

CDTI-NEDO online Joint Workshop on Hydrogen Technology
- Green Hydrogen Production & Mobility -



For H2 Society to Come Building Global Supply Chain

Ryuichi HIROTANI

General Manager

Hydrogen Hydrogen Refueling Station

Construction Dept.

Iwatani Corporation



Our Business

Core business "Gas & Energy"



Energy Division

- LPG • Electric power sales and city gas safety service • Gas equipment and lifestyle products
- Portable gas cooking stoves and cassette gas canisters



Industrial Gases & Machinery Division

- Industrial gasses • Gas facilities and industrial machinery



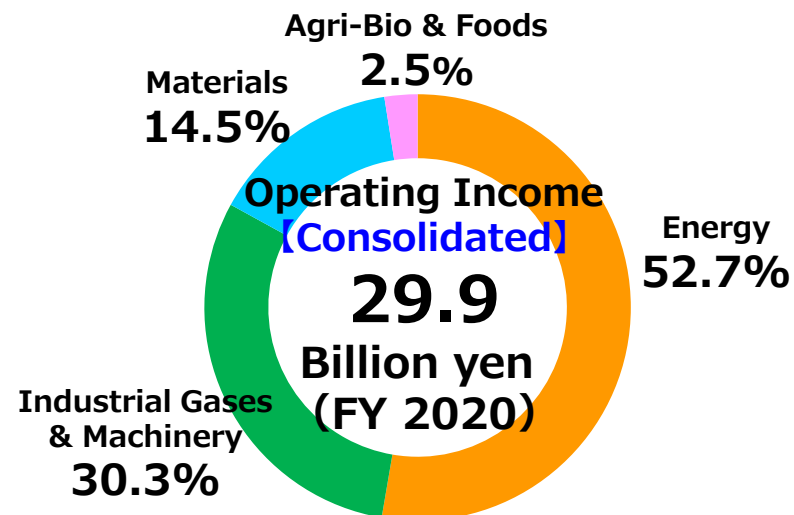
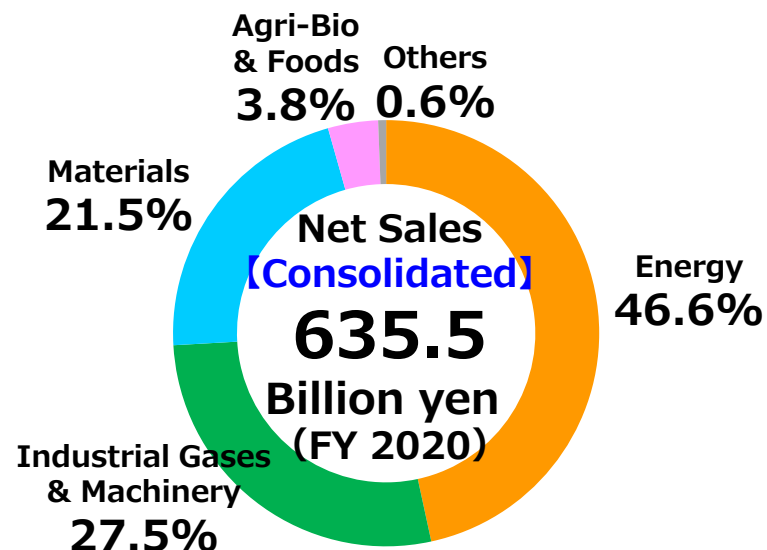
Materials Division

- Functional plastic products
- Resources and advanced materials
- Metals • Electronic Materials



Agri-Bio & Foods Division

- Frozen foods
- Equipment for Agriculture
- Seed pigs and equipment for livestock



