

Bachelor's / Master's Thesis

Design and Optimization of an Isolated HV-LV DC/DC Converter for a Formula Student Car

Motivation

Formula Student is a global engineering competition where university students design, build and race small formula-style cars. Teams must balance performance, efficiency, reliability and innovation within a limited budget and timeframe. This project focuses on the design and optimization of a galvanically isolated, 600 V to 24 V DC/DC converter to power the low voltage system of a TUG Racing car.

Research Questions

- Which topologies and design choices are most suitable for the required capabilities?
- Which methods can be implemented to ensure a stable output voltage for varying loads and fluctuations on the high voltage side, while maximizing efficiency?

Tasks

- Research and selection of topology, control strategy, and high-frequency transformer design.
- Development of an isolated, 600 V to 24 V DC/DC converter with minimized losses, EMI and weight.
- Construction of the converter and functional verification in all operating points.

Further Information

- In cooperation with the TUG Racing Team
- Start: As soon as possible (according to agreement with the TUG Racing Team)

Contact

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