



POWER **TEPCO**

K **"K" LINE**
KAWASAKI KISEN KAISHA, LTD.



Sumitomo Heavy Industries
Marine & Engineering Co., Ltd.

Press Release

September 11, 2024

Albatross Technology Inc.

Electric Power Development Co., Ltd.

Tokyo Electric Power Company Holdings, Inc.

Kawasaki Kisen Kaisha, Ltd.

Sumitomo Heavy Industries Marine & Engineering Co., Ltd.

Consortium selected for NEDO's next-generation floating offshore wind power technology development project

Feasibility study on a large-scale floating vertical axis wind turbine

A consortium of five companies—Albatross Technology Inc. (Albatross), Electric Power Development Co., Ltd. (J-POWER), Tokyo Electric Power Company Holdings, Inc. (TEPCO HD), Kawasaki Kisen Kaisha, Ltd. ("K" LINE), and Sumitomo Heavy Industries Marine & Engineering Co., Ltd. (wholly owned by Sumitomo Heavy Industries, Ltd., SHI-ME)—has been selected to conduct a feasibility study on large-scale floating vertical axis wind turbines as part of the New Energy and Industrial Technology Development Organization's (NEDO) public call for projects to develop next-generation technologies that help promote the adoption of floating offshore wind power.

As Japan pushes to make renewable energy a primary power source, expectations for offshore wind power are high. Given the limited shallow coastal waters around Japan, there is a pressing need to commercialize floating offshore wind technology.

This feasibility study aims to verify the viability of large-scale commercial vertical axis (floating axis) wind turbines, where both the turbine and floating foundation rotate together, as a game-changing next-generation technology for floating offshore wind turbines. The consortium will conduct design work toward obtaining basic design approval. Large-scale vertical axis wind turbines can achieve efficiency comparable to conventional (horizontal axis) wind turbines, while also enabling the use of smaller and more cost-effective floating structures. Furthermore,

as they can be produced using nearly the same design regardless of differences in water depth or seabed conditions, it is expected that mass deployment will also lead to cost reductions.

Leveraging each company's respective expertise, the five companies will collaborate on developing floating axis wind turbines, aiming to establish offshore wind power as a primary energy source and contribute to the realization of a carbon-neutral society.

Reference: Press release dated May 30, 2023

“Joint Research Agreement Signed for Next Generation (Floating Axis) Small-scale Offshore Wind Turbine Demonstration Project”

https://www.jpowers.co.jp/english/news_release/pdf/news230530e.pdf



Image of a floating axis wind turbine (FAWT) wind farm

Company Role

Name	Role
Albatross	-Overall system design for floating axis wind turbines -Design and manufacturing considerations for carbon fiber reinforced materials for the wind turbines -Life cycle cost analysis
J-POWER	-Examination of certification processes for the large-scale floating foundation for floating axis wind turbines -Supply chain analysis and research
TEPCO HD	-Establishment of numerical analysis methods for large-scale turbines
“K” LINE	-Research on cost reduction for installation, maintenance, and operations -Life cycle cost analysis
SHI-ME	-Research on design and production technologies for large-scale turbines

Subcontractors

Fukui Fibertech Co., Ltd.: Development of continuous FRP molding technology

Innovative Composite Materials Research and Development Center (ICC) at Kanazawa

Institute of Technology: Development of continuous FRP assembly technology

GH Craft Ltd.: Design of high-strength, lightweight composite materials

“K” Line Wind Service, Ltd.: Verification of offshore wind-related operations using vessels

Division of Global Architecture, Graduate School of Engineering, Osaka University: Analysis of floating foundation motion characteristics

Chubu University: Lightning protection measures

Graduate School of Engineering, The University of Tokyo: Life cycle assessment of CO₂ emissions and economic efficiency

Institute of Industrial Science, The University of Tokyo: Prediction of marine environmental impacts