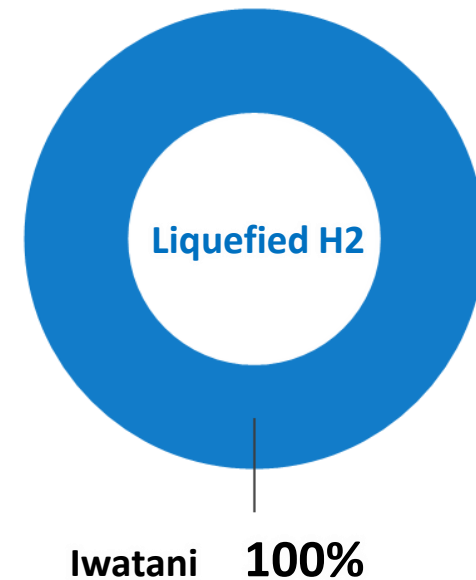
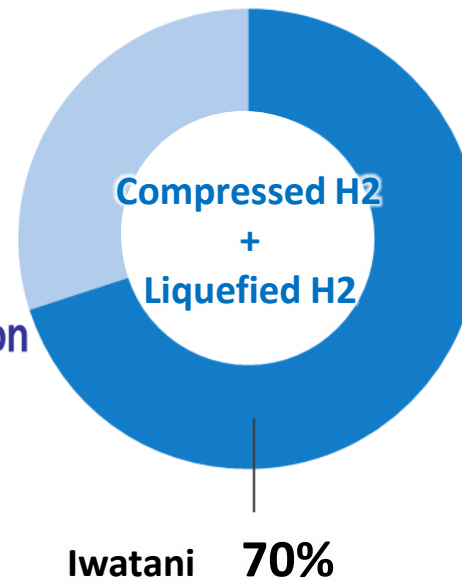
Note) Others and adjustments are excluded.



Our Hydrogen Business

- 1941 Started hydrogen business
- 1958 Established Osaka Hydrogen industries
(Now Iwatani industrial gasses corporation)
- 1978 Constructed Japan's first liquefied
hydrogen commercial plant
- 2006 Launched largest liquefied hydrogen production
plant in Japan "Hydro Edge" in Osaka
- 2014 Opened the country's first commercial
hydrogen refueling station
- 2019 Entered the hydrogen station business in the
United States

Market Share (JAPAN)



80 Year Experience for Safety

Dominant Market Share in Japan



LH2 Supply Chain in Japan

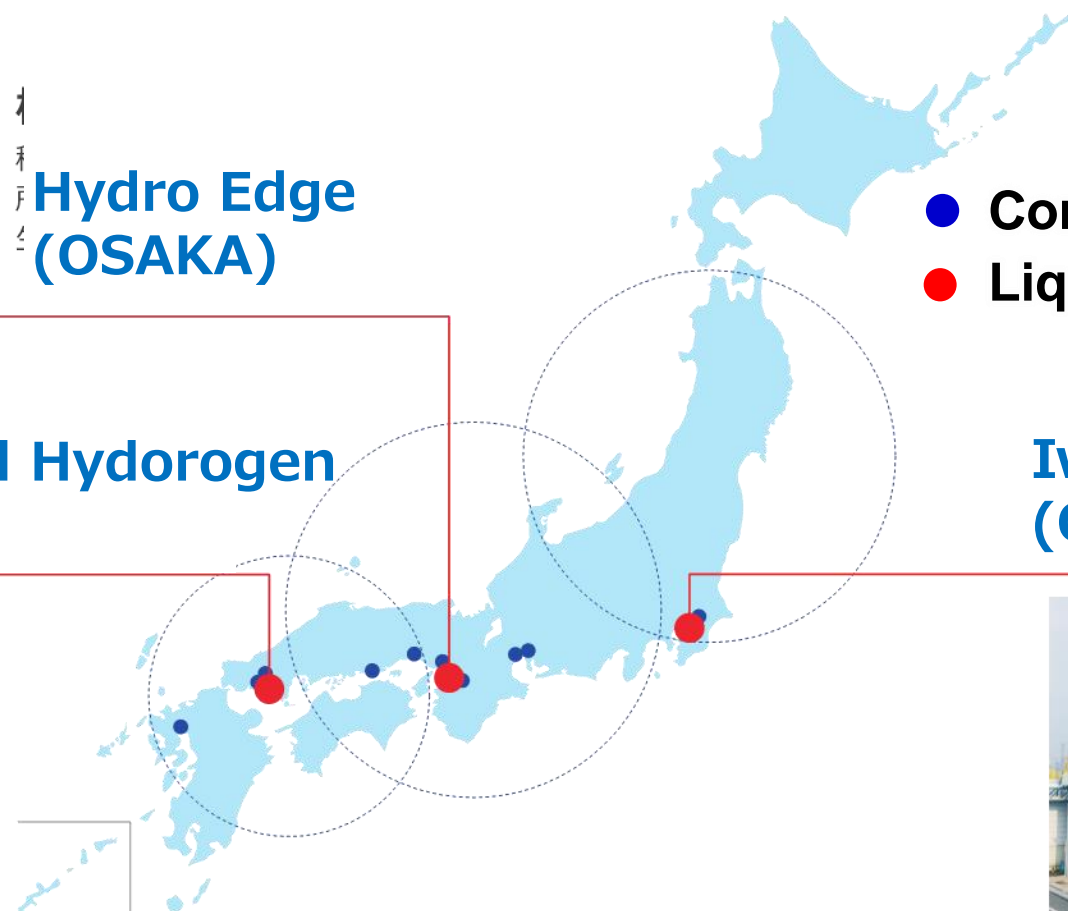
Iwatani has 3 plants of LH2 in Japan.

