

Recent R&D progress of BESS in Kansai EPCO

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Abstract

Battery energy storage system (BESS) is one of the promising device in the future power grid because the performance of quick response can be used for multiple grid operation such as relieving renewable energy power fluctuation and resources of virtual power plant (VPP).

Two demonstration experiments using large scale BESS and simple simulation test with residential PV and battery system are introduced.

(1) Demonstration of Nickel Metal Hydride Battery system (2013 - 2015)

KANSAI installed Kawasaki Heavy Industries' Nickel Metal Hydride Battery (GIGACELL; 250kW-102kWh) in Ishizugawa distributing substation. This demonstration was the first experiment of BESS with grid in service in Japan. GIGACELL, which consists of non-inflammable materials, was adopted because of its safety. The system functions in order to stabilize frequency toward the standard frequency of 60Hz.

(2) Demonstration of Li-ion battery system (2013 - Current)

KANSAI installed TOSHIBA's Lithium Ion Battery (SCiB; 100kW-300kWh) system and started its operation as one element of Energy Management System (EMS) of R&D Center. SCiB was adopted because of its long life and safety. The system follows the order by peak cut Operation of the EMS. We have been focusing available capacity and checking its seasonal variation continuously.

(3) Simple simulation of residential PV and BESS

Feed-in Tariff (FIT) scheme in Japan has led rapid increase of PV capacity in residential sector and installation of BESS has also been accelerated subsequently. We are studying residential BESS control method which maintains backup capacity for medical equipment and other appliances.