Green Innovation Fund Projects
Cost Reductions for Offshore Wind Power Generation

Project Objective ・ Research and Development Items

【Project Objective】
Offshore wind power generation is regarded as a key solution for making renewable energy a main power source, as it enables large-scale deployment and cost reduction while also offering expected economic ripple effects.
This project aims to achieve early cost reduction for offshore wind power—particularly floating systems—by leveraging knowledge gained from previous demonstration projects and to promote expanded adoption.

【Research and Development Items】
There are six research and development items being pursued under 'Cost Reductions for Offshore Wind Power Generation.'

Phase1-(1) Technology development project for next-generation wind turbines
Phase1-(2) Technology development project for basic manufacturing and installation cost reduction for floating wind turbines
Phase1-(3) Technology development project for offshore wind power-related electrical systems
Phase1-(4) Innovative offshore wind power operation and maintenance project
Phase1-(5) Development of common basic technologies
Phase2 Floating offshore wind turbine demonstration project

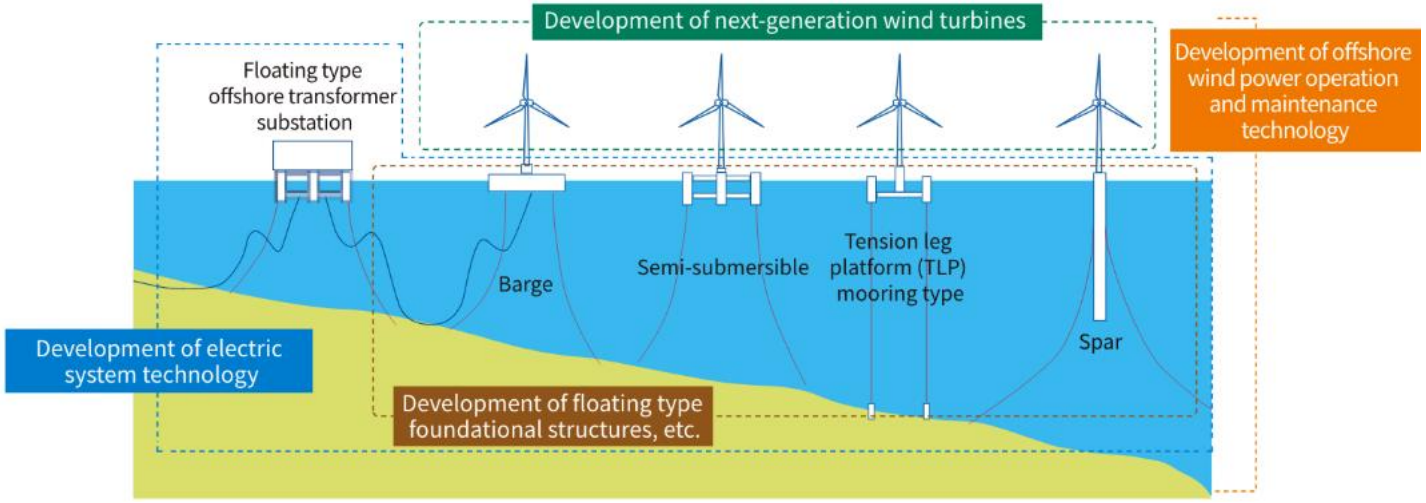

Image of technology development for floating type offshore wind power

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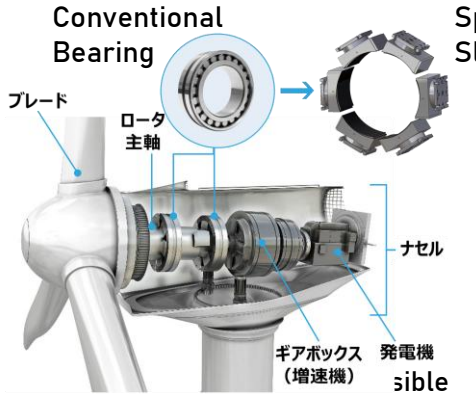
Cost Reductions for Offshore Wind Power Generation Phase1-(1) Technology development project for next-generation wind turbines

Current Research and Development Themes

Development of plain bearings for wind turbine main shafts

Project Operators: : DAIDO METAL CO., LTD.

