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| **Abstract:** |  |
| Large-scale grid-tied photovoltaic (PV) station are increasing rapidly.However, this large penetration of PV system creates frequency fluctuationin the grid due to the intermittency of solar irradiance. Therefore, in thispaper, a robust droop control mechanism of the battery energy storage system (BESS) is developed in order to damp the frequency fluctuation of  the multi-machine grid system due to variable active power injected from the PV panel. The proposed droop control strategy incorporates frequency error signal and dead-band for effective minimization of frequency fluctuation.The BESS system is used to consume/inject an effective amount of active power based upon the frequency oscillation of the grid system. The  simulation analysis is carried out using PSCAD/EMTDC software to prove the effectiveness of the proposed droop control-based BESS system. The simulation result implies that the proposed scheme can efficiently curtail the frequency oscillation. | |