

EUROPEAN COMMISSION
HORIZON 2020 PROGRAMME - TOPIC H2020-LC-BAT-2020

Solutions for large batteries for waterborne transport

GRANT AGREEMENT No. 963560



D6.1 – Report of the Integration
and validation test program

Report details

Deliverable No.	SEABAT D6.1	
Deliverable Title	Report of the Integration and validation test program	
Deliverable Date	2023-05-31	
Dissemination level	Confidential – member only (CO)	CO
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Document History

Version	Date	Author	Remarks
V0.1	2023-06-15	Andrea Colavitto	First draft for review
V0.2	2023-06-30	Andrea Colavitto	Improvements and final updates based on reviews
V1.0	2023-07-06	Jeroen Stuyts (FM)	Coordinator review
V1.1	2023-07-06	Cor van der Zweep (UNR)	Final for submission

Project Abstract

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

- 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, converters) so that unique ship designs can profit from economies of scale by using standardized low-cost components. The concept will be suitable for ships requiring up to 1 MWh of storage or more.

Public summary

The primary objective of WP6 is to verify that the HESS (Hybrid Energy Storage System) meets the requirements outlined in WP2 and the specifications from WP3. The validation process for the HESS involves two steps: a power-hardware-in-the-loop (P-HIL) virtual integration and validation test, and a performance test of the entire battery system.

This document defines the integration and validation test program, which aims to validate the intended operation, fault tolerance, and fault ride-through capabilities of the modular battery system in a realistic environment. It serves as a record of the work carried out in Task 6.1.

In addition, the document outlines the tests that will be conducted in Task 6.3, including a list of tests that have already been performed in previous tasks of the SEABAT project and, therefore, this deliverable can be used as a reference to understand all the validation work completed during the SEABAT project. The tests planned for Task 6.3 involve integrating the controllers, evaluating control functionality and fault handling of the control systems, conducting virtual integration with the vessel power system, and performing virtual upscaling of the battery system.

Furthermore, the document assesses the aspects that are not covered by the tests conducted in Task 6.3 and provides general recommendations for tests to be carried out during Task 6.4. These recommendations are based on the findings from failure/functional tests highlighted in this deliverable.

A small delay (one month) was experienced in the finalisation of the deliverable report, this did not have any effect on the progress of the in the testing schedule.

10 Acknowledgements and disclaimer

The author(s) would like to thank the partners in the project for their valuable comments on previous drafts and for performing the review.

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6	VARD	VARD ELECTRO AS
7	ABEE	AVESTA BATTERY & ENERGY ENGINEERING
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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 963560. The information and views set out in this publication does not necessarily reflect the official opinion of the European Commission. Neither the European Union institutions and bodies nor any person acting on their behalf, may be held responsible for the use which may be made of the information contained therein.