



Supervisory Controller for Power Management of AC/DC Microgrid

Hossam A. Gabbar, Mohamed El-Hendawi, G.El-Saady, El-Nobi A. Ibrahim

Abstract:

This paper proposes a hybrid AC/DC micro grid to reduce the processes of multiple conversions in an individual AC or DC micro-grid. The hybrid grid consists of both AC and DC networks connected together by a bidirectional AC/DC converter. Wind generator, AC loads, and utility are connected to the AC bus whereas PV system and DC loads are tied to the DC bus. The coordination control algorithms of supervisor controller are proposed for smooth power transfer between AC and DC links and for stable system operation under various generation and load conditions. In this paper, a flexible supervisor controller is developed for a hybrid AC/DC microgrid, where the power flow in the micro-grid is supervised based on demanded power with maximum utilization of renewable resources. A small hybrid micro-grid has been modeled and simulated using the Simulink in the MATLAB. The simulation results show that the system can maintain stable under load variations.

Keywords:

Hybrid AC/DC micro-grid; supervisor controller; BIC; MPPT; PV system; wind generation

Published In:

the 4th IEEE International Conference on Smart Energy Grid Engineering , NULL , 147-152