

RTRI Hosts Technology Forum FY 2024

The Railway Technical Research Institute (RTRI) held the “RTRI Technology Forum FY 2024” at its headquarters to widely disseminate its research achievements and business activities.

1. Overview of the Forum

Dates	Opening Hours	Participants
August 29, 2024	10:00 a.m. to 5:00 p.m.	1,574 people
August 30, 2024	10:00 a.m. to 4:30 p.m.	

RTRI welcomed 1,574 participants from railway operators, manufacturers, government authorities, and other organizations.

2. Details

(1) Exhibition of Achievements

A total of 86 projects were divided into five technical fields (1) Electricity, (2) Rolling Stock, (3) Transportation, Business, and Human Science, (4) Structures, Disaster Prevention, and Earthquake, and (5) Track, and were exhibited in 81 booths. Additionally, three business activities were introduced. For more details, please refer to the attached sheets.

(2) Open House Events at Test Facilities

Five test facilities (1) High-Speed Wheelset Dynamic Load Test Facility, (2) High-Speed Test Facility for Pantograph/OCL Systems, (3) Rolling Stock Test Plant, (4) Large-Scale Shaking Table, and (5) Low-Noise Moving Model Test Facility were showcased through guided tours, attracting approximately 600 participants.



Photo 1: Exhibition of Achievements



Rolling Stock Test Plant



Low-Noise Moving Model Test Facility

Photo 2: Open House Events at Test Facilities

Exhibited RTRI's Achievements

Attached Sheets

Introduction to RTRI's Activities	
International Activities of RTRI	
Development of International Standards	
Activities of the Railway Technology Promotion Center	
Electricity	
1	Wear Measurement System for Overhead Contact Wire and Overhead Conductor Rail Using Light-Section Method
2	Clarification of Wear Mechanism of Current Collecting Materials
3	Integrated Control Method of Stationary and Onboard Energy Storage Systems
4	Image Detection System for Overhead Contact Lines
5	Intermediate Connection of Compound Overhead Contact Lines for Shinkansen
6	Superconducting Feeder Cables
7	Superconducting Material Production and Development of Applied Devices
8	Interlocking Device in Cloud-Computing Environment
9	Lifetime Estimation of Electronic Signalling Equipment Based on Sensing Data from Usage Environment
10	Application of Cellular Network and General-Purpose Devices to Train Control Systems Easy-to-Use Measurement System for Public Cellular Communication Characteristics
11	Application of Beamforming to Communication Based Train Control
12	Method for Managing the Fixing Force of a Point Machine
13	Integrated Networks and High-Performance Routers for Railways
Rolling Stock	
1	Numerical Wind Tunnel Simulating the Large-Scale Low-Noise Wind Tunnel of RTRI
2	Safety Evaluation Method of Railway Vehicles for Overturning Under Localized Strong Wind Conditions
3	Snow Plowing Simulation
4	Visualization of Exhaust Flow on the Train Roof
5	Experimental and Analytical Methods for Identifying Three-Dimensional Elastic Vibration Characteristics of Vehicle Car Bodies
6	Material Strength Analysis of Brake Friction Materials Using SAICAS
7	Thermal Efficiency Map for Diesel Engines
8	Vibration Monitoring System Using Battery-Free Wireless Sensors
9	Noise Source Identification Technology Using Microphone Arrays
10	Automatic Flaw Extraction Method for Non-Destructive Inspection of Bogie Parts
11	On-Board Lubricant Condition Monitoring System
12	Door Catching Detecting System Using a Doorstop Rubber with a Built-In Pressure Sensor
13	Fire Testing System for Time-Dependent Changes in Calorific Value and Combustion Gas Component
14	New Adhesion-Enhancing Particles Used to Prevent Wheel Slip on Steep Inclines
15	Vehicle Underbody Imaging System
16	Collision Analysis Model for Aluminum-Alloy Vehicle Front End
17	Next-Generation Railway Vehicle Pendulum System
18	Mechanical Derailment Detection Sensor for Freight Cars
19	Method for Measuring Contact Force and Position Between Wheel and Rail Using Shear Strains
20	Countermeasures to Prevent Dewirement Incidents Focusing on Pantograph Lift Force Characteristics Under Crosswind
