

EXECUTIVE SUMMARY

The current report, D3.1 revisits the defined use cases for a superconducting cable system in an offshore setting with the aim to define a select number of key parameters. An examination of future power capacities was undertaken leading to the conclusion that capacities exceeding 2 GW should be within the scope of this work package, aligning with industry trends and the anticipated evolution of this technology.

This deliverable then outlines the requisite Functional Specifications for the cable system to meet the identified use cases whilst also considering the user requirements. Emphasis is placed on designing the cable system with reliability, availability, and compatibility with existing systems to garner acceptance from stakeholders across the industry. While factors such as system cost, electricity consumption, and physical space usage are vital and can influence project feasibility, they must be subordinate to primary considerations.

For each identified use case, multiple design options are explored for both cable and cooling architecture, ensuring adherence to the defined functional specifications. A closed-loop, sensible cooling approach is adopted, with clustered stations providing ample redundancy to mitigate the impact of routine maintenance. Preliminary analysis has identified certain cryostat sizes and pressure ratings as unsuitable for specific use cases; however, further in-depth techno-economic analysis is imperative to determine the final configuration.

