



EUROPEWAVE

Blue Horizon

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<https://www.mocean.energy/>



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement 883751.



www.europewave.eu



[@Europewave_EU](https://twitter.com/Europewave_EU)



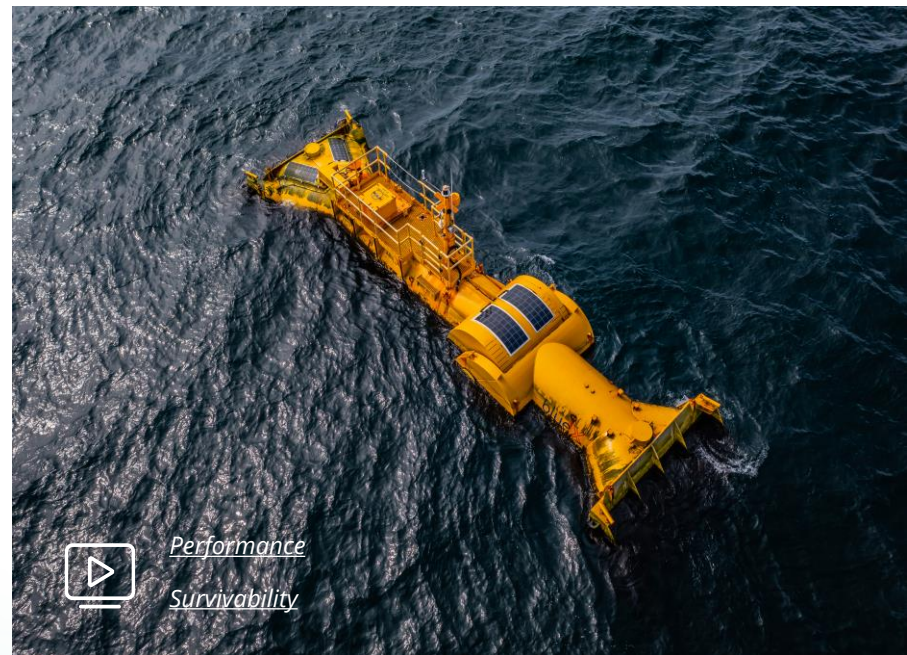
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Hinged Raft WEC

Mocean's technology is a hinged-raft WEC with an innovative hull geometry.

Blue X in Mocean's first-of-a-kind prototype. "X" is for experimental.

- It was designed, built and first tested in the Wave Energy Scotland Novel WEC program
- Used the C-Gen generator developed by the University of Edinburgh
- 5 months testing at EMEC
- 13.5 months testing as part of the Renewables for Subsea Power project, supported by the Net-zero Technology Centre and project partners.



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Prototypes

BlueX

BlueX – creates a pathway to our both our Blue Star and Blue Horizon Products

18 months of test data used to inform design of products and increase TRL

BlueV (EuropeWave Project)

BlueV – *V for VHM* – creates a pathway to both our Blue Star and Blue Horizon Products

Project will develop a 20 kW WEC due to growing commercial interest in small-scale product

Products

blueSTAR



Near-term market in offshore O&G and CCS subsea equipment

Saves money and CO2 compared to subsea cables

blueHORIZON



Medium-term market in power for the Blue Economy – islands, ports, O&G, aquaculture

Innovations in BlueV

Software Optimisation

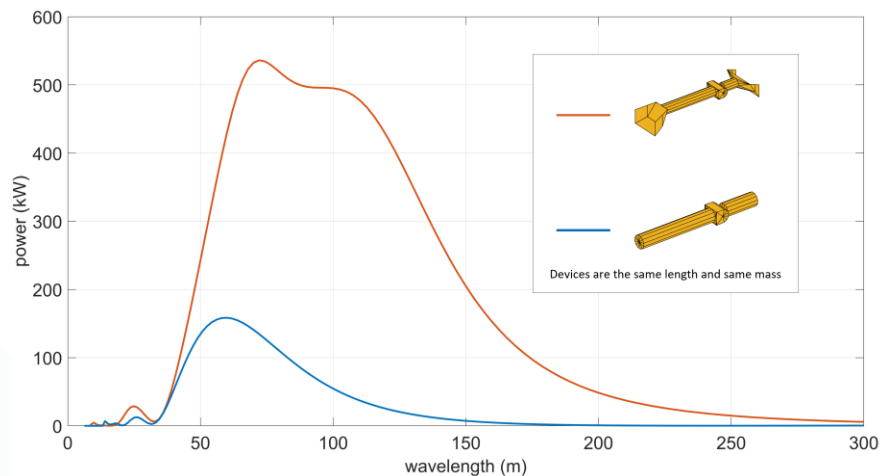
- Software to optimise products and projects
- Discovered the new hull geometry!

