

IHI REPORT

Interim Report for 202nd Fiscal Year

April 1, 2018 to September 30, 2018

By maintaining a sense of urgency and accelerating our initiatives for reform, we will strive to achieve the targets set out in Group Management Policies 2016.



Tsugio Mitsuoka

President and Chief Executive Officer

IHI Corporation

Taking a look back over the first six months ended September 30, 2018, how was IHI's performance during the period?

Fiscal 2018 is the year in which we put the finishing touches to our implementation of Group Management Policies 2016, the core theme of which was “strengthening the earnings foundations.” The most important step we have taken is to adopt comprehensive risk management measures to prevent the deterioration of profitability on large projects, and we have worked to generate stable profits and restore the trust of stakeholders, including shareholders. In addition, fiscal 2018 is the “First year for change,” in which we move speedily to overcome discontinuous and drastic changes in the business environment and work to transform the business structures and business models.

In the first six months ended September 30, 2018, not only did profitability improve in the Boiler Business, but also the deterioration of profitability in large projects

in North America in the Process plants Business, which recorded large losses in the previous fiscal year, is being brought under control. This is the fruit of work done to strengthen project implementation and risk management structures. Moreover, business structural reforms also drove improvements in profitability, and every business area was in the black at the operating profit level.

In particular, with reference to the business structural reforms, directly below myself in the organization we have established a specialized team that works across the IHI Group as a whole to allocate human resources as appropriate to areas of growth and high profitability, thus promoting the transformation to a lean and flexible corporate structure. Nevertheless, from the perspective of overall optimization we are far from being satisfied, and we will continue to drive this transformation further going forward.

What is the outlook for achieving the targets set in Group Management Policies 2016?

We have not revised forecasts of consolidated results for fiscal 2018 since the beginning of the fiscal year. The forecasts for operating profit incorporates the impact of a range of risks, such as not being able to achieve various improvements, or changes in the external environment. In addition, our exchange rate assumption is ¥105 to the U.S. dollar, an appreciation of ¥10, compared to when we set the target three years ago. We have established plans for each of the four business areas to get them to the level of operating margin that corresponds to the target, and we are moving forward with the business on that basis.

Our goal is to securely deliver the 5.7% operating margin in the forecasts, with the entire IHI Group working on various initiatives that would help us to exceed this level.

●Earnings Highlights		(Billions of yen)
Items	Six months ended September 30, 2018	FY2018 Full-year forecast
Orders received	649.3	1,500.0
Net sales	699.5	1,500.0
Operating profit	45.2	85.0
Ordinary profit	49.1	65.0
Profit attributable to owners of parent	28.4	32.0

Please share your ideas on the issues, and the medium- to long-term initiatives, that are occupying your thoughts at the moment.

The forecasts for this fiscal year for Aero Engine, Space and Defense Business, which has been the main driver of profitability for the IHI Group as a whole over the past several years, are projecting a decline in profits compared with the previous year. The primary factor behind that is rising output of the new PW1100G-JM engine, which is in the early stage of mass production. We are strengthening initiatives to reduce costs ahead of schedule, and working to mitigate the impact on earnings for the business as a whole.

Furthermore, in the Resources, Energy and Environment Business, which is subject to major changes in the external environment, we are focusing management resources away from businesses where marketing conditions are stagnant and towards maintenance areas, which are expected to be highly profitable, while implementing initiatives aimed at overall optimization.

The business environment in which the IHI

Group operates is changing rapidly and drastically, as can be seen by the shift to reduced use of carbon or decarbonization, the switch to electric vehicles and innovation in the area of IoT technology. We cannot yet say that the business structural reforms and the transformation of our business model have fully caught up with these trends. We must maintain a sense of urgency and further accelerate our efforts to transform the corporate structure.

Currently, we are going through repeated discussions over the specific measures we should take in the next medium-term management plan, and we should be in a position to explain this to shareholders next spring. The four business areas that were established in April 2017 freed the organization from the restrictions of fragmented management at the business unit level. Going forward, I would like the IHI Group to confront social issues head on and show a path to resolving them so that it can form the details showing the future direction of the IHI Group's management. I express my heartfelt gratitude to all IHI shareholders, and hope to count on their invaluable support going forward.

