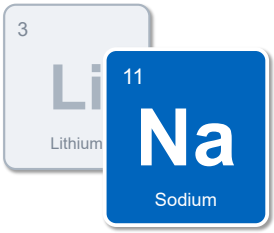
Institute for Machine Tools and Industrial Management (*iwb*)
TUM School of Engineering and Design
Technical University of Munich

MASTER'S THESIS · SODIUM-ION BATTERIES

Cost Modeling for Sodium-Ion Batteries

How can electrode design make sodium-ion cells competitive?



What is it about?

Sodium-ion batteries are considered a low-cost alternative to lithium-ion technology. Whether this potential can be realized in production depends largely on electrode design. The goal of this thesis is to develop a mathematical model that describes this relationship and identifies cost-optimal designs. It builds on OpenCell, the open-source cell model developed by STEER (Stanford University).

Your tasks

- Getting familiar with cost modeling and OpenCell
- Development of a methodological concept
- Mathematical modeling of electrode design and cell costs
- Derivation of design recommendations

Your profile

- Battery production knowledge from a lecture or internship required
- Interest in techno-economic questions
- Solid Python skills
- Structured and independent way of working
- Good command of English

What we offer

- Joint supervision by *iwb* and STEER (Stanford)
- Research topic with industrial relevance
- Insights into battery production at *iwb*
- For outstanding students: opportunity for a one-year research stay at Stanford

IN COOPERATION WITH STEER Stanford

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Start: by arrangement
Apply by email with your CV and transcript of records