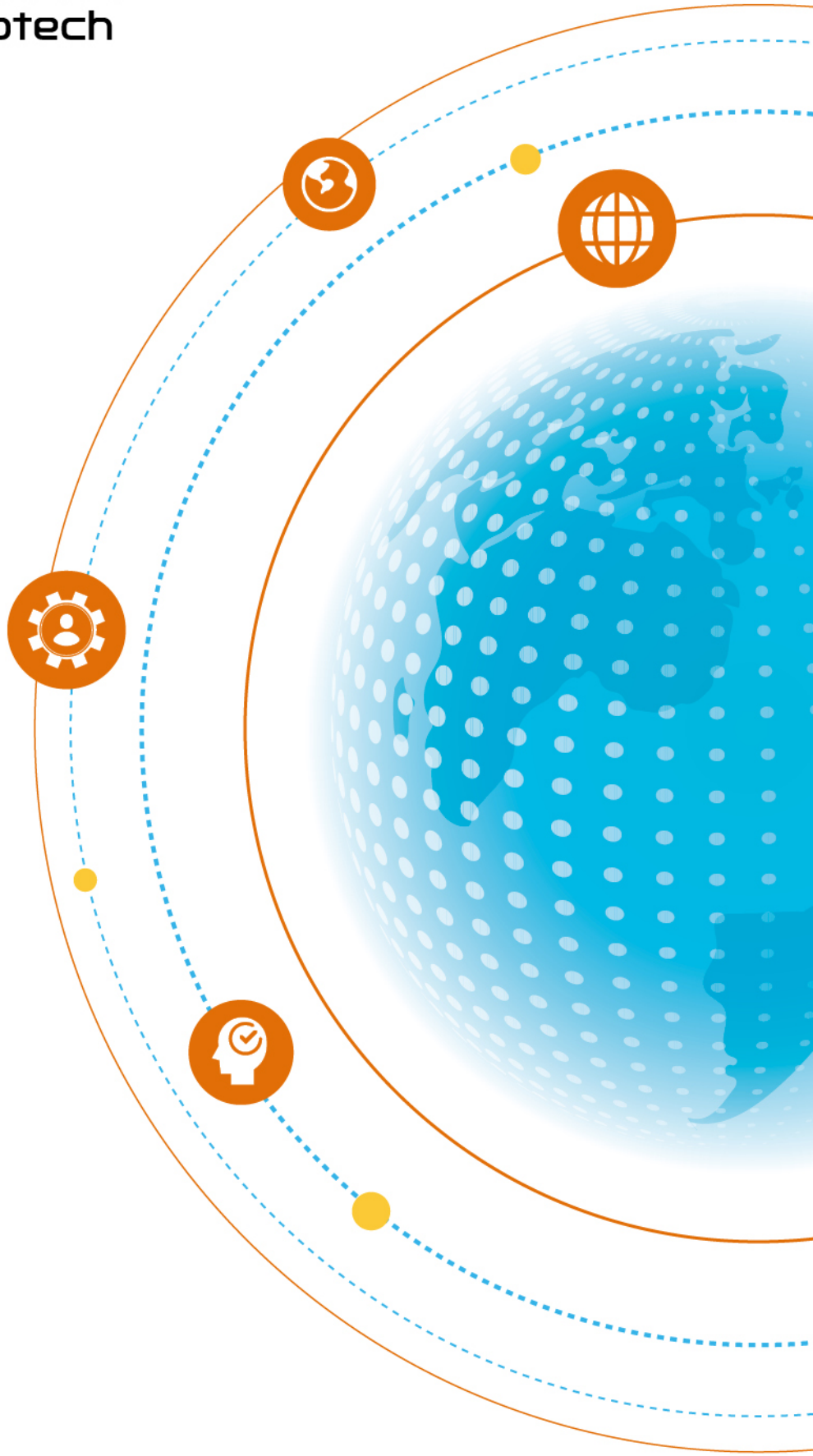
Hanwha
Ocean Ecotech



www.hanwhaoceanecotech.com

Challenge, Dedication & Integrity

On April, 2010, our company started manufacturing Ship parts and On/Off shore products as the affiliated company of "Hanwha Ocean" which is the world's leading company of shipbuilding.
We are located in Yul-chon Industrial Complex of Gwangyang Free Trade Zone, center of logistics in the eastern Asia.
We are manufacturing the high quality with the best facilities on the area of 423,525㎡.
All employees are trying to do the best with "Challenge, Dedication & Integrity" as core values to be the best partner for those who choose Hanwha Ocean Ecotech.

