



Technical & Commercial
Conference

World's First Liquefied Hydrogen Carrier

Tetsuya Ohashi

Manager

Kawasaki Heavy Industries, Ltd.



Kawasaki

Powering your potential

'Suiso Frontier' loaded liquefied hydrogen from Australia to Japan





すいそふりていあ
SUISO FRONTIER

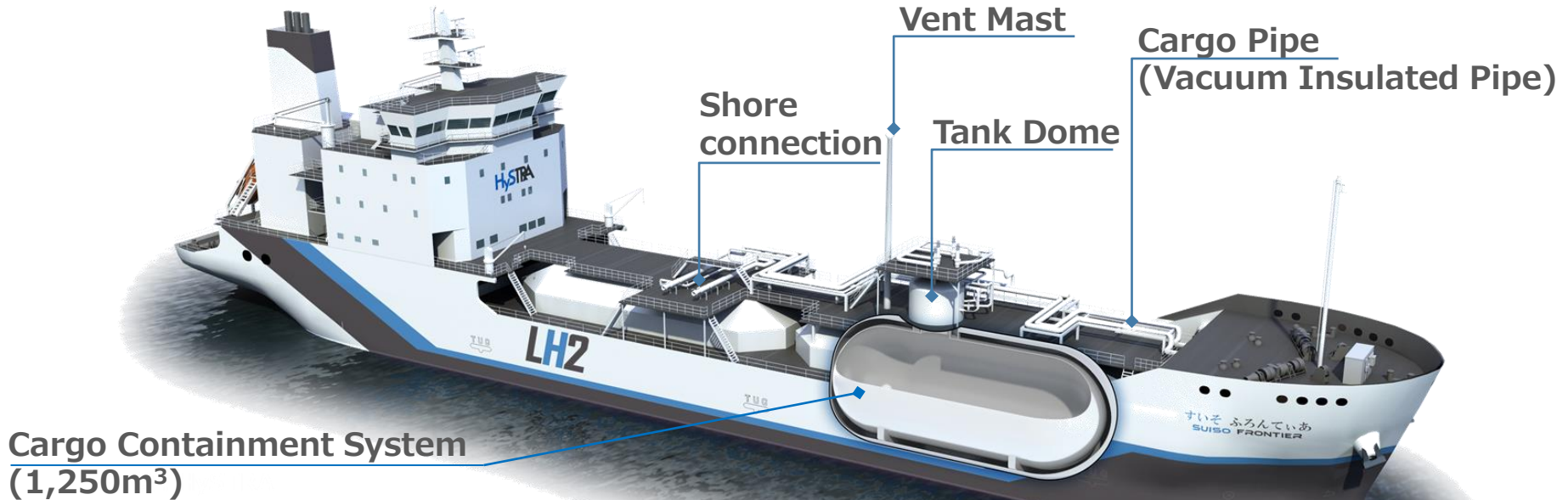
TUG

LH2

TUG

すいそふりていあ
SUISO FRONTIER
株式会社
KOBELCO
08 24612

The world's first LH₂ carrier "Suiso Frontier"

