

Master's Thesis

Modelling of wind turbines for hardware-in-the-loop test

Initial situation and motivation

The volatility of wind power supplies and the fast dynamic properties of power electronic devices pose great challenges to the stable operation of the power system. The correct modeling of wind turbines is therefore of great importance for the investigation of the grid-connected stability of wind turbines. These investigations are often performed based on hardware-in-the-loop test. The detailed model, which is used by the manufacturer of the wind turbine, is not suitable for real-time simulation with hardware-in-the-loop test due to the high level of detail and the associated high computing effort.

Research question(s)

In this thesis the detailed model of the wind turbine (Type 1 ~ 4) should be investigated. Based on the IEC 61400-27 standard, a simplified modeling of the wind turbine for application in hardware-in-the-loop test is then carried out.

Procedure/Methodology/Task definition

The modeling must be performed in Matlab/Simulink, the simplified models are then implemented in real-time simulations on a dSpace platform. The results are compared and the models iteratively optimized.

Organizational matters

Begin immediately.

Upon successful completion, the payment of a bonus is planned.

Contact person / supervisor

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