

Special Feature:  
GX Initiatives

## Offshore Wind Power Initiatives

## 》Start of the full scale construction for the Kitakyushu Hibikinada Offshore Wind Power Project (port area)

The Kitakyushu Hibikinada Offshore Wind Farm Construction Project is a large-scale offshore wind farm construction project to install 25 wind turbines (9.6 MW class) and generate approximately 220 MW of output on an approximately 2,700 ha site located in the port area of the Kitakyushu Hibikinada district. We signed an EPCI<sup>\*1</sup> contract for marine construction and other works ([1] offshore civil engineering works such as foundation work for wind turbines, installation of wind turbines, cable laying, etc., [2] construction of O&M<sup>\*2</sup> base port), and started the construction in March 2023. (project developer: Hibiki Wind Energy Co. Ltd.)

\*1 Acronym for Engineering, Procurement, Construction, and Installation \*2 O&M: Operation & Maintenance



- (1) Wind turbine foundation and marine works  
In charge of marine civil works, including foundations and installation of 25 bottom-fixed-type wind turbines

## Contractor

Penta-Ocean Construction Co., Ltd. and  
Nippon Steel Engineering JV

- (2) O&M base port construction  
Establishment of a base port for the operation and maintenance of the wind farm

## Contractor

Penta-Ocean Construction Co., Ltd. and  
Wakachiku Construction JV

Project outline  
(Source: Hibiki Wind Energy Co., Ltd. website)



CP-16001  
Our second large offshore installation vessel  
(equipped with a 1,600t lifting capacity crane)



CP-16001  
Our second large  
offshore installation vessel  
(equipped with a 1,600t  
lifting capacity crane)



CP-8001  
Japan's first offshore installation vessel  
(equipped with an 800t lifting capacity crane)



CP-5001: Multi-purpose self-propelled crane vessel



O&M base port completed



ZEB-certified site office



## » A Japanese Offshore Wind Power Construction Leader

In Japan, aiming for the achievement of carbon neutrality by 2050, the Japanese government has set targets for the development of 10 GW of offshore wind power by 2030 and 30-45 GW by 2040. Offshore wind power is expected to increase its supply capacity as a major source of renewable energy, and in this context, the entire country is witnessing a surge in momentum for offshore wind construction.

In this business environment, we aim to become the “front runner in the offshore wind construction”, and are actively working to establish a system to meet the growing demands for offshore wind power facilities.

### Capital investment - POC plans to own three offshore installation vessels, including one under construction, in cooperation with other companies.

- **CP-8001 (equipped with an 800t lifting capacity crane) (in operation since March 2019)**

Shipowner: Penta-Ocean Construction Co. Ltd.

We have accumulated experience in port construction, offshore wind turbine removal (Hibikinada, Kitakyushu), underwater geotechnical surveys, etc., and accumulated expertise in operating offshore installation vessel ahead of peer companies

- **CP-16001 (equipped with a 1,600t lifting capacity crane) (in operation since November 2023)**

Shipowner: PKY Marine Co. Ltd. (joint venture between POC, Kajima Corporation and Yorigami Maritime Construction)

- **Our third offshore installation vessel (equipped with a 1,600t lifting capacity crane) (scheduled to start operation in 2026)**

Upgrading a foreign-flagged offshore installation vessel to mount a 1,600t lifting capacity crane and reflag it into a Japan-flagged vessel  
Shipowner: Japan Offshore Marine Co. Ltd.

- **Plans for the construction of offshore wind power work vessels**

- A heavy lift vessel HLV<sup>\*1</sup> (self-propelled, and equipped with a 5,000t class crane) \* Scheduled to be completed in FY 3/28
- A cable laying vessel CLV<sup>\*2</sup> (self-propelled, with a total cable-carrying capacity of 9,000 tons) \* Scheduled to be completed in FY 3/28
- Turbine component carrier, and service operation vessel SOV<sup>\*3</sup> (under consideration)

\*1 Heavy Lift Vessel \*2 Cable Laying Vessel \*3 Service Operation Vessel

- **Construction of new Muroran Factory**

- Fabricates temporary steel structures required for offshore wind power construction
- A “100% renewable energy factory” that uses renewable energy sources to power the entire factory

#### Japan Offshore Marine Co. Ltd.

A Japan-based joint venture between Penta-Ocean Construction and DEME Offshore (Belgium) formed to collaborate on the construction of wind turbine foundations and installation of wind turbines for offshore wind power projects in Japan.

#### Investment ratio

Penta-Ocean Construction	51%
DEME Offshore	49%



### Alliances

- **Collaboration with DEME Offshore**

DEME Offshore, with a leading track record, technology and know-how in the field of offshore wind power construction in Europe, and POC, with abundant experience and technical know-how in offshore civil engineering work under the severe metocean conditions in Japan, collaborate to overcome the severe construction conditions unique to Japan and to realize safe and reliable construction.