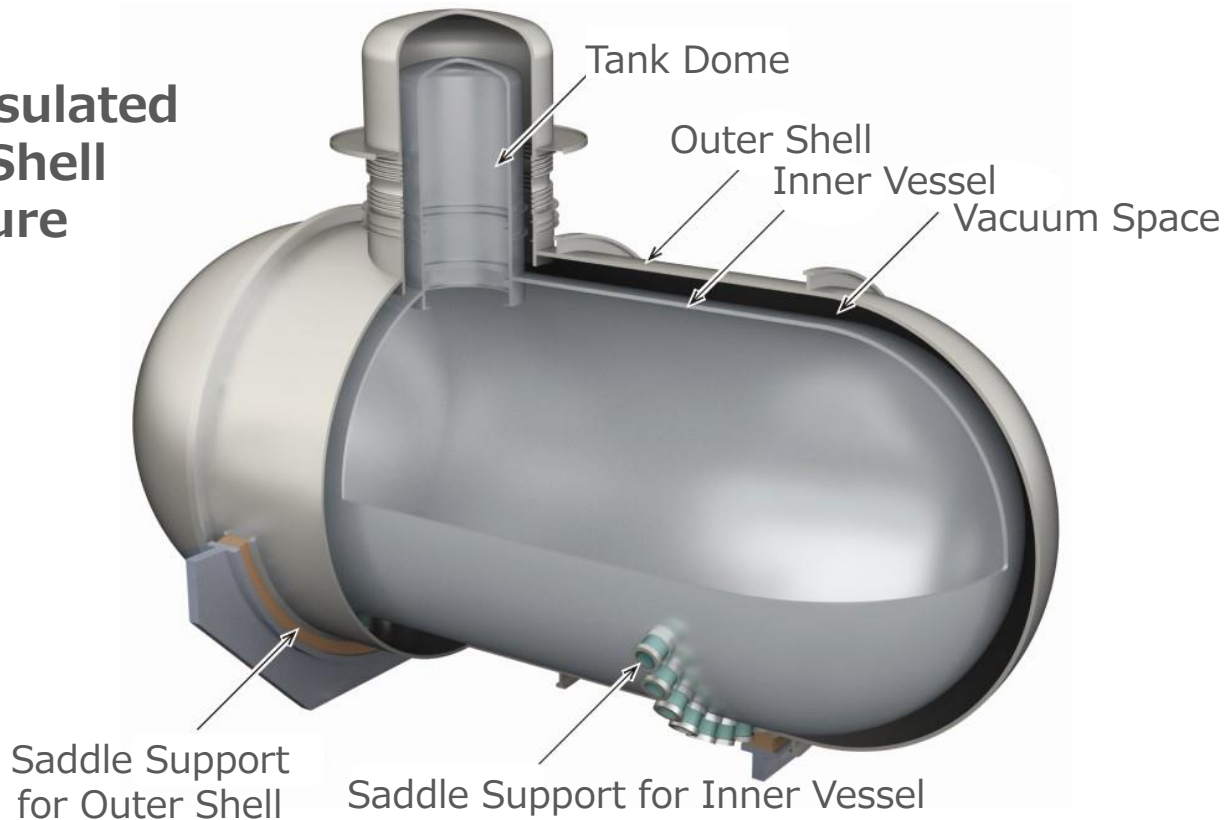


Source : HySTRA

■ Length o.a.	116.0 m	■ Propulsion	Oil fired diesel electric
■ Breadth	19.0 m	■ Service speed	abt. 13 knots
■ Class/Flag	NK/Japan	■ Complement	25 persons

Cargo Containment System

Vacuum Insulated Double Shell Structure



Milestones of LH₂ Carrier during Construction

Launch
December 2019



Source of photo : HySTRA

Sea Trial
October, 2020



LH₂ receiving terminal “Hy touch Kobe”

- The world 1st LH₂ receiving terminal “Hy touch Kobe” was constructed on December, 2020 for HySTRA.



Demonstration I

- Loading and unloading tests were carried out with LH₂ at the terminal.



Source of photo : HySTRA

Full load trial voyage in Japan
(September to October, 2021)



