عنوان مقاله:

Power Quality Improvement of Wind Farms by UsingPredictive Direct Power Control Drive System ofDFIG Based on Indirect Matrix Converter

محل انتشار:

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خلاصه مقاله:

This paper presents a novel predictive DirectPower Control (DPC) for Doubly-Fed Induction Machine (DFIG)based on Indirect Matrix Converter (IMC), which ischaracterized by a simple structure, minimal power ripple andconstant switching frequency. Nowadays, the control strategiesbased on predictive methods have proved their efficiency toimprove drive systems capabilities. So, in this paper, one of thebest predictive methods that has recently been suggested forDFIG drive systems, is applied to Indirect Matrix Converter. Thepurpose of this combination is modifying the control parametersand size / volume reduction of drive system structure which it isdifficult to achieve in conventional systems based on VSIconverters. By suitably selecting switching pattern, the strategy isable to improve the steady state and transient response behaviorsof the machine. The good tracking behavior with reduced powerripple for the both motoring and generating modes as well asremoving bulky electrolytic capacitor from dc-link of converterare resulted by using two active vectors plus one zero vector perswitching period and apply these vectors to inverter stage ofIMC. This paper investigates the use of four-step commutation inrectifier stage of indirect matrix converters to reduce losses andinput currents waveform distortion caused by circuit snubbr.Using this proposed strategy, the advantages of the DPC schemesand the benefits of the indirect matrix converters can becombined. In the inverter stage, the predictive DPC method isemployed. The simulation results of proposed model confirm .itseffectiveness and accuracy

کلمات کلیدی:

Doubly-Fed Induction Generator, IndirectMatrix Converter (IMC), Indirect Space Vector Modulation(ISVM), Predictive Direct Power Control

لینک ثابت مقاله در پایگاه سیویلیکا: