

The penetration of Doubly Fed Induction Generator (DFIG) into the power grid has become an important concern for power system engineers today. Voltage stability is an important factor to maintain the wind farm in service during some abnormal operating conditions. This paper deals with the integration of Synchronous Static Compensator STATCOM to overcome the voltage stability issue for the power systems with connected wind turbine. A dynamic model for the DFIG has been presented and the integration of a STATCOM to maintain stable voltage has been studied during a low voltage conditions. The developed system is simulated and the results demonstrate that the good control of STATCOM enhances voltage regulation as well as transient stability of the DFIG during three phase faults. Many verifications based on timedomain simulations have been presented in order to show the STATCOM capability in improving transient stability of the power system