

H ∞ Fuzzy Integral Power Control for DFIG Wind Energy System

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Abstract : In order to maximize energy capturing from wind energy, controlling the doubly fed induction generator to have optimal power from the wind, generator speed and output electrical power control in wind energy system have a great importance due to the nonlinear behavior of wind velocities. In this paper purposes the design of a control scheme is developed for power control of wind energy system via H ∞ fuzzy integral controller. Firstly, the nonlinear system is represented in term of a TS fuzzy control design via linear matrix inequality approach to find the optimal controller to have an H ∞ performance are derived. The proposed control method extract the maximum energy from the wind and overcome the nonlinearity and disturbances problems of wind energy system which give good tracking performance and high efficiency power output of the DFIG.

Keywords : doubly fed induction generator, H-infinity fuzzy integral control, linear matrix inequality, wind energy system

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