Master Thesis

Development of a measurement and control system

Master thesis **"Development of a measurement and control system for a power cycling test bench based on an FPGA SoC"** at Chemnitz Power Labs GmbH.

Reliability tests are crucial for the development of power electronic devices. To perform these tests, an effective measurement and control system is required to provide accurate and reliable measurements. In this master thesis, a measurement and control system for a power cycling test bench will be developed, which significantly extends previous functionalities of such systems. The system is based on an FPGA SoC, such as the Xilinx Zynq 7010/7020. The thesis includes the following steps:

1. Literature review: the literature review will identify the current standards and procedures for performing power cycling tests in order to create the requirements for the development of the measurement and control system.

2. Concept development: Based on the literature research, a concept for the measurement and control system will be developed that takes into account the requirements for the test environment and the methodology for performing power cycling tests. In this respect, the interfaces to the existing Labview application for test execution have to be considered.

3. Design and build-up: After concept development, the measurement and control system willl be designed and built. Both the hardware and software components have to be considered. The interface between the board and the LabVIEW computer will be via Ethernet.

4. Validation: To ensure that the measurement and control system provides reliable results, various validation measures will be carried out.

Chemnitz Power Labs GmbH is a young and dynamic company founded in November 2021 as a spin-off of the Chair of Power Electronics at Chemnitz University of Technology. We offer specialized test services for power semiconductors and also develop our own products. With our experienced team and extensive knowledge in this field, we have a lot of potential to grow further, to advance modern technologies such as electromobility and renewable energies, and to contribute to CO2 reduction.

Please send your application to jobs@cpowerlabs.com

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