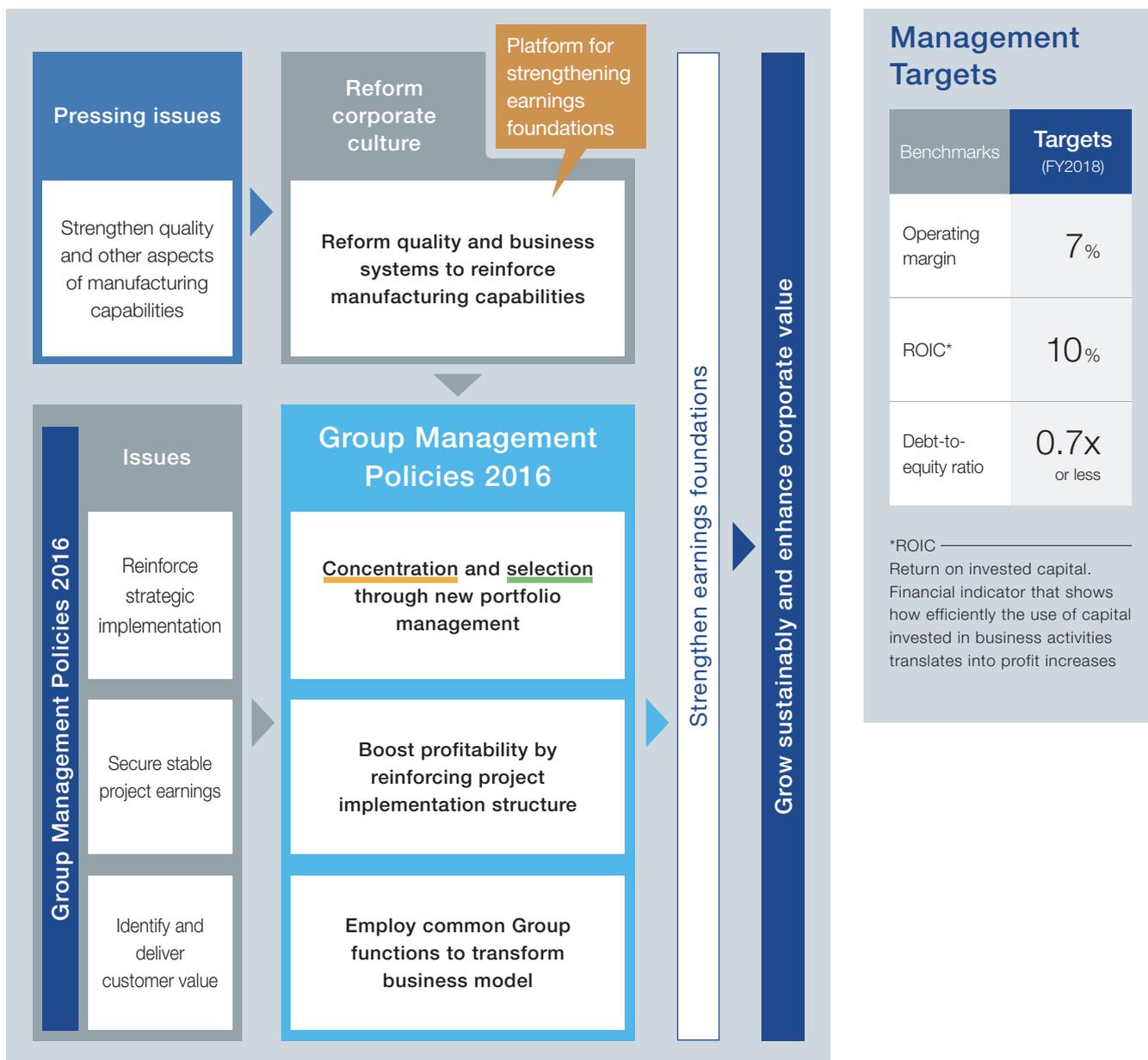
Interim Dividend

¥30 per share

We have set the interim dividend for the six months ended September 30, 2018, at ¥30 per share.

