

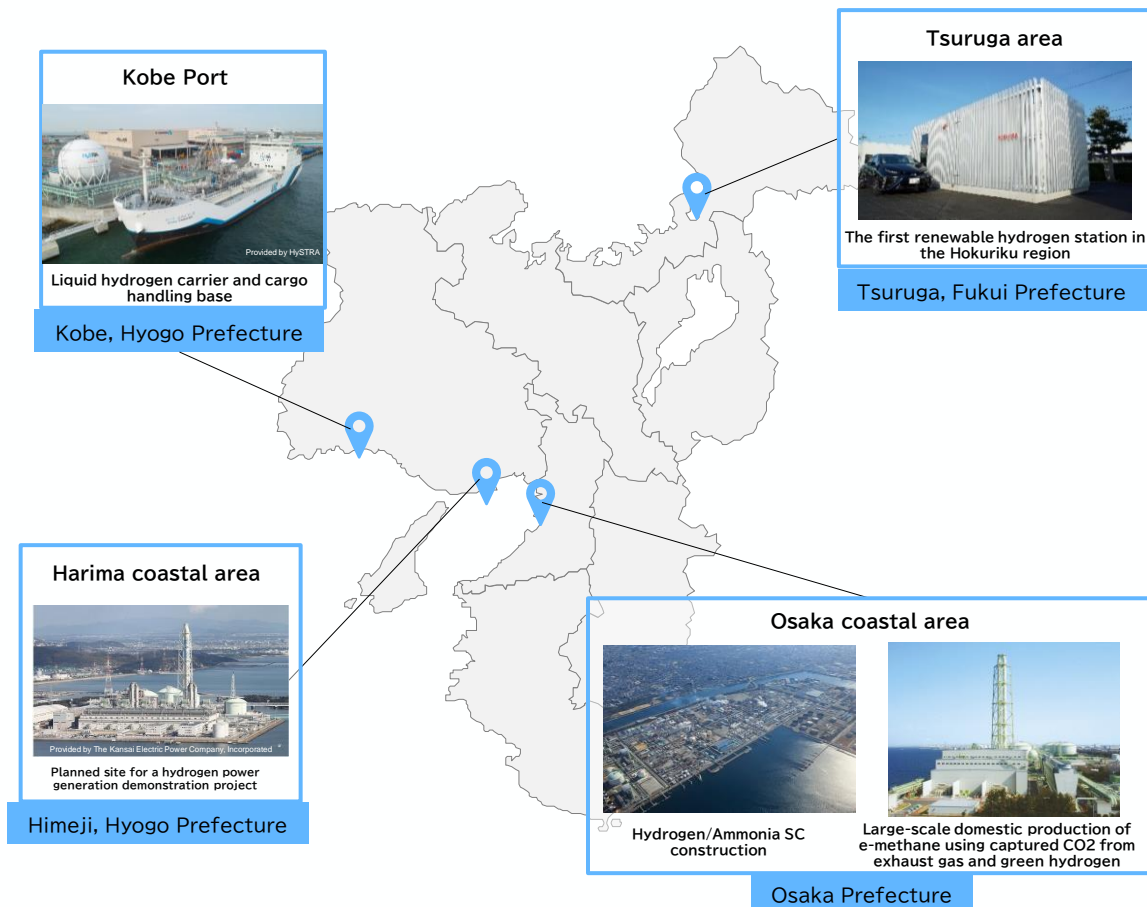
Hydrogen Utilization Promotion Project by METI-Kansai

Carbon Neutrality Promotion Office, METI-Kansai

Green Innovation (Hydrogen)

- Kansai is home to many manufacturing companies, including heavy industries in port areas, and has high potential for the demand and supply of hydrogen.
- Various companies in Kansai are developing technologies in the hydrogen field by using their core technologies and are leading the country in many hydrogen-related demonstration projects.

Port areas in Kansai working toward carbon neutrality



Current projects for public implementation of hydrogen in various parts of Kansai

■ The world's first facility capable of consistently validating technologies from hydrogen production to power generation is now in operation

○Mitsubishi Heavy Industries, Ltd. Takasago City, Hyogo Prefecture
In order to achieve the early commercialization of hydrogen power generation, MHI has established the Takasago Hydrogen Park within its Takasago Machinery Works, where development, design, manufacturing, and validation facilities are located. The park is the world's first facility for consistently validating technologies from hydrogen production to power generation, in which hydrogen production tests and hydrogen power generation tests at a large-scale validation facility are currently conducted.



■ Demonstration of an international liquid hydrogen supply chain model

○Kawasaki Heavy Industries, Ltd. × Iwatani Corporation × Shell Japan Ltd. Kobe City, Hyogo Prefecture
The CO₂-free Hydrogen Energy Supply-chain Technology Research Association (HySTRA) has successfully conducted a technology demonstration using the world's first liquid hydrogen carrier "Suiso Frontier" to transport liquid hydrogen, including hydrogen derived from brown coal, from Australia to Japan, and unload it at the liquid hydrogen cargo handling terminal "Hy touch Kobe" (Kobe City).



