

International Conference on

Power and Energy Engineering

September 29-30, 2016 London, UK

Study of power quality by the introduction of renewable energy to the island

Katsuaki Sato, Shin'ya Obara and Daisuke Mikawa
Kitami Institute of Technology, Japan

The island of Japan has been powered primarily by diesel power generation. The discharge of carbon dioxide and transport of the fuel that required for the power generation is an issue. For these reasons, construction of clean energy systems using renewable energy in order to carry out the local production for local consumption of energy is being planned. However, the island that is difficult to interconnect with the mainland cannot be expected to be backed up by a large-scale power. Therefore, there is a risk of causing a power failure because power quality decreased if the amount of introduction of renewable energy becomes larger. It is an object of this study that is to clarify the introduction limit the amount of renewable energy in building an independent micro-grid in the island. The relation between the amount of introduction of renewable energy, frequency change, and voltage fluctuations is investigated by MATLAB/Simulink. In Teuri Island and Yagishiri Island of Hokkaido, to clarify the capacity of renewable energy that variation in the frequency and the voltage is in the range of provisions.

Biography

Katsuaki Sato is currently a Master's course student at the Kitami Institute of Technology, Japan.

m1552300065@std.kitami-it.ac.jp

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