

S4-3

Development of Hardware Simulator for DC Micro-grid Operation Analysis

Byung Moon Han
Myongji University, Yongin, Korea

erichan@mju.ac.kr

Keywords: DC Micro-grid, Distributed Source, Power Management System, CAN(Controller Area Network), CCP(CAN Calibration Protocol), IEC61850 Ethernet, PMSG(Permanent Magnet Synchronous Generator), MPPT(Maximum Power Point Tracking)

Abstract

This paper describes the development of hardware simulator to analyze the operation of DC micro-grid. The hardware simulator is composed of several distributed sources such as a wind power, photovoltaic and fuel cell, and two energy storages such as super-capacitor and battery.

The main controller which plays a role of power management and state monitoring is connected with the local controller in each power source and storage through communication link based on CAN or IEC61850. The developed hardware simulator can be utilized to analyze the performance of newly designed DC micro-grid with practical approach.