

DC-Based Interconnected-Modified Nanogrids within an Open Energy Distributed System (OEDS)

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Abstract

This paper introduces a design for several modified interconnected nanogrids via a dc-link within a multilevel direct current (DC) system that called an open energy distributed system (OEDS). Each nanogrid includes a SBI with a contribution towards improving its performance by offering a new model-reference closed-loop control technique for its dc-link voltage. Also, this paper includes a controller technique for the proposed interconnected nanogrids to achieve the optimum power flow with high reliability. The proposed systems are modelled and simulated with the help of MATLAB/Simulink software package. The included test results ensure the system robustness against the load fluctuations and its validity to be applied on various power loads in remote areas.

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