

Commercial Readiness of Floating Foundation Launch Methods: The Missing Bottleneck in FLOW Port Planning

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This study investigates the commercial readiness of floating offshore wind (FLOW) foundation launch methods, identifying a critical yet underexplored bottleneck in port planning and deployment strategies. While existing assessments emphasize infrastructure requirements such as quay strength, upland storage, and water depth, limited attention has been given to the technical maturity and scalability of methods used to transfer large floating foundations from fabrication areas into the water. Several launch approaches including semi-submersible barges, ramps, ship-lift systems, graving docks, and direct crane lifts are discussed in current literature; however, none have been fully commercialized at the scale required for serial FLOW deployment.

A comparative analysis framework is developed to evaluate these launch methods based on technical readiness, capital cost, operational risk, water depth requirements, and cycle-time efficiency. A stress-test assessment is conducted to examine the feasibility of each method under increasing foundation sizes, ranging from 3,600–8,100 tons for steel floaters to 15,400–22,700 tons for concrete structures, with integrated turbine systems reaching blade-tip heights of up to 305 m. A cycle-time analysis is also being developed to evaluate the ability of each approach to meet an assumed production rate of one integrated unit per week.

The study highlights the importance of evaluating launch methodologies alongside port infrastructure planning, with particular attention to scalability, repeatability, and operational integration. These considerations are critical in understanding whether proposed port upgrades alone are sufficient to support industrialized FLOW deployment.

Overall, this work aims to identify key risks and opportunities associated with FLOW foundation launch systems, providing a foundation for future validation, pilot testing, and integrated port design strategies to support commercial-scale deployment.