Abstract: Frequency and Voltage Control of Islanded Microgrid using SMES

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Abstract

A microgrid as a small-scaled power system will be introduced in power distribution systems in the near future. To keep frequency and voltage of the microgrid in allowed ranges during islanded operation mode is an important requirement for microgrid operation. The superconducting magnetic energy storage (SMES) has no restriction with the number of charge/discharge with fast response and high efficiency. In this paper, the application of the SMES to control frequency and voltage of a microgrid during the islanded mode is proposed. To evaluate the feasibility of the application, a test microgrid, is modeled by using Power System Computer Aided Design/Electro-Magnetic Transient Design and Control (PSCAD/EMTDC) and is tested. In addition, the test result is discussed.

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