

Thursday, 07 January 2021

## Bombora and Mitsui O.S.K. Lines Forge Partnership to Identify Marine Energy Project Opportunities in Japan

At a time when there is a strong push for offshore renewable power generation in Japan, Mitsui O.S.K. Lines, Ltd. (MOL) have entered into an agreement with leading marine energy developer Bombora to identify wave energy potential across the region. Following the completion of a detailed internal technology review of Bombora's unique mWave wave energy converter by the global marine transport group, MOL and Bombora are now progressing to the second phase of their collaboration. The partnership will identify potential sites for both mWave energy projects and combined wind and mWave energy projects in Japan and the neighbouring regions.

MOL operates one of the world's largest merchant fleets and is dedicated to minimising the environmental impact of its business activities and reducing its carbon footprint. The rapidly growing marine renewable energy sector represents a new opportunity for MOL, and it is anticipating significant demand for vessels involved in the construction and ongoing operations across the marine energy sector. The collaborative project with Bombora is an example of MOL's ambition to mitigate its environmental impact whilst driving new and sustainable business growth opportunities across the region.

MOL will bring its expertise in maritime consultation, offshore marine operations, and regional industry supply chain knowledge to the joint study. This will match Bombora's mWave™ technology and project development experience to form a strong working partnership.

Bombora's Development Manager for the Asia Pacific region, Mr Ryota Yamada said:

*"We are very pleased to be conducting this strategic site identification project with MOL. The study will seek out opportunities suitable for wave, as well as hybrid wave and wind projects. MOL has a clear ambition to expand its sustainable marine operations into the energy sector and are a significant collaboration partner for Bombora on this pathfinder wave energy initiative in Japan. We know that there is excellent wave resource to be found around this coastline. Having a partner with the expertise of MOL alongside us will help progress projects in this region."*

*Mr. Yamada went on to explain:*

*“With a focus on carbon emission reduction we will work together to find potential development sites for Bombora’s mWave™ to reduce reliance on diesel fuel for island communities. The project will also investigate the broader utility power potential off Japan’s Pacific coastline.”*

Japan aims to install between 30GW and 45GW of offshore wind by 2040 as part of the country’s aims to reach carbon neutrality by 2050. The ministry of economy, trade and industry (Meti) also set an interim target of 10GW by 2030. The Japanese Wind Power Association claims a potential of more than **500GW** of floating offshore wind capacity in Japan alone, positioning it as one of the world’s most promising and dynamic new offshore energy markets. The MOL/Bombora partnership will analyse the opportunity to capitalise on this growth potential by adding wave energy into offshore wind farms to increase energy production.

The stage is set to prove the case for a global multi-megawatt scale renewable wave energy solution. Bombora’s mWave product is unique among wave energy converters as it simultaneously addresses the ‘cost of energy’, ‘scalability’ and ‘ocean survivability’ challenges which have previously hampered the development of a commercial wave energy converter product.

Bombora is currently in the final assembly phase of its 1.5MW mWave Pembrokehire Demonstration Project in Wales with installation scheduled for mid-2021.

Looking beyond the test and validation this year, Bombora is forging ahead with technological and commercial advancements. InSPIRE, Bombora’s partnership project with global EPC contractor, TechnipFMC, to integrate mWave and wind generation on one floating offshore platform has already commenced. The first phase of the InSPIRE project will realise the demonstration of a 12MW Integrated mWave and wind floating platform. Phase two makes the leap to an industry leading 18MW. Significant gains are made from integrating mWave and wind onto a single platform. It is possible to generate 50% more power from seabed lease areas and 50% more consistent power than just offshore wind. Most important of all is the ability to accelerate the cost reduction pathway for this emerging sector, delivering a 20% lower cost of energy than floating offshore wind alone.

This exciting renewable project partnership for Japan marries MOL’s maritime offshore marine operations expertise and strong regional supplychain network with Bombora’s pre-eminent technology. Aspirations are high for a positive outcome to uncover opportunities to support diesel displacement initiatives for coastal regions and island communities and also support growth in Japan’s offshore renewable sector.

