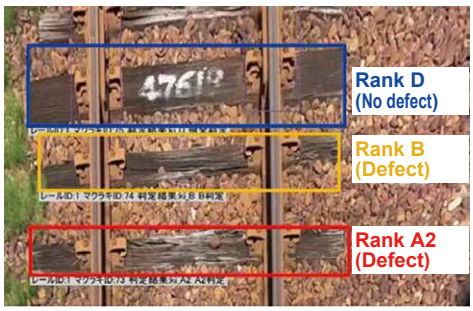
Train patrol support method using smartphones

Forward-view video is recorded and train vibration is measured using a smartphone. Integration of this data with the wooden sleeper deterioration assessment system improves efficiency in inspection and maintenance operations and reduces labor requirements.



Installation of a smartphone onto the front of the train

Screen shot showing the measurement screen of a train patrol support application



Screen shot showing the result of wooden sleeper deterioration evaluation result

Part of the development of this application was conducted with financial support from the Ministry of Land, Infrastructure, Transport and Tourism for railway technology developmen.

Part of the development of this application was conducted as a joint research project with the University of Tokyo.

Weed control method using steam

RTRI has developed a weeding technique that withers weeds using the heat of the steam. By giving the cover of the hand-held nozzle a unique shape, work efficiency has been improved. There is no negative impact on the environment since herbicides are not used.

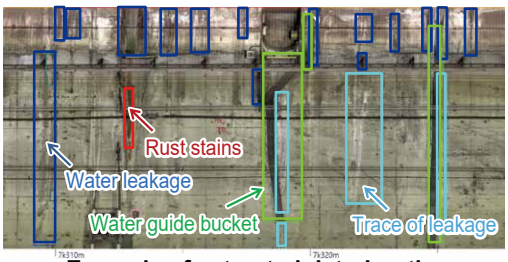
Steam weeding equipment

Example of practical application of steam weeding equipment

Inspection support system using images of tunnel walls

This system uses AI to identify the overall soundness of tunnels and areas that require special attention by using images of tunnel walls. Tunnel wall inspections can be conducted more efficiently by projecting and displaying areas that require special attention on the tunnel wall surface.

Projecting areas that require special attention



Example of extracted deteriorations

Part of this research was commissioned by the Ministry of Land, Infrastructure, Transport and Tourism's Railway Technology Development and Promotion Program.

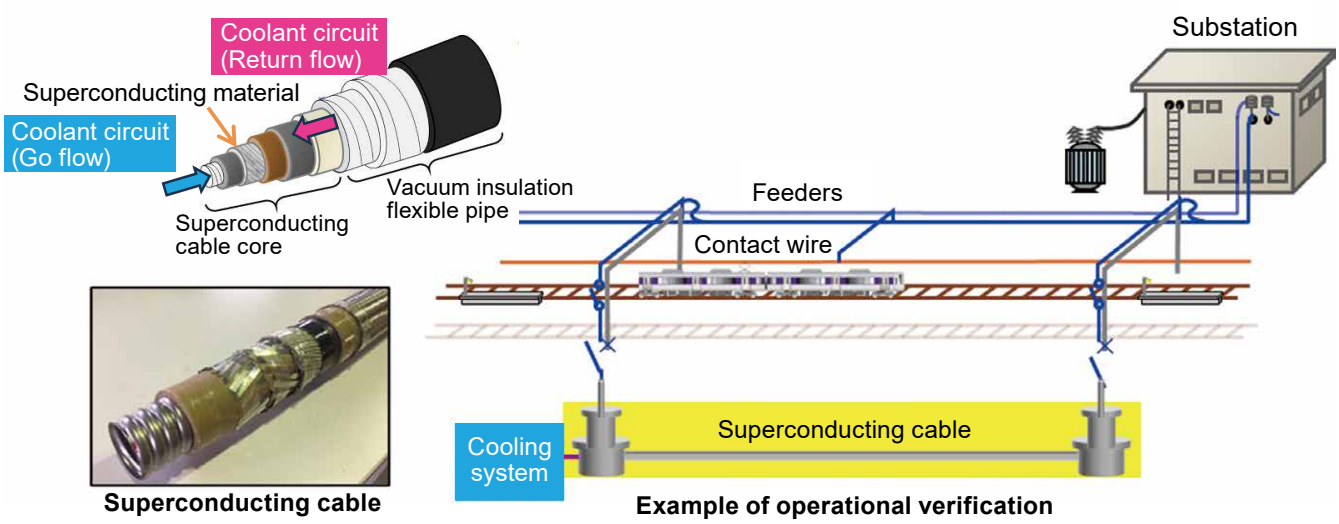
Harmony with the Environment

RTRI has been conducting R&D aimed at decarbonizing railway systems to contribute to the realization of a decarbonized society by 2050, and R&D that contributes to improving the environment inside trains, at stations, and along railway lines.

Decarbonization

Power transmission through superconducting feeding system

This superconducting feeding system applies the superconducting phenomenon where electrical resistance becomes zero below a certain temperature to the feeder used for power supply to trains. Currently, operational verification is being conducted using feeders approximately 400 meters in length. By extending the length of the feeders, effects such as a reduction in the number of substations and decreased power consumption are expected.



Part of this research was commissioned and subsidized by the Ministry of Land, Infrastructure, Transport and Tourism for railway technology development, the "Strategic Innovation Promotion Program (JPMJSV0921)" and " Mirai Program (JPMJMI17A2)" of the Japan Science and Technology Agency (JST), and the New Energy and Industrial Technology Development Organization (NEDO).

Safety assessment of fuel cell railway vehicles

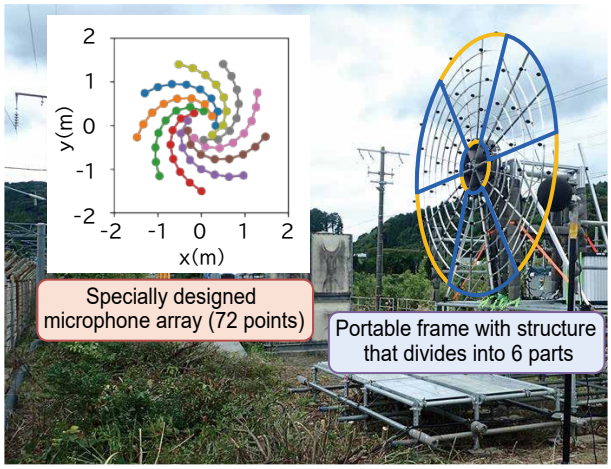
In the process of developing the hydrogen fuel cell railway vehicle, we analyzed risk mitigation strategies and obtained critical baseline data for safety evaluation, such as hydrogen leakage scenarios inside a tunnel and discharge conditions via safty valves.

