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Integrated Operation of Distribution network with Smart Distribution and Microgrid

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Abstract

During last decades, the interconnection of distributed energy resources (DERs) including renewable generation, electric vehicles and energy storages has increased steadily and in accordance with green growth policy of Korean government, the amount of DG penetration in the distribution network is expected to grow rapidly. However, in the environment of high penetration of distributed energy resources, distribution network operator (DSO) needs the tools and facilities which can integrate a variety of distributed energy resources and optimize the operation efficiency. KEPCO are making efforts to address these environmental changes by carrying on several smart distribution projects. In this paper, firstly Smart Distribution Management System (DMS) we are developing is presented for increasing the operation efficiency and hosting capacity of distributed energy resources in distribution network. Smart DMS platform using Common Information Model (IEC61970/61968), its application and IEC61850-based Feeder IEDs are explained. And Microgrid operation system for safe integrated operation of small distributed generation in islanded and grid connected mode. Current Status and some lessons learned in conducting these RD& D projects are showed. As a future plan, smart distribution management system and microgrid operation system will be demonstrated and verified in real MV distribution network and remote island.