Novel Hull Geometry

- Moves more in waves → generates more power
- 2-4x more power per mass than first gen
- Patented

Vernier Hybrid Machine (VHM)

- Ultra low speed, high torque direct-drive generator
- Improves reliability, efficiency, reduces maintenance



VHM

VHM Development



Structural Design

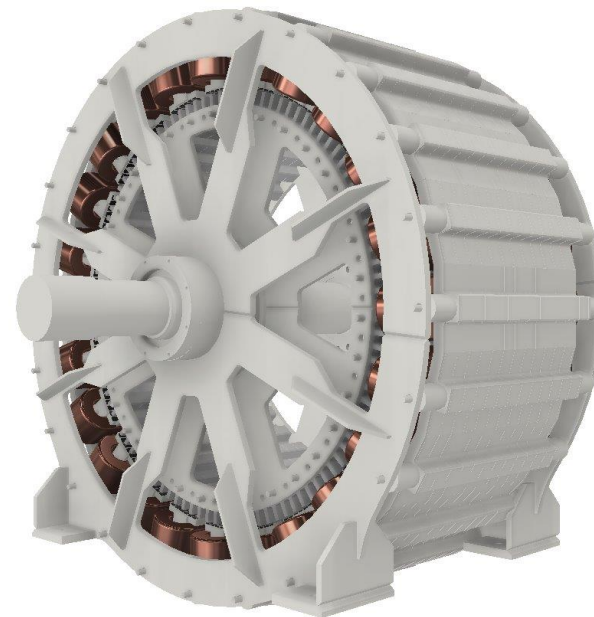
- Monolithic 2m diameter direct drive generator
- 1 off VHM located inside WEC nacelle

Supply Chain

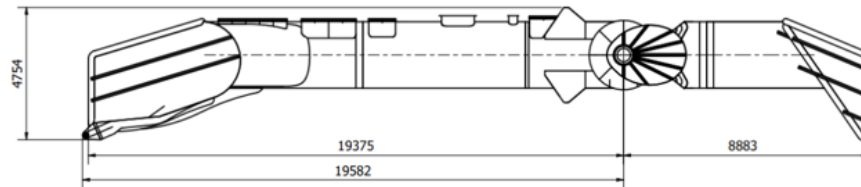
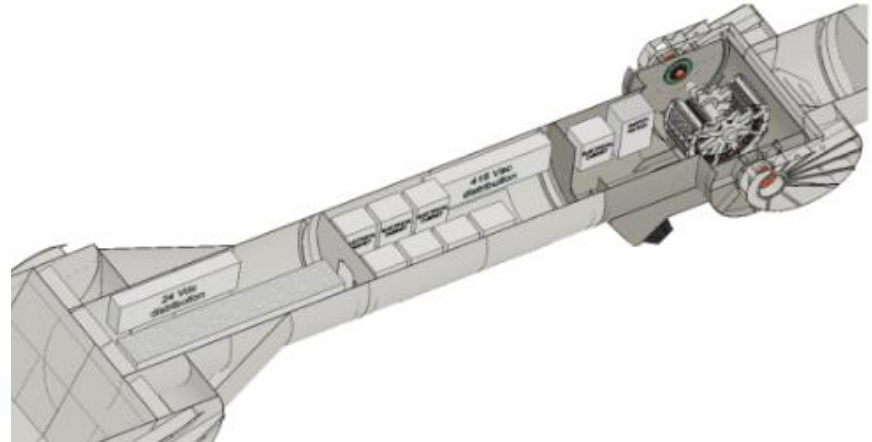
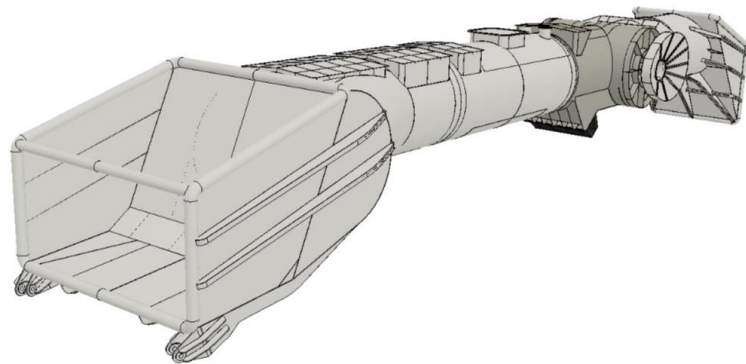
- MoU with TDC Parsons Peebles – Rosyth to manufacture FOAK VHM
- Collaborative Design for Manufacture workshops in progress
- To commence manufacture Q1 2025

