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NEDO Green Innovation Fund Project (R&D for floating offshore wind farm and hybrid mooring systems): Demonstration project for hybrid mooring systems

Japan Marine Untied Corporation (JMU) will begin a demonstration project off the coast of Akita-city and Katagami-city, Akita Prefecture in relation to the hybrid mooring systems for floating offshore wind power systems.



A scale model, which was fabricated based on the JMU original design, will be installed off the coast of Akita-city and Katagami-city, and moored by hybrid mooring systems, which are formed by combinations of steel chain and fiber rope. Robustness assessment for mooring systems, methodology for designing mooring systems and its constructability will be validated. Please refer to the “Outline of demonstration project” below for the details.

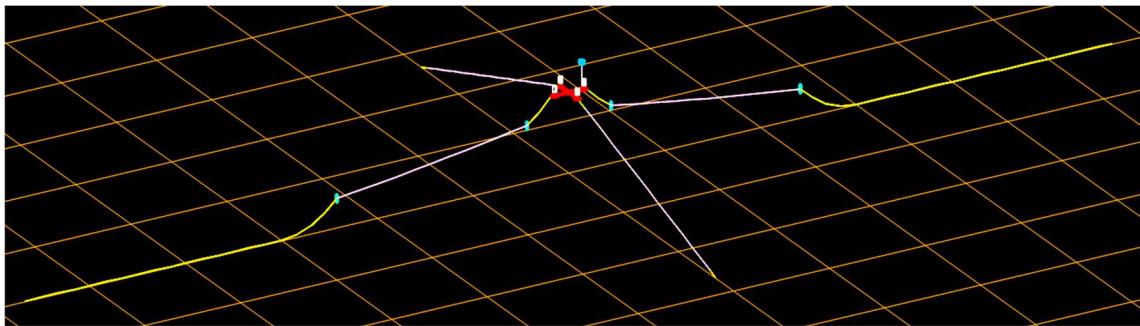
The Japanese government has accelerated the clean energy strategy to achieve decarbonization in order to meet carbon neutrality by 2050 and expand the introduction of renewable energy as much as possible. The expectations for the floating offshore wind power, in particular, is enormous in terms of the feasibility of large-scale introduction and cost reduction as well as the anticipated economic ripple effect. As such, floating offshore wind power generation holds the key to making renewal energy a main source of power.

In January 2022, JMU, as a consortium with Nihon Shipyard Co., Ltd (NSY), K-Line Wind Service Ltd. (KWS), and TOA Corporation (TOA), was adopted as a New Energy and Industrial Technology Development Organization (NEDO) Green Innovation Fund project for reducing the cost of offshore wind power generation. This demonstration project, which is one of the R&D to be performed by the said four companies' consortium, will be jointly proceeded with National Institute of Marine, Port and Aviation Technology under the funding.

After intense discussion with administrative members of Akita Prefecture, Akita Fisheries Cooperative Associations and etc. since the JMU consortium's adoption of NEDO Green Innovation Fund project in January 2021, JMU has finally got the permission for the utilization of sea areas. Such discussion was cooperatively proceeded with Venti Japan Inc. (Venti) under the cooperative agreement for the expansion of floating offshore wind power business made between JMU and Venti in April 2020. We would like to express our gratitude for all the persons who supported us to realize this demonstration project.

Outline of demonstration project

Development of low-cost mooring systems is one of the area of concerns for the expansion of floating offshore wind turbines. JMU seeks the ways to reduce the mooring cost in terms of hybrid mooring systems, which are formed by combinations of steel chain and fiber rope.



On the other hand, technical challenges in hybrid mooring systems still exist as an important issue to be solved in that its robustness assessment for medium and long term is insufficient, and the design analysis methodology is not completely established.

At this demonstration project, hybrid mooring systems, which are the combination of two mooring systems (i.e. taut and catenary mooring) shall be examined. The purpose is to assess creep rate, fatigue characteristics, wear resistance and marine growth effect of each mooring systems and to realize the hybrid mooring systems based on the feedback of the result. A scale model will be installed off the coast in September 2022 and the one-year project will be commenced thereafter.

Through this demonstration project, JMU will contribute to environmental protection and social development by promoting expansion of renewable energy in terms of the realization of floating offshore wind systems and carbon neutral.