Project or Master Thesis:

**Modeling and Analysis of an Inverter Topology for Connecting PV Modules to the Power Grid**

**Project Description:** With increasing penetration of the renewable energies in the existing power systems and the prospect of continuing this increment in the next decades, the importance of modeling and analysis of the impact of these new energy generations on the power grid is becoming the concern. The available simulation tools for modeling the power electronic interface between these generations and the grid are slow which cannot use for long time simulation of the system.

This project deals with modeling, simulation and analysis of a converter topology for connecting PV power plants to the grid. The work includes but is not limited to:

- Detailed average modeling of an inverter topology for connecting PV powers to the network
- Accurate modeling of PV modules and the behavior of the module in different irradiations
- Modelling of a precise Maximum Power Point Tracking (MPPT) algorithm for the PV module
- Stability, Reliability and robustness study of the topology with long time simulation

**Requirements:** A prior knowledge of power electronics and acquaintance with Matlab/Simulink is desirable but not strictly mandatory. This work is suitable for students belonging to the discipline of Electrical and computer Engineering.

**Project Outcome:** By doing this project the student can gain knowledge about challenges of grid integration of PV parks. She/he can also learn different methods of modelling and simulation, experimental experiences and working in a well-equipped lab are other advantages of this project.

The start time: Immediately

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