© We plan to pay a dividend of ¥30 per share as a year-end dividend for the fiscal year ending March 31, 2019.

Overview of Group Management Policies 2016



Review of Group Management Policies 2016

	Results	Issues
Boost profitability by reinforcing project implementation structure	<ul style="list-style-type: none"> · Built a screening process to ensure the selection of good quality orders · Swiftly identified and tackled project implementation risks · Resolved downswings in current large projects 	<ul style="list-style-type: none"> · Identifying and addressing risks at early stages · Reinforcing global and local procurement capabilities · Strengthening project process management
Employ common Group functions to transform business model	<ul style="list-style-type: none"> · Harnessed IoT and deployed new business models 	<ul style="list-style-type: none"> · Proposing solutions that create additional customer value · Shifting away from focus on equipment supply business
Concentration and selection through new portfolio management	<ul style="list-style-type: none"> · Concentrated human resources on priority and highly profitable businesses by introducing the business area framework 	<ul style="list-style-type: none"> · Accelerating business structural reforms to address major changes in the business climate

Progress of concentration and selection through new portfolio management

- Reforming business structure to bolster profitability under the business area framework
- For businesses with viability concerns (strategic business units designated for rehabilitation and reorganization), made progress in formulating structural reform plans under implementation to rehabilitate and reorganize

Concentration		Overview
Parking		IHI Transport Machinery Co., Ltd., established a joint venture company to operate a mechanical parking business in China with Qingdao Huatong Energy Investment Co., Ltd. and Qingdao Huatong Science & Industry Investment Co., Ltd., two affiliates of the Qingdao Huatong State-owned Capital Operation (Group) Co., Ltd.
Rocket systems		IHI Aerospace Co., Ltd., Canon Electronics, Inc., Shimizu Corporation, and the Development Bank of Japan Inc. jointly established Space One Co., Ltd., to launch small rockets.
Shield systems		JIM Technology Corporation acquired 51% of the shares of Terratec Ltd. of Hong Kong to enhance its global competitiveness in shield tunneling machinery.

Selection		Overview
F-LNG and offshore structures		Aichi Works, a key production site for F-LNG and offshore structures production, completed project order and ends its manufacturing role.
Small power systems		IHI Agri-Tech Corporation plans to sell small engine business to U.S.-based Caterpillar Inc. (scheduled in December 2018)
Environmental response systems		IHI Enviro Corporation plans to sell waste process facilities-related and other businesses to Kobelco Eco-Solutions Co., Ltd. (scheduled in January 2019)



Resources, Energy and Environment

Completion of the handover of Cove Point LNG facility in the United States

In May 2018, IHI E&C International Corporation, an IHI's group company, completed a liquefied natural gas (LNG) facility for U.S. power generation and gas company, Dominion and handed it over to that company.

This was based on the Cove Point LNG project implemented as a joint venture with Kiewit Energy Company, a major U.S. construction organization. This was the first liquid natural gas plant that the IHI Group had tackled, and, after overcoming some challenging implementation issues related to construction, it was completed more or less by the deadline.

This facility has a liquefaction capacity of 5.25 million tons per annum, and will provide Japan and other Asian countries with low-priced LNG, derived from shale gas produced in the U.S.

The IHI Group will put the experience and know-how it has accumulated during this project to use in other projects.



Aerial photo of the LNG facility



Washington, D.C.
Cove Point LNG terminal (Lusby, Maryland)



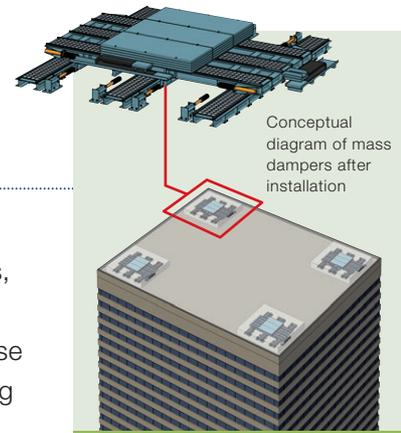
Social Infrastructure and Offshore Facilities

Lighter, more compact mass dampers for long-period ground motion developed and launched

In response to the growing demand over the past several years for measures to combat long-period ground motion in high-rise buildings, IHI's group company IHI Infrastructure Systems Co., Ltd. has led the world in developing, and putting on sale, mass dampers that make use of linear motors to reduce weight and size, while dramatically reducing the oscillation of buildings during earthquakes.