History

2007. 11. Established Samwoo Heavy Ind. Co., Ltd. And Samwoo Propeller Co., Ltd.
2010. 04. Became an affiliated company of DSME
2010. 10. Acquired ISO-9001, ISO-14001, OHSAS-18001certificate
2012. 04. Selected as "the 100 best companies to work" Manufacturing Part by Korean Government
2014. 12. Received the Ministry of Trade, Industry & Energy Award
2016. 04. Started Production of PRS/FRS(Partial/Full Re-liquefaction System)
2017. 01. Started Operation of Nonferrous metal manufacturing Factory
2021. 02. Started Production of CHES(Cryogenic Heat Exchange System) for 360K FSU
2023. 05. Change of Company name as Hanwha Ocean Ecotech Co., Ltd

System Certifications

ISO9001 ISO45001 ISO14001 ISO3834-2

Capacity

Area	423,515 m² (128,000 Py)
Quay	355 m
Material Storage & Unloading	840,000 ton/year
Surface Treatment	540,000 ton/year
Assembly	92,000 ton/year
Paint	103,523 ton/year

Facility

1. Quay

Length	355m
Unloading Capacity	3,000 ton
Depth of Seawater	9 m (High 11m/Low 7m)
Berthing Capacity	Draft : 5.5 m
	3,000 ~ 20,000 P (2,000 ~ 14,000 dwt)

2. Steel Logistics Center (Pre-treatment)

	A-Line	B-Line
Size	110 x 27 x 17 m	110 x 27 x 17 m
Capacity	45,000 ton/mon.	540,000 ton/year

3. Indoor Assembly Shop

	Size
1 Bay	270 x 24 x 14 m
2 Bay	270 x 39 x 16 m
3 Bay	270 x 39 x 23 m
4 Bay	270 x 39 x 23 m

4. Outdoor Assembly Shop

	Size
#1 Area	250 x 80 m
#2 Area	302 x 70 m
#3 Area	200 x 88 m
Heavy Zone	170 x 25 m

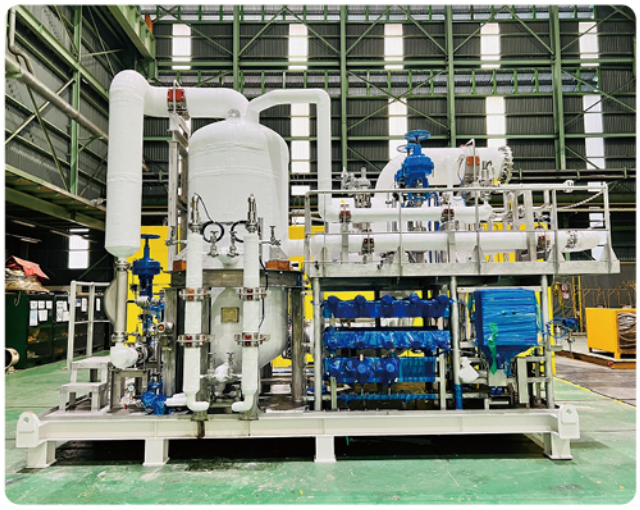
5. Painting Shop

	Blasting #1 (Non Metal)	Blasting #2 (Block)
Size	45 x 40 x 12 m	45 x 50 x 18 m
Capacity	86 ton/mon. 1,029 ton/year	8,541 ton/mon. 102,494 ton/year
Air Blaster	12EA Nozzle (2 x 6)	16EA Nozzle (4 x 4)
	Painting #1~3	**Painting #4~5**
Size	45 x 50 x 18 m	45 x 40 x 12 m
Capacity	8,541 ton/mon. 102,494 ton/year	86 ton/mon. 1,029 ton/year
Gas Heater	400,000 kcal/hr. – 5EA, 1,000,000 kcal/hr. – 3EA	

6. Marine Equipment & Components Shop

	Size
1 Bay	192 x 30 x 18 m
2 Bay	173 x 25 x 18 m
3 Bay	173 x 30 x 18 m

Gas Equipment Business Products



PRS / A-PRS
(Partial Re-liquefaction System / Advanced Partial Re-liquefaction System)

PRS is the most innovative cutting-edge technology that uses the inevitable BOG (Boil Off Gas) and re-liquefy with any other additional equipment and material.

