



Newsletter on the  
Latest Technologies  
Developed by RTRI

Railway Technical Research Institute  
2-8-38 Hikari-cho, Kokubunji-shi  
Tokyo 185-8540, JAPAN

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# Railway Technology Avalanche

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## Railway Technical Research Institute Celebrates 20th Anniversary

**Katsuji AKITA**  
President

The Railway Technical Research Institute (RTRI) was established in December 1986 as a non-profit institution to assume the functions of the R&D branch of the Japanese National Railways. (JNR was privatized and divided into seven railway companies soon after, in 1987.) Today, we have more than 500 technical researchers active in a wide range of fields from civil, electrical, mechanical and biological engineering to physics, chemistry and human science. Our basic research aims, for example, to further improve rail safety and preserve global environment, our research and development contribute to technical innovations in the Shinkansen and conventional rail systems, and our pioneering efforts focus on the development of a superconducting magnetically-levitated (maglev) transport system.

Over the last two decades we have achieved impressive results, contributing to greater rail transport safety, faster speeds for Shinkansen and conventional trains, lower costs for the construction, operation and maintenance of rail systems, and better rail services through the use of IT. Our basic railway research has examined issues such as wheel-rail interaction, ride comfort evaluation methods, aerodynamic factors and noise-generating mechanisms associated with higher speeds, the dynamic behavior of running rolling stock during earthquakes and strong winds, mechanisms leading to human errors, and railway system risk analysis.

Our R&D tools include a large-scale low-noise wind tunnel, which is among the world's most advanced, a rolling stock test plant to evaluate the motion characteristics of individual railcars, a simulator to evaluate ride comfort, and a supercomputer.

In collaboration with Central Japan Railway Company and the Japan Railway Construction, Transport and Technology Agency, we have constructed a test line for a superconducting maglev system. We have used the line to conduct test runs and promote the development of maglev technologies. In early 2005, the project achieved the establishment of the basic technology needed to place the system in commercial service. We are continuing our

R&D efforts to further improve maglev system performance.

RTRI's R&D efforts are conducted in partnership with JR

companies and in association with other railway-related companies and government-funded research institutes.

Several dozen of our researchers work also as visiting professors at Japanese universities, and we have established tie-ups with overseas entities such as the International Union of Railways (UIC), the Innovation and Research Department of the French National Railways (SNCF), railway research institutes in China and Korea, and universities and research centers in the United States and Europe. RTRI is an organizing member of the World Congress on Railway Research (WCRR). We provide technical consulting for projects targeting the introduction of Japanese railway technology in other countries, upon the request of governments, rail transport institutions and corporations.

Railways offer a number of advantages, particularly safety, high speed, on-time service, and environmentally-friendly operations, and it is important to further increase this competitive advantage to ensure the future expansion of rail transport. It is also important to form tie-ups with other modes of transport, to give users the convenience they want from rail services. Our R&D efforts will continue to support technical innovations to achieve these aims.

Our Railway Technical Research Institute, now 20 years old, will keep increasing its technical potential in order to create new rail systems for the 21st century.



秋田雄志