Power Electronics

- Working with supplier of COTS drives to provide control solution
- Prototype 2m machine at Fountain Design successfully driven using drives above



Hull Design



Contractors Involved to Date



UK
FMECA & RAM
Analysis



BLACKFISH
ENGINEERING DESIGN AND PRODUCT DEVELOPMENT
UK
Structural &
Mechanical Design



UK
CCI System Design



UK
Generator Design



USA
Hydrodynamic
Modelling



UK
Fabricator



UK
Mooring Design &
Operations



UK
Generator
Manufacturer

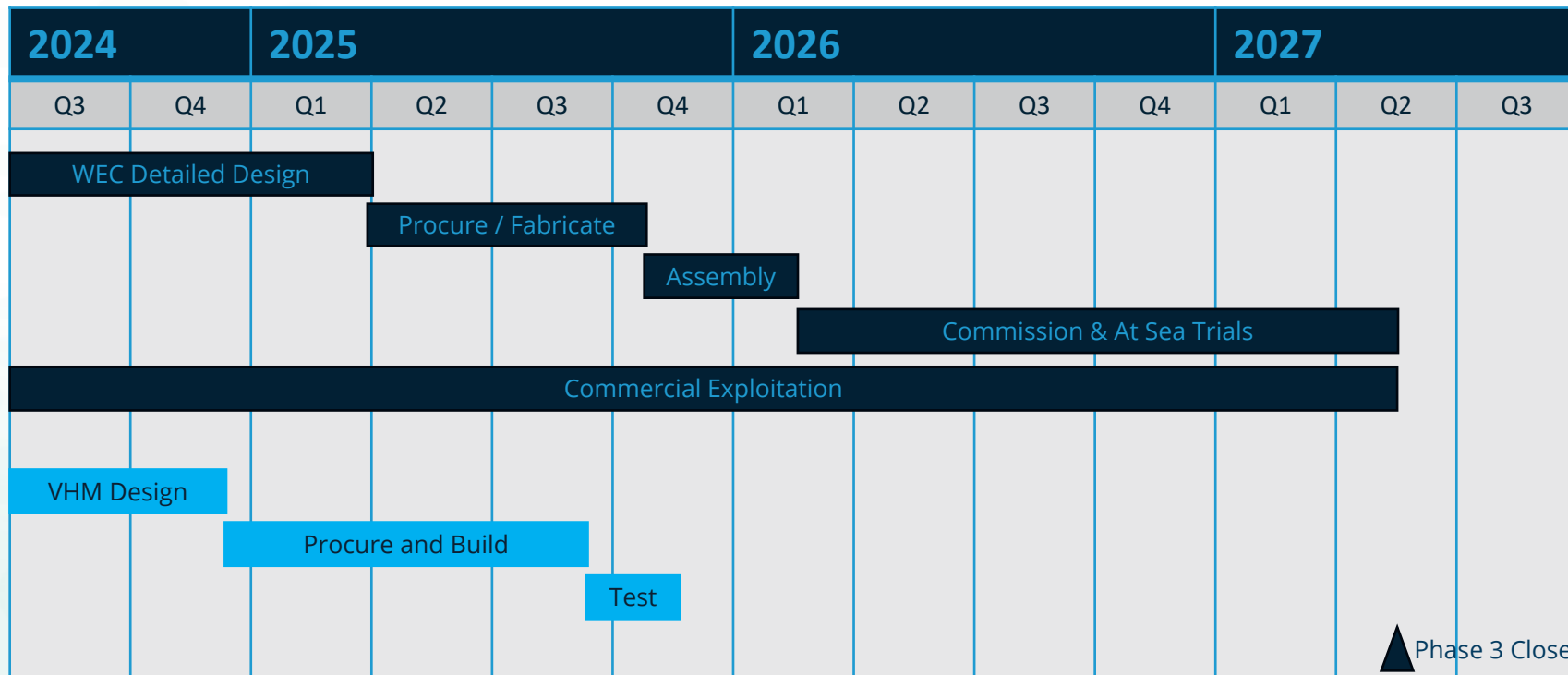
Phase 3 Timelines

WEC

EWV Funded

VHM

WES Funded



Next Steps

- Approval to Proceed in November
- Complete detailed design of WEC + VHM
- Commence manufacture/build of WEC + VHM

www.mocean.energy

www.linkedin.com/company/mocean-energy

