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Introducing: Orbital Marine Power

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“The team at Orbital have spent over 17 years developing a revolutionary technology to unlock the power of the tides. We are on a mission to provide sustainable clean energy to millions of people, homes and businesses around the world.”



Orbital O2: Most Advanced Tidal Turbine in the World



2.5MW of power at rotor shaft.

20m rotor diameter / 628m²

74m main hull structure.

Pitch controlled rotors.

Forward and aft catenary mooring.

Breakthrough Industry Project: SR1-2000

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- ✓ World's most powerful operating tidal turbine – 2MW.
- ✓ 2 x 1MW nacelles with 16m rotor diameters.
- ✓ Stall regulated control.
- ✓ 500T turbine mass.



Construction Philosophy

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Manufacturing process analogous to ship building.

No dependency on high cost specialist construction vessels.

Simplified, standard offshore operations involving moorings and cable installation.



Maintenance Philosophy

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Maximise generator uptime by enabling fast response maintenance interventions.

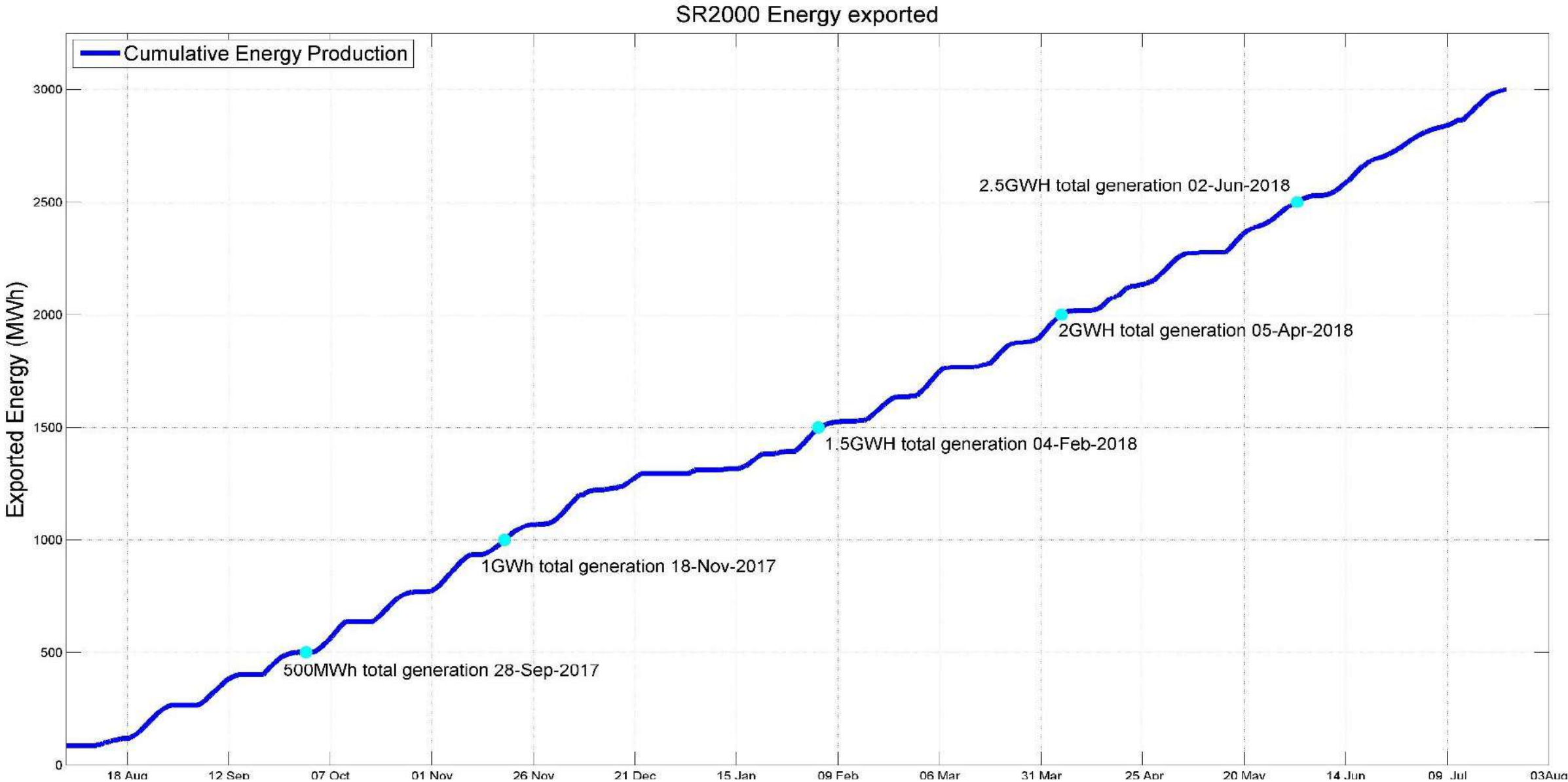
Minimise cost of repairs and service vessels via turbine design and marine operations.