21	Measurement System for Magnetic Fields in Low-Frequency Bands Related to Railway Vehicles
22	Seat Surface to Reduce Severity of Passenger Injuries in the Event of a Collision
Transportation, Business, and Human Science	
1	Automatic Generation of Maintenance Worker Schedules
2	Railway Dynamic Map
3	Method for Identifying Trains and Stations that Require Delay Countermeasures, Considering the Range Affected by the Delay
4	Quantifying Method for Residential Location Preference Along Railway Lines with Changes in the Levels of Urban Railway Services
5	Support System for Preventing Decline of Train Driver's Alertness Levels
6	Highly Sensitive Ammonia Measuring Instrument
7	Automatic Deer-Repellent Sound-Emission Device for Railway Vehicles
8	Hot Gas Flow Simulation During Tunnel Fires
9	Obstruction-Warning Signal Detection System
10	Platform Safety Confirmation Support System Using Side Cameras on Rolling Stock
11	Evaluation Method for Conductors' Safety Verification Behavior Using Virtual Reality Technology
12	Educational Software for Prospective Calling
Structures, Disaster Prevention, and Earthquake	
1	Real-Time Mapping of Time-Varying Wind Speeds
2	Method for Estimating Snow Accretion on and Snow Dropping from Railway Vehicles
3	Vibration Measurement System for Estimating Natural Frequencies of Bridge Piers
4	System for Automated Tunnel Soundness Assessment and Projection Mapping of High-Risk Areas and Electronic Field Notebooks
5	Verification Method for Railway Concrete Structures Using BIM/CIM Models
6	Development of a Design Method for Railway Viaducts Considering Characteristics of the Precast Construction Method
7	Method for Measuring the Coating Thickness on Steel Bridges During Repainting Work
8	Back Side Construction Method for Geosynthetics-Reinforced Soil-Retaining Walls Applicable to Narrow Areas
9	Free-Directional Dynamic Rod-Penetration Testing Device
10	Evaluation Method for Rock Bolt Bond Strength to Ground by Laboratory Testing
11	Cement-Free Sleepers and Plastering/Spraying Materials
12	Track Deformation Prediction System Using Seismic Prospecting for Railway Underpass Construction
13	Estimation System of Origin-Destination Flow Data in Stations
14	Design Method for Concrete Bridge Bearings Suitable for Restoration Processes After Earthquakes
15	IMPACTUS: Bridge Substructure Health Diagnosis System Argosfinder: Visual Inspection System for Structures Using Three-Dimensional Images U-Doppler III: Non-Contact Vibration Measuring System for the Diagnosis of Railway Structures
16	Base Isolation Method Using Piles and Soil Bags
17	Supporting Early Resumption of Operations After Earthquakes Using Stress Tests and DISER
18	Examining Practical Application of Optical Sensing Technology (DAS) to Earthquake Disaster Prevention in the Railway Industry
19	Simulation of the Behavior of a Trainset During Earthquakes
20	Countermeasures Against Soil Liquefaction from Leaf-Vein-Shaped Grouting
21	Movement Restriction Devices with Improved Restorability of Existing Steel Bridge Bearings Seismic Countermeasure Technology for Structures with Strict Construction Conditions
22	Method for Detecting Major Earthquakes Using Information from Multiple Ocean-Bottom Seismometers
Track	
1	Weed Control Method Using Steam with Superior Prevention Effects and Ease of Application
2	LABOCS and LABOCS-MATE: Systems for Supporting Track Maintenance and Management ROOPSYS-TM: System for Supporting Development of Track Maintenance Plans
3	Train Patroller: On-Board Measurement App for Supporting Train Patrol
4	Track Component Condition Evaluation System
5	Image Analysis Engine Around Railway Track
6	Unloosening Rail Fastening System with Leaf Spring Clip
7	Evaluation of Track Irregularity in High-Speed Turnouts
8	Rail Fastening System Using Resin Materials
9	Countermeasures Against Settlement of Fouled Ballast and Method for Inspecting the Fouling State of Ballast
10	Development of a Method for Detecting Rail Breakage and Damage Using Guided Waves
11	Low-Upset-Length Rail Gas Pressure Welding Method without Bulge Removal Process
12	New Alumino-Thermic Welding with Improved Fatigue Strength