

Optimal Power Exchange of Multi-Microgrids with Hierarchical Coordination

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Abstract : A Microgrid (MG) has a major role in power system. There are numerous benefits, such as ability to reduce environmental impact and enhance the reliability of a power system. Hence, Multi-MG (MMG) consisted of multiple MGs is being studied intensively. This paper proposes the optimal power exchange of MMG with hierarchical coordination. The whole system architecture consists of two layers: 1) upper layer including MG of MG Center (MoMC) which is in charge of the overall management and coordination and 2) lower layer comprised of several Microgrid-Energy Management Systems (MG-EMSs) which make a decision for own schedule. In order to accomplish the optimal power exchange, the proposed coordination algorithm is applied to MMG system. The objective of this process is to achieve optimal operation for improving economics under the grid-connected operation. The simulation results show how the output of each MG can be changed through coordination algorithm.

Keywords : microgrids, multi-microgrids, power exchange, hierarchical coordination

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