Total Supply Capacity: **30**ton/d



Hydro Edge
(OSAKA)

Yamaguchi Liquid Hydrogen
(YAMAGUCHI)



- Compressed H2 Plant
- Liquefied H2 Plant

Iwatani Gas Chiba
(CHIBA)





Future Hydrogen Supply Chain

Hydrogen sources

Initiative

Acquire large amounts of inexpensive, CO₂-free hydrogen sources

CO₂-free

New

Overseas

Lignite + CCS

Natural gas+ CCS

Renewable energy

Japan

Renewable energy

Electrolysis using surplus power

Japan

Caustic soda

LNG

Refinement of by-product gases

Reforming / Modification

LH₂



Hydrogen import terminal

Initiative

Shift from production to import/storage functions

New

LH₂ terminals



Provided by Hystra

LH₂ production in Japan



Initiative

Produce hydrogen to adjust surplus energy

Hydrogen use

Initiative

Create hydrogen energy demands

New

Energy conversion at industrial complexes

Power plants (co-firing)



Grobal Supply Chain (HySTRA)

CO₂-free Hydrogen Energy Supply-chain Technology Research Association

Aiming for commercialization in 2030



**Brown
Coal**

LH2+CCS

**LH2
Vessel**

**LH2
Terminal**

In Australia

Transportation

In Japan





Grobal Supply Chain (HySTRA)

■ Demonstration for LH2 Carrier and Storage

LH2 Carrier



提供:川崎重工業

LH2 Storage (Kobe Airport Island)



提供:HySTRA

	Ship	Tank
Demonstration	1,250kL/ship	2,500kL/tank
Commercialization	40,000kL×4tanks/ship	50,000kL×4tanks

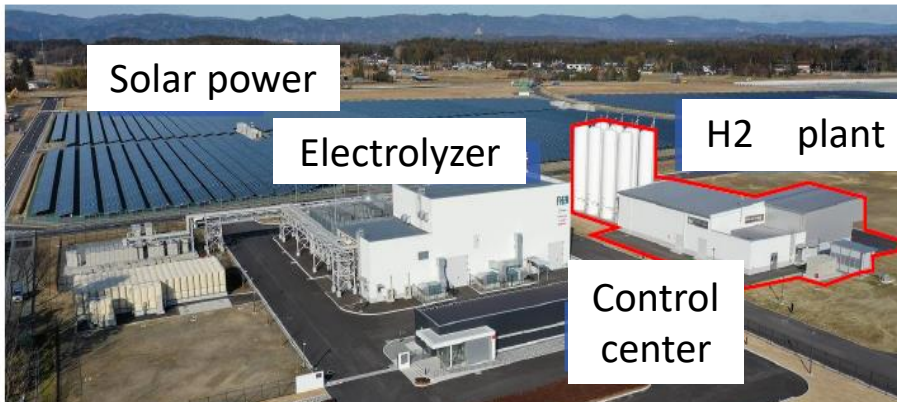


Grobal Supply Chain (Domestic Source)

