

عنوان مقاله:

Application of combined mathematical modeling/optimization methods coupled pitch controller in wind turbine using hybrid MLP neural network and firefly algorithm

محل انتشار:

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خلاصه مقاله:

A common method utilized in wind turbines is pitch angle control whereby via varying the angle of wind turbine blades around their own axis, power generated at high speeds of wind is held around maximum amount and is kept away from the severe mechanical stress on wind turbine. In current study, in order to control pitch angle, a control method based on using PI controller is suggested. Therefore, gains of the PI controller are regulated through combining the Firefly evolutionary algorithm and MLP neural network in such a way that the controller at its output sends a suitable controlling signal to the pitch actuator to set the pitch angle and so by varying the blades pitch angle suitably at high speeds of wind, the produced generator power remains around its nominal value. A wind turbine 5MW made by NREL (National Renewable Energy Laboratory) has been utilized based on FAST software code to simulate and analyze the results. The simulation results show that proposed method has a good performance

کلمات کلیدی:

Wind turbine, Pitch control, Firefly Algorithm (FA), Multi-layer perceptron (MLP) neural network

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