Solutions for large batteries for waterborne transport

D4.2 – BMS design, development approach and validation

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Project Abstract

The goal of the SEABAT project is to develop a full-electric maritime hybrid battery concept that is based on the following:

- Modularly combining high-energy batteries and high-power batteries,
- novel converter concepts and
- production technology solutions derived from the automotive sector.

The modular approach will reduce component costs (battery cells) so that unique ship designs can profit from economies of scale using standardized low-cost components. The concept will suit ships requiring up to 1 MWh of storage or more.

Public summary

The SEABAT project aims to create a Hybrid Energy Storage System (HESS) for marine applications where two different battery technologies are combined to optimize the system's performance.

Developing an energy storage system for a defined application requires multiple developments of their components. In this case, some components need to be updated or modified to fulfill the system hybridization architecture, which implies further efforts in the design and development phase of the project.

In general, the electronic components of a battery system are critical when designing a battery system. Several components must be developed, identified, and prepared for integration into the final battery system. A dedicated task, Task 4.1, within WP4 of the SEABAT project, has been defined where all the electronic components of the HESS have been developed and identified.

Although the Battery Management System (BMS) could be the "heart" of the battery system itself, other electronic components are as well critical for the proper performance of the system. Deliverable 4.2 provides an in-depth analysis of the development and validation of the BMS for the modules integrated into the HESS level. Moreover, the deliverable outlines the state functions integrated into the BMS. Additionally, the document provides a detailed analysis of the electronic components' selection, along with identifying the components' interfaces which will help with the wiring diagram definition and final assembly of the components at module, string, and HESS level.

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1	FM	FLANDERS MAKE
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