■ Japan's first commercial liquid hydrogen production plant

○Hydro Edge Co., Ltd. Sakai City, Osaka Prefecture
Hydro Edge began commercial operation in 2006 as Japan's first commercial liquid hydrogen production plant, contributing to a stable supply of liquid hydrogen in the country. Expansion work was carried out in 2020, and the plant's annual liquid hydrogen production capacity has reached 60 million m³, making it the largest plant of its kind in Japan.



■ Demonstration of RE100 solutions using hydrogen

○Panasonic Corporation Kusatsu City, Shiga Prefecture
Panasonic's H₂ KIBOU FIELD is a demonstration facility for "RE100 solutions", in which aiming to use 100% of the power for site operations generated from renewable resources by using a self-sustaining power system that combines 99.5-kW pure hydrogen fuel cell generators and photovoltaic generators (approx. 570 kW) as well as lithium-ion storage batteries (approx. 1.1 MWh). It has been in operation since April 15, 2022.



■ Hydrogen fuel cell ship in action at Expo 2025 Osaka, Kansai, Japan

○Iwatani Corporation Osaka City, Osaka Prefecture
A hydrogen fuel cell ship runs on hybrid power of electricity generated by fuel cells and plug-in power. It uses only hydrogen and oxygen from the air, and emits zero CO₂ during operation. At Expo 2025 Osaka, Kansai, Japan, the first passenger service on a hydrogen fuel cell ship in Japan is scheduled to operate (from Nakanoshima Gate to Universal City Port to the Expo 2025 venue).



Hydrogen Utilization Promotion Project

- METI-Kansai collaborates with companies, local governments, and research institutions to contribute to the promotion of a hydrogen society.

Events to promote interaction among stakeholders

– We hold events to facilitate business matching among hydrogen-related industries and promote interaction among stakeholders.

- Scene from a previous event



Expansion of the hydrogen-related industry

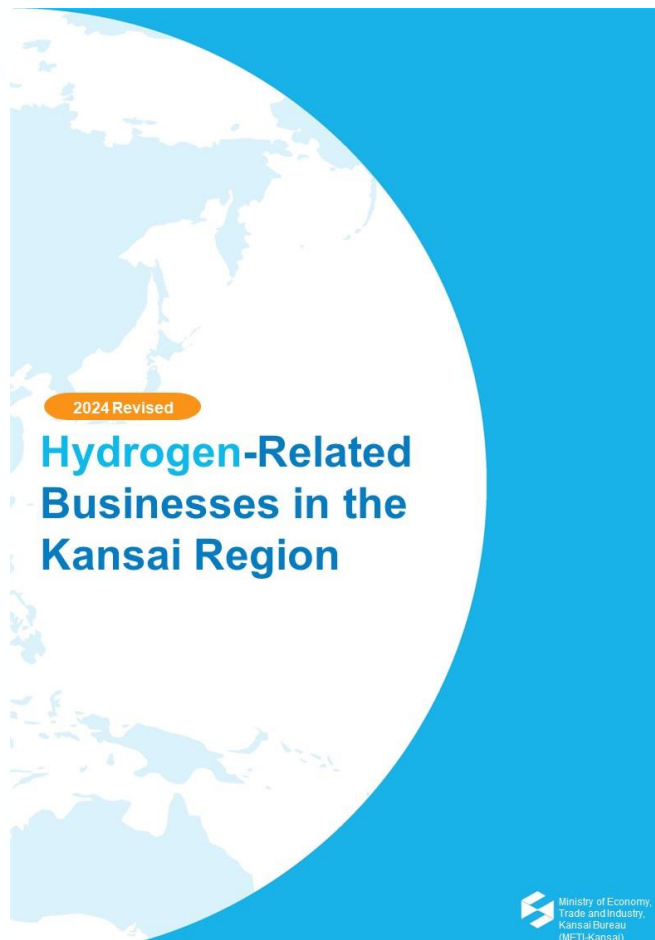
– We collaborate with hydrogen supplier companies and present practical utilization examples in everyday life to foster enthusiasm for the hydrogen-related industry in the Kansai region.

Support for establishing facilities

– We provide information on policies such as the Hydrogen Society Promotion Act to support the establishment of facilities related to the supply and utilization of hydrogen and other resources.

Hydrogen-Related Businesses in the Kansai Region

- METI-Kansai has created and published *Hydrogen-Related Businesses in the Kansai Region*, which introduces an overview of companies based in the Kansai region that are active in the hydrogen sector, as well as the strengths of their technologies and services.



Iwatani Corporation

Take a closer look! Japan's only liquefied hydrogen supplier; Holder of Japan's largest market share in hydrogen

Production **Transport/Storage** **Utilization**

R&D Development of hydrogen-related products
Pilot business
Evaluation project
Commercial facility management

Based on the corporate philosophy "Become a person needed by society, as those needed by society can prosper," we deliver various "gas and energy" needed in everyday lives and industry, with a comprehensive energy business focusing on L.P. gas and an industrial gas and machinery business focusing on oxygen, nitrogen, hydrogen, and helium as our core business operations. In addition, we have positioned environmental and energy challenges that must be addressed and overcome as our important initiatives, and are committed to providing solutions to these challenges by reducing the burden on the environment by promoting the utilization of hydrogen, which will achieve the ultimate form of clean energy.

