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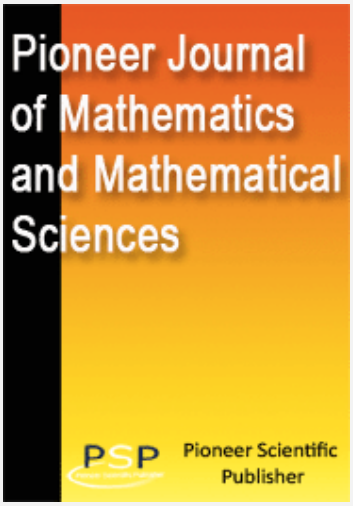

MATHEMATICAL MODEL OF A CLOSED LOOP PITCH CONTROLLED TURBINE IN A WIND ENERGY CONVERSION SYSTEM

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Abstract

The closed loop pitch control relies on the variation in the power captured by the turbine as the pitch angle of the blades is changed in line with most companies challenge of maintaining a steady and optimal power supply. The control involves the pitch angle, wind power, reference power, wind speed and the angular velocity of the turbine. This is done through modelling and simulation undertaken and implemented in MATLAB/SIMULINK simulation environment to optimize energy capture. Results are obtained graphically. In conclusion, pitch function gives full control over the mechanical power for the variable speed wind turbines.

Keywords and phrases: pitch angle, wind velocity, turbine power, reference power, power coefficient, tip speed ratio.