IJARSCT

ISSN (Online) 2581-9429

International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)

International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal

Impact Factor: 7.301

Volume 3, Issue 1, May 2023

Design and Simulation of DC Microgrid for Utility

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Abstract: *Due to the widespread use of direct current (DC) power sources, including fuel cells, solar photovoltaic (PV), and other DC loads, high-level integration of various energy storage systems, including batteries, supercapacitors, and DC microgrids, has become more significant in recent years. Additionally, DC microgrids do not experience problems with synchronization, harmonics, reactive power regulation, or frequency control like traditional AC systems do. The control of DC bus voltage as well as power sharing is complicated by the inclusion of various distributed generators, such as PV, wind, fuel cells, loads, and energy storage devices, in the same DC bus. Several control strategies, including centralized, decentralized, distributed, multilevel, and hierarchical control, are described to assure the secure and safe functioning of DC microgrids.*

Keywords: MPPT- Maximum Power Point Tracking, IREA- International Renewable Energy Agency, RES- Renewable Energy Sources, SVC- static variable-frequency, PV- Photo Voltaic

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