

Bachelor-/Master thesis

Evaluation of the total lifecycle costs of heavy-duty batteries



Image Source: PEM

Initial situation:

In the LiVe project, a novel battery system with pouch cells has been developed for heavy-duty trucks (BEV, HEV, high voltage line connection).

The purpose of the research project is to reduce the total costs of operation of such delivery trucks, and the battery system entails innovative aspects such as tab-cooling and the capability of being disassembled up to cells level, hence enabling repairs, remanufacturing and repurposing of used cells.

In this context, CAD models of two design iterations have been designed and prototypes have been built. Documentation for the purchasing and manufacturing of the prototypes is available. Moreover, some concepts for the further improvement have been outlined.

Objective of the thesis:

- (1) Given the bill of materials and the assembly manual, evaluate the costs of components in a mass production environment
- (2) Evaluate the cost of assembly and disassembly at different level of automation
- (3) Identify possible lifecycles of batteries and cells, and estimate the total costs over such lifecycles, taking remanufacturing and second life of batteries into consideration

Requirements:

- Understanding of the underlying technical problems and creativity
- Knowledge of Siemens NX, and willingness to learn

- Interest in electric mobility and circular economy
- Motivation and effort
- Capability to both work independently and in team

What is offered:

- Comprehensive supervision
- Relevant problems to the industry
- Knowledge in battery production

Have we sparked your interest?

Please send your transcript of records, CV and certificates to the e-mail address below.

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