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Improving Power Quality in Wind Power Generation System

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Abstract : With the growing of electrical energy demand, wind power capacity has experienced tremendous growth in the past decade, thanks to wind power's environmental benefits. Direct driven permanent magnet synchronous generator (PMSG) with a full size back-to-back converter set is one of the promising technologies employed with wind power generation. Wind grid integration brings the problems of voltage fluctuation and harmonic pollution. In the present study, the filter is placed between the wind system and the network to reduce the total harmonic distortion (THD) and enhance power quality during disturbances. The models of wind turbine, PMSG, power electronic converters and the filter are implemented in MATLAB/SIMULINK environment.

Keywords : wind energy conversion system, PMSG, PWM, THD, power quality, passive filter
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