The mass dampers are expected to cut the amplitude of building oscillation by around 40% during long-period earthquakes, and reduce the period for which the building oscillates after a tremor by about 80%. The special features of the mass dampers are that, by extending the range of motion of the weight by utilizing linear motors, we were able to reduce its mass and improve its responsiveness to oscillations, and that it can operate even during power outages due to it being equipped with a high-capacity battery.

Going forward we will actively propose the fitting of the mass dampers to both new and existing buildings, thus contributing to the safety and security of society.

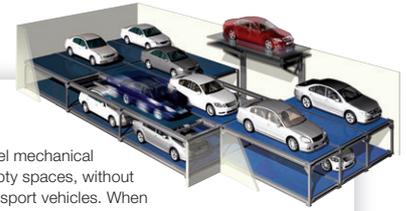


Conceptual diagram of mass dampers after installation



Industrial Systems and
General-Purpose Machinery

Development of the parking business



Super Square Parking

This is a horizontally elongated rotary carousel mechanical parking structure. This uses a number of empty spaces, without pallets, to allow pallets to be moved and transport vehicles. When retrieving a vehicle, the shortest path is calculated using a proprietary algorithm. This results in reduced vehicle retrieval times.

IHI's group company IHI Transport Machinery Co., Ltd. (IUK), a leading company in the field of parking systems, is accelerating the expansion of its parking business both in Japan and overseas, offering parking facilities such as mechanical and self-driving systems.

In Japan, IUK is actively moving ahead with acquisitions in order to expand its service and maintenance business for mechanical tower parking equipment. In China, which is chronically under-supplied with parking facilities, IUK and local companies have established Qingdao IHI-HT Mechanical Parking System Co., Ltd. as a joint venture company for the mechanical parking business. The joint venture company will offer as its main model the super square parking structure that offers excellent space efficiency and which does not exist in China, and work to steadily capture demand.

In addition, as part of our initiatives related to next-generation urban planning, IUK is conducting joint research with Keio University to enable parking of vehicles equipped with automated driving systems in self-driving parking facilities.

Going forward, we will continue to provide optimal solutions to our customers by leveraging the technology and know-how we have nurtured, thus maintaining our position as a vital presence in the development of a comfortable vehicle society.



Aero Engine, Space and
Defense

New production base for civil aero engines

IHI has acquired an industrial site in Tsurugashima-city, Saitama, for the construction of a new production base for civil aero engines, to facilitate the further expansion of the rapidly growing civil aero engine business.

For the new plant, IHI will introduce new technologies such as IoT and AI for use in an advanced manufacturing for aircraft engines. By generating synergies with the business operations of the existing Mizuho Aero-Engine Works, IHI will build a production system with world-class efficiency, providing an integrated aircraft engine service. In addition, by leveraging the superior access to the airport via the expressways that are close by, IHI will be able to provide high-quality engine services with shorter times to completion to airline companies, both in Japan and overseas.

In addition to contributing to the development of the regional economy through the effective use of this new base, going forward IHI will continue to provide a range of aircraft engines with superior environmental performance, and to support the reliable, safe and comfortable operation of aircraft throughout the world.



Image of the new factory

Preparing for the low-carbon/decarbonized society

The IHI Group aims to assist in the creation of a “recycling-based society” that is not dependent on limited resources by using its low-carbon/decarbonization technology to reduce CO₂ emissions. Here we introduce some of the IHI Group’s initiatives.

