
PI Controller Design Based on Genetic Algorithm in order to reduce SSR for DFIG Wind Farms

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Abstract: In this thesis, the implementation of the DFIG wind turbines connected to the power transmission network to reduce the Sub-synchronous resonances will be investigated. The IEEE second benchmark model aggregated with a DFIG based wind farm is employed as the case study. Two different control methodologies are proposed for DFIG: a conventional PI controller and an adaptive PI controller based on Genetic algorithm (GA) that optimizes the proportional and integral gains of the current regulators of grid and rotor side converters. The simulation results show that DFIG based on adaptive PI controller can damp the sub-synchronous resonance effectively.

Keywords : Keyword: Doubly Fed Induction Generator, Sub-Synchronous Resonance, PI controller based on Genetic algorithm, Rotor Side Converter, Grid Side Converter.

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