Wind turbine performance optimization through pitch control by using fuzzy logic*

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Abstract

This research work presents fuzzy pitch controller design of wind turbine to get the maximum power in addition to decrease the losses caused by acceleration and deceleration in turbine rotation. And thus optimize power coefficient of turbine through artificial intelligence and in particular fuzzy logic, because the fuzzy controller doesn't need a complex mathematical pattern of the controlled system.

A fuzzy controller is designed and compared with conventional controller for the same purpose in a wind turbine system described by its transfer function and membership function has been chosen for error and accumulation errors signals by using MATLAB. Results have been compared and showed better response by using the fuzzy controller.

Keywords: fuzzy logic, Artificial intelligence, pitch control.

*For The paper in Arabic see pages (211-224)

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