

Master Thesis

Investigating the behaviour of various grid-forming inverters

Motivation

The demand for electrical energy has steadily increased over the last decades and will continue to do so in the future. In recent years, electricity generation from renewable energy sources like wind and solar power dramatically increased and will continue to grow substantially in the future due to increased legislative and financial incentives. Non-synchronous generation is replacing well known synchronous generators which brings new challenges to the power system. Grid-forming inverters might be a solution to face these changes and help improve system stability.

Research issues

- How do different types of grid-forming converters compare to each other?
- How do grid-forming converters behave under normal grid conditions and under critical conditions?

Procedure/Methodology/Task definition

In this work, different grid-forming inverter concepts should be investigated and simulated. Simulation results of different types of grid-forming converters should be compared with each other and with real measurements from experiments at the Power Hardware-in-the-Loop system. The behaviour should be analysed under normal as well as under critical grid conditions.

Organizational issues

Begin immediately

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

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