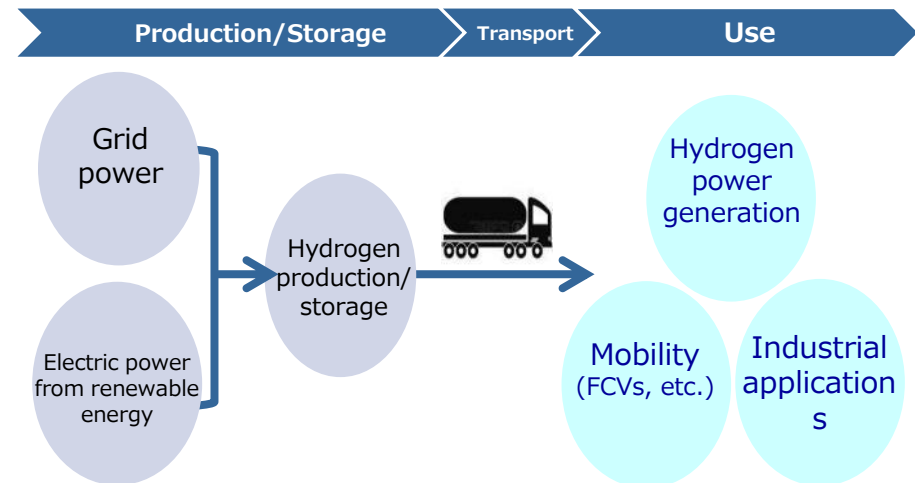
■ Fukushima Hydrogen Energy Research Field (FH2R)

- Demonstration operation of one of the world's largest (10,000kW) Hydrogen systems using renewable energy

Member :  **TOSHIBA**  東北電力 **Iwatani**



CO₂-free hydrogen production using renewable energy





Establishing a global supply chain (Domestic Source)

Establishment and operation of 53 Hydrogen stations in Japan
(15 sites are under construction)

