

A Novel Fuzzy Second-Order Sliding Mode Control of a Doubly Fed Induction Generator for Wind Energy Conversion

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Abstract : In this paper we present a novel fuzzy second-order sliding mode control (FSOSMC) for wind energy conversion system based on a doubly-fed induction generator (DFIG). The proposed control strategy combines a fuzzy logic and a second-order sliding mode for the DFIG control. This strategy presents attractive features such as chattering-free, compared to the conventional first and second order sliding mode techniques. The use of this method provides very satisfactory performance for the DFIG control. The overall strategy has been validated on a 1.5-MW wind turbine driven a DFIG using the Matlab/Simulink.

Keywords : doubly fed induction generator, fuzzy second-order sliding mode controller, wind energy

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