

Wind Turbine Emulator

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Abstract

The paper presents the development of a DC motor based Wind Turbine Emulator (WTE) and its performance verification through simulation. The torque signal that represents the actual wind turbine with environmental effect was made to generate at the DC motor shaft. Particularly, the study incorporates the turbine power control strategy including the effect of stochastic and deterministic load components with the shaft dynamics. The WTE with the Wind Energy Conversion System (WECS) is studied to verify the effectiveness of the WTE in the presence of various wind characteristics.