- **Collaboration with “K” Line Wind Service, Ltd. (KWS)**

- Operations such as conversion of foreign-flag offshore installation vessels that will be owned by our subsidiary JOM to Japan-flag vessels, as well as subsequent operations, maintenance, and management of crew members
- Utilization of KWS-owned offshore support vessels  
Utilization of “KAIKO” as a towing vessel for CP-8001, etc.  
Utilization of other vessels such as “AKATSUKI”
- Consideration of collaboration for SOV, etc. necessary for maintenance after starting operation

### Efforts in Floating Offshore Wind Power Generation

- **Establishment of a specialized division**

The Floating Project Division was established within the Offshore Wind Construction Business Divisions Group in April 2023, with the aim of conducting research on construction technologies including the review of rational and efficient construction methods for floating offshore wind power facilities and promoting technical sales activities for floating offshore wind power projects, etc.

- **Proposal of offshore platforms (offshore wind turbine assembly bases)**

In the name of the Japan Dredging and Reclamation Engineering Association, we engage in research and development in cooperation with related ministries, agencies, and private companies to promote the widespread use of floating offshore wind power facilities, including proposals of the work base construction to the government (offshore platforms) that will significantly increase the construction capacity of floating offshore wind power facility construction.

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## ZEB Initiatives

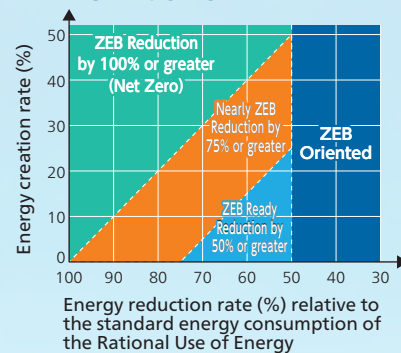
## 》ZEB (Net Zero Energy Building) Track Records

POC's Institute of Technology continues to develop energy-saving technologies for the promotion of conversion to ZEB. Energy monitoring of buildings after the completion of construction with energy-saving technologies has confirmed that ZEB features have been achieved, proving its effectiveness.

## POC's major achievement in ZEB construction

ZEB rank	Project Name	Energy saving rate	Energy creation rate	Energy conservation rate
ZEB	Hisamitsu Pharmaceutical Museum (2019)	65%	38%	103%
Nearly ZEB	EXEO Group, Inc. South Kanto Branch (2021)	50%	25%	75%
ZEB	POC Muroran Factory (2022)	65%	360%	425%
ZEB Ready	GLP Okinawa Urasoe Anshin General Distribution Center (2022)	51%	0%	51%
ZEB Ready	Landport Fukuoka Hisayama I (2023)	50%	0%	50%
ZEB	Hulic Logistics Kashiwa (2023)	64%	105%	169%

## Definition of ZEB



(Based on materials compiled by the ZEB Roadmap Follow-up Committee in FY 3/19)



Hisamitsu Pharmaceutical Museum



EXEO Group, Inc. South Kanto Branch



Landport Fukuoka Hisayama I

## POC Muroran Factory

ZEB

The new Muroran factory was completed in 2022. With its ZEB-converted offices, all the facilities including the factory is powered by renewable energy sources. In addition to the existing business of fabricating steel structures for bridges, etc., the new factory will play a more significant role as a fabricating hub for temporary steel structures for offshore wind power construction, which is expected to have high demand in the future.

At the new factory which runs on 100% renewable energy, we will accumulate knowledge on the use of hydrogen energy through the use of by-product hydrogen and the production and use of green hydrogen generated from solar power, and apply this knowledge to our businesses.

## ▶ Energy-saving technology applied to the offices of the new factory

- Improvement of thermal insulation through the use of resin sashes
- Reduction of lighting load through the use of light-collecting films
- Introduction of high-efficiency air-conditioning units tailored for cold climates, etc.
- Air conditioning control using motion sensors, etc

High energy savings

Energy reduction rate: 65%

## ▶ Energy-creating equipment installed at the new factory

- Photovoltaic power generation system (670 kW output)
- Hydrogen fuel cells (30 kW output)

A large amount of power generation throughout the year

## ▶ Use and demonstration of hydrogen energy

- Use of two types of hydrogen: green hydrogen and by-product hydrogen
- Green hydrogen: Hydrogen produced through a water electrolysis system using solar power generation electricity is stored in hydrogen storage alloys, and used in fuel cells to generate electricity.

By-product hydrogen: Hydrogen produced as a by-product at a plant in Hokkaido is stored in hydrogen tanks, and used in fuel cells to generate electricity.



New Muroran Factory

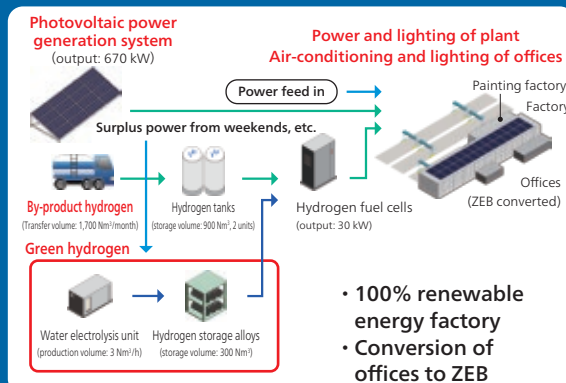


Diagram of energy use at the new factory