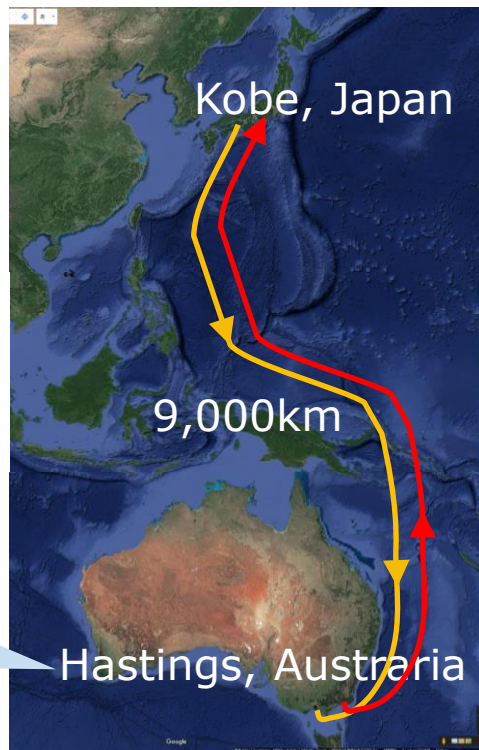
Demonstration II

■ Verification of long-distance transportation technology

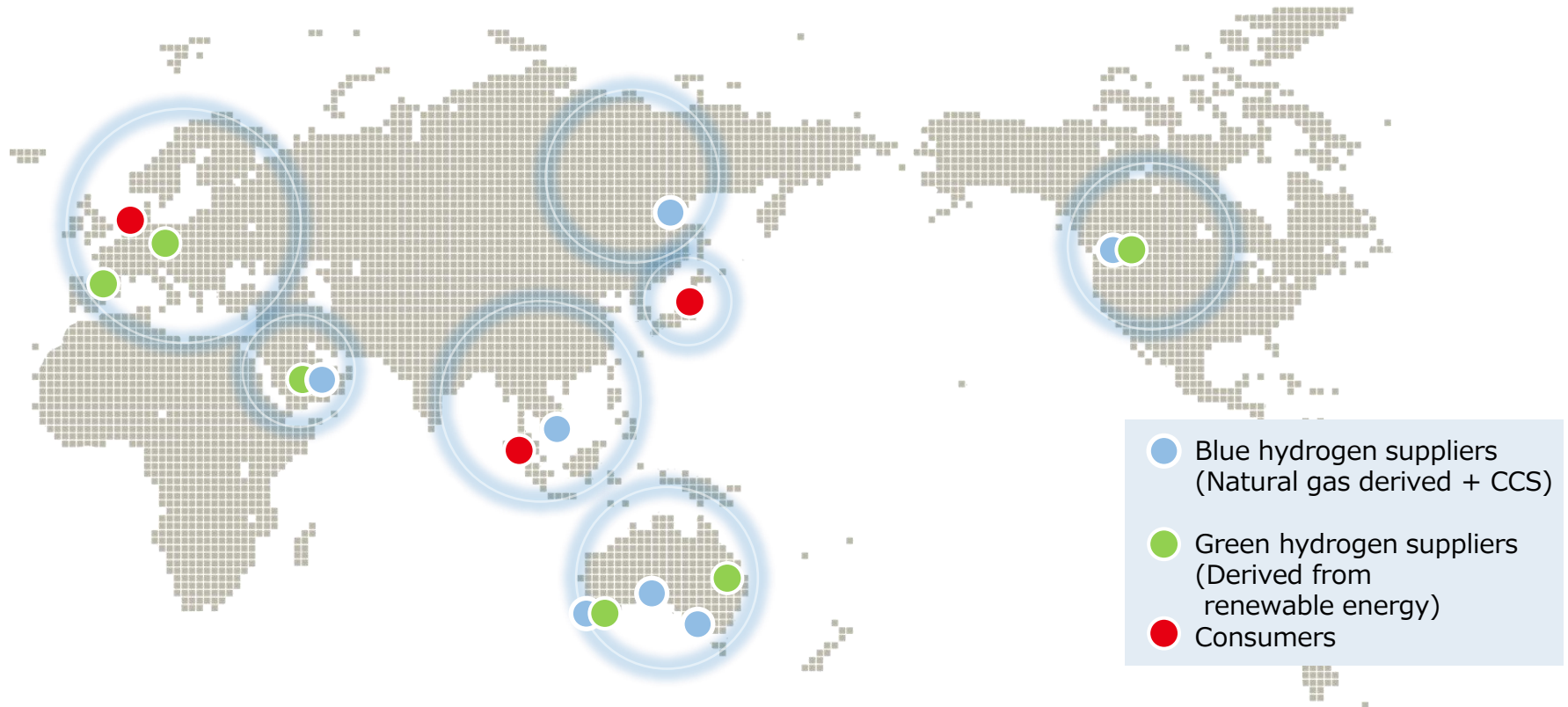
Demonstration voyages were carried out between Japan and Australia.



