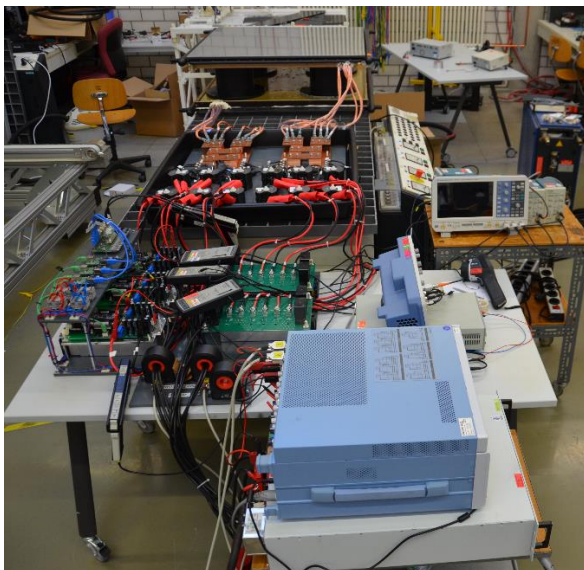


## Umbau und Optimierung der Dauerlauffestigkeit sowie Charakterisierung unterschiedlicher Arbeitspunkte eines High Power WPT-Prüfstands

Wireless Power Transfer (WPT) systems with an output of several hundred kilowatts are currently the focus of research. The realisation 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 truck charging, dynamic charging of vehicles on motorways and wireless fast charging of vehicles at service stations.

In this project, an existing test bench is being converted and extended to ensure long-term load stability. A new cooling concept is to be developed and implemented to ensure the required cooling. In addition, a new rectifier is to be designed and constructed. In addition, the existing simulation model is to be expanded to include a more precise thermal model.



### Student profile:

- High degree of independence and self-motivation
- Understanding of electrical engineering
- Knowledge of circuit technology and power electronics
- Knowledge of Matlab advantageous
- Knowledge of PLECS advantageous
- High interest in working with hardware components

### Work packages and schedule:

- Introduction to the topic
- Simulative preliminary investigation
  - Investigation and simulation of the thermal transitions to map the thermal behaviour
- Concept and planning of the cooling system
  - Component selection/detailed plan for the conversion of the test bench
- Development of the rectifier
  - Concept design and realisation of the rectifier
- Conversion of the test bench
- Commissioning and tests
  - Function and load tests at different operating points to characterise the HPWPT system
- ? Documentation