



Analysis of Wind Turbine Driven Permanent Magnet Synchronous Generator under Different Loading Conditions

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Abstract:

This paper proposes the configuration of a wind turbine generating system equipped with permanent magnet synchronous generator (PMSG). There are different types of synchronous generators, but the PMSG is chosen in order to obtain its model. It offers better performance due to higher efficiency and less maintenance since it does not have rotor current and can be used without a gearbox, which also implies a reduction of the weight of the nacelle and a reduction of costs. Wind turbine and drive train have been modelled and the equations that explain their behaviour have been introduced. The generator model is established in the dq synchronous rotating reference frame. The PMSG is operating in stand-alone which is loaded with different types of loads. The proposed system has been implemented in MATLAB /SIMULINK software.

Keywords:

Permanent Magnet Synchronous Generator(PMSG), Wind Turbine, Modeling, WTGS simulation and modeling.

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