Special Feature: GX initiatives

Offshore Wind Power Initiatives

Completion of the Wind Turbine Installation Work 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*1 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*2 base port), and started the construction in March 2023. (project developer: Hibiki Wind Energy Co., Ltd.).
On August 31, 2025, installation of the 25th wind turbine installation work was completed.

*1 EPCI: 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)


Wind turbine installation work (CP-16001)


Departure from the base port (CP16001)


Completed O&M base port

A Japanese Offshore Wind Construction Leader

In Japan, aiming for the achievement of carbon neutrality by 2050, the Japanese government has set targets for the development of 10GW of offshore wind power by 2030 and 30-45GW 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.

Construction of Large Work Vessels (HLV, CLV) for Offshore Wind Construction, Expansion of Work Vessel Lineup

Heavy Lift Vessel (HLV)

With the increasing size of wind turbines, the weight of monopile foundations has grown, making foundation installation difficult using offshore installation vessels. To safely and efficiently install large monopile foundations for 15MW–20MW class turbines, we are constructing one of the world’s largest self-propelled Heavy Lift Vessels (HLV) equipped with a fully rotating crane with a 5,000t lifting capacity, based on a new concept.

HLV Overview

Main Dimensions	: Length 218.4 m, Width 57.4 m
Foundation Design	: Ulstein Design & Solution (Netherlands)
Hull Construction	: Seatrium Group (Singapore)
Cranes and others	: Huisman Equipment (Netherlands)
Ownership Structure	: POC (50%), Fuyo General Lease Co., Ltd. (50%)
Construction Cost	: ¥120 billion (POC’s share: ¥60 billion)
Completion & Delivery	: Scheduled for May 2028

Cable Laying Vessel (CLV)

To expand our operations from wind turbine construction to power cable laying, and with an eye toward future offshore wind development within Japan’s Exclusive Economic Zone (EEZ), we are constructing one of the world’s largest and most advanced self-propelled Cable Laying Vessels (CLV). This CLV will be equipped with two 5,000-ton carousels (cable tanks), a state-of-the-art trencher (burial machine), and a work-class ROV. It will be capable of handling not only bottom-fixed offshore wind installations, but also floating offshore wind projects and subsea direct current power transmission cable laying.

CLV Overview

Main Dimensions	: Length 150 m, Width 32.2 m
Foundation Design	: Salt Ship Design (Norway)
Hull Construction	: PaxOcean Group (Singapore)
Ownership Structure	: POC (50%), Fuyo General Lease Co., Ltd. (50%)
Construction Cost	: ¥31 billion (POC’s share: ¥15.5 billion)
Completion & Delivery	: Scheduled for February 2028

Overview of Trencher and Work ROV

Procurement Sources	: SMD (UK)
Ownership Structure	: POC 65%, Kojima Corporation 35%
Construction Cost	: ¥5.5 billion (POC’s share: ¥3.5 billion)

Offshore Installation Vessels			Scour Protection & Work Support Vessel
CP-8001	CP-16001	Sea Challenger	CP-5001
 Completed in 2018	 Completed in 2023	 Scheduled for modification completion in 2026	 Completed in 2012
Non-self-propelled (800t lift) / Owned by POC	Non-self-propelled (1,600t lift) / Owned by PKY*3	Self-propelled (1,600t lift) / Owned by JOM*4	Self-propelled (500t lift) / Owned by POC

*3: PKY Marine (a joint venture of Penta-Ocean Construction, Kajima Corporation, and Yorigami Maritime Construction)
*4: Japan Offshore Marine (a joint venture of Penta-Ocean Construction and DEME Offshore)

Special Feature: GX initiatives

ZEB Initiatives

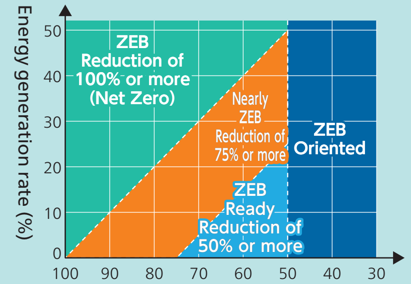
ZEB (Net Zero Energy Building) Performance

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 achievements 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%
ZEB	CP Kasei Co., Ltd. Metropolitan Area Molding Factory (2024)	80%	20%	100%

Definition of ZEB



(Created based on FY 3/19 ZEB Roadmap Follow-up Committee summary materials)