We are developing a split-type sliding bearing (pad bearing) that overcomes the challenges of conventional bearings, enabling future large-scale offshore wind turbines. By designing a structure that allows bearing replacement within the nacelle, we aim to reduce the cost of bearing disassembly and replacement during maintenance and shorten the work period, thereby improving equipment operating rates and reducing power generation costs.



Floating Structure

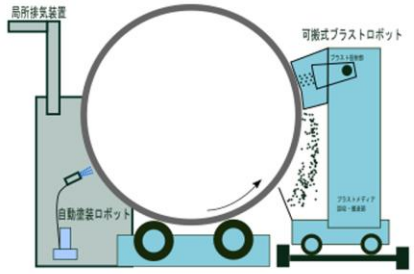
Development and demonstration of advanced technology for high-performance manufacturing of offshore wind turbine towers

Project Operators : KOMAIHALTEC Inc.

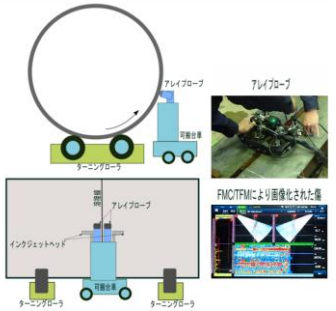
To reduce the production cost of offshore wind turbine towers, we are developing and demonstrating rationalized production technologies, aiming to establish efficient manufacturing methods for offshore wind towers and build a low-cost production system.

The rationalized production technologies consist of the following three items:

- Development of a rationalized welding system
- Development of a coating and blasting robot application system
- Development of a non-destructive inspection system utilizin



Coating and Blasting Robot



AI-Based Non-Destructive Inspection System

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Cost Reductions for Offshore Wind Power Generation
Phase1-(5) Development of common basic technologies

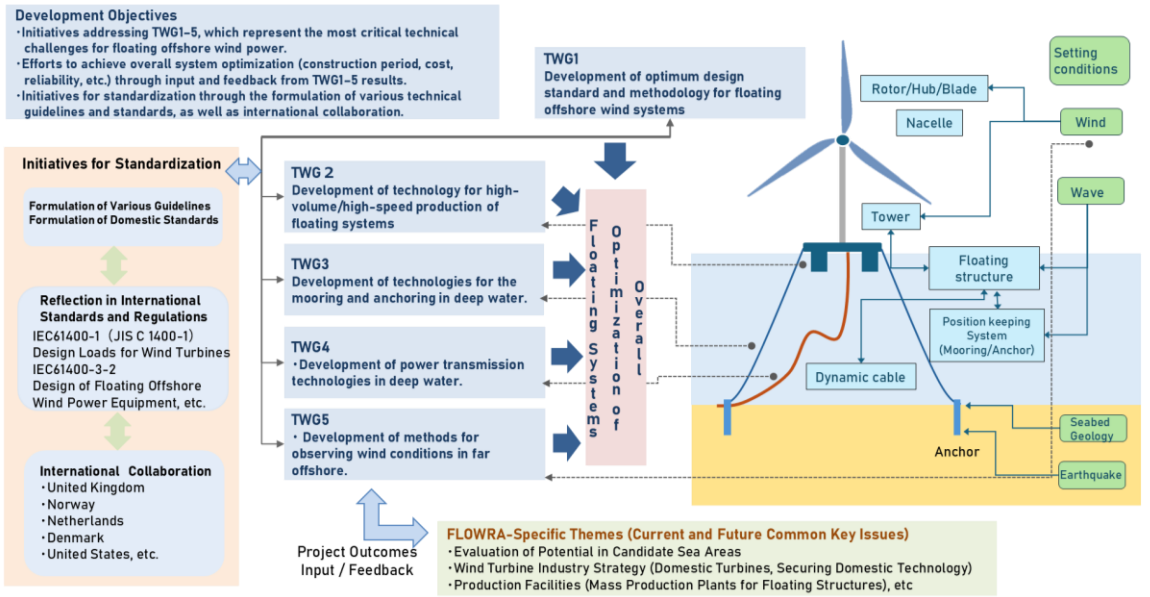
Current Research and Development Themes

Research and Development of the Double-Donut Spar-Type Floating Offshore Wind Power Generation System

Project Operators: : Kumagai Gumi Co., Ltd., Saga University, Yokohama National University, Chodai Co., Ltd.