Part of this development was financially supported by the Japanese Ministry of Land, Infrastructure, Transport and Tourism.

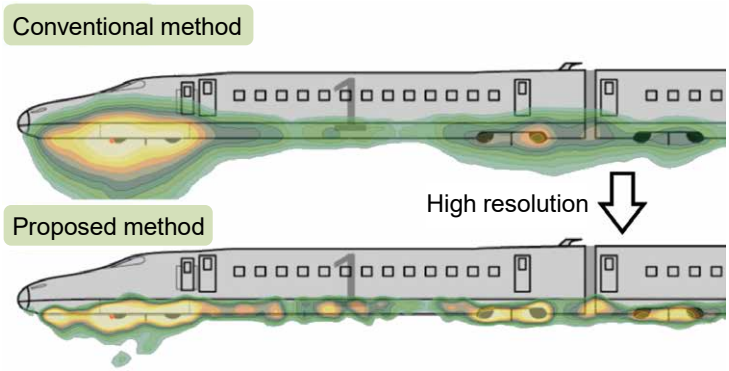
Improvement of environment inside trains and stations, and along railway lines

High-resolution sound source identification method

Through the introduction of a newly produced measurement device and the improvement of the processing method for recorded data, it is now possible to more precisely identify noise source distribution. This makes it easier to implement measures to reduce noise originating from vehicles and other sources.

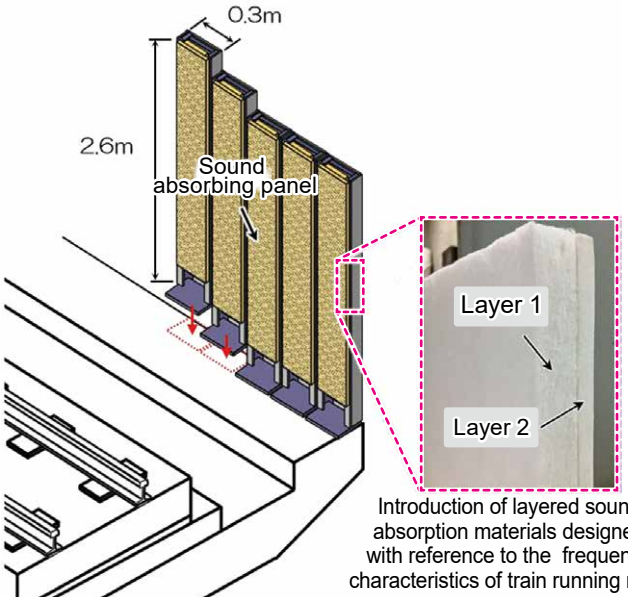


Measurement device with a spiral microphone array



Modular noise barrier for railway viaducts

The introduction of unique sound absorbing materials corresponding to the frequency characteristics of train running noise, together with the realization of a lightweight structure using highly corrosion-resistant steel materials, has enabled further reduction of wayside noise and more efficient replacement of existing noise barriers.



Introduction of layered sound absorption materials designed with reference to the frequency characteristics of train running noise

Installation example of modular noise barrier

This research was conducted in collaboration with Nippon Steel Metal Products Co., Ltd.

Improvement of Convenience

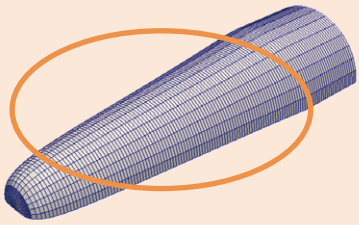
RTRI is conducting R&D to create railways that are more comfortable and easier to use for passengers.

Higher speeds

The train nose shape for micro-pressure wave reduction

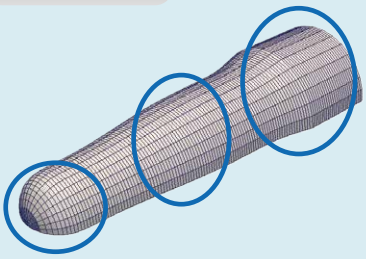
RTRI has developed a three-stage train nose shape to suppress micro-pressure waves generated at tunnel entrances due to the increase in train speeds.

Previous theory

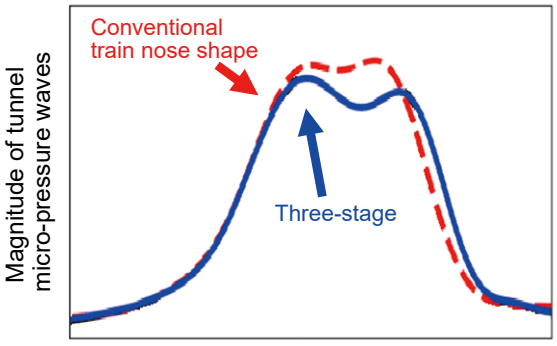


One stage only at the nose tip
Smooth in the middle

New concept



Three steps: at the tip, middle and end



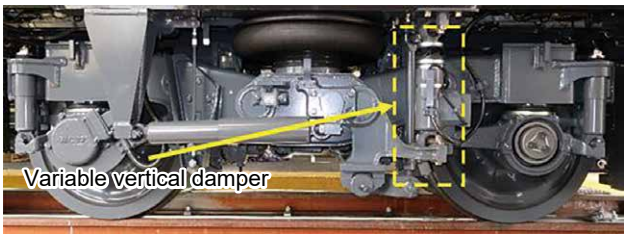
Results of model tests

Part of this research outcomes was obtained from a joint research project with DB Systemtechnik (Germany).

Improvement of railway services

Vibration suppression control system employing variable vertical dampers

The variable vertical dampers control the damping force to cancel out the vibrations of the vehicle carbody, thereby reducing vertical vibrations and improving ride comfort at a relatively low cost.