Source of photo : HySTRA

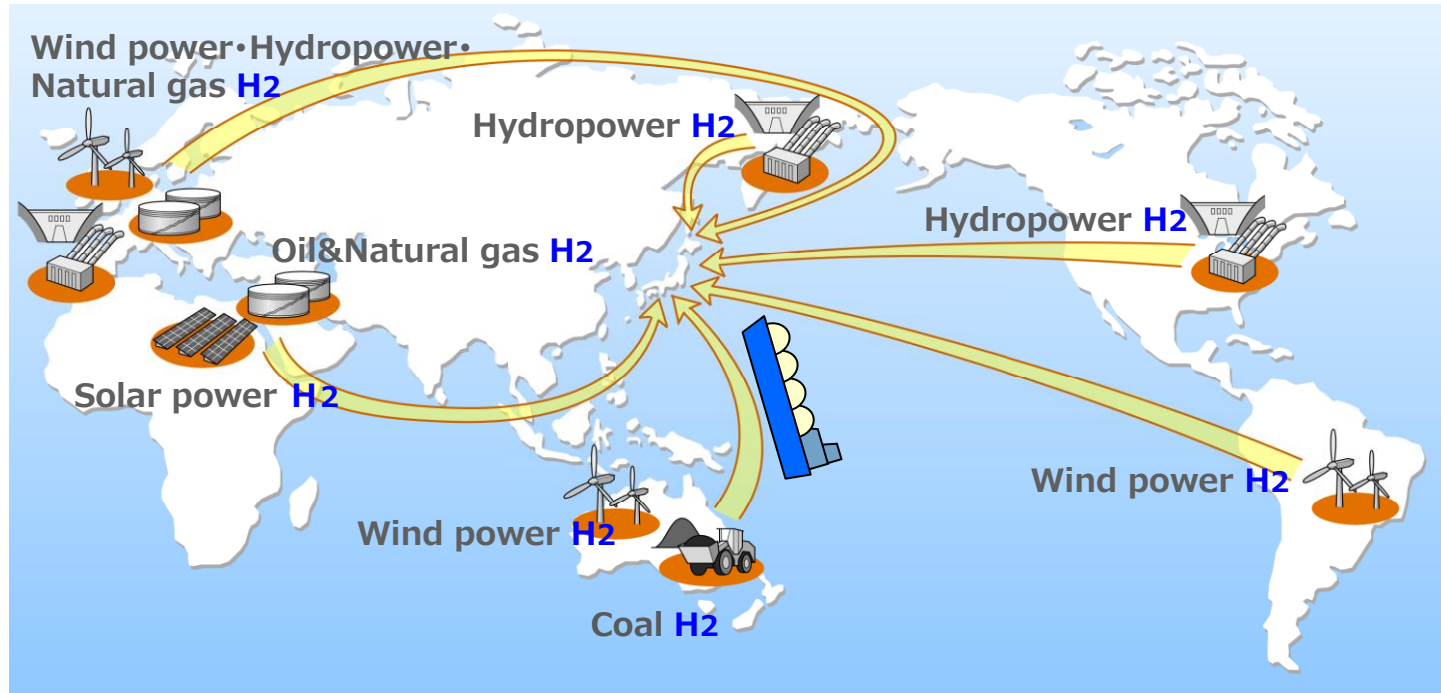


Hydrogen Businesses



Hydrogen energy supply chain

Hydrogen can be produced from various sources and procured from many countries. It can be transported in larger amount and longer distance compared to electricity transmitted through a global power grid.