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

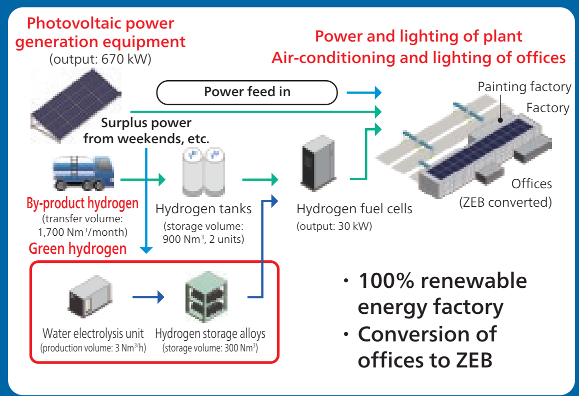


Diagram of energy use at the new factory

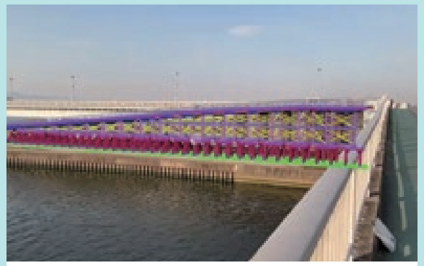
Special Feature: DX initiatives

Utilization of ICT and Initiatives for Improving Productivity

Domestic Civil Engineering: Utilization of AR, VR, and ICT (Yodogawa Weir Gate Improvement Project)

This project started as a "project to promote and implement construction DX using the latest digital technology," and promoted the use of DX in various scenes by fully utilizing AR (augmented reality) and VR (virtual reality) technologies in construction DX. In addition, together with the client (Kinki Regional Development Bureau), we created a PR video summarizing DX and ICT utilization examples and communicated the appeal of the construction industry to society.

▲ Reference link Kinki Regional Development Bureau Youtube video (Japanese)



Activity Example 1

To change the originally planned river-based approach to a land-based approach, augmented reality (AR) technology was used during discussions with the client regarding slope installation. This enabled smooth sharing of visual concepts and helped shorten the time required to reach consensus.

Activity Example 2

During in-river construction in the flood season, when formulating evacuation plans for equipment and materials in the event of typhoons or heavy rain, vehicle movements were simulated using a 4D model. This helped streamline the development of evacuation plans and improve the efficiency of information sharing.

Activity Example 3

By converting the BIM/CIM model, reflecting the actual placement of equipment and materials, into a VR environment, operators and workers can virtually experience potential contact hazards during crane operations. This enhances hazard prediction efforts and helps prevent accidents.

Domestic Building Construction: Improvement of Construction Productivity by Promoting the Use of Precast Concrete (Tsukishima 3-chome Redevelopment)

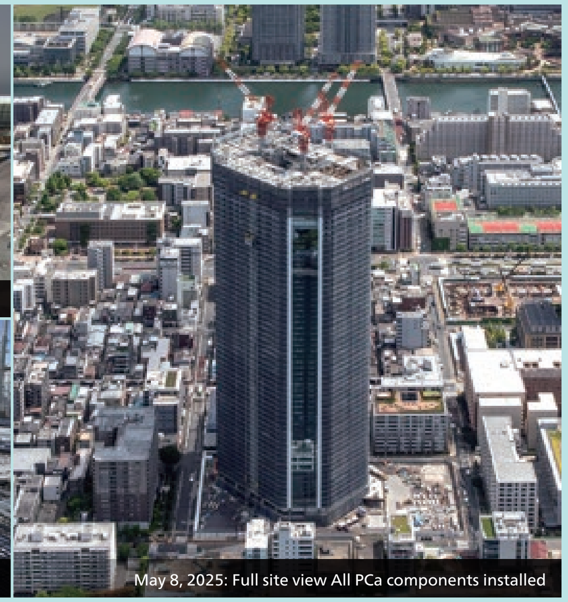
In this project, which is the largest scale domestic building, the semi top-down method was adopted, allowing underground construction while using the first floor slab around the high-rise building as a work platform, and the SQRIM/LVR method*1, which fully precasts columns and beams and does not provide cast-in-place concrete at the joints, was adopted, resulting in a significant reduction in construction period (achieving a four-day cycle per floor for the high-rise building). In addition, by utilizing various DX and ICT tools, we streamlined construction management operations and realized work style reforms, achieving eight site closures every four weeks in FY 3/25.

