

Abstract

Yasser Gaber A. Dessouky

Improved Ride-Through of PMSG Wind Turbine during Symmetrical Voltage Dip using a Magnetic Amplifier

Direct-drive wind turbines based on permanent magnet synchronous generator with full scale back to back converters are becoming very promising due to their high power density, gearless structure and flexible control. With the remarkable growth of wind energy capacity connected to the utility grids, strict grid interconnection requirements of power plants comprising permanent magnet synchronous generators technology are essential to improve the control of electrical power system, both in steady-state and transient operation. Low voltage ride through capability enhancement is one of the grid requirements which ensures the safe operation of the wind farm during the network disturbances and avoids its shutdown. This paper proposes an improved topology based on magnetic amplifier in the boost converter circuit to enhance the ride through capability of permanent magnet synchronous generators based wind energy systems.