

عنوان مقاله:

Investigation of SFCL Impacts on Crowbar Protection of DFIG based Wind Turbine

محل انتشار:

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خلاصه مقاله:

Among different types of wind turbine generators, doubly fed induction generators are most widely used because of their low cost and capability to work in different wind speeds. Despite numerous advantages of doubly fed induction generator (DFIG) based wind turbines (WTs), they are very sensitive to the network faults. Fault occurrence could increase DFIG rotor current and may damage the converters of DFIG. A general solution to protect DFIG converters is using crowbar which short circuit the rotor winding. However, with crowbar activation, the rotor side converter (RSC) is disconnected and may lead to loss of controllability of DFIG during fault condition. Therefore, reduction of crowbar protection operation time is important. Furthermore, connecting wind turbine generation (WTG) to a power system might more easily increase the short-circuit current toward its maximum utilization level. The superconducting fault current limiter (SFCL) can present an efficient system protection for the duration of severe faults. In this study, the transient model of resistive type SFCL based on the thermal model is developed and the impact of SFCL on DFIG-based WT is studied using PSCAD/EMTDC software. The simulation results illustrate that by applying the SFCL during the fault, the rotor current is decreased and leads to decrease the operation time of crowbar.

کلمات کلیدی:

Crowbar protection, Doubly-Fed Induction Generator (DFIG), Fault Ride-Through (FRT), Superconducting Fault Current Limiter (SFCL)

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