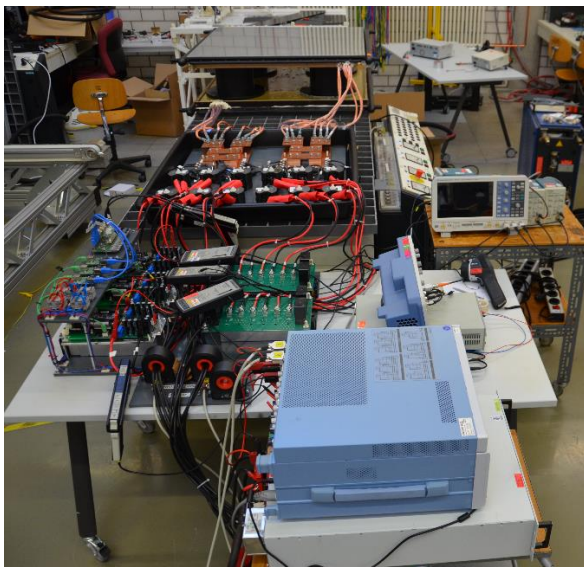


Thermal Simulation of HPWPT System Components

Wireless Power Transfer (WPT) systems with power levels in the range of several hundred kilowatts are currently a focus of research. The realization of such systems is crucial for the future use of electric buses without the need for heavy batteries weighing several hundred kilograms. Other potential applications for inductive charging systems in this power class include charging trucks, dynamic charging of vehicles on highways, and wireless fast charging of vehicles at rest areas.

In this work, a thermal simulation of various system components (e.g., inverter, coil system) will be created. A new cooling concept will be developed and implemented to ensure the necessary cooling. Depending on the progress of the work, an integration of the thermal and electrical models will be pursued.



Student Profile:

- High degree of independence and self-motivation
- Understanding of electrical engineering and thermodynamics
- Knowledge of circuit technology and power electronics
- Knowledge of Matlab is advantageous
- Knowledge of COMSOL is advantageous
- Ability to work independently

Work Packages and Timeline:

- Familiarization with the topic
- Development of the first simple simulation model
 - Inverter, coil, etc.
- Development of a new cooling concept
 - Analysis of thermal results and identification of cooling requirements
 - Design of a cooling concept based on the simulation results
- Integration of thermal and electrical models
- Documentation