- ✓ 2.2MW peak output.
- ✓ Provided 7%+ of entire Orkney electricity demand over 1 year of continuous generation.
- ✓ Predictable source of generation.
- ✓ 450+ days on moorings and grid connection.
- ✓ Weathered 6m+ storm waves.
- ✓ Maintained generation in 3m+ waves.
- ✓ 6,000hrs generation per nacelle.
- ✓ 3.2GWh+
- ✓ 30+ interventions – no lost time incidents, no expensive vessels.
- ✓ <45mins quickest time to repair.



SR2000 - Performance



Orbital O2: Optimised Low Cost Solution

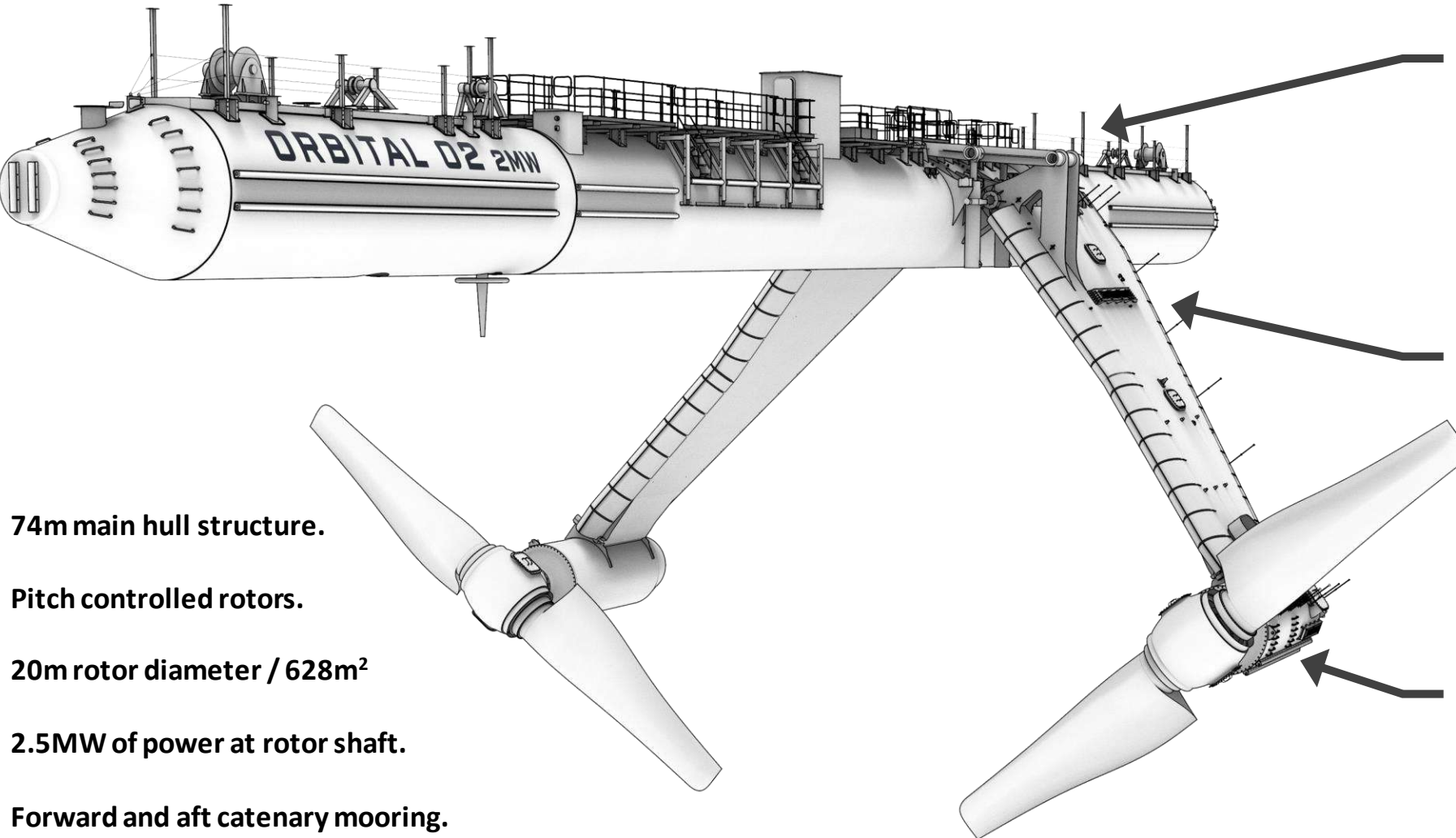
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Key Innovations

