Masterarbeit/ Master Thesis

TECHNISCHE UNIVERSITÄT DARMSTADT

Design and Simulation of the Control Scheme of the 3level T-type based Grid-tied Inverter to Minimize the Total Harmonic Distortion of the Current Injected into the Grid

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One of the most crucial part in designing a converter is the consideration of the limitation of the THD in output current of the Inverter. There are different control methods suggested by researchers around the world to minimize the THD of the current injected into the grid. Grid Code and other regulatory bodies (VDE AR-N 4100) also put a limit on the maximum THD that can be allowed. Higher harmonic content in the current causes losses in the inverter and power system thus reducing the effective efficiency of the converter. This thesis is about the design of a feedback control scheme that helps to minimize the THD of the output current keeping in consideration the main objectives of the power controller.

PLECS RT-Box can be employed to test the control loop performance in real-time simulation. Siemens S120 (16kVA) inverter is available for testing out the controllers in experimental phase.

Prerequisites:

- Strong background in automatic control theory
- Working proficiency in Matlab
- Basics of power systems
- Previous experience in converter modelling will be helpful.

Start Date:

15.01.2022 or later (by arrangement)

Please include your CV describing your previous experiences and transcript of records and send your application to adeel.jamal@lea.tu-darmstadt.de.

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