Installation status of a variable vertical damper on an actual vehicle

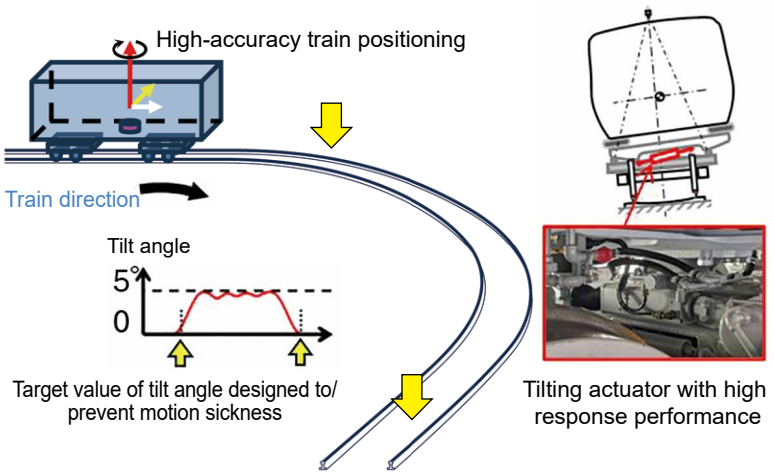
Implementation examples demonstrated by this system

① Yufuin no Mori (JR-Kyushu)
② TRAIN SUITE SHIKI-SHIMA (JR-East)
③ TWILIGHT EXPRESS MIZUKAZE (JR-West)

Part of this research outcomes was obtained from a joint research project with Astemo, Ltd.

Next-generation tilt control system

RTRI has improved the ride comfort of tilting vehicles/trains by renewing three key elements: high-accuracy train positioning, a target value of tilt angle designed to prevent motion sickness, and an actuator for high-precision tilting of the vehicle body.

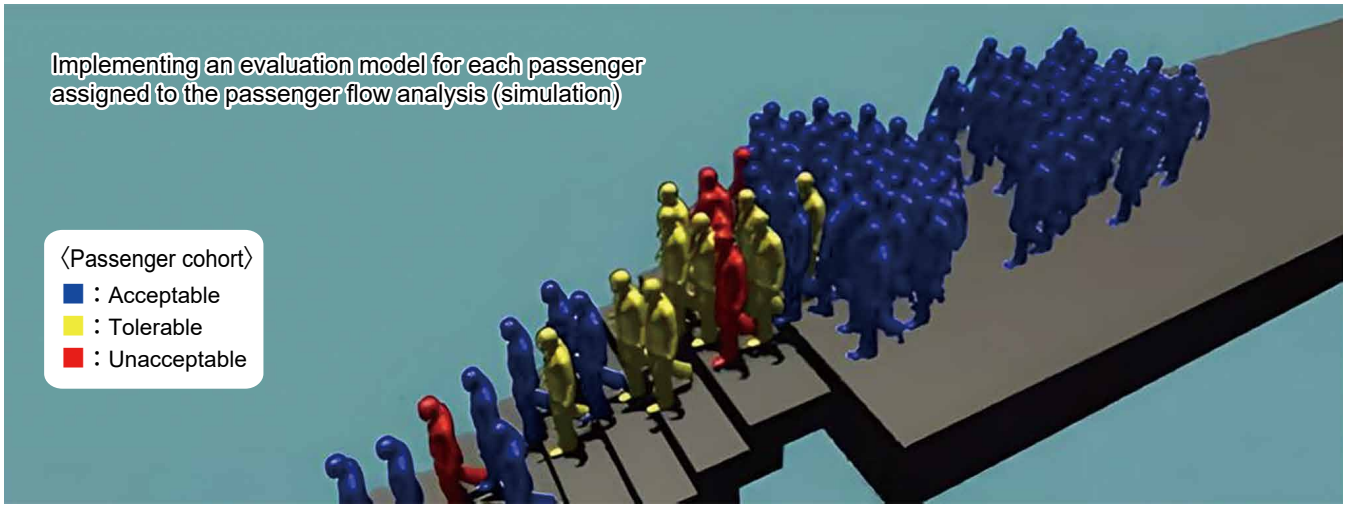


Elemental technologies for the next generation tilt control system

273 Series Yakumo Limited Express (JR West, in operation from 2024)

Tools for evaluating congestion in terms of passenger discomfort in station

RTRI has developed a tool for evaluating congestion in a station environment in terms of passenger discomfort based on the relationship between the congestion (density) levels and duration of congestion that individual passengers can tolerate. This tool can be utilized as a tool to be incorporated beforehand when planning a station upgrade plan.



Tools for evaluating congestion in terms of passenger discomfort in station

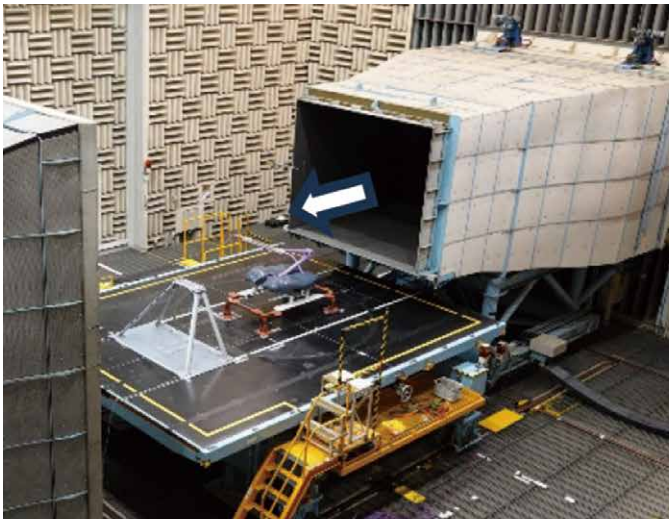
Basic Research for Railways

In R&D activities classified as basic research for railways, which is the source of innovative technologies such as the elucidation of railway-specific phenomena, we will actively promote challenging R&D topics with a significant impact on railway operation if their results lead to practical applications.

