

## Comparison of DPC and FOC Vector Control Strategies on Reducing Harmonics Caused by Nonlinear Load in the DFIG Wind Turbine

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**Abstract :** Doubly-fed induction generator (DFIG) equipped with a power converter is an efficient tool for converting mechanical energy of a variable speed system to a fixed-frequency electrical grid. Since electrical energy sources faces with production problems such as harmonics caused by nonlinear loads, so in this paper, compensation performance of DPC and FOC method on harmonics reduction of a DFIG wind turbine connected to a nonlinear load in MATLAB Simulink model has been simulated and effect of each method on nonlinear load harmonic elimination has been compared. Results of the two mentioned control methods shows the advantage of the FOC method on DPC method for harmonic compensation. Also, the fifth and seventh harmonic components of the network and THD greatly reduced.

**Keywords :** DFIG machine, energy conversion, nonlinear load, THD, DPC, FOC

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