Technological/Service Strengths

Since we started handling hydrogen in 1941, with the understanding that hydrogen will achieve the ultimate form of clean energy, we have advanced our various efforts toward the utilization of hydrogen. Starting with the construction of Japan's first liquefied hydrogen production plant in Sakai City, Osaka in 2006, we have brought six plants at three bases into operation, and we are now providing a stable supply nationwide as the sole liquefied hydrogen supplier in Japan. In 2014, we introduced Japan's first commercial hydrogen station in Amagasaki City, Hyogo. Currently, hydrogen stations operate in 51 locations (including ones under construction). In addition, in order to contribute to the realization of net zero greenhouse gas emissions by 2050, which the Japanese government has pledged, we are actively working toward early realization of a hydrogen energy-based society by participating in various projects with multiple companies to build a large-scale low-carbon hydrogen supply chain. At Expo 2025 Osaka, Kansai, Japan, we believe that through the operation of hydrogen fuel cell passenger boats (between Hakanshima Galle, Universal City Port, and the Expo site), the first of their kind in Japan, we can have visitors from around the world feel the appeal of hydrogen energy and help promote the Expo.

Delivery records We provide a stable supply of liquefied hydrogen to more than 120 user companies nationwide. In addition, our hydrogen stations now operate in 51 locations (including ones under construction) in Japan, and we are planning to construct hydrogen stations mainly for trucks and other commercial vehicles.

Business plan Toward the realization of a hydrogen energy-based society, we are producing low-carbon hydrogen by utilizing renewable energy overseas. At the same time, by importing large amounts of liquefied hydrogen through the use of a dedicated carrier, we aim to supply liquefied hydrogen for power generation and mobility.

Company profile

Location: 3-4-4, Hommachi, Chuo-ku, Osaka-shi, Osaka 541-0053, Japan
Representative: Hiroshi Majima
Capital: 35,090 million yen
Established: May 5, 1932
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E-mail: Please contact us via our website.
URL: <http://www.iwatani.co.jp>

Department in charge

Department name: Hydrogen Division
TEL: +81-6-7537-3466
E-mail: Please contact us via our website.

Kawasaki Heavy Industries, Ltd.

Take a closer look! Strengths in cryogenic material handling, large-scale structures, high rotational speed machinery, clean combustion, etc.; Possessing technologies for an entire hydrogen supply chain

Production **Transport/Storage** **Utilization**

R&D Development of hydrogen-related products
Pilot business
Evaluation project
Commercial facility management

We are a comprehensive engineering manufacturer engaged in diverse businesses including ships, rolling stock, aircraft, motorcycles, gas turbines, gas engines, industrial plants, hydraulic components, and robotics. Kawasaki Group has established the group vision 2030 "Trustworthy Solutions for the Future" as its vision for 2030. With a focus on three fields in the future: "A Safe and Secure Remotely Connected Society," "Near-Future Mobility," and "Energy and Environmental Solutions," our Group looks to change to a business model that will enable further growth.

Technological/Service Strengths

We are advancing our expertise in technological development from upstream to downstream of the entire supply chain for the "production," "transportation," "storage," and "utilization" of hydrogen aiming for the early realization of a hydrogen-based society. To achieve this objective, with partner companies, we are developing core technologies for the supply chain, starting with producing and liquefying CO₂-free hydrogen (production), followed by loading and unloading liquefied hydrogen between carriers, transporting it by sea on a large scale (transportation), storing it (storage), and generating electricity with gas turbines optimized for the characteristics of hydrogen (utilization), through a NEDO-subsidized project. Once this hydrogen supply chain is put into practical use, not only will it be possible to significantly reduce CO₂ emissions, but it will also be possible to supply a large volume of stable clean energy. Kawasaki Heavy Industries contributes to decarbonization as the world's only company that has the technology for the entire supply chain.

Delivery records Our initiatives for "Hydrogen Road" have led to many achievements, including "developing and distributing Japan's first-ever hydrogen liquefier," "developing and building liquefied hydrogen carriers ahead of the rest of the world and succeeding in demonstrating marine transportation of liquefied hydrogen from Australia," and "developing and distributing the world's first dry low-NiX hydrogen-fueled gas turbine cogeneration system."

Business plan As the largest shareholder in Japan Suiko Energy, Ltd. (JSE), we look to perform a "demonstration for the commercialization of a liquefied hydrogen supply chain" (to determine the feasibility of commercialization including economic efficiency with plant configuration as a minimized system) under the Green Innovation Fund Project to realize "commercialization" of the liquefied hydrogen supply chain in 2030.

Company profile

Location: (Tokyo Head Office) 1-1-4-5, Kojima, Minato-ku, Tokyo 105-8315, Japan
(Osaka Head Office) 1-1-3, Higashi-Kawasaki-cho, Chuo-ku, Kobe-shi, Hyogo 650-8680, Japan
Representative: Yasuhiro Hashimoto
URL: <https://www.khi.co.jp>

Department in charge

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URL: <https://www.khi.co.jp/corporate/contacts/>
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