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Fostering Sustainability through Energy Storage Systems for Marine & Offshore Vessels

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Abstract:
Nearly four years into a 'lower-for-longer' price environment, offshore operators continue to develop and implement the means to effectively navigate the new normal. Cost constraints, however, are not the only driver behind innovation. The long-term sustainability of the industry is also predicated on minimizing the environmental impact of O&G operations, particularly in the offshore environment.
The new charter contracts which include fuel have already initiated commercial awareness of fuel efficient hybrid power systems.
The 2020 IMO regulations related to Sulphur content will also impact the need for more environmental friendly solutions.

One direction in order to meet the "new normal"; with reduced carbon footprint, improve the OPEX, increase the reliability as well as performance of the DP operated vessels, will be a seamless integration of renewable technologies (i.e., wind, wave and solar power) with energy storage solutions (ESS) into reliable power systems for marine and offshore units.

This paper will outline potential solutions and strategies for operators to reduce both the cost and environmental footprint of their offshore facilities. More specifically, it will focus on the use of ESS and the potential for integrating battery-powered solutions with offshore floating DP operated vessels. The paper will also briefly discuss the relevant experience from around 40 marine installation with ESS, including RoPax, Ferries, Fishing Vessels, OSVs and Offshore Wind Service Vessels.

The introduction of Energy Storage Systems in E-ferries and Commercial Coastal Fishing Vessels has the potential to reduce annual CO2 emissions from domestic shipping and commercial fishing off the coast of Norway by 9%. (Ref: NTNU report ….)

As many parallels can be drawn from the design and construction of these hybrid and all electric ferries to other marine vessels and facilities, the case history serves as a partial proof of concept for incorporating ESS with power generation in the DP vessel environment. Doing so could help drill rig and vessel operators significantly reduce the carbon footprint improve efficiency and enhance the safety in their operations

Additionally, the paper will discuss the potential for linking energy storage solutions with offshore wind farms in order to ensure 100% power availability. This is highly applicable to the O&G industry, as one of the primary challenges of using wind farms to power offshore installations is the inherent unpredictability and the intermittent generation often associated with them.