



CASE STUDY

MARINE POWER SYSTEMS (MPS)

The Offshore Renewable Energy (ORE) Catapult collaborated with Marine Power Systems (MPS) through its Marine Energy Engineering Centre of Excellence (MEECE). The project looked at the following topics:

- Investigating the impact of varying tendon configurations on the dynamic behaviour of the MPS platform
- Cost analysis of Semi-submersible (SS) floating platforms and the MPS Tension Leg Platform (TLP)

The effect of tendon inclination angle on the platform dynamics was modelled with a Python-based static model and an Orcaflex dynamic model to identify the response of the platform to realistic metocean conditions. Pitch, heave, and mooring tension were assessed for several locations at various tendon inclination angles, and design driven trends were observed. Increasing inclination generally observed lower surge amplitudes, high heave and pitch amplitudes and reduced nacelle accelerations and tower base bending moments using a counter pitching design. This analysis can be used to inform design parameters for future installations.

Cost modelling was performed using numbers provided by MPS and present day supply chain costs through ORE Catapult's Combined Offshore Wind Cost Model. Different locations and sizes of wind farms were assessed, and the results showed between a 10 % and 12 % LCOE (Levelised Cost of Energy) saving on overall costs between the TLP and the SS for all assessed scenarios.

“Marine Power Systems are delighted to have benefited from the wealth of knowledge and experience in floating offshore wind that the team at ORE Catapult bring. Our floating wind platform, PelaFlex, is positioned very competitively in the market, bringing excellent stability in challenging environments and enabling an efficient pathway through the supply chain to deliver rapid industrial scale deployments. Most importantly, this study validates our earlier work highlighting the potential for PelaFlex to make a significant contribution to LCoE reduction in the delivery of floating offshore wind”

Dr Martin Carruth
Commercial Director,
Marine Power Systems

“This project has highlighted some of the key benefits of MPS’ technology, notably its inherent stability and low material content, both of which have contributed to the impressive LCOE reduction found in our analysis. Due to a smaller platform footprint and draft, PelaFlex also has the potential to make assembly and deployment from UK ports easier. We look forward to working further with MPS on their game-changing floating offshore wind technology.”

Dr Magnus Harrold
Senior Marine Energy Technical Manager,
ORE Catapult



In collaboration with:



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