



## Study on the Technological Comparison of Automated Charging Options for EVs

How would you charge autonomous electric vehicles? Automated charging is a fundamental prerequisite for automated driving. Inductive charging is an elegant solution from a technical point of view, but competes on a technological level with automated conductive charging. The suitability of a charging technology in a private or public environment is strongly influenced by modularity, scalability and ultimately cost.

Starting with a market research, the current automated charging options will first be recorded and technically evaluated in this work. In a second step, the potential improvement of inductive charging in private and public environments will be investigated in more detail. For this purpose, different concepts will be developed and simulated in an appropriate framework. The final analysis places these results in the context of the state of the art.

### Students profile

- Self-reliant and determined working attitude
- Basic knowledge in electromagnetics
- Interested in insight into current R&D of automotive inductive charging

### Work package and schedule

#### 1) Literature and Market Research

- Capture of existing automated charging capabilities
- Technical evaluation of the state of the art

#### 2) Concept Ideas and Simulation

- Improve the technical value of inductive charging systems for different application scenarios
  - Synergy effects
  - Scalability...
- Simulative verification of selected concepts in MATLAB/Simulink/PLECS and/or COMSOL

#### 3) Evaluation

- Final comparison and documentation

A corresponding economical/ecological study is planned in a parallel master thesis with EnBW in a federally funded research project.

