MSc Thesis – Development of an Experimental Test Chamber for Thermal Characterization of Lithium-Ion Batteries

Background

The thermal behaviour lithium-ion battery cells significantly influences their safety. To accurately characterize their thermal behaviour, experimental testing using specific test chambers is necessary. However, standard systems are often non-modular and limited in volume, making them unsuitable for the investigation of large format battery cells that are used in the automotive sector. Which exhibit different heat generation, venting and thermal runaway behaviour compared to battery cells of a smaller format.

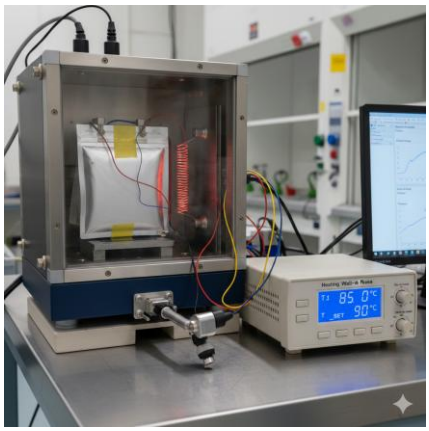

Figure 1: Image of an example test setup generated using Google Gemini

Your goal in this thesis is to develop and construct an experimental test chamber suitable to characterize the thermal behaviour of battery cells.

Tasks

- **Get familiar** with the subjects of lithium-ion batteries and thermal behaviour
- **Understand** the necessary functions that thermal test chambers have to fulfill to comply with the requirements for lithium-ion batteries
- **Develop and construct** a thermal test chamber
- **Perform** commissioning tests
- **Cooperate** with renowned industry partners.

Desired qualifications:

- Interest in the research area of lithium-ion batteries
- Knowledge of development and construction of test benches
- Structured and independent way of working

Recommended as

- Master thesis for Mechanical Engineers

Organizational

- Start: As soon as possible
- Scholarship: min. € 2.500,- for successful completion of the master thesis.
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