Legs attached above the waterline with all hull penetrations and leg actuation system above the waterline.

Legs hinged axially to present nacelles and pitch hubs to surface for servicing at same time as improving structural load-paths.

360° blade pitching allows for simplified forward and aft mooring arrangement and improved yield.



74m main hull structure.

Pitch controlled rotors.

20m rotor diameter / 628m²

2.5MW of power at rotor shaft.

Forward and aft catenary mooring.

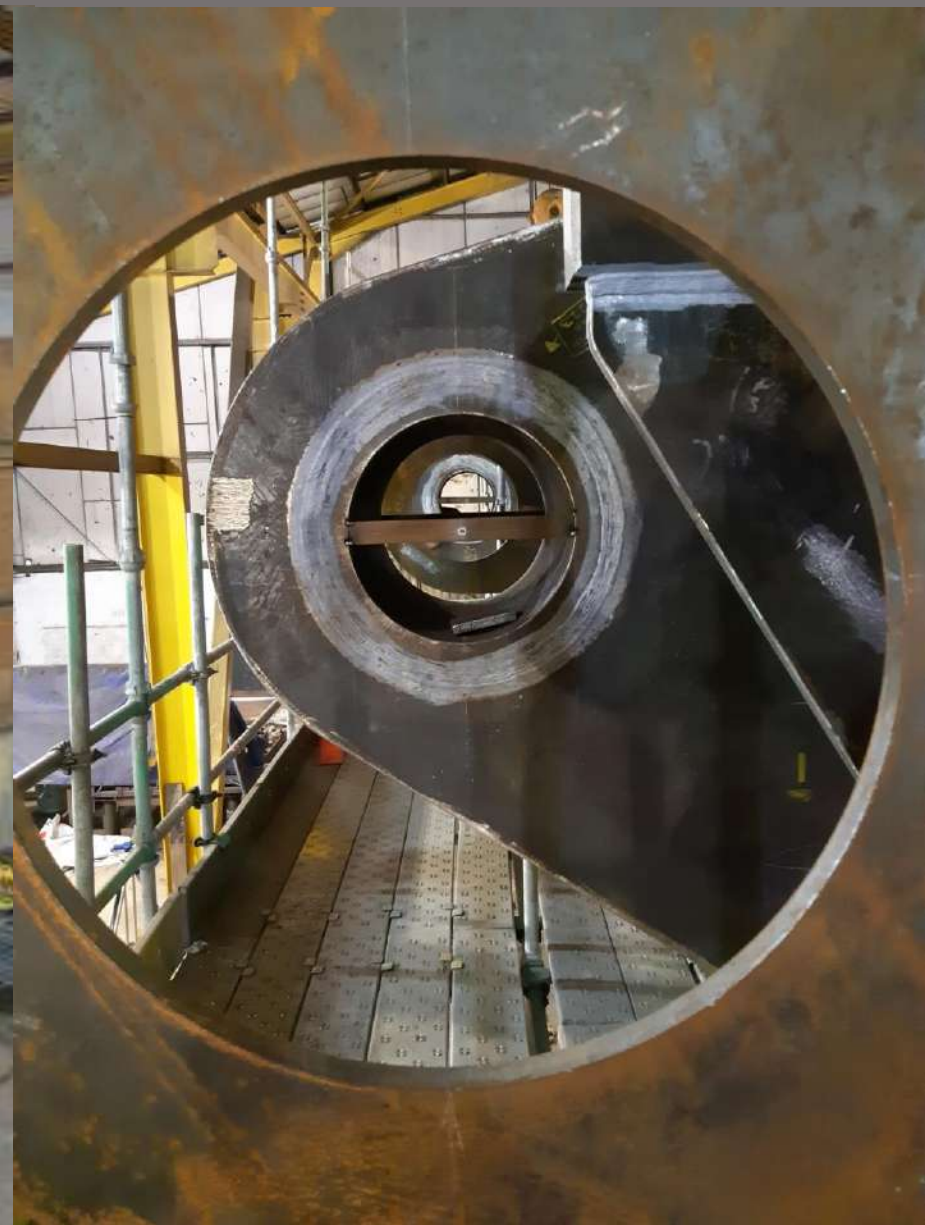
