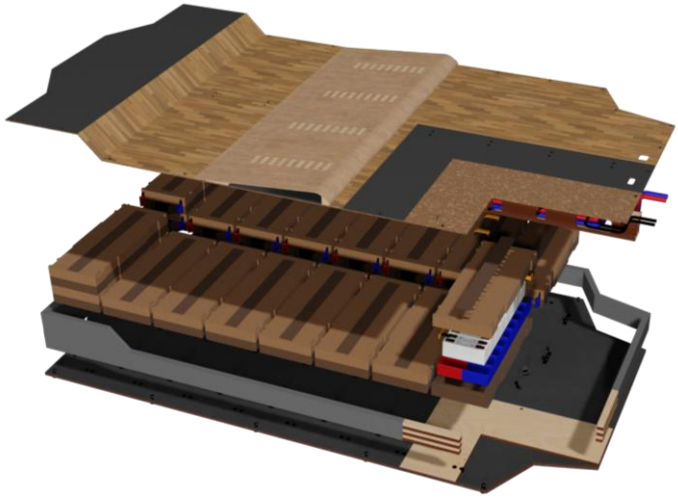
Vehicle Safety Institute

BSc Thesis – Design of a sustainable thermo management system for electric vehicles

Background

A cutting-edge thermal management system is key to making battery cells in electric vehicles safer and more efficient. Temperatures exceeding or falling below critical thresholds accelerate aging and degrade performance. As part of the SMADBatt project, the thermal management system is to be investigated in more detail and optimised. By doing so, it is hypothesised that the overall energy balance and service life of the cells can be improved, making them more sustainable and reliable.



Your goal in this thesis is to create a comprehensive thermo-management concept that leverages the unique properties of cork and PCMs to improve battery performance, longevity, and safety in electric vehicles.

Tasks

- **Get familiar** with the subject of thermo management and various cooling concepts.
- **Understand** relevant parameters for a proper heat balancing including drive cycles, rest cycles, climate cycles, etc.
- **Develop** an innovative thermo management concept.
- **Implement your ideas** in an analytical assessment on the effect of insulation and phase change materials (PCMs).
- **Cooperate** with renowned industry partners.

Desired qualifications:

- Interest in the research area of E-Mobility and biobased materials
- Basic skills in fluid mechanics and thermodynamics
- Structured and independent way of working

Recommended as

- Bachelor thesis for Mechanical Engineers and Process Engineering
- Master thesis would also be possible

Organisational

- Start: beginning with November 2024
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