Control method and characteristics of Virtual Synchronous Generator

Kenichi Sakimoto (Kawasaki Heavy Industries)
Yuko Hirase (Kawasaki Technology)

Introduction
Distributed generators connected to grid by inverters are installed in microgrid. Some microgrid which can disconnect from the grid without interruption are demonstrated.

Example
NEDO microgrid demonstration in New Mexico

Virtual Synchronous Generator (VSG)
The VSG is an attempt to realize the characteristics of the actual synchronous generators.

Control method
Proposed VSG is based on current controlled type inverter.

Impedance model
Impedance model simulates the impedance of a synchronous generators without transient impedance

Experimental result
Microgrid consist of VSG and SG are connected to the commercial grid and disconnected from the grid by opening MC

Conclusion
Virtual synchronous generator control based on current control inverter is proposed. The experimental results shows that proposed VSG could operate in disconnection from grid smoothly.