



Suiso Frontier

World's First Bulk Liquefied Hydrogen Carrier

Shell is a member of the CO₂-free Hydrogen Energy Supply-chain Technology Research Association (HySTRA). Sponsored by NEDO*, the pilot project undertakes the loading and unloading operations with ship-shore interface, long-distance shipping and onshore storage of liquefied hydrogen with an ambition to demonstrate a hydrogen supply chain between Australia and Japan.



The Suiso Frontier has been built by Kawasaki Heavy Industries (KHI) to transport liquefied hydrogen by shipping.



Shell operates the Suiso Frontier with a focus on operational efficiency and safety.



1,250m³

The ship's centrepiece is its 1,250m³ tank



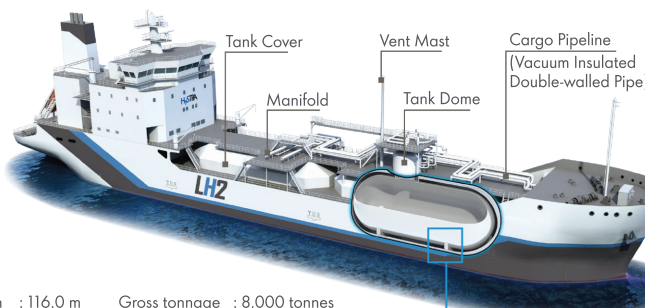
1/800th

The tank can safely carry liquefied hydrogen at 1/800th of its original gas-state volume

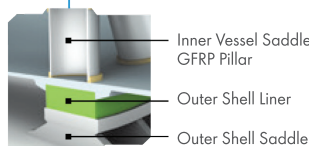


-253 °C

The tank keeps the hydrogen liquid at the cryogenic temperature of -253 °C

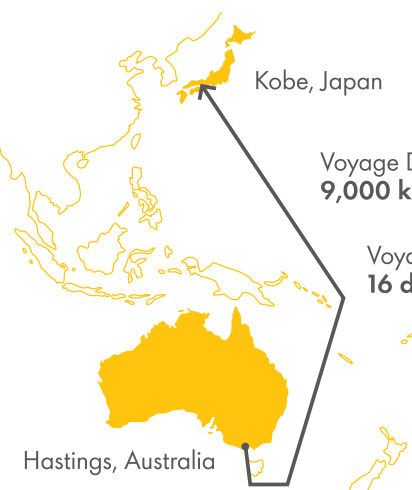


Overall length : 116.0 m	Gross tonnage : 8,000 tonnes
Overall width : 19.0 m	Vessel speed : 13 knots
Depth : 10.6 m	Draft : 4.5 m
Maximum crew : 25 persons	Tank capacity : 1,250 kL



Liquefied hydrogen tanks for marine transportation

A vacuum insulated double-walled structure provides ultimate insulation properties. Using glass fiber reinforced plastic (GFRP) for the support structure minimizes heat transfer.



Images courtesy of HySTRA: <https://www.hystra.or.jp/en/project/>

*New Energy and Industrial Technology Development Organization, a subsidiary of the Ministry of Economy, Trade and Industry of Japan