- Record : 14 EA(2016 ~)

FRS
(Full Re-liquefaction System)

FRS is the most innovative cutting-edge technology that uses the inevitable BOG (Boil Off Gas) and re-liquefy with any other additional equipment and material.

- Record : 10 EA(2016 ~)

CHES
(Cryogenic Heat Exchanger System)

Similar to PRS and FRS, CHES is a part of Nitrogen Re-liquefaction System that re-liquefies BOG(Boil off Gas) generated from tanks. This skid consists of 2 separated circuits using N2 and BOG as the refrigerant.

- Record : 2 EA(6Module, 2Ship)

LNG FGSS
(Fuel Gas Supply System)

LNG FGSS is the technology to supply the gas such as LNG to the engine. In general, the skid is including the vaporizer, pumps and other equipment to provide the fuel gas as the design condition.

– Record : 1 EA with Bunkering station & Vent mast

Ammonia Fuel Supply System

Ammonia Fuel Supply System is the technology to supply the liquid such as Ammonia to the engine. In general, the skid is including the vaporizer, pumps and other equipment to provide the Ammonia as the design condition.

LPG LFSS
(Low-Flashpoint Fuel Supply System)

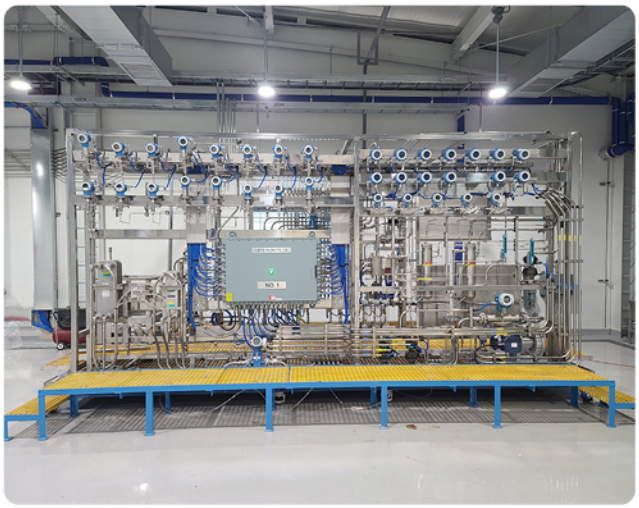
LPG LFSS is the technology to supply the low-flashpoint fuel such as LPG to the engine. In general, the skid is including the vaporizer, pumps and other equipment to provide the LPG as the design condition.

HP Compressor
(High Pressure Compressor Package)

HP Compressor is a device that pressurizes Boil-Off Gas (BOG) generated into high-pressure gas.

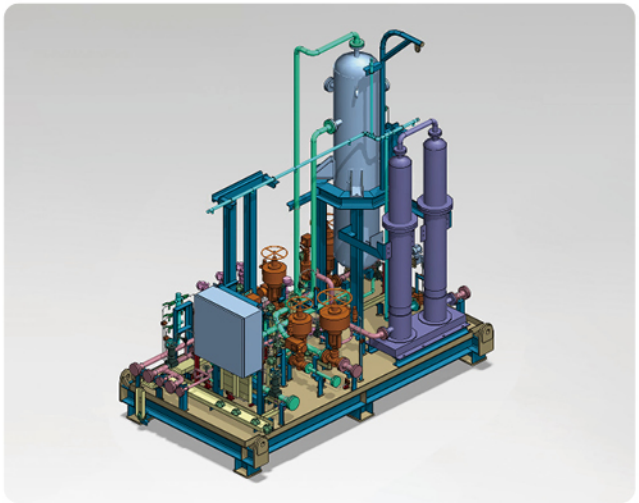
It according to engine type(appropriate temperature and pressure) to supply BOG fuel to the engine.

- Record : 2 EA (6Module, 2Ship)



30kW PEMFC
(Polymer Electrolyte Membrane Fuel Cell)

PEMFC is a System that uses High-Purity Hydrogen as fuel and generates power using air and oxygen as oxidizing agents.



ACS
(Ammonia Catch System)

ACS is a device for safely handling unburnt ammonia gas. Through the separator, liquid ammonia is reused as a fuel supply system, and the gas is converted into the low concentration ