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Multi-objective Sliding Mode Control of a Wind Farm with Permanent Magnet Synchronous Generator

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***Abstract*— In this paper, the sliding mode control method has been used to optimize the performance of a wind Farm with the permanent magnet synchronous generator connected to the utility grid through two back-to-back PWM converters. The first goal for the control system is maximum power point tracking. On the other generated power is injected by using to the grid, by applying the sliding mode control to them at wind speed variations, one can regulate the DC link voltage as well as the power factor from the grid point of view. The later is needed to be unit or close to it. In order to actualize this purpose, appropriate sliding surfaces are defined to extract the required control law, and insure stability in Lyapunov's method.**

***Keywords*— Maximum Power Point Tracking, Magnet Synchronous Generator, Robustness, Sliding Mode.**