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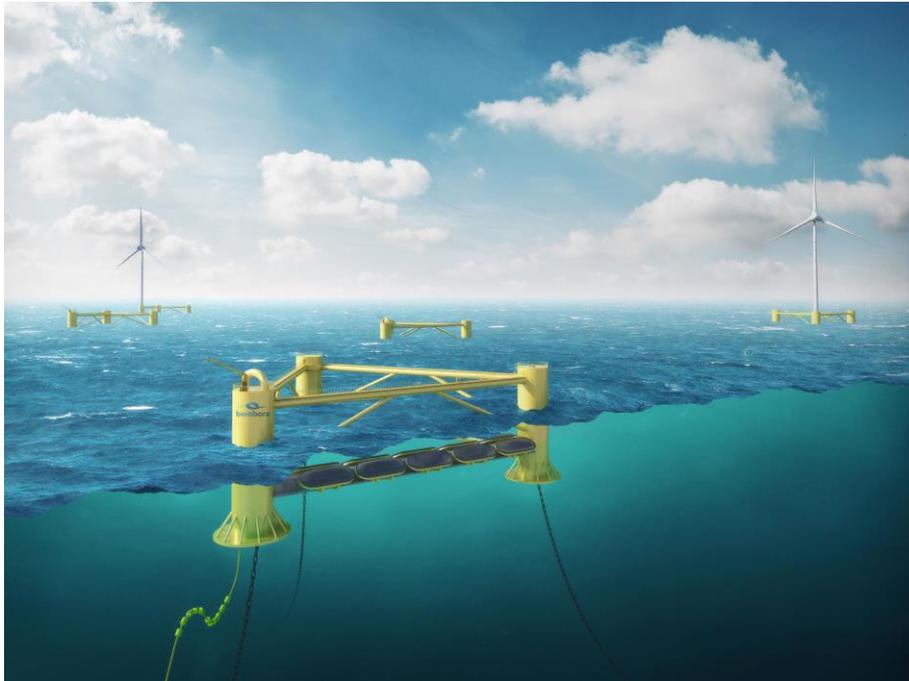
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**Image:** Floating mWave™ co-located or integrated with Floating Wind Turbines to optimise seabed lease area utilisation, maximise marine energy generation capacity and reduce the cost of energy.



**Notes to editor:**

**About Bombora and mWave™**

- Bombora has developed a membrane style wave energy converter called 'mWave™'. Located 10 meters beneath the ocean's surface, mWave is similar to a fully submerged reef. As ocean waves pass over mWave, the membranes deflect, pumping air through a turbine to generate electricity. Electricity is directly transferred to shore via a submerged cable.
- mWave is unique among wave energy converters as it simultaneously addresses the 'cost of energy' and 'ocean wave survivability' challenges whilst delivering a utility scale solution.

- mWave can be located in both nearshore and offshore sites with good wave resources to generate sustainable clean energy.
- Bombora is currently completing the **1.5MW mWave Pembrokeshire Demonstration Project** in Wales part funded by £13.4 million European Regional Development Fund (ERDF) through the Welsh Government.
- Bombora is working with global EPCI contractor TechnipFMC on the **InSPIRE** project to develop a floating offshore wind foundation incorporating Bombora's mWave.
  - o **Phase 1: 12MW Demonstrator** - Integrated mWave (4MW) and wind turbine (8MW) on a shared floating platform. Targeting European demo site.
  - o **Phase 2: 18MW Pre-Commercial** - Integrated mWave (6MW) and wind turbine (12MW) on a shared floating platform.
- The TechnipFMC and Bombora partnership marries strong marine offshore engineering heritage with ground breaking multi-MW mWave technology.
- Bombora is progressing further opportunities in Lanzarote, Japan, Ireland and Australia.  
[www.bomborawave.com](http://www.bomborawave.com)

#### **About Mitsui O.S.K. Lines, Ltd. (MOL)**

- Mitsui O.S.K. Lines, Ltd. (MOL), as a global marine transport group, operates a global fleet exceeding 700 vessels, including tankers, bulkers, car carriers, ferries, which also extends to offshore projects.
- MOL made "environmental Vision 2030" in April 2017, however, newly established the "MOLGROUP Environmental Vision 2.0" in June 2020 which clarifies our commitment to achieve sustainable 2Net Zero GHG Emissions" through collective efforts with all capabilities.
- MOL has identified five important themes for the Sustainability Issue of "Marine and global environmental conservation," which are "Prevention of marine pollution," "Promotion of measures to mitigate climate change," "Reduction of air pollution," "Response to environmental regulations," and "Realization of transport means with low environmental burden."

#### **Wave energy**

- Ocean energy has the potential to deliver 300 GW of wave and tidal energy by 2050, saving 500 million tonnes of CO2, and creating 680,000 direct jobs on a world-wide basis (OES International Vision Report).