

## Master thesis



## Automated charging of electric vehicles

Automated charging of electric cars has a great potential to improve usability and comfort, increase safety and enables a better utilization of charging infrastructure. In combination with automated driving and self-parking cars, automated charging technologies will enable fully autonomous charging processes. In this context, automated charging technologies provide a great potential for a wide field of applications. Different technologies of charging automation are under investigation today, but it is not clear which of the technologies might be optimal for different types of usage scenarios. In this context, the present master thesis project targets to an investigation of the latest status of charging technologies and the development of charging concepts for selected use cases in private and public applications.

### Working tasks

- Analysis of state-of-the-art automated charging technologies for both road- and industrial use: Inductive charging (stationary / dynamic), conductive charging (side coupler, underbody coupler, pantograph), mobile charging robots, battery swapping, etc.
- Definition of requirements for automated charging of electric vehicles for selected use cases (private cars, commercial car fleets, commercial vehicles)
- Development of automated charging concepts for selected use cases
- Potential-evaluation and discussion of the concepts considering pre-defined parameters, e.g. usability, performance, efficiency, costs, infrastructure integration, etc.
- Documentation and presentation of the work

**Duration:** ca. 6 months

**Remuneration:** € 3.000,-

**Language:** German and / or English

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