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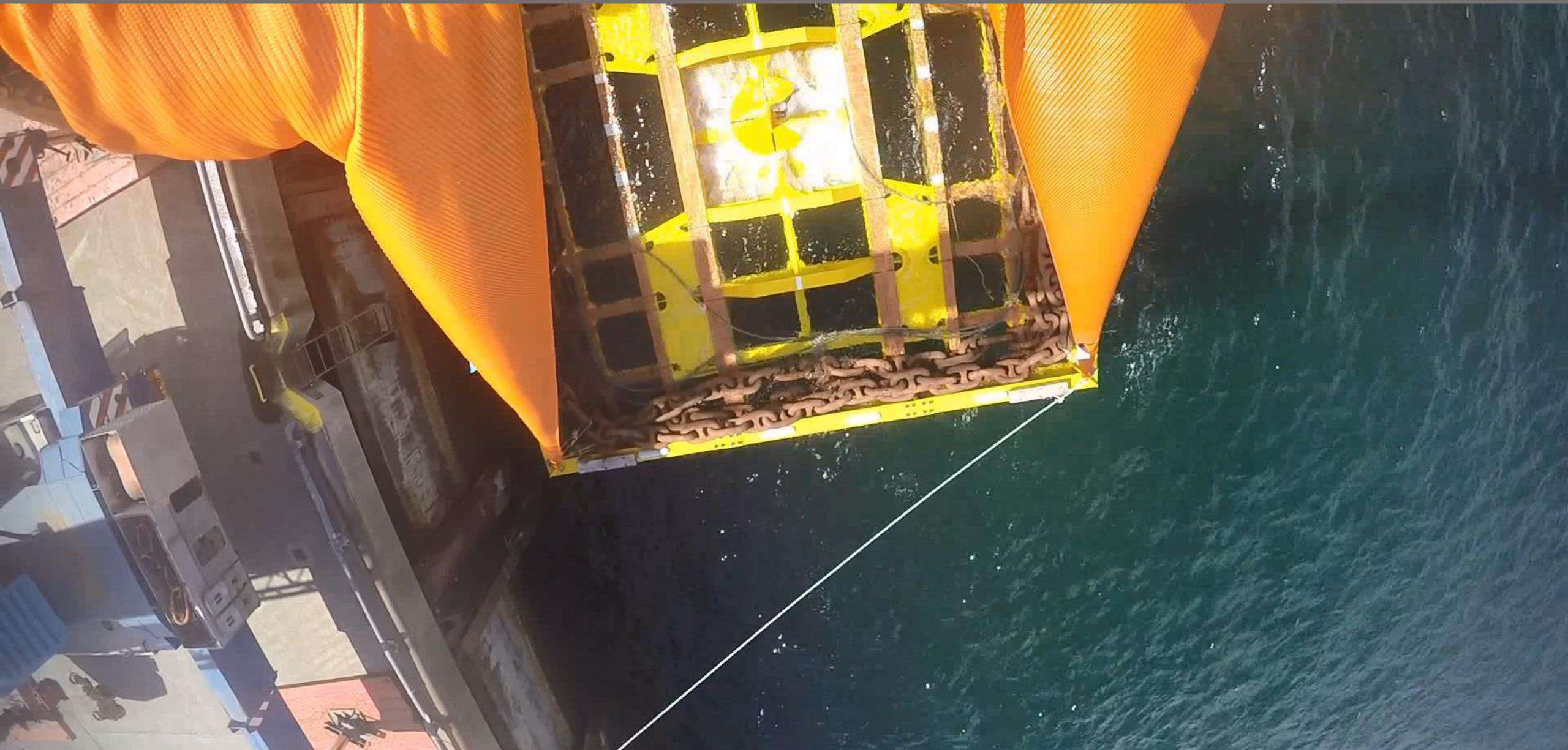
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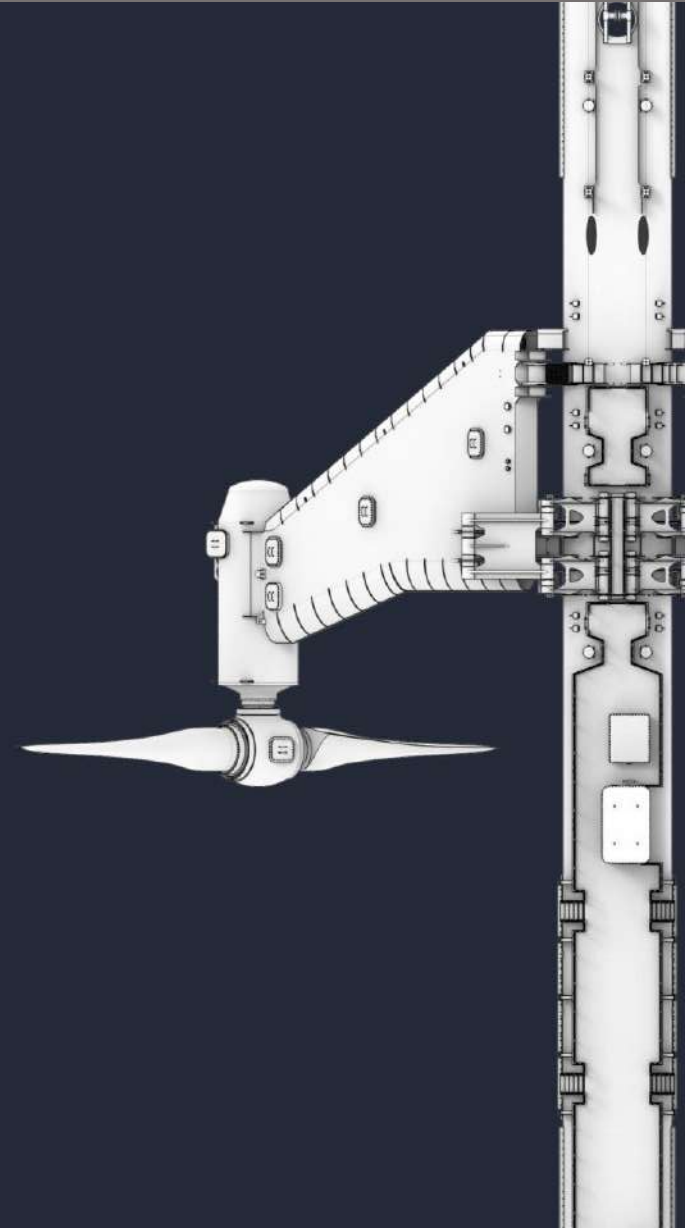
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Alternative markets



