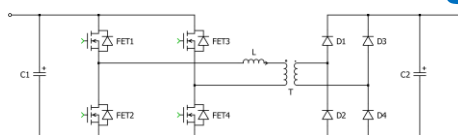


Master Thesis



Source: <https://evsafecharge.com/abby>

Development and Construction of an Optimized DC/DC Converter Cell for High-Power EV-Chargers



Motivation

Modern EV chargers require a power level of several 100 kW in order to provide reasonable charging times and a direct connection of the EV charger to the feeding MV grid is required. A multicell concept with series connection of several low-voltage switching cells is used to implement this challenging task. In this master thesis an optimized DC/DC converter cell shall be analyzed in detail and an optimized laboratory prototype shall be constructed.

Research Questions

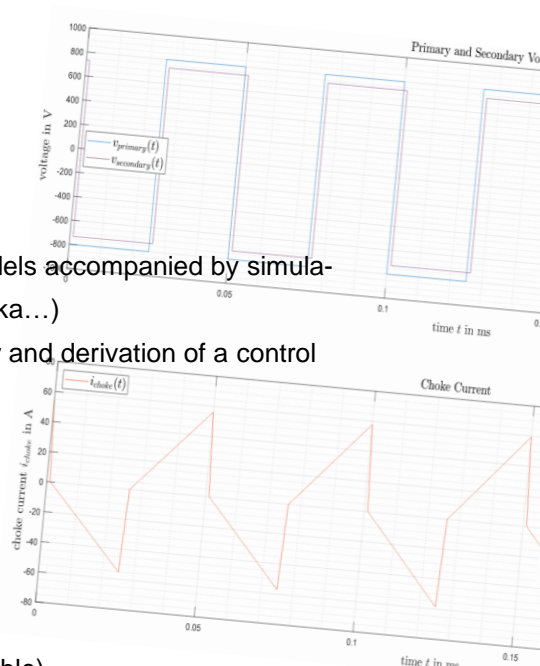
- Pros and cons of application of the proposed topology.
- Optimization of the topology using analytical methods.

Tasks

- Detailed analysis of the proposed topology using analytical models accompanied by simulations using appropriate software (PLECS, MATLAB, Mathematika...)
- Optimization of the topology regarding efficiency, power density and derivation of a control strategy if required.
- Construction of a power cell (~3 kW).
- Verification of the constructed power cell by measurements.

Further Information

- Mentoring through the power electronics research group.
- Start according to agreement (start before summer 2022 is eligible).
- Practical as well as theoretical work in the power electronics labs of the institute.



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