*1: Patented construction method by Sumitomo Mitsui Construction and Obayashi Corporation

Installation of precast concrete underway at the first-floor slab level

Installation of a precast concrete beam

Installation of a precast concrete column



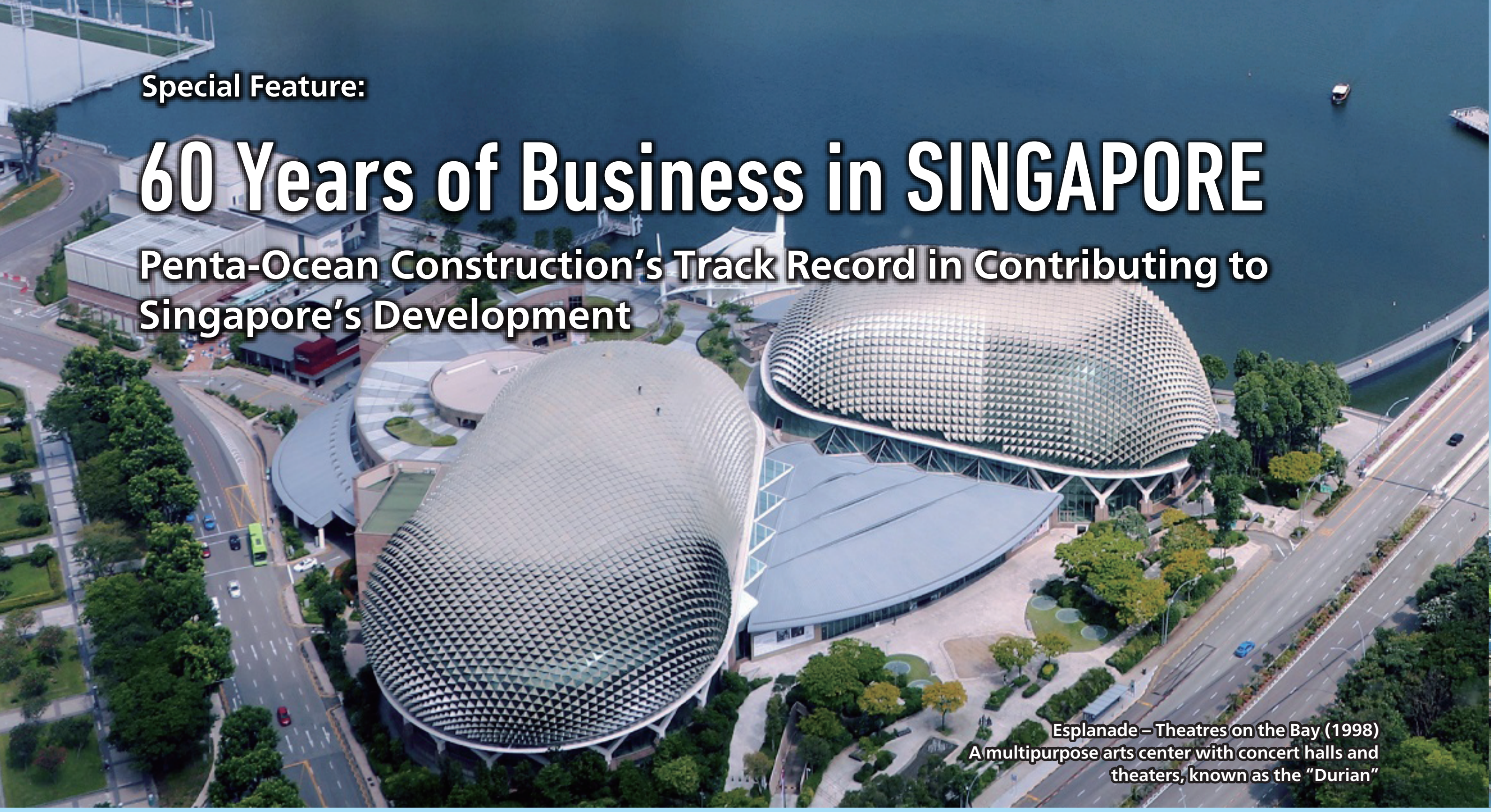
May 8, 2025: Full site view All PCa components installed

Management Philosophy and Vision
Value Creation Strategy
Sustainability Management Base
Environment
Society
Governance
Data Section

Special Feature:

60 Years of Business in SINGAPORE

Penta-Ocean Construction's Track Record in Contributing to Singapore's Development



Esplanade – Theatres on the Bay (1998)
A multipurpose arts center with concert halls and theaters, known as the "Durian"

ArtScience Museum (2007)
A Marina Bay landmark constructed with a lotus flower motif

