Bachelor/Master thesis

**Contact**

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Extension of a toolkit-based methodology for partially automated conceptual design of battery systems with format-flexible cells for various fields of application

Battery systems are becoming increasingly important – in addition to everyday battery-powered applications such as power tools or smartphones, the mobility sector is also focusing strongly on electrification. In order to make optimal use of the installation space available for the battery system in the diverse individual application, the introduction of format- and size-flexible battery cells is of advantage.

A modular toolkit system is being developed to realize the external product diversity while maintaining the limited internal diversity of the product solutions. Based on this, a methodology shall be expanded and partially automated, which supports the development of a battery system that is ideally adapted to the respective application from the cell level onwards, while considering various application areas and requirements.
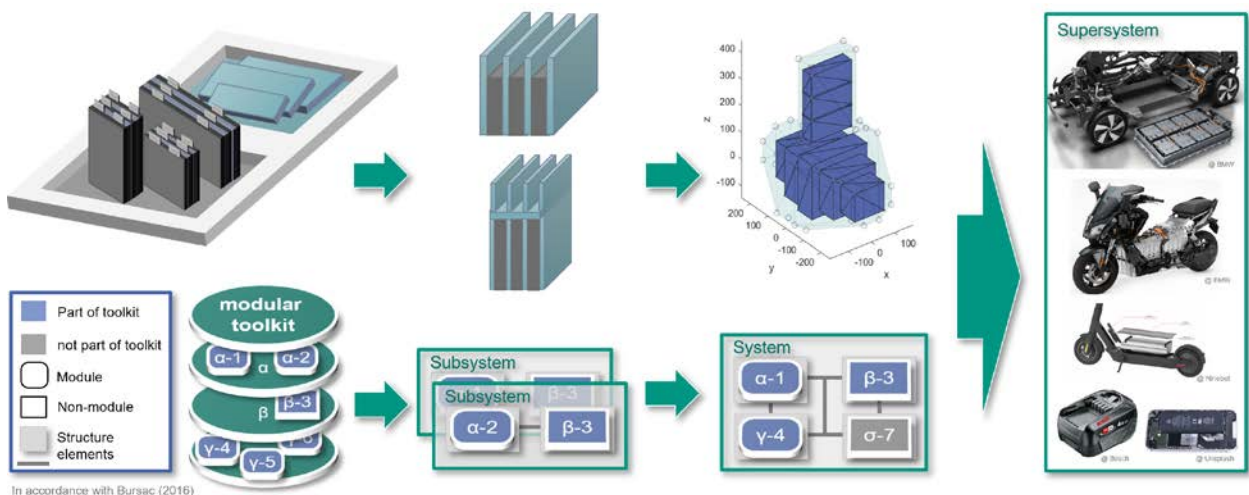
Tasks:

- You will familiarize yourself with the preliminary work at IPEK for the development of the modular toolkit for a battery system with format-flexible cells and alternative further subsystems;
- You will analyze the existing selection process of solution principles from the modular toolkit;
- Based on this, you will elaborate methods for the application-specific selection of concepts based on quantitative requirements as well as a combined consideration of these;
- You will implement this methodology in MATLAB to realize a partially automated workflow.

Profile:

- Study of engineering degree program (mechanical engineering / mechatronics / electrical engineering)
- Interest in battery system technology, basis knowledge in this field helpful
- Independent, reliable way of working and analytical thinking
- Programming knowledge in MATLAB is a plus

If you are interested, please submit a sound application with a current transcript of grades and curriculum vitae to: yunying.zeng@kit.edu