

Optimal Voltage and Frequency Control of a Microgrid Using the Harmony Search Algorithm

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Abstract : The stability is an important topic to plan and manage the energy in the microgrids as the same as the conventional power systems. The voltage and frequency stability is one of the most important issues recently studied in microgrids. The objectives of this paper are the modelling and designing of the components and optimal controllers for the voltage and frequency control of the AC/DC hybrid microgrid under the different disturbances. Since the PI controllers have the advantages of simple structure and easy implementation, so they are designed and modeled in this paper. The harmony search (HS) algorithm is used to optimize the controllers' parameters. According to the achieved results, the PI controllers have a good performance in voltage and frequency control of the microgrid.

Keywords : frequency control, HS algorithm, microgrid, PI controller, voltage control

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