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| **Abstract:** |  |
| Fixed speed wind turbine-squirrel cage induction generator (FSWT-SCIG) based wind farm (WF) is increasing significantly. However, FSWT-SCIG have no frequency control capability, which creates a significant problem on power system steady-state stability. This paper represents a new operational strategy to control frequency of the entire power system including large-scale FSWT-SCIG based WF by using battery storage system (BSS). The proposed cascaded control of BSS is designed to provide effective amount of real power during steady-state period to damp frequency fluctuations. To evaluate the validity of the proposed system, simulation studies are executed on a reformed IEEE nine-bus power system with three synchronous generators (SGs) and SCIG-based WF along with BSS. The simulation results indicate that the proposed system can be an effective solution to reduce frequency fluctuations of the hybrid power system during steady-state condition. | |