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On-Off control based particle swarm optimization for maximum power point tracking of wind turbine equipped by DFIG connected to the grid with energy storage

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Abstract: In this paper, particle swarm optimization (PSO) is proposed to generate an On-Off Controller. On-Off Control scheme based maximum power point tracking is proposed to control the rotor side converter of wind turbine equipped with doubly fed induction generator connected to the grid with battery storage. The Grid Side Converter (GSC) is controlled in such a way to guarantee a smooth DC voltage and ensure sinusoidal current in the grid side. Simulation results show that the wind turbine can operate at its optimum power point for variable speed and power quality can be improved.

Keywords : DFIG, Energy storage, Maximum Power Point Tracking, On-Off Control, Particle Swarm Optimization (PSO)