WP5 - Modular 1.5 MWh BESS demonstration and optimisation for the Solstad retrofitted hybrid vessel

D5.3: Commissioning and certification 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 report relates to Task T5.3 “Final testing, certification and commissioning” for the NEMOSHIP Battery Energy Storage System (BESS) on Normand Drott vessel from Solstad.

The objective of this task is to safely execute the commissioning of the newly developed 1 MWh modular BESS (see also Deliverable D3.4), including the installation, integration, and FMEA tests, in order to renew the vessel certifications. Safety is prioritised throughout all phases, with strict adherence to established procedures, risk assessments, and class requirements to ensure the protection of personnel, vessel, and environment. All activities are conducted in accordance with the installation plans defined in Task T5.1, and regular status updates on the 1 MWh ESS installation were provided to enable efficient and safe revision processes.

The task has been closely coordinated with the preparations overseen by Task T5.2, ensuring that all prerequisites for safe installation and commissioning are met, including verification of interfaces, emergency procedures, and compliance with relevant safety standards.

Special attention is given to the documentation and approval of all safety-critical steps, and lessons learned are systematically captured to further enhance safe execution in future projects.

This report, prepared by Solstad for the NEMOSHIP consortium, provides a detailed account of the commissioning and certification process for the battery energy storage system and related energy management systems installed on the offshore vessel Normand Drott. The document describes how both harbour and sea acceptance tests were conducted to ensure that the systems functioned according to their technical specifications and met all relevant safety and performance requirements. The report covers the practical execution of tests, including procedures for local operation, charging and discharging of the batteries, integration with the vessel’s generators, and the handling of alarms and fault conditions.

Special attention was given to the verification of safety features such as blackout prevention and system response to critical faults, as well as compliance with class requirements for battery-powered vessels.

All test activities were thoroughly documented and approved by representatives from Wärtsilä, Solstad Rederi, and Global Maritime, ensuring full traceability and regulatory compliance.

The process for obtaining DNV’s “Battery (Power)” class notation is also described, confirming that the vessel is certified for safe and efficient battery operation.

The introduction of the NEMOSHIP digital platform is also discussed, which will offer the crew data-driven insights and optimisation tools for battery usage and maintenance.

Overall, the report serves as a comprehensive record of the steps taken to ensure that the battery systems on Normand Drott are safely integrated, fully functional, and compliant with the highest industry standards.

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