ION Orchard and the Orchard Residences 2006
A 218m-tall mixed-use facility, the tallest constructed by POC, built above an MRT station

Sim Lim Square Building
1983
The first large-scale commercial facility awarded to us in Singapore

Wheelock Place
1991
Mixed-use facility designed by Kisho Kurokawa

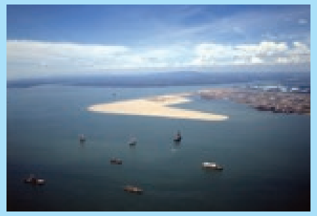
VIVO CITY
2003
Mixed-use commercial facility designed by Toyo Ito

Mount Elizabeth Novena Hospital
2010
The first large-scale medical facility awarded to us in Singapore

Sengkang General Hospital
2014
Our largest-ever building construction contract

Jurong Shipyard dock and quay
1964
Our first project in Singapore

Changi International Airport Land Reclamation
1976
The largest reclamation project in Southeast Asia at the time

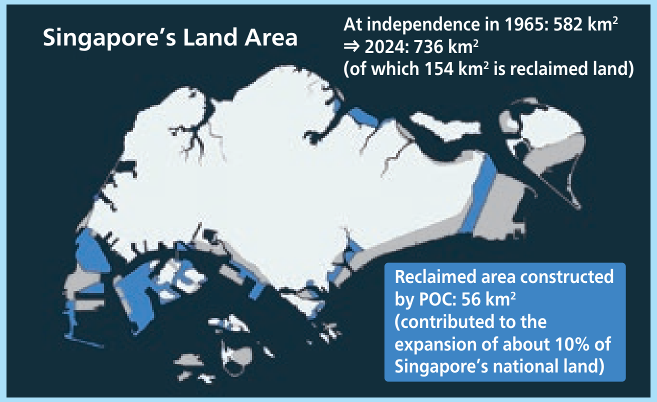


Tuas Reclamation Project
1984
World's largest-scale reclamation project at approximately ¥70 billion

Jurong Phase 2 / Tuas Reclamation (1996)
Jurong Phase 3 3B Reclamation 1998
Jurong Phase 4 / Tuas Reclamation 2000
Consecutive Orders for Large-Scale Reclamation Projects

Pasir Panjang Container Terminal Phases 3 & 4 Reclamation 2007
Container terminal construction project awarded following Phase 1

Tuas Finger One reclamation project
2014
First large-scale port reclamation project for the development of a next-generation container terminal

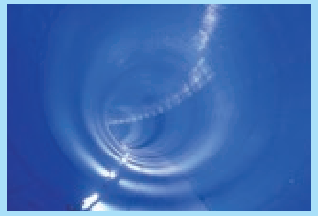


MRT Yew Tee Station, Kranji Station
1993
The first railway construction project awarded to us in Singapore

Deep Tunnel Sewerage System (DTSS)
1999
First long-distance shield tunneling project overseas

Marina District Expressway Section 485
2008
Singapore's first undersea tunnel located in the center of the Bay Area

Thomson-East Coast Line Subway T219 Section 2014
Construction of tunnels, waiting areas, and subway connecting passages adjacent to Orchard Station



Deep Tunnel Sewerage System Phase 2 (DTSS2) (2017)
Shield tunneling project using POC's proprietary sulfuric acid-resistant concrete (a 100-year service life) for secondary lining

Construction of Polder at Area A and C of Pulau Tekong
2018
The first polder construction project ever awarded in Singapore (approx. 810ha)

The self-propelled dredger Andromeda V (commissioned in 1999)

1964: POC Singapore office established 1965: Republic of Singapore gained independence

2015: The headquarters functions of the International Business Unit was relocated to Singapore

Early Period (Prime Minister: Lee Kuan Yew 1959–1990)

- Large-scale supply of public housing (HDB)
- Port development and promotion of Changi International Airport construction
- Securing water resources

Growth Period (Prime Minister: Goh Chok Tong 1990–2004)

- Government support for the promotion of arts and sports
- Development of high-quality living conditions and enhancement of leisure activities
- Securing industrial land and development of transportation and communication infrastructure

Development Period (Prime Minister: Lee Hsien Loong 2004–2024)

- Response to an aging society
- Acceleration of smart cities (improving accessibility and efficiency of public transportation)
- Expansion of airports and ports

Present (Prime Minister: Lawrence Wong 2024–)

- Development of new residential areas and revitalization of existing ones
- Expansion of green infrastructure and climate-adaptive urban planning
- Expansion of MRT and railway networks and development of integrated community hubs