

Project work / Bachelor thesis / Master thesis

Development of a stacking process for the production of an oxidic solid state battery



Image source: PEM

Initial situation:

The current generation of lithium-ion batteries still faces challenges in terms of range, performance, lifetime and safety.

A critical lever to increase safety is the replacement of currently used liquid electrolytes by solid-state electrolytes. So-called solid-state batteries, also known as all-solid-state batteries, have a significant impact on other key areas such as energy density as well.

The industrialization of such solid-state batteries is currently in its infancy. Cells built in the laboratory show enormous potential. Numerous OEMs equate successful mass production of such solid-state batteries with the penetration of e-mobility in all vehicle classes.

Your task:

The aim of the work is the development of a stacking process for the production of oxide solid-state batteries. The stacking process is realized by a robot arm, which takes the individual components of the battery from a magazine and stacks them into the battery housing. For this purpose, the coordinate system of the robot has to be calibrated and the pick-and-place operations have to be programmed. Subsequently, stacking tests are to be carried out and parameters such as traversing speed, vacuum of the suction, etc. are to be varied and evaluated.

Prerequisites:

- Studies in the field of mechanical engineering (or comparable)
- Ability to structure and develop content independently
- Very high motivation
- Commitment and willingness to learn

We offer:

- Intensive support
- Fast conduction desired
- Flexibility in the formulation of topics
- Insight into future technologies of battery technology
- Work in an exciting and relevant research field

Have we sparked your interest?

Please send a current transcript of records, resume and additional information to the email address below.

Your contact at PEM:

Lorenz Plocher, M.Sc. M.Sc.
Bohr 12
D-52072 Aachen
l.plocher@pem.rwth-aachen.de