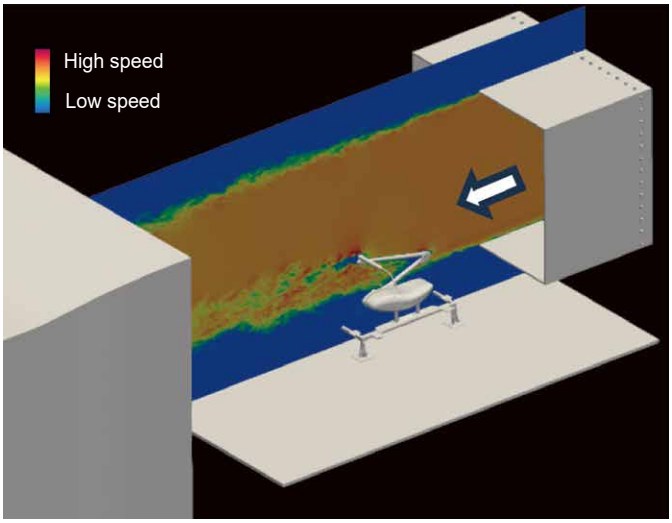
Sophistication of simulation technologies

Numerical wind tunnel

RTRI has developed a numerical wind tunnel capable of reproducing wind tunnel tests conducted in a large-scale low-noise wind tunnel on a computer. This numerical wind tunnel simulation tool allows researchers to use a narrower set of test conditions and fewer measurement points.



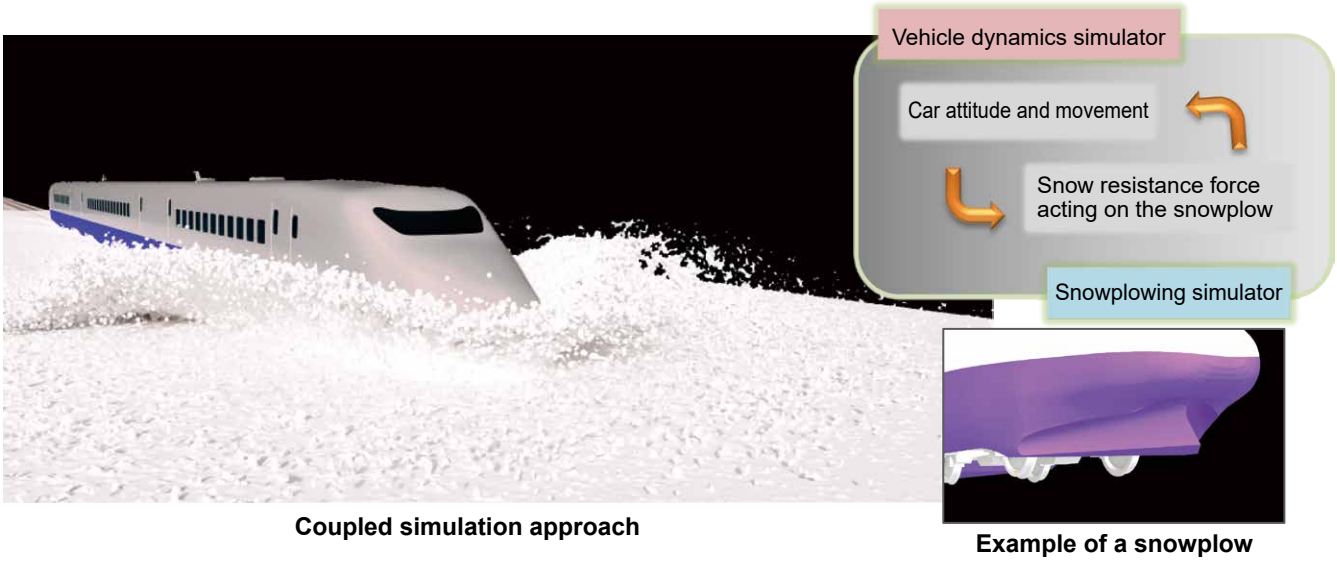
Large-scale low-noise wind tunnel (Wind Tunnel Technical Center)



Numerical wind tunnel

Snowplowing Simulation

RTRI has developed a simulation approach that simultaneously analyzes both the resistance force caused by snow during train operation and the vehicle dynamics. This approach can be utilized for assessing operational safety and for the development of new snowplow designs.



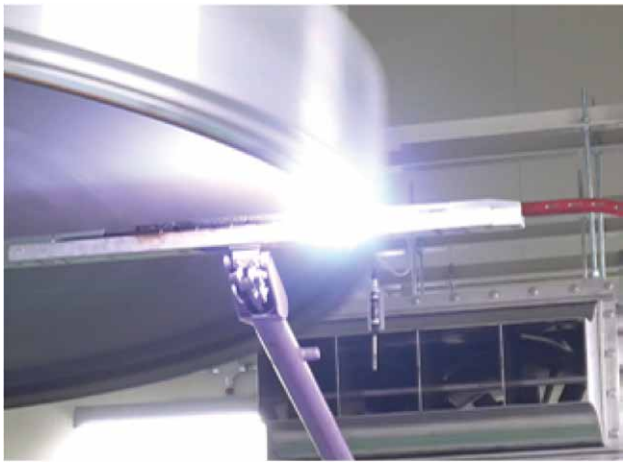
Coupled simulation approach

Example of a snowplow

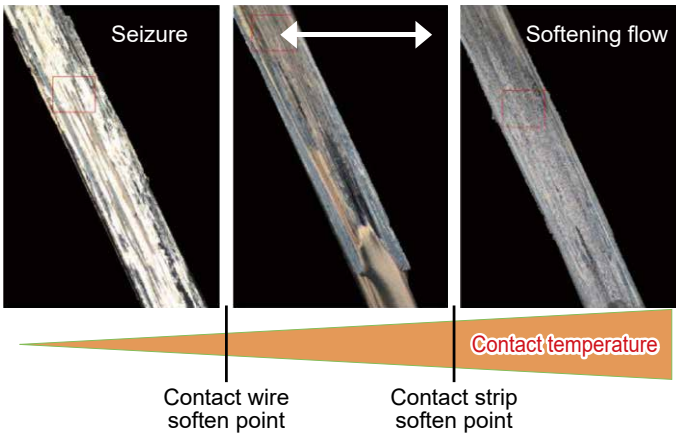
Sophistication of physical technologies

Estimation method for wear mode of contact wires and contact strips

RTRI has developed a method to estimate wear modes of contact wires and contact strips, focusing on the heat accumulated in the contact strips by friction and Joule heat and taking into account the sliding history including speeds and passing currents. This method will be used to investigate and implement measures for reducing wear on both contact wires and contact strips.



