

Demonstration Experiment of the “Power-Generating Floor” at Tokyo Station

Frontier Service Development Laboratory at Research & Development Center of JR East Group is presently researching and developing comfortable, safe, and environmentally friendly station space. Foremost consideration is being given to both the environment and the energy saving at stations. We are jointly working on the development of the “power-generating floor” together with New Energy and Industrial Technology Development Organization and JR East Consultants Company.

Building on last year’s experiment, we are planning to conduct a demonstration experiment of the “power-generating floor” (currently being developed) at Tokyo Station to confirm the increase in electrical production capability and the durability of the current floor. We will also continue with our research and development, aiming to achieve further energy-saving facilities for stations.

1. The “Power-Generating Floor”

The “Power-generating floor” is an environmentally friendly system that generates electricity by using the energy from the vibrations created by people walking on the floor. The piezoelectric elements incorporated inside the flooring transform pressure and vibration into electric power. (Please see Appendix.)

JR East aims to install the “Power-generating floor” at the ticket gates of stations where there is high traffic, using the electricity generated to cover a portion of the electrical output for such station facilities as automatic ticket gates and electroluminescence displays.

2. Outline of the Experiment

- * Location: Inside Tokyo Station’s Yaesu North Exit ticket gates
- * Time period: January 19th, 2008 (Sat.) to the beginning of March, 2008
- * Installation area: 90 m²
Installed at ticket gates, the concourse, and stairs.
- * Electricity production:

The target is more than 10 times (per unit installation area) of the value obtained from last year’s experiment (more than 1.0 watt-second when a person passes through the ticket gate). In addition, since the installation area (and the experiment as a whole) is larger than the area of last year’s experiment, our target is to produce daily electricity of

500kW-seconds, equivalent to the electricity needed to light a 100W light bulb for 80 minutes.

* Issues to confirm with this demonstration experiment

1) Increase in power generation efficiency

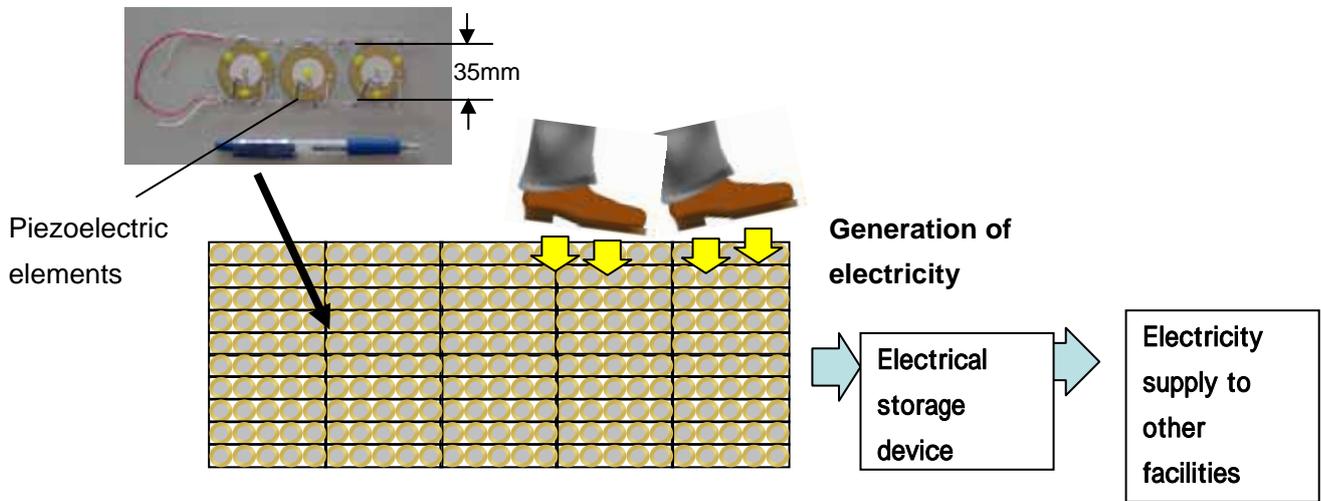
With this floor, we have increased the density of piezoelectric elements and re-examined the device for storing electricity.

In comparison with last year's experiment, we aim to confirm the increase in power generation efficiency.

2) Enhancement of durability

To confirm the enhancement of durability, the power generation equipment has been elaborately developed with such features as inner structure supporting piezoelectric elements and protective material (rubber matting).

The Mechanism of the Power-Generating Floor



[Reference] Results of last year's experiment

Location: Tokyo Station's Marunouchi North Exit

Time period: October 16th, 2006 (Mon.) to December 8th (Fri.)

Installation area: 6 m² (ticket gates only)

Results:

Production of electricity reached a maximum of 10,000 watt-seconds per day (equivalent to the electricity needed to light a 100W light bulb for 100 seconds).

From the 3rd week of the experimental period (a total of 800,000 people passing), production of electricity decreased due to a degradation in durability.



Photo: Last year's experimental Power-generating floor at Tokyo Station's Marunouchi North Exit