NEMOSHIP

WP3 - Modular BESS design, integration and testing

D3.4: Modular BESS delivery, documentation, and 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. This deliverable relates to Task 3.5 titled "Containerised system integration and testing" which is a core activity of WP3 within the NEMOSHIP project. It focuses on the preparation, assembly, testing, and compliance verification of the newly developed containerized 1 MWh Battery Energy Storage System (BESS) in line with required certifications.

This task complements the activities of WP5 and ensures that the delivered system meets both technical and regulatory requirements before integration onboard the Normand Drott (ND) demonstration vessel. The modular BESS developed in NEMOSHIP integrates two complementary battery types: high-energy (HE) and high-power (HP) units, supplied by Corvus Energy. These are combined into a hybrid configuration to provide both long-duration energy supply and fast transient power support. The system is delivered as a customized 20-foot ISO high-cube container designed for installation within a converted fuel tank on ND.

This marks one of the first retrofits of such a heterogeneous BESS configuration on an Anchor Handling Tug Supply (AHTS) vessel. Deliverable D3.4 documents three main aspects:

- Assembly: Description of the containerized BESS build-up, including mechanical, electrical, safety, and auxiliary subsystems, as well as the integration of the Battery Power Management System (BPMS).

- Certification and compliance: Overview of the regulatory framework and class requirements, referencing DNV guidelines and type approval processes already completed.

- Subsystem testing and validation: Reporting on validation activities carried out at container and BPMS levels, including Factory Acceptance Tests (FAT) and preparation for Harbor and Sea Acceptance Tests (HAT/SAT).

The final section outlines the preparations for onboard integration, which will be completed in coordination with WP5. The BPMS installation and commissioning are scheduled for Q4 2025.

Through this deliverable, the NEMOSHIP consortium ensures that the modular BESS is delivered as a safe, compliant and validated system, paving the way for its installation and demonstration onboard ND. The outcomes will directly contribute to proving the feasibility of modular hybrid storage solutions for large vessels, supporting the ZEWT roadmap and IMO greenhouse gas reduction objectives.

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