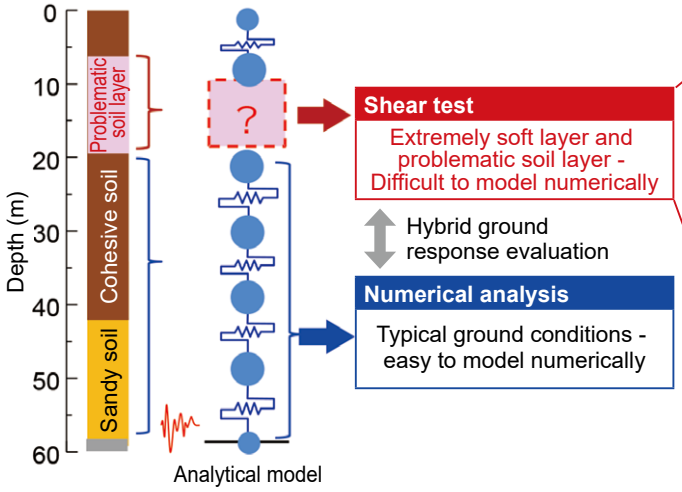
Wear experiment for contact wires and contact strips with current passing



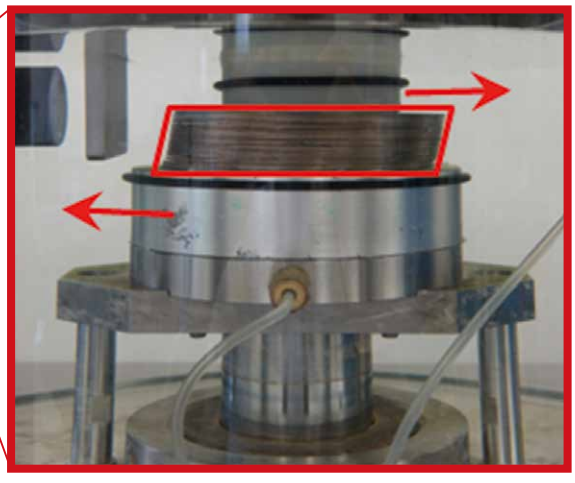
Wear modes of the sliding surface of the contact wire

Assessment of soil liquefaction

By conducting shear tests on soil layers that have been difficult to model numerically, and combining the test results with numerical analysis, we can achieve a more accurate evaluation of soil liquefaction phenomena during large earthquakes.



Hybrid ground response evaluation method



Applying forces in opposite directions to the upper and lower surfaces of the soil sample

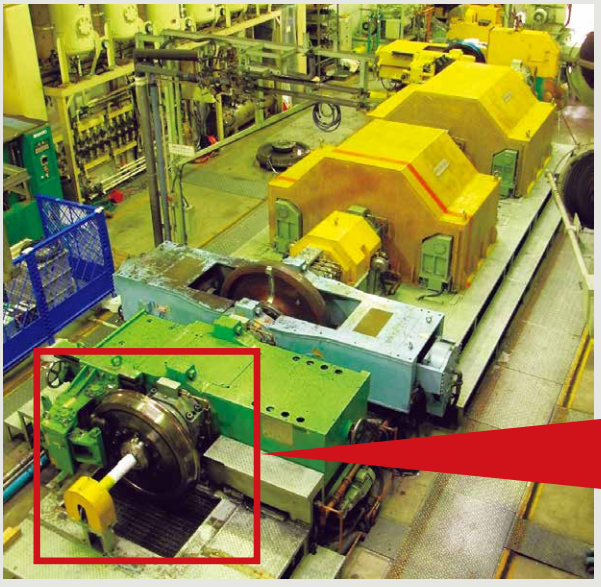
Test Facilities

Rolling stock test facility

This test plant is capable of simulating running conditions in the speed range of up to 500 km/h, using an actual vehicle.

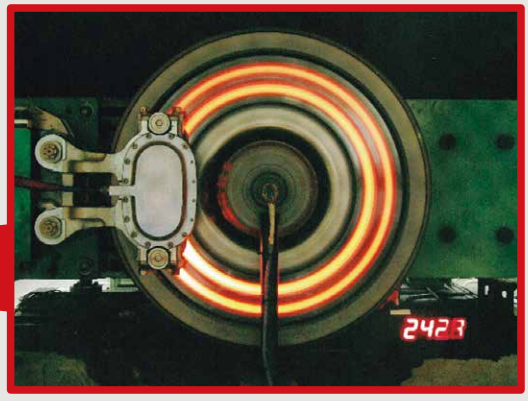
Low-noise moving model test facility

A 1:20 scale model train can run at the maximum speed of 400 km/h through the rig and aerodynamic phenomena in and out of a tunnel can be simulated.



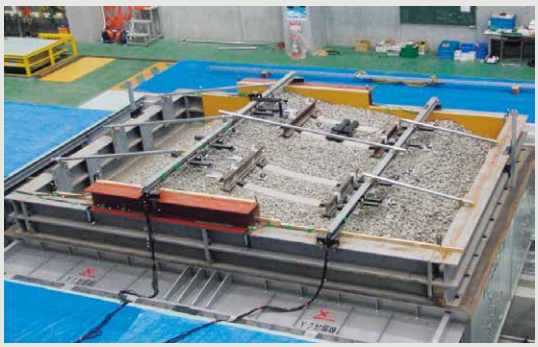
Brake performance test stand

Testing of disc brakes and tread brakes is conducted on this test stand under various conditions.



Large-scale low-noise wind tunnel

This wind tunnel is used for research to reduce the aerodynamic noise of high-speed trains and to improve their aerodynamic characteristics.



Large-scale shaking table facility

This facility can simulate ground vibrations with seismic intensity of 7 and apply two-dimensional horizontal acceleration onto an actual bogie.

High-speed wheelset dynamic load test facility

This facility can test the performance of axles and wheelsets at the maximum speed of 500 km/h by simulating the load acting to bogies of a running train.