Hydrogen

- ✓ First green hydrogen in the UK was produced in Orkney using tidal electricity produced by Orbital Marine Power



Battery storage

- ✓ Opportunity for base load power, of particular interest to micro-grid solutions.



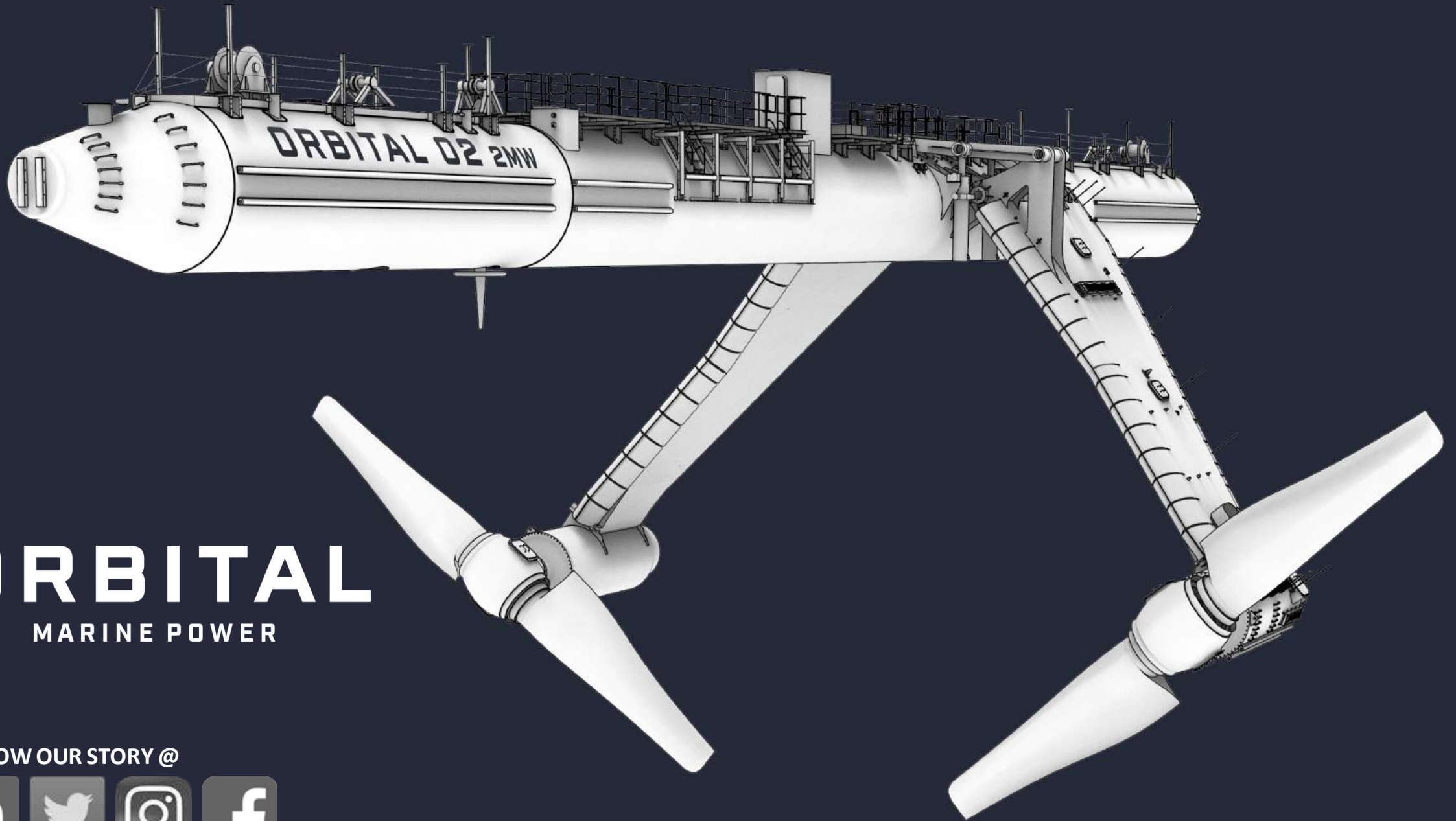
Desalination

- ✓ Continued need for water is a good fit with predictable tidal generation.



Run of river

- ✓ Large market with the possibility to provide close to baseload power.



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