To establish technologies that enable the commercialization of floating offshore wind power at an internationally competitive cost level under certain conditions, we will work on the following five R&D items that contribute to optimal design of the entire floating system, mass production, and deployment in deep waters:

1. Development of optimal design standards and standardization for floating systems Building a common foundation that contributes to overall optimization of floating systems.
2. Development of technologies for mass and high-speed production of floating systems Developing common foundational technologies necessary to produce 150–200 units annually in Japan.
3. Development of mooring and anchor installation technologies for deep waters Creating common foundational technologies required to economically and efficiently implement mooring systems and anchor installation for GW-scale wind farms.
4. Development of power transmission technologies for deep waters Developing transmission technologies adapted to deep waters, essential for commercializing floating systems at internationally competitive prices.
5. Development of offshore wind condition observation methods Establishing low-cost, highly reliable wind condition observation methods for harsh meteorological and ocean conditions in offshore areas where floating systems will be installed.



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Cost Reductions for Offshore Wind Power Generation
Phase2 Demonstration Operations for Floating Offshore Wind Power Generation System

Current Research and Development Themes

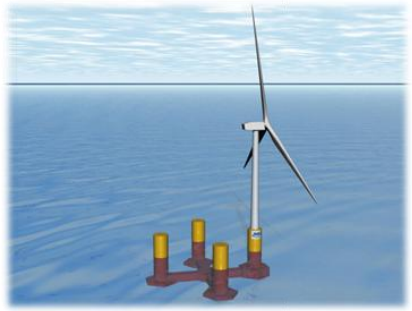
1. The Southern Akita Floating Offshore Wind Demonstration Project Aimed at Overseas Expansion via Cost Reductions

Project Operators: : Marubeni Offshore Wind Development Corporation, Tohoku Electric Power Co., Inc., Akita Floating Offshore Wind LLC, Japan Marine United Corporation, TOA CORPORATION, Tokyo Seiko Rope Mfg. Co., Ltd., Kanden Plant Corporation, JFE Engineering Corporation, NAKANIHON AIR Co., Ltd.

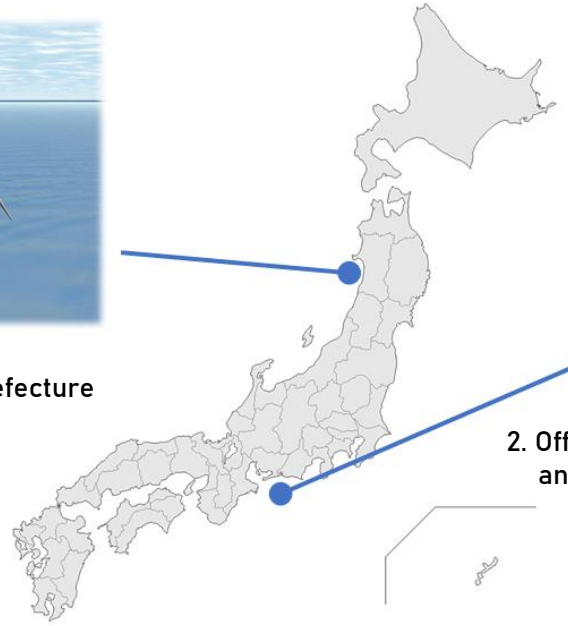
2. Demonstration Operations for Floating Offshore Wind Power Generation System off the Coast of Aichi Prefecture

Project Operators: : C-Tech Corporation, Kanadevia Corporation, KAJIMA CORPORATION, Hokutaku Co., Ltd., Mitsui O.S.K. Lines, Ltd.

While incorporating the elemental technology developments implemented in GI Fund Phase 1, we will carry out a floating offshore wind demonstration project in actual sea areas using large wind turbines (12–15 MW).



1. Offshore Area in Southern Akita Prefecture



2. Offshore Area of Tahara City and Toyohashi City, Aichi Prefecture

Planned Wind Turbine Construction Sites

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