

Optimal control based RST controller for maximum power point tracking of wind energy conversion system

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Abstract: This paper presents an LQ optimal control based RST controller for maximum power tracking in a wind energy conversion system (WECS) connected to the electrical grid through a back-to-back converter. Input-output discrete WECS model has been used to implement the input-output optimal control approach. The performance criterion has two terms: the first one is involved for maximum power tracking and the other one for the mechanical fatigue loading (control input) minimization. The obtained simulation results with the considered control and a variable wind profile show an adequate dynamic of the considered conversion system.

Keywords : wind energy conversion system, Induction generator (IG), LQ optimal control, RST controller