# Latest cases of new energy systems

JR East is committed to contributing to further environmental conservation through research and development in railcars and station facilities.

## Research and development contributing to environmental conservation

JR East has set "Contribution to the Global Environment" as one of the four fundamentals of our R&D initiatives and is committed to the research and development for creating environmentally friendly stations. Specifically, our main R&D initiatives are related to environment assessment using Life Cycle Assessment (LCA), the promotion of resource circulation efforts by considering 3R (reduce, reuse, and recycle) in designing, and "Applications of new energy systems" such as fuel cells and the power generating floor.

### Operation of the world's first diesel hybrid railcars

The Kiha E200 Type cars, which entered service on the Koumi Line in July 2007, are the world's first diesel-powered, electric motor-driven hybrid railcars.

The world's first diesel hybrid railcars operating on the Koumi Line

These cars use electricity generated by a diesel engine equipped with the latest emission control equipment and by a motor that charges a battery during train braking. Efficiency in tests was approximately 20% better than a standard diesel railcar *1 The diesel hybrid railcars are quiet when idling at a station (approx. 30dB reduction). Hazardous substances in the exhaust, such as NOx and graphite, are reduced by approximately 60%.

2007 Environment Minister's Award for Global Warming Prevention Activities in the category of technological development and commercialization (organized by the Ministry of the Environment)

*1 Approx.20% improvement
Results are based on test runs on level ground. On the Koumi Line, which has steep grades, efficiency improved by approximately 10%.

### Fuel-cell hybrid railcar experiments continue

Fuel cells are electricity-generation technology with low environmental impact. They feature high electricity-generation efficiency, and the only byproduct generated through their reactions is water.

JR East is currently proceeding with research and development of fuel cell systems for railway applications.

We began test runs of the world's first fuel-cell hybrid railcar in 2006, and started test runs on operational lines in spring 2007. The fuel-cell railcar is currently being tested at around 100km/h.

We continue to develop control, safety, and other technologies, and are advancing to meet future challenges.

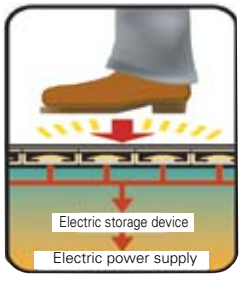
There are still many challenges to overcome with fuel cell technology, but we are committed to the development of this technology with an eye on the day when it is commercially available in the future.

Test runs started with the world's first fuel-cell hybrid railcar.

### Experiment with a power-generating floor at the Yaesu-exit of Tokyo Station

Demonstration experiment of the power-generating floor which generates electricity from the pressure of people walking on it was conducted on the passageway at the Tokyo Station Yaesu North Exit ticket gate from January to March 2008. It generates electricity from the vibration caused by the deformation of piezoelectric elements under the floor when people walk on it. We will continue our research and development for further improvement of power generation efficiency and endurance.

Demonstration experiment at Tokyo Station




Mechanism of the power generating floor