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Iwatani Corporation  
Kawasaki Heavy Industries, Ltd.  
Shell Japan Ltd.  
Electric Power Development Co., Ltd.  
Marubeni Corporation  
ENEOS Corporation  
Kawasaki Kisen Kaisha, Ltd.

## **HySTRA celebrates completion of world's first liquefied hydrogen vessel voyage in Japan**

A ceremony to mark the completion of the world's first maritime transport of liquefied hydrogen, including its loading and unloading has been held in Kobe, Japan.

The demonstration voyage by the world's first liquefied hydrogen carrier, Suiso Frontier, proved that an international liquefied hydrogen supply chain is possible, marking a significant step towards the utilization of hydrogen as a new energy source.

The HySTRA<sup>※1</sup> joint venture, comprising Iwatani Corporation, Kawasaki Heavy Industries, Ltd., Shell Japan Ltd., Electric Power Development Co., Ltd.(J-POWER), Marubeni Corporation, ENEOS Corporation, and Kawasaki Kisen Kaisha, Ltd. with support from NEDO<sup>※2</sup>, is exploring the development of a large-scale marine transport supply chain.



Ceremony for completing the demonstration test

The joint venture developed technologies to produce and transport large volumes of liquefied hydrogen, conducting demonstration tests between Japan and Australia to establish processes around the safe loading, offloading and storage of hydrogen. Insights from the demonstration voyage will also guide the development of international safety standards and codes for transporting liquefied hydrogen.

Suiso Frontier, the world's first liquefied hydrogen carrier, departed Japan in December 2021 and arrived in Australia in January 2022. The ship was loaded with liquefied hydrogen produced from coal in Victoria, Australia, and returned to Japan in February 2022, unloading the cargo to a landside storage tank.

The HySTRA joint venture partners will continue to gather data and findings, and collaborate with various parties to promote this project and contribute to the development of a commercial hydrogen supply chain, as more industries explore hydrogen as a new energy source.

The HySTRA joint venture comprises:

Iwatani Corporation	Operation of Hy touch Kobe, a liquefied hydrogen cargo handling demonstration terminal
Kawasaki Heavy Industries	Design and construction of "Suiso Frontier", a liquefied hydrogen carrier, and the Hy touch Kobe, a liquefied hydrogen cargo handling demonstration terminal
Shell Japan	Operation and crewing of Suiso Frontier
J-POWER	Construction and operation of the facilities to produce hydrogen gas using Victorian coal in Latrobe Valley, Victoria
Marubeni	Examination of implementation of CO2-free hydrogen supply chain technologies by leveraging knowhow cultivated as a general trading company
ENEOS	Feasibility study of CO2-free Hydrogen Supply Chain
Kawasaki Kisen Kaisha	Assistance for safe transportation of liquid hydrogen by using its knowledge and experience acquired through the operation of LNG carriers.

The project had input from Japanese and Australian government agencies, including the Ministry of Economy, Trade and Industry and NEDO, and companies in Japan and Australia.

Japan-Australia Supply Chain Pilot Diagram



※HySTRA business supported by NEDO(New Energy and Industrial Technology Development Organization) is written in red.

※Consortium business supported by Commonwealth of Australia and Victoria State Government is written in white.

※KHI=Kawasaki Heavy Industries, Ltd.

※STASCO=Shell Energy (Australia) Pty Ltd. Shipping Company Limited

川崎汽船株式会社

KAWASAKI KISEN KAISHA, LTD.

\*1: An abbreviation of the Japan CO2 Free Hydrogen Energy Supply-chain Technology Research Association. The company was established by Iwatani, Kawasaki Heavy Industries, Shell Japan and J-POWER to establish and demonstrate technologies for hydrogen production using Victorian coal, transportation and storage for the commercialization of a CO2-free hydrogen supply chain. Marubeni Corporation, ENEOS Corporation, and Kawasaki Kisen Kaisha joined the project later.

\*2: New Energy and Industrial Technology Development Organization

(Reference)

In Australia, Iwatani Corporation, Kawasaki Heavy Industries Group, J-POWER Group, Marubeni Corporation, Sumitomo Corporation, and AGL Energy Limited formed a consortium to build a gas refining facility, hydrogen liquefaction and loading terminal with subsidies from the Australian and Victorian governments. A local industrial gas company oversees ground transportation of hydrogen.