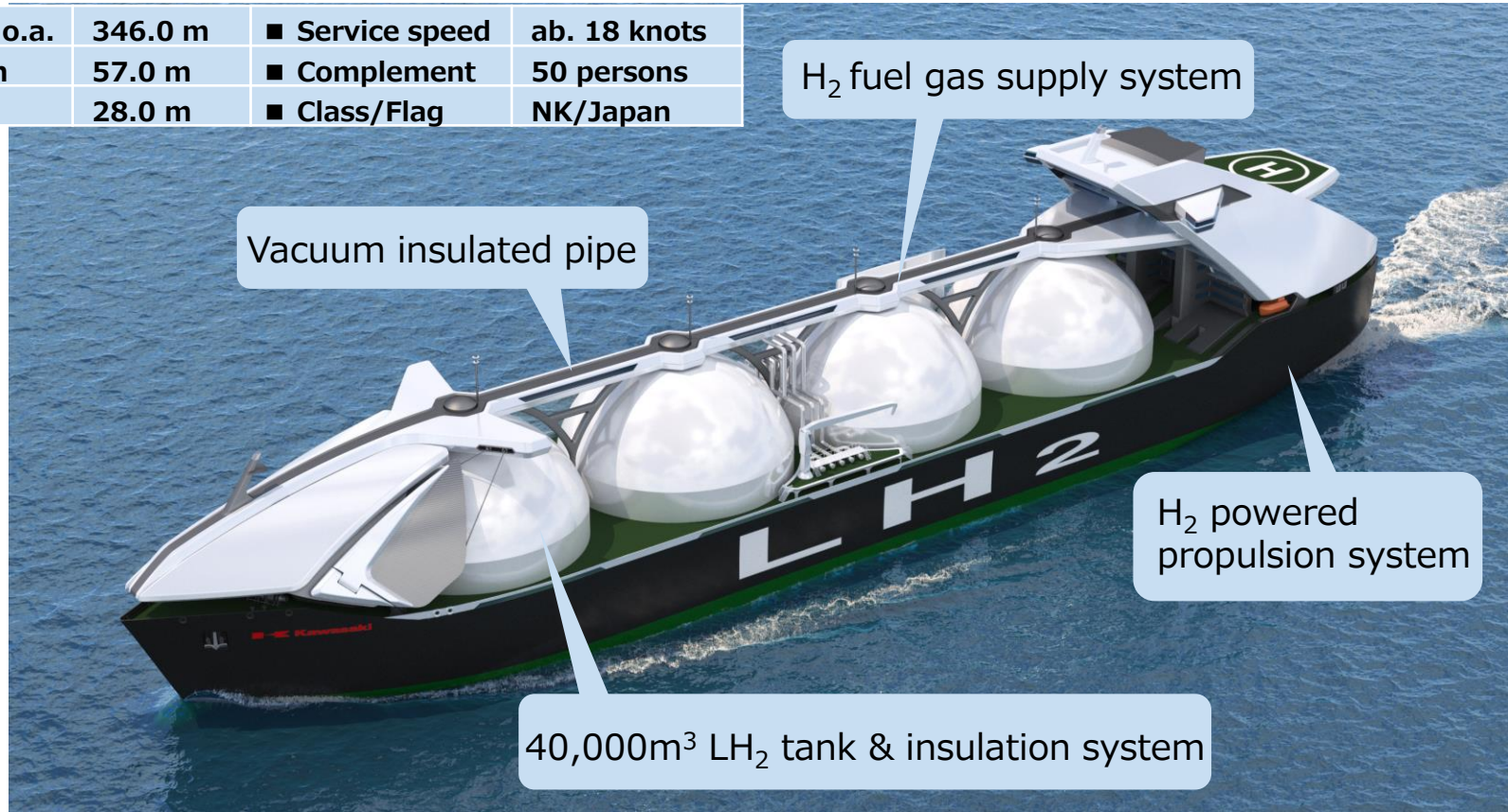


Computer graphics



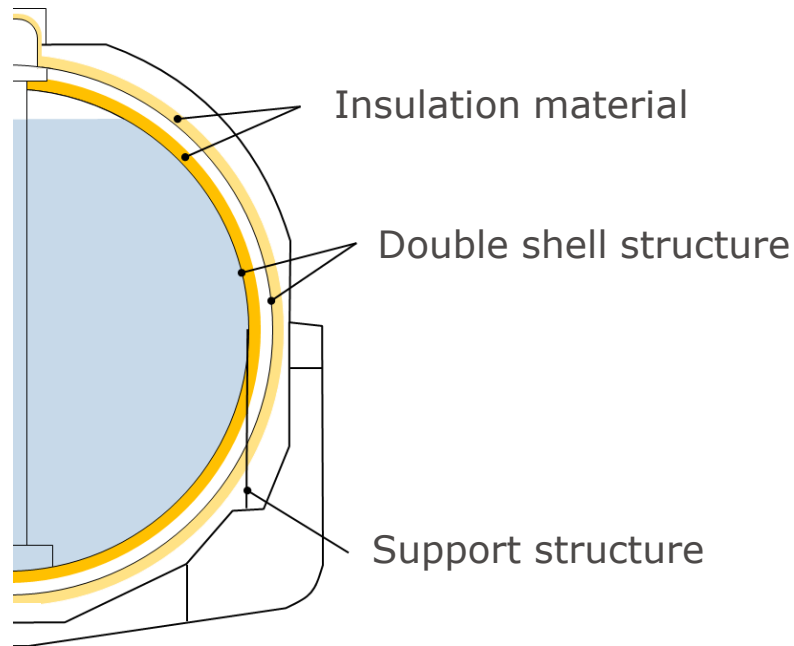
160,000m³ Liquefied Hydrogen Carrier

■ Length o.a.	346.0 m	■ Service speed	ab. 18 knots
■ Breadth	57.0 m	■ Complement	50 persons
■ Depth	28.0 m	■ Class/Flag	NK/Japan



Novel technologies for cargo containment system

- Newly developed **double shell structure** cargo containment system



