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Feedback linearization control based particle swarm optimization for maximum power point tracking of wind turbine equipped by PMSG connected to the grid

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Abstract: The main problem regarding wind power systems is the major discrepancy between the irregular character of the primary source (wind speed is a random, strongly non-stationary process) and the exigent demands regarding the electrical energy quality. This paper presents a feedback linearization controller based particle swarm optimization for maximum power point tracking of wind turbine equipped by PMSG connected to the grid, the proposed method which aims at maximizing the power captured by WECS. In order to drive the system to the optimal operating point using the selection of the controller parameters with particle swarm optimization. The obtained simulation results with a variable wind profile show an adequate dynamic of the conversion system using the proposed approach.

Keywords : Wind turbine, Maximum Power Point Tracking, Feedback linearization control, Particle Swarm Optimization (PSO), Wind Energy Conversion System (WECS)