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عنوان مقاله:

A Novel Direct Active and Reactive Power Control Method Using Fuzzy Super Twisting Algorithms and Modified Space Vector Modulation Technique for an Asynchronous Generator-based Dual-rotor Wind Powers

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خلاصه مقاله:

This work presents a novel direct active and reactive powers command (DARPC) scheme based on fuzzy super twisting algorithms (FSTAs) of an asynchronous generator (ASG) integrated into dual-rotor wind power (DRWP) systems. The DRWP has two sets of blades. So it is more efficient for collecting power from wind in comparison to a traditional wind turbine. The scientific works indicate that a DRWP could extract additional ۲۰-۳۰% power compared to a traditional wind turbine. The conventional DARPC control scheme using the conventional integral-proportional (PI) regulators (DARPC-PI) has considerable reactive and active power oscillations. In order to guarantee an effective DARPC technique for the ASG-based DRWP system and minimize these oscillations, FSTAs are used in this work. Both DARPC strategies are presented and simulated from two tests using Matlab software. Simulation results showed the effectiveness of the designed DARPC control technique especially on the quality of the provided active and reactive power comparatively to the traditional DARPC control scheme with PI controllers.

کلمات کلیدی:

Asynchronous generator, Direct active and reactive powers, Dual-rotor wind power, Fuzzy super-twisting sliding mode

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