Professorship of Energy Conversion Technology
TUM School of Engineering and Design
Technical University of Munich

# Working Student or Thesis or Internship in the Field of Wireless Power Transfer

### Contribution to a Research Project on
### High-Power Inductive Charging Systems for Electric Vehicles

The Professorship of Energy Conversion Technology (EWT) focuses on research questions related to tomorrow's mobility. Apart from energy storage technologies, the charging infrastructure and innovative charging strategies are decisive factors in making electric vehicles suitable for everyday use. For example, inductive charging systems enable wireless and thus convenient charging of the vehicle battery. Therefore, EWT is conducting research to improve wireless charging systems. The focus is on the electromagnetic and system design and system behavior.
We are looking for motivated students to support various research activities. The focus of the work is on the simulation and evaluation of inductive charging systems. There are diverse and challenging subprojects, partly to be solved in small groups of students, and to be actively contributed to the research project.

## The work may include one or more of the following topics:

- Design and evaluation of coil topologies in FE simulations.
- Automation of modeling and simulation functions using pyansys (a Python library).
- Magnetic field propagation/stray field analysis of inductive charging systems
- Circuit analysis, circuit design and compensation design for inductive charging systems
- Loss calculations and thermal modeling
- Development of novel functions and methods for the design of inductive charging systems
- Conducting and evaluating design studies on various system aspects

These topics are intended to provide a brief overview of possible topics. Actual topics will depend on several factors. Therefore, the final topic will be discussed at the time of application.

## Requirements and prerequisites:

- High level of commitment.
- Interest in inductive charging systems and simulations.
- Structured, diligent, and independent work style.
- Solid background in electrical engineering (especially electromagnetic fields and circuit analysis).
- Basic knowledge of MATLAB is required.
- Basic knowledge of Python and ANSYS Electromagnetics is an advantage, but not required.
- Additional requirements may apply for specific topics.
- Language: English or German

**Start:** by agreement
**Duration:** depending on the type of work (e.g. working student, thesis or internship)
**Application**: cover letter, résumé, and, if applicable, proof of qualifications by email

In case of interest or questions, please contact:
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