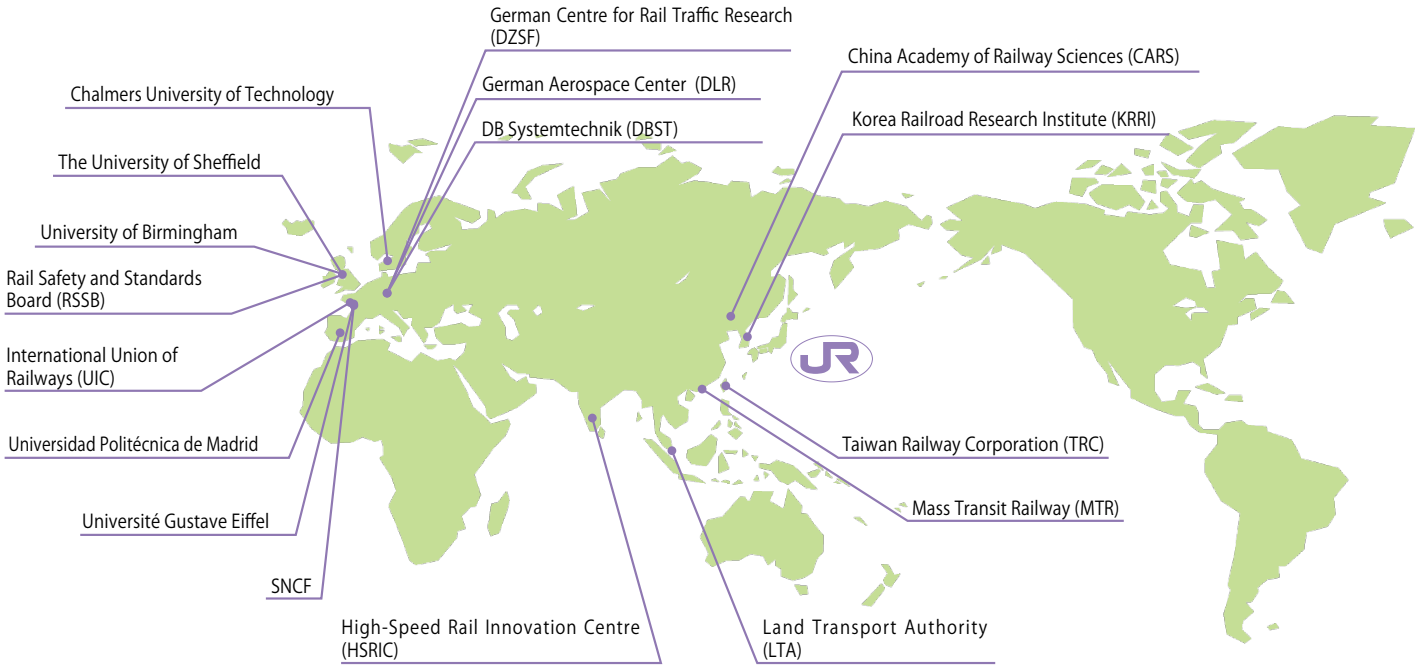
High-speed test facility for pantograph / OCL systems

The sliding motion of an actual pantograph can be tested with this facility at the maximum speed of 500 km/h.

Becoming a World-leader Through International Collaboration

Cooperation with overseas research organizations

RTRI actively promotes joint research projects with overseas universities and research institutes, sending and welcomming researchers to and from overseas research organizations. In addition, RTRI proactively supports the overseas expansion of domestic railway operators and railway related companies.



Recent collaboration with global railway organizations, research institutions, etc.

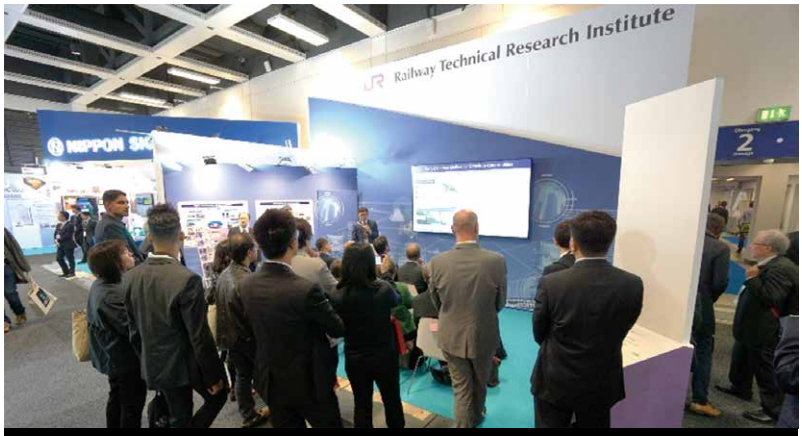
SNCF-RTRI Collaborative Research

Collaborative research with Université Gustave Eiffel

Promoting R&D outcomes and gathering overseas technical information

RTRI participates in international conferences and various forums spanning multiple academic fields to present our R&D outcomes and collect overseas railway technical information. Furthermore, we share our work globally through our publications of “Ascent” and “Annual Report”.

WCRR 2022



InnoTrans 2024

Collaborative research with Chalmers University of Technology

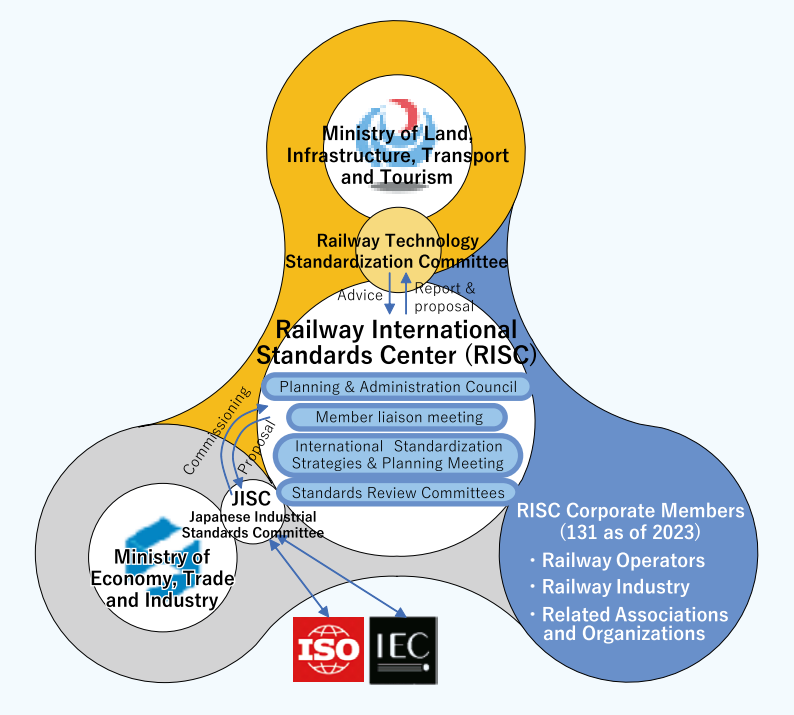
Publications (e-books)

