



Bachelor Thesis / Master Thesis

Start: from now

- Faculty 1 - Mathematics, Computer Science and Natural Sciences
- Faculty 4 - Mechanical Engineering
- Faculty 6 - Electrical Engineering and Information Technology

Battery aging modeling for the optimization of charging processes using the example of a charging robot

The increasing demand for charging infrastructure can be supplemented in some places by mobile charging infrastructure in the form of intelligent charging robots. The used charging strategies have a high influence on the lifetime of the batteries of the charging robots. This motivates a detailed investigation of the aging processes.

Within the scope of this work, a generic aging model for batteries will be developed. The model will be used to evaluate the charging strategies of the charging robot using a real-time battery aging prediction. Furthermore, together with thermal management and dynamic tariffs, a cost-optimal charging strategy can be developed for the application case.

Your tasks / your profile:

- You have a good knowledge of Matlab/Simulink
- You have an interest in automotive & energy applications
- You have the ability to work responsibly and scientifically

The Teaching and Research Area for Mechatronics in Mobile Propulsion is located between the domains of mechanical and electrical drive components as well as control algorithms. Under the guidance of Professor Jakob Andert, the institute researches innovative, environmentally friendly vehicle drives and particularly emphasizes electrification and simulation-based development methods.

The automotive sector is currently undergoing a major transformation that is in particular affecting the drive technology. Electrification is gaining enormous relevance as one of the key technologies to reduce or avoid emissions. Regardless of the specific technology, a steadily increasing complexity of both the hardware and the associated control algorithms is leading to the evolution of modern drives towards software-intensive, embedded mechatronic systems.



Teaching and Research Area
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Would you like to know more?

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