Proceedings of the 11th World Congress on Civil, Structural, and Environmental Engineering (CSEE 2026)
Paris, France - April, 2026
DOI: 10.11159/iceptp26.002

Grid Modernization Techniques in Renewable-Rich Electrical Distribution Networks

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Abstract

Due to increasing penetration of renewable energy sources, microgrids become a promising platform in electrical distribution systems to interconnect geographically closed distributed generation units and load. Micogrids enable faster service restoration during disturbances and natural disasters, and improve the system's reliability and resiliency. The soft open point is an emerging power electronic device in distribution systems by connecting feeders to realize voltage regulation and service restoration. This speech covers advanced techniques in renewable-rich active distribution networks, including microgrid formation and soft open points to facilitate the system's planning, operation, and automatic service restoration.