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Study on characteristic analysis of generator system according to parameter variations of wind turbine

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Environmentally friendly energy resources of wind, tidal and solar power are important. It is since the latest resource depletion and the safety issues of nuclear power development. It is a change of the generator has a constant effect on the output by a change in temperature or current during operation in wind power systems. Generator driving region is determined according to the speed. If it is less than the rated speed, constant torque region and if over the rated speed, constant output region. The constant torque region is to make maximum torque with minimum current, using MTPA (Maximum Torque per Ampere) control algorithm. In the constant output region, to maintain constant DC link voltage using flux-weakening control algorithm. MTPA control and flux-weakening control is performed based on the parameter of the generator, if there is error of the parameter. It will affect the output characteristic of the generator system. In this paper, we analyze the characteristics of the system according to the parameters change of the wind generator. The parameters of the wind turbine was generated errors in the d -axis inductance and the q-axis inductance in order to analyze the characteristics of the MTPA curve if different parameters designed due to the environment or the measurement error. The stator resistance and the linkage flux in accordance with the varying temperature were calculated mathematically. The experimental result according to the error in the d -axis inductance and the q -axis inductance and the d -axis q -axis command current value can be seen that the difference plenty. In this paper, we analyze the output characteristic of generator in accordance with changing parameters. Output characteristic will be improved through the online parameter estimation with future research.

Biography

Gap-Jin Han has completed his BS degree in Electrical Engineering from Dong-A University, Busan, Korea, in 2015. He has a MS degree in Electrical Engineering from Dong-A University. His research interests include Flux-Weakening control and Parameter Estimation.

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