

Integrated Control of Renewable Energy and Fault Restoration for Distribution Systems

T. T. Ku, C. H. Lin, C. S. Chen, C. T. Hsu, C.S. Li, Y.J. Chang

Abstract— To mitigate the impact of distribution system service quality due to high penetration of PV systems, a Distribution Renewable Energy Advanced Management System (DREAMS) is developed and installed at Feng Shan District of Taiwan Power Company (Taipower). The PV gateways and the public 4G communication system are applied to monitor the power generation and the voltage of 24 PV systems and to report the operation data to the master station. The power factor for the PV smart inverter is adjusted automatically to absorb the reactive power when the overvoltage problem occurs. When the distribution automation system (DAS) performs the functions of noninterruptible load transfer and service restoration after fault contingency, the DREAMS executes the power factor control for the PV smart inverters before the line switches are operated. The coordination control of DAS and DREAMS can prevent the overvoltage problem for a distribution system during the process of load transfer between distribution feeders with high PV penetration.

For the published version of record document, go to:
<http://dx.doi.org/10.1109/ICPS.2019.8733325>

