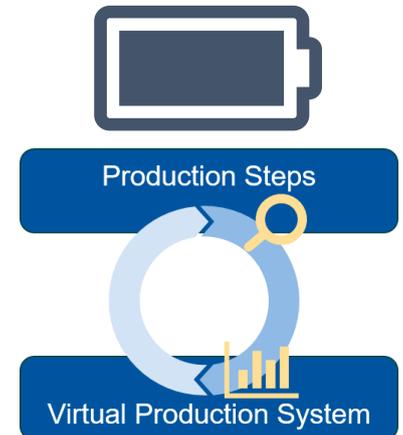


## Battery Production 4.0 – Digitalizing the Future

### Scientific Question

The future is just around the corner: E-mobility, wireless devices, green energy at any time at any place. For this, we need to store energy. **Battery technology** should allow us to take the necessary steps into the future. In this context, we look at optimizing the production process of battery cells (lithium-ion). Many production steps are still based on analog processes and experience-based parameters. We want to take a step further into the **digitalization** of battery cell production. Therefore, it is necessary to record and analyze current efforts and research trends. What is the state of the art of battery production 4.0? What data is being collected? How is it being collected, stored, processed and turned into knowledge (machine learning models)? How can a digital shadow be used to improve battery production?



### Scientific Methodology

The purpose of this thesis is to conduct a literature review on the topic of digitalization in battery cell production and to generate an initial concept for a virtual production system. The nature of the work allows for a rapid processing. Close supervision and regular meetings allow an interesting exchange and support in scientific work in general.

### Goal and Expected Results

The work aims at gaining a comprehensive insight into the current state of research and development in battery cell production. The results should especially cover the field of digitalization, data mining, data processing, digital shadow, etc. The results will build the basis of the initial concept on digitalizing a battery production.

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### Type of Thesis

PA/BA – Mechanical Engineering, CES