Tokyo flywheel energy storage

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The Railway Technical Research Institute (RTRI) has been developing a superconducting flywheel power storage system, as a next-generation power storage system, jointly with Kubotek Corporation, Furukawa Electric Co., Ltd., Mirapro Co., Ltd. and the Public Enterprise Bureau of Yamanashi Prefecture. This development has been supported by the New Energy and Industrial Technology Development Organization as a one of the projects for "the Technical Development for Safe, Low-Cost, Large-Capacity Battery Systems."

Now the world"s largest-class superconducting flywheel power storage system with a superconducting magnetic bearing was completed and test operation was started.

The details of this technical development will be presented at the 91st Cryogenic and Superconducting Engineering Technical Meeting scheduled on May 27, 2015. Grid-connection tests with a megawatt-class solar power plant will also be started this summer at Komekurayama in Yamanashi Prefecture.

This system has been developed jointly with Kubotek Corporation, Furukawa Electric Co., Ltd., Mirapro Co., Ltd., and the Public Enterprise Bureau of Yamanashi Prefecture, in a project known as "the Technical Development for Safe, Low-Cost, Large-Capacity Battery System - the Development of the Next-Generation Flywheel Power Storage System" sponsored by the New Energy and Industrial Technology Development Organization (NEDO).

The larger and heavier the flywheel is, and the faster it rotates, the larger the amount of energy the power-storage system can store. In this "superconducting flywheel power-storage system," the following technical developments have enabled a large-diameter, heavy-weight flywheel to rotate with higher speeds and less power loss.

The completed system is the world"s largest-class flywheel power storage system which has 300-kW output capability and 100-kWh storage capacity by rotating the flywheel which is 2 meters in diameter and weighs 4 tons.

Basic performance of this machine will be tested and adjusted in confirmation tests and moved to a megawatt-class solar power plant at Komekurayama in Yamanashi Prefecture. There, it will be connected to the solar power system and the power grid of Tokyo Electric Power Company, and confirmation testing will be started to help stabilize fluctuating supply of renewable energy.

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