Iwatani

38sites



2021
53sites

Chukyo 9sites

Kansai 11sites

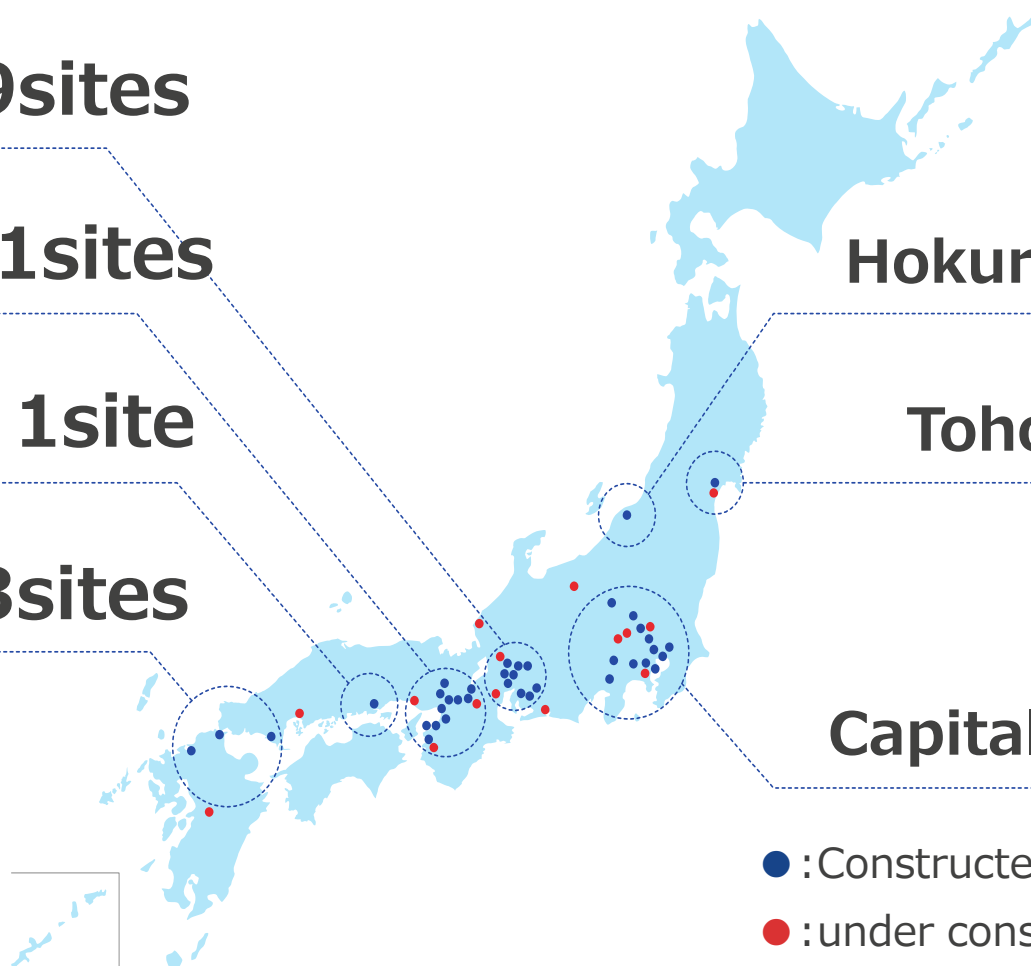
Chugoku 1site

Kyushu 3sites

Hokuriku 1site

Tohoku 1site

Capital 12sites



● : Constructed

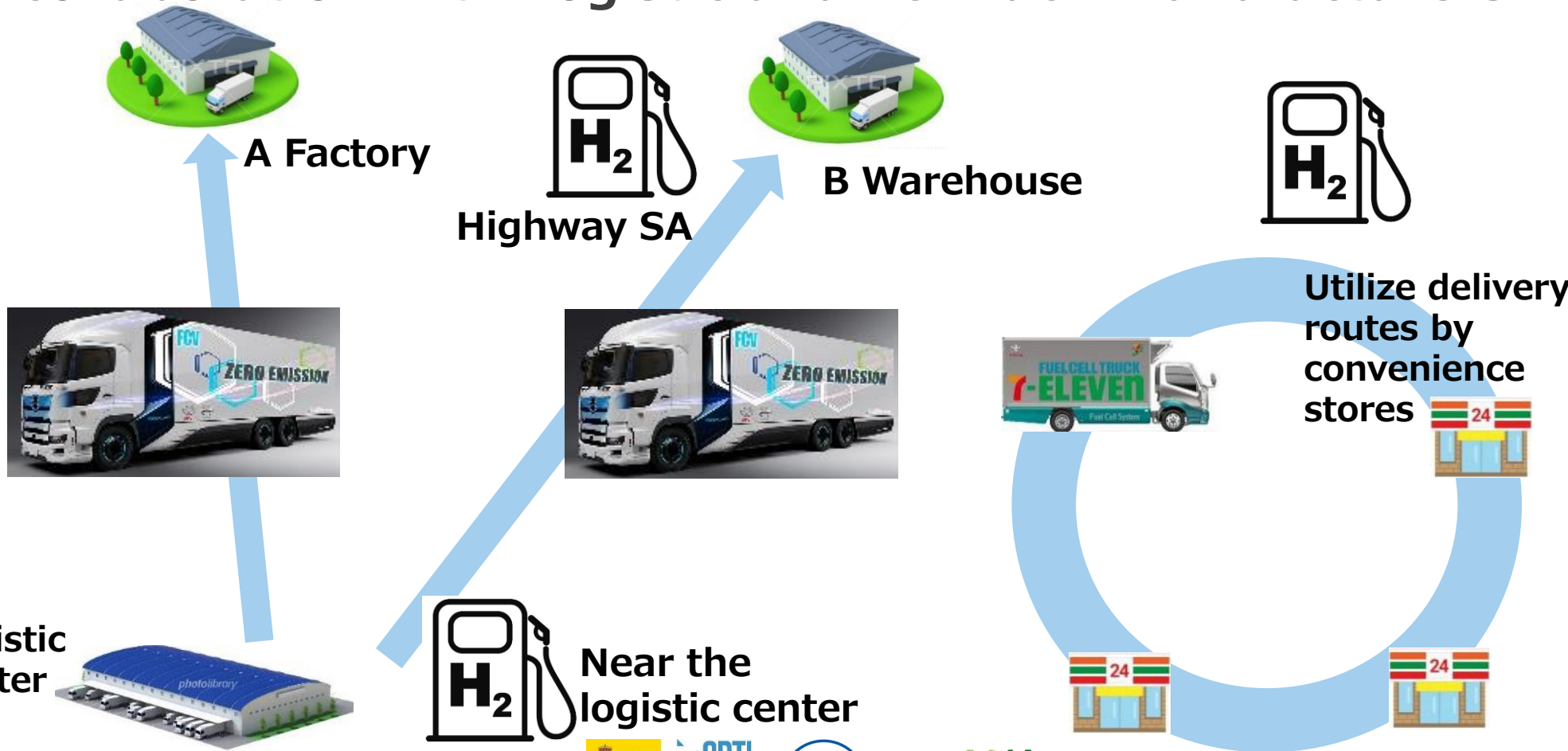
● : under construction

(December, 2020)



Establishing a global supply chain (demand creation)

- Total 83 (+30) H2 Refueling Stations by 2023
- Focus more on Mid-Heavy Duty Stations by collaboration with Logistic and FC Truck manufacturers.





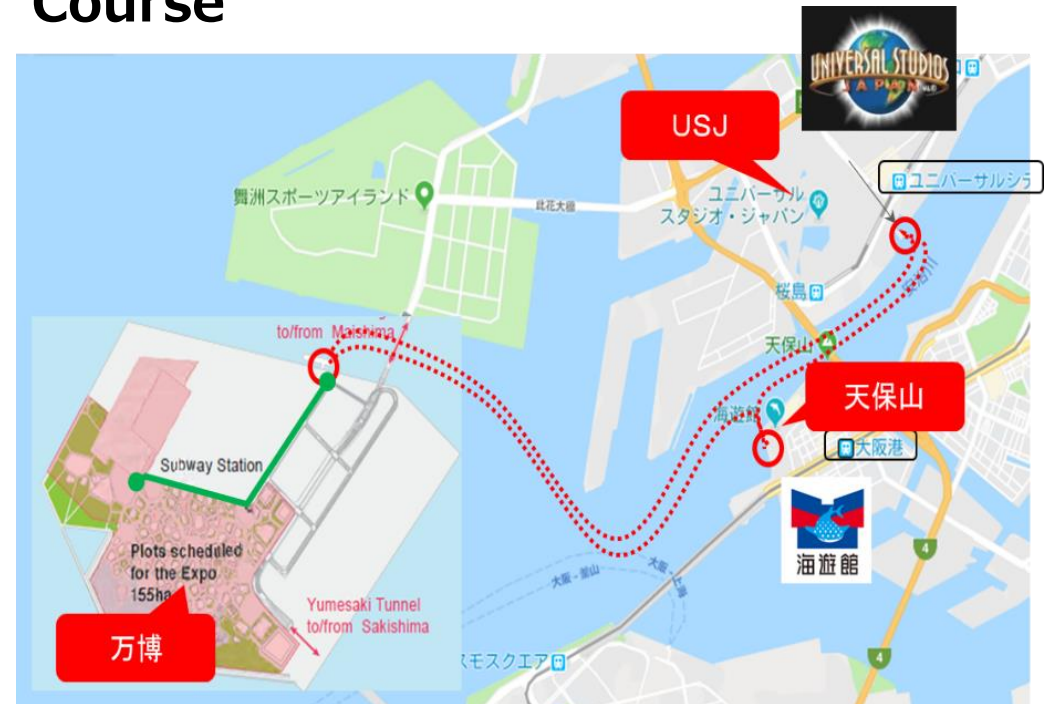
Grobal Supply Chain (HySTRA)

■ Fuel Cell Ship for OSAKA, KANSAI EXPO 2025

Fuel Cell Ship (design)



Course



Overview

- Total tonnage : 60~100 ton
- Capacity : 100~150 people
- Output : 400kW
- Speed : 10kt
- Maximum sailing distance : 70km

Operate around the Expo2025



Japan Hydrogen Association (JH2A)

- Aim to realize the Hydrogen world by involving a lot of companies interested in Hydrogen from production to consumer entry in this association





Make the Hydrogen Society to Come

Iwatani will

1

Create New Hydrogen Markets & Demand

2

Build Large Scale Supply Chain of Low Price CO₂-Free H₂



Make the Hydrogen Society to Come