AiP obtained from Class NK

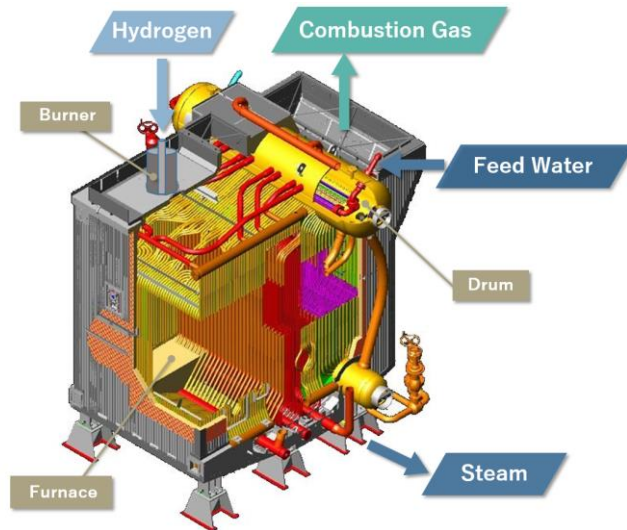
- Half diameter of **functional demo tank** is under construction



Supported and subsidized by NEDO

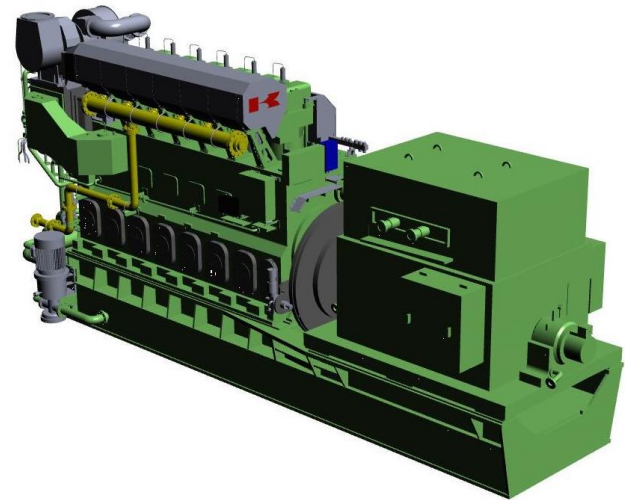
Novel technologies for propulsion system

- Newly developed dual fuel **zero-emission main boiler** for main propulsion system



