A New Converter Topology for Wind Energy Conversion System

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Abstract : Doubly Fed Induction Generators (DFIGs) are currently extensively used in variable speed wind power plants due to their superior advantages that include reduced converter rating, low cost, reduced losses, easy implementation of power factor correction schemes, variable speed operation and four quadrants active and reactive power control capabilities. On the other hand, DFIG sensitivity to grid disturbances, especially for voltage sags represents the main disadvantage of the equipment. In this paper, a coil is proposed to be integrated within the DFIG converters to improve the overall performance of a DFIG-based wind energy conversion system (WECS). The charging and discharging of the coil are controlled by controlling the duty cycle of the switches of the dc-dc chopper. Simulation results reveal the effectiveness of the proposed topology in improving the overall performance of the WECS system under study.

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