Technische Hochschule Rosenheim

Master's Thesis Announcement

Readiness of Medium-Sized Companies for the EU Digital Battery Passport: Analysis of Data Gaps and Development of a Maturity Model

Faculty:
Faculty of Industrial Engineering,
Technische Hochschule Rosenheim

Start:
Immediately or by arrangement

1. Background and Task Description

From 18 February 2027, the EU Battery Regulation (EU) 2023/1542 requires a digital battery passport for LMT batteries (e.g. e-bike batteries), industrial batteries above 2 kWh and electric vehicle batteries. Batteries without a valid passport may no longer be placed on the EU market. The battery passport is the first Digital Product Passport (DPP) in the EU and serves as the reference model for further product groups under the Ecodesign Regulation, such as textiles, electronics and construction products.
Industry readiness is low: in a survey presented by the European Commission in July 2026, only 15% of respondents were very confident that the required data would be available in their value chain by the deadline. Data availability and quality, unclear roles and responsibilities along the value chain and the integration of supplier data were named as the main challenges. Medium-sized manufacturers, importers and suppliers in particular often lack a structured way to assess where they stand and what needs to be done.

2. Objective

The aim of this thesis is to identify the data gaps and coordination problems that prevent medium-sized actors in the battery value chain from creating the digital battery passport on time, and to develop a maturity model that allows companies to assess their readiness systematically and derive concrete measures.

3. Tasks

1. Regulatory analysis: Structured review of the requirements of the EU Battery Regulation and the delegated acts on the battery passport, including data attributes, access rights, roles of economic operators and timelines.
2. Literature review: State of research on Digital Product Passports, supply chain data sharing and maturity models in the context of the circular economy.
3. Development of a maturity model: Derivation of assessment dimensions (e.g. data availability, supplier integration, IT infrastructure, roles and responsibilities, lifecycle data management) and definition of maturity levels with clear criteria.
4. Empirical study: Conducting 10 to 15 semi-structured expert interviews with manufacturers, importers, suppliers and recyclers to validate and refine the model.
5. Case studies: Application of the maturity model in two to three companies and analysis of their specific gaps.
6. Recommendations: Derivation of a roadmap with prioritised measures for medium-sized companies, and assessment of how the results can be transferred to future product passports.

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4. Expected Results

A validated maturity model for battery passport readiness, an empirically based analysis of typical data gaps and coordination problems, case study results from practice, and an implementation roadmap for medium-sized companies.

5. Your Profile

You are enrolled in a master's programme in industrial engineering, business administration, sustainability management or a related field. You are interested in the circular economy, supply chain management and digitalization. Experience with qualitative research methods (e.g. expert interviews) is an advantage. You work independently and in a structured way, and you enjoy translating regulatory requirements into practical solutions for companies. A cooperation with an industry partner is possible and welcome.

6. Language

The thesis can be written in English or German.

7. Contact

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