



Newsletter on the
Latest Technologies
Developed by RTRI

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Improving the Safety and Environmental Compatibility for Sustainable Railways

Norimichi KUMAGAI Dr.

Director, Research & Development Promotion Division

It is the chief mission of railways to transport many people and large volumes of freight safely to their destinations. The Railway Technical Research Institute (RTRI) is an organization that engages itself in research and development towards building railway systems that are safe, comfortable, economical and compatible with the environment. Employing some 400 researchers, RTRI puts in about ¥3,400 million (\$30 million) to carry out 300 or so R&D projects annually. The Research & Development Promotion Division of RTRI is responsible for planning R&D projects, checking progress, and evaluating the results of those projects.

We think that improving the safety and environmental compatibility of railways has become especially important nowadays, from the point of view of making the general public feel at ease, and benefiting railway users in particular. Two serious railway accidents, such as we had never experienced in Japan before, occurred in the past year. The first was the derailment of a Shinkansen train running at a high speed during a big earthquake, and the second was the overturning of a commuter train due to excessive speed on a sharp curve. In order to restore society's trust in railways, we will tackle research and development towards the safety of railways in cooperation with the railway operators.

Among natural disasters, earthquakes are an especially difficult problem to deal with. This is because preventative measures against earthquakes depend largely on a presupposed maximum magnitude. Learning lessons from the above accidents, we started research and development on new viaduct and tracks which have greater resistance to earthquakes, and on measures to keep trains on the tracks, even if they derail.

In order to permit railways to continue serving as one

of the principal transportation facilities for the next generation, it will be necessary to make them fully compatible with the global environment. As a measure to save energy, we are focusing on research and development for a power-recycling train that reuses regenerative braking power, stored by the train or in wayside equipment. We are also developing a fuel cell car as part of our efforts to reduce emissions as CO₂.

In order to create sustainable railways, we need to promote new projects of safety and environment and to carry out research and development to attain the objectives of improving the safety and environmental compatibility. In this respect, I consider it necessary to build a network that pools the knowledge of railways around the world. Hoping for the lasting progress of the railways of the world, I would ask all concerned people for their cooperation in widening the sphere of joint research activity.



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