AiP obtained from Class NK

- Newly developed **hydrogen reciprocating engine** for electric power plant



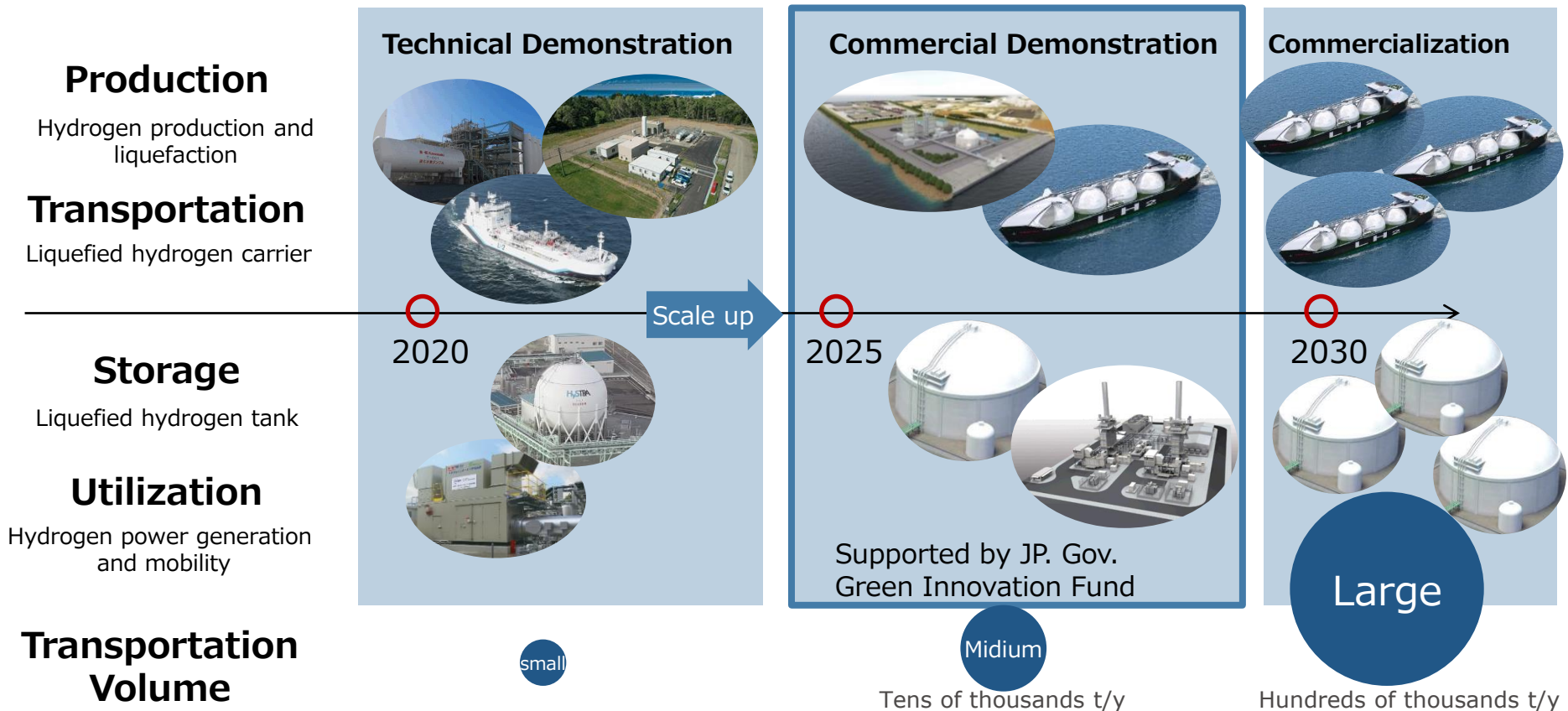
Supported and subsidized by NEDO

AiP obtained from ClassNK

ClassNK issued Approval in Principle (AiP)
for 160,000m³ LH₂ Carrier in April, 2022.



Steps in Scale Up of Hydrogen Use and Transportation



Keys to the Future

1 Hydrogen energy supply chain

- Hydrogen can be produced from wide range of countries and energy sources
- Large volume of liquefied hydrogen carrier is one of key components to establish hydrogen energy supply chain

2 Pilot project ship “SUISO Frontier”

- Kawasaki demonstrated realization of long-distance marine transportation of liquefied hydrogen by “SUISO Frontier”
- Cargo handling operation procedure for liquefied hydrogen was established by loading and unloading operations with terminal

3 Scale up of the ship

- Large volume marine transportation is essential in view of cost
- Technologies to achieve large volume marine transportation would be available through commercial demonstration

Booth information

For further information and ship model of 160k LH2 carrier, please visit our booth **"15B05"** in Hydrogen Area

The Gastech 2022 floor plan

