NEMOSHIP

WP4 - Multi-level management systems development

D4.2: BPMS algorithms for modular BESS-version 2 - 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 is developing 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 NEMOSHIP BESS is heterogeneous as it combines High-Energy (HE) and High-Power (HP) batteries from Corvus. 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 present report relates to Task 4.1 of the NEMOSHIP project. It focuses on the control of the above-mentioned 1 MWh BESS that has been installed on an offshore vessel from Solstad in mid-2025. This deliverable presents the second version of the Battery Power Management System (BPMS) algorithm developed within the project to ensure optimal power balancing between the HE and HP batteries. As described in the first version, the tool can split a power profile into two, with one output corresponding to the power that the HE battery should deliver, and the second output to the power of the HP battery. The tool relies on an exponential filter and is further described in this report.

Improvements to the initial version (Deliverable D4.1) were implemented in this second version; the present report describes these.

Moreover, Deliverable D4.2 includes an analysis of the impact of the BPMS parameters on the lifetime and reliability of the storage units using the virtual platform from WP2.

The algorithm described will be embarked in the Solstad vessel, Normand Drott, before starting a comprehensive evaluation period; results will be shared in WP5 at the end of 2026.

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