

عنوان مقاله:

Novel design and simulation of predictive power controller for a doubly-fed induction generator using rotor current in a micro-hydropower plant

محل انتشار:

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خلاصه مقاله:

Hydropower plant and especially micro-hydropower plant is an available, reliable and economical energy source. Micro-hydropower plant is one of the most environment-friendly technology, use and development of which leads to reduction of energy consumption sporadically and worldwide. Along with the growth of these power plants, the issues related to the control of electrical parameters such as load, frequency, voltage and power are also constantly rising. This paper describes the proposed structure of variable speed micro-hydropower plant based on Doubly-Fed Induction Generator. The aim is to control the active and reactive powers for this generator. Here, the proposed controller applied to the generator is predictive power controller that adheres to the principle of predictive strategy. Therefore, in this research, a predictive power controller has been proposed to control active and reactive powers of a DFIG based micro-hydropower plant. The control law is acquired by optimizing a cost function considering the tracking factors. The prediction has been performed on basis of a DFIG model. Finally, the stimulations are carried out .by Matlab/Simulink to verify the desired performance of controller

کلمات کلیدی:

Rotor Current, Permanent Magnet Synchronous Machine (PMSM), Doubly Fed Induction Generator (DFIG), Predictive Power Controller, Micro-Hydropower Plant

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