Railway International Standards Center (RISC)

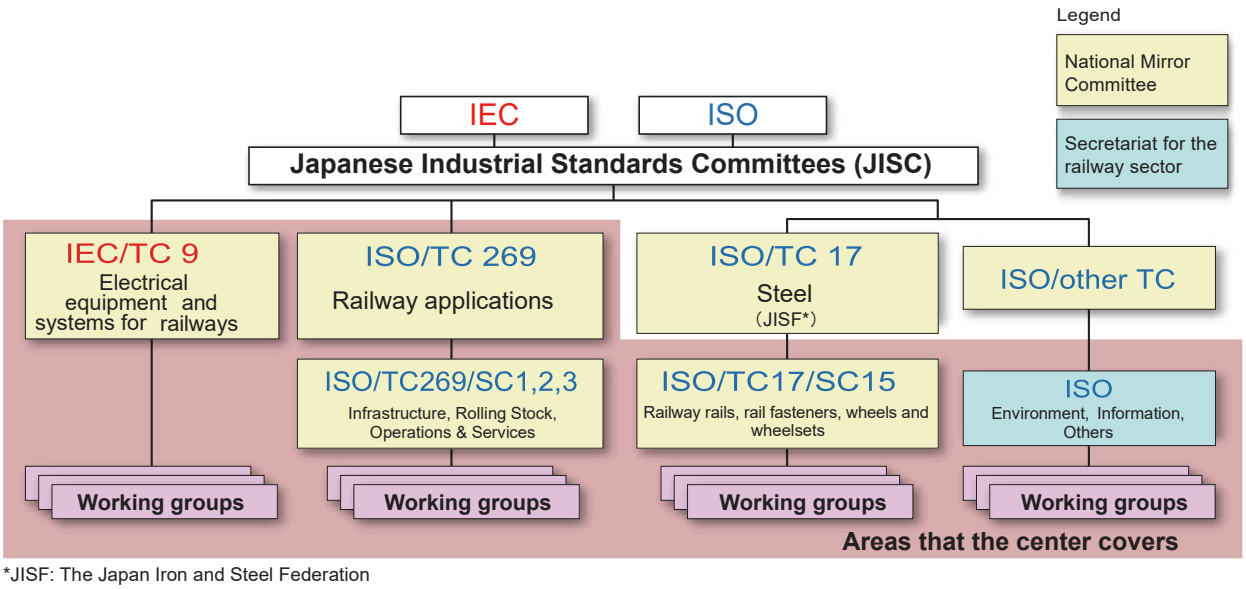
TRI's Railway International Standards Center (RISC) was established in 2010. The aim of this center is to ensure that Japan is fully engaged and represented in discussions and work relating to the establishment of international railway standards. RISC is therefore working to contribute to the development of the world's railways by incorporating Japanese technical specifications and design concepts into these discussions to establish international standards.

RISC operates with the support of its members, including domestic railway operators, railway-related industries, and domestic secretariats for the national mirror committee. Its activities include "deliberation and proposal of international standards," "strategic examination of international standardization," and "provision of information related to international standards.

RISC participates in the drafting and deliberation process of international standards through its role as secretariat of the national mirror committee for railways under the IEC and ISO.



Organization and related meetings of RISC



*JISF: The Japan Iron and Steel Federation

Scope of Railway International Standards Center (As of 2024)

RISC plans and deploys strategies for international standardization in co-operation with member companies and organizations including railway operators, industry leaders and associations.

Railway Technology Promotion Center

RTRI's Railway Technology Promotion Center was established in 1996 to provide a forum where railway engineers and researchers can share their experience and expertise and is operated with the support of its members, including domestic railway operators, railway-related companies, and educational institutions such as schools.
This center addresses three main issues: preservation and improvement of technological potential, systematization of railway technologies and providing technical solutions, and provision of technical information services.

Technical assistance

Through field surveys and training sessions/courses, RTRI is actively involved in providing diagnosis, advice, and guidance on technical issues and supporting local regional railways to guarantee safe and reliable transportation. Additionally, RTRI is transmitting technical know-how, for example, by compiling various educational materials to train the next generation of railway engineers.

Technical advice related to the inspection and diagnosis of facilities and equipment

Professional Railway Design Engineer examinations

RTRI has been contributing to the development of human resources throughout the railway industry by conducting Professional Railway Design Engineer examinations to maintain and improve the technical level of railway engineers.

Professional Railway Design Engineer examinations

Preparation of technical standards

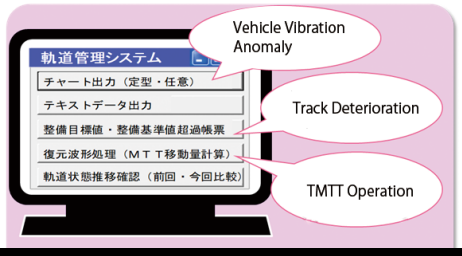
RTRI works hard to make railway transportation safer and more efficient by drafting technical standards for design and maintenance of railway structures.

Design standards and technical guides
Maintenance standards and technical guides

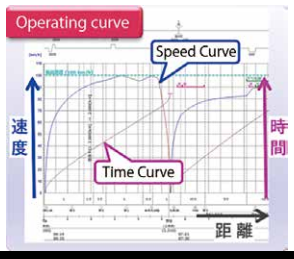
Application of RTRI Products in Commercial Operation

RTRI's research outcomes are already widely used across commercial railway services and businesses. RTRI aims to produce results which help meet a broad range of needs in society, and help address specific requirements in the railway industry.

Examples of commercialized research outcomes



LABOCS



SPEEDY

IMPACTUS

Earthquake early warning system

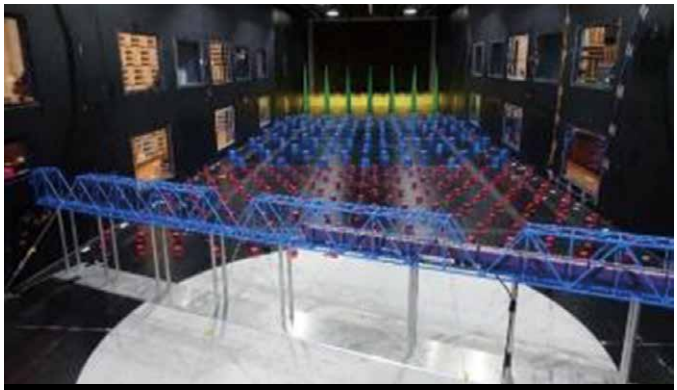
U-Doppler

RTRI human factor analysis method

Individually commissioned research projects

Lectures and technical guidance on various R&D, testing, assessment/evaluation, investigations/surveys, design, system integration, engineering, and railway technologies.

