NEMOSHIP

WP3 - Modular BESS design, integration and testing

D3.3: BPMS and E/E architecture validation report - Public Summary:

The ambition of the NEMOSHIP project is to develop, test and demonstrate innovative technologies, methodologies and guidelines to accelerate large BESS deployment and optimal exploitation toward 2030 on both hybrid and fully electric configurations. To help achieve this ambition, NEMOSHIP will develop a 1 MWh modular and standardised battery energy storage solution that is able to exploit heterogeneous storage units and a cloud-based digital platform to enable data-driven, optimised and safe exploitation. The project will demonstrate the maturity of these innovations at TRL 7 for hybrid ships as well as their adaptability towards fully electric ships.

The 1 MWh NEMOSHIP modular BESS will be installed on an offshore vessel from Solstad called Normand Drott (ND). The high-energy battery will be the Dolphin Energy product and the high-power battery will be the Orca Energy product, both from Corvus.

The present deliverable is part of WP3 which focuses on the NEMOSHIP modular BESS design, integration and testing. The deliverable is about the Battery Power Management System (BPMS) control unit and E/E architecture validation on an XIL bench.

The aim of the BPMS algorithms is to compute an optimal power balancing between the high energy (HE) and high power (HP) battery units composing the NEMOSHIP BESS.

The present deliverable is closely linked to WP4 in which the BPMS algorithms were developed and Deliverable 3.1 where the BESS sizing and architecture was defined together with the controller and interfaces. The deliverable describes the tests carried out and shows the results obtained. The tests following the XIL approach helped identify a number of issues and constraints inherent to the E/E architecture. The work carried out allowed these problems to be resolved and the overall behavior of the controller to be verified, along with the correct integration of the algorithm developed in Simulink into an industrial PC by Beckhoff. Some areas for improvement have also been identified and will be integrated before the onboard tests.

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