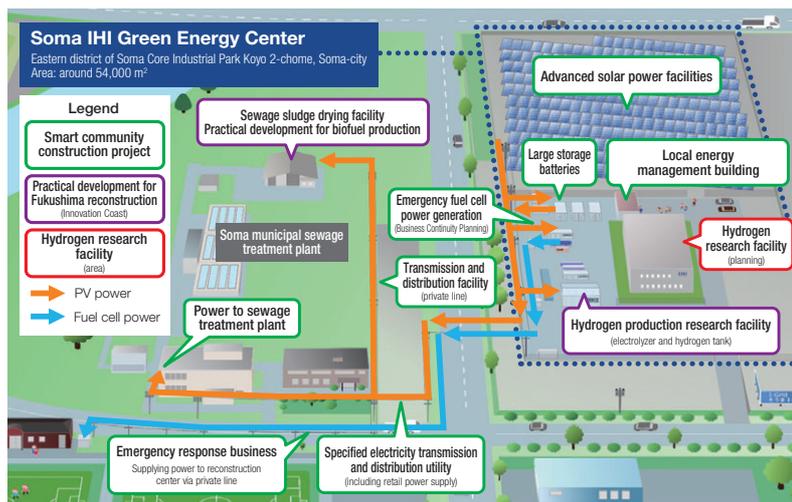
01 Soma IHI Green Energy Center

In Soma-city, Fukushima, IHI has opened the “Soma IHI Green Energy Center” smart community to enable solar power to be both produced and consumed locally, and to help promote and develop the regional economy.

The Center sends photovoltaic power to the sewage treatment plant, with surplus power being used in a demonstration project related to generating and storing hydrogen and in a demonstration project in the sewage treatment plant to reduce the amount of and recycle sludge. The hydrogen thus generated and stored is earmarked for demonstration experiment and other purposes that use hydrogen in the Center in preparation for a future hydrogen-based society.

In addition, the Center is equipped with one of the largest fuel cell power generation facility for BCP use in Japan, with an output of 25 kW, which in the event of a natural disaster is capable of supplying the disaster countermeasures center with electricity for 21 days.

IHI will use this business to enable the local production and consumption of renewable energy, while working to create a new autonomous business model led by the region. The aim is to promote business development in order to assist the planning of new urban areas that can lead to the revitalization of the regional economy, starting with reconstruction of the area affected by the disaster.



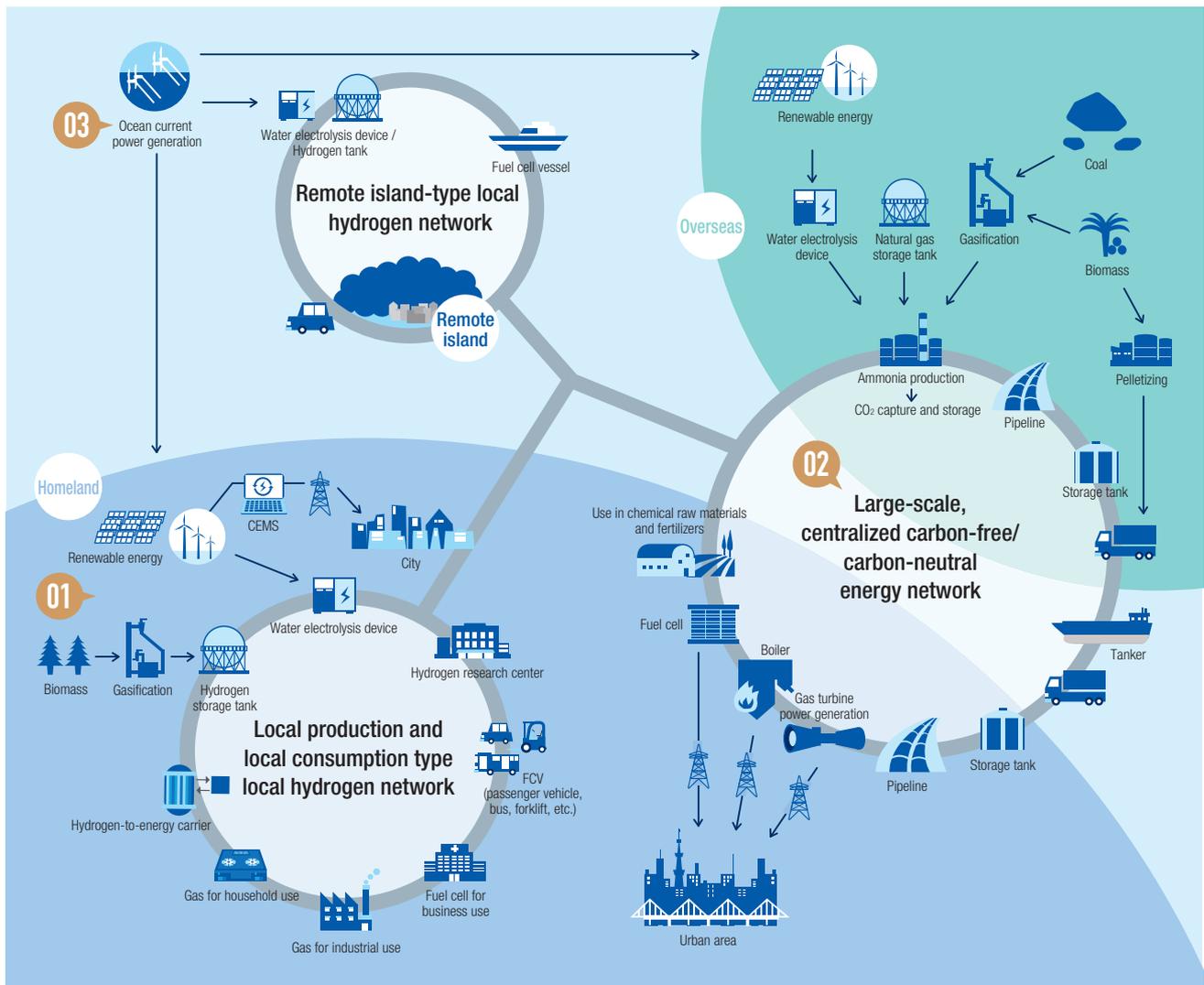
02 Development of power-generation technology using ammonia