Example of commissioned/contracted services utilizing test facilities/equipment



Wind tunnel tests for aerodynamic force evaluation of railway vehicles/rolling stock

Sharing Technical Information and Research Outcomes

RTRI regularly organizes lectures such as the annual conference and publishes regular periodicals including the RTRI Reports and RRR, to socially disseminate its research achievements. Additionally, RTRI collects and makes publicly available railway technology information from both domestic and international sources.

Seminars and lectures

RTRI regularly organizes various events to comprehensively present the wide range of its R&D achievements, for example:

- Annual conference focused on specific themes
- Monthly presentations to timely share outcomes from each research field
- Railway Technology Forum

Annual conference

Training sessions

RTRI organizes railway technical courses to share basic railway technologies and research outcomes among railway engineers.


Training courses (Online distribution of railway technology lectures)

Publications

RTRI disseminates information externally by publishing various materials:

RTRI Report:

A monthly journal of research outcomes compiled from an academic perspective

RRR:

A public relations magazine which clearly introduces R&D outcomes as well as railway technologies

Quarterly Report (QR):

A quarterly English-language journal presenting R&D achievements for overseas readers

Ascent:

An international public relations magazine aimed at introducing RTRI's activities to overseas readers

Periodicals (including electronic books)

Collection and publication of railway-related technical materials

The RTRI library collects and provides access to approximately 30,000 railway-related books and around 240 titles of railway-related journals. Additionally, through its digital library, RTRI actively disseminates research outcomes via RTRI publications and other materials.


Library

Compliance and a Better Work Environment

Human rights policies and action agenda for compliance

RTRI has been conducting its activities based on a strong commitment to respecting human rights and complying with all applicable laws and regulations with a high level of awareness about ethical standards.

Human rights policies

Under the vision of developing innovative technologies to enhance the rail mode so that railways can contribute to the creation of a happier society, we have been advancing our activities. We firmly believe that the foundation of all these activities lies in respecting human rights. To fulfill our social responsibilities, we have established our human rights policies and are actively promoting initiatives to uphold respect for human rights.

For more detailed, please visit our website.

(Japanese only)

Action agenda for compliance

We, the executives and the staff members of RTRI, act on the basis of the guiding principles listed below to promote compliance and to contribute to the development of the railway system, science and technologies.

1. We commit ourselves to always function as responsible members of society with a strong awareness of high ethical standards.
2. We undertake to comply with laws, ordinances, and social norms, and to behave fairly and sincerely.
3. We recognize our mission as executives and staff members of a public interest corporation in conducting research and development as well as information dissemination, and through this commitment, we strive to maintain and enhance the trust placed in us by society.
4. We commit ourselves to faithfully fulfill our missions, abiding by RTRI rules and regulations.
5. We undertake to respect each other's responsibilities and positions, and to maintain and enhance a healthy work environment where diverse opinions can be freely and actively exchanged.

Procurement policies

For information about our procurement policies, please visit our website.

(Japanese only)

Commitment to SDGs

RTRI engages in activities aimed at achieving nine of the 17 SDGs, primarily focusing on "GOAL 9: Industry, Innovation and Infrastructure," which aligns with RTRI's strengths through its business operations.

The nine SDGs addressed by RTRI

RTRI supports the Sustainable Development Goals (SDGs).

Creating a vibrant workplace

We aim to create a workplace that promotes well-being and allows each individual to experience their own self-realization.

Support for flexible work styles

We actively promote initiatives such as introducing flextime and telecommuting systems, as well as support for childcare and nursing care.

Support for self-development

Support for self-development: RTRI provides support for self-development, such as assistance for doctoral studies and incentive payments for obtaining professional qualifications.

Measures to nurture and develop future generations

We have received special recognition from the Minister of Health, Labour and Welfare as an excellent “company supporting family life,” and was awarded the highest level of accreditation, the “Platinum Kurumin.”

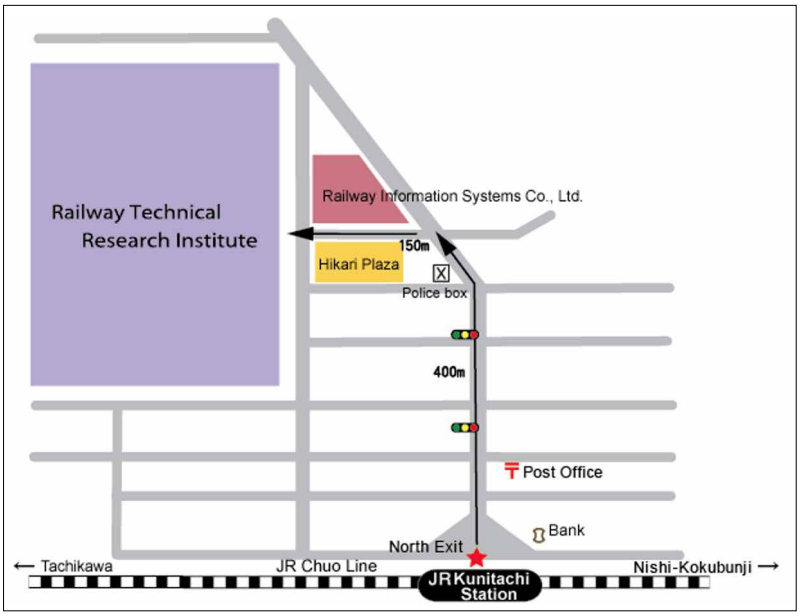
Employee benefits

Our employee benefits include family housing, dormitories for employees living alone, housing allowances, a cafeteria plan, and a student loan repayment assistance program.

Certification mark for organizations which are supportive of raising a family: the “Platinum Kurumin.”

Dormitories

Access to the Railway Technical Research Institute (Kunitachi)



A **seven-minute** walk from the north exit of **JR Kunitachi Station** (550 meters from the station)

2-8-38 Hikari-cho, Kokubunji-shi, Tokyo 185-8540, JAPAN
https://www.rtri.or.jp/eng

2025.09