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| **Abstract:** |  |
| **This paper investigates the dynamic performance of a hybrid power system comprising a 9-bus main system integrated with three wind farms, each utilizing different wind turbine technologies: Permanent Magnet Synchronous Generators (PMSGs), Doubly Fed Induction Generators (DFIGs), and Squirrel Cage Induction Generators (SCIGs). The system also includes conventional synchronous generators (thermal and hydro) operating under Automatic Generation Control (AGC) and Governor Free (GF) control. The study focuses on the system's response to a three-line-to-ground (3LG) fault, with particular emphasis on the Low Voltage Ride- Through (LVRT) capability of the wind farms. Simulations conducted using PSCAD/EMTDC demonstrate the system' stability during and after the fault. The results indicate that the wind farms can maintain stable operation and comply with LVRT requirements, while the conventional generators provide essential support to stabilize the system. This study offers valuable insights into integrating renewable energy sources into conventional power systems.** | |