Ammonia is a compound of nitrogen and hydrogen, and does not emit CO₂ even when combusted, for which reason it is expected to find use as a clean fuel. However, the technology needed for stable combustion of ammonia has not yet been established.

IHI has developed technology that enables ammonia to be combusted and used as a fuel in power generation. Initially, utilizing a 2,000 kW-class gas turbine, we have carried out experiments demonstrating the first-ever combustion of a mixture of ammonia and natural gas, and established the prospect of practical application. We were also able to jointly combust ammonia and fossil fuels in a boiler, while controlling CO₂ and NO_x emissions.

Furthermore, we have developed a solid oxide fuel cell that extracts electricity from the energy generated by the chemical reaction between hydrogen and oxygen with ammonia used as fuel, and succeeded in generating of electricity of 1 kW.

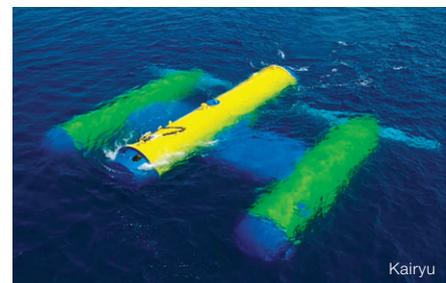
Conceptual diagram of the IHI Group's Carbon-Free/Carbon-Neutral Energy network



00 Kairyu

IHI has carried out surveys of ocean current conditions in the region of the ocean in which Kairyu, the 100 kW class subsea floating-type ocean current power generation system is expected to be used, performed surveys for the connection of the system, made preparations for the demonstration machine and verified its performance. If as a result we succeed in confirming the practicality of Kairyu, we intend to implement a long-term demonstration experiment of at least one year.

Furthermore, we were awarded the “Ship of the Year 2017 Award in the Offshore Structure/Equipment Sector,” which is awarded to vessels constructed in Japan that exhibit superior technological, artistic or social merit.



Kairyu

Low-carbon and decarbonization technologies are also presented in a special feature in the IHI Integrated Report 2018. Please do take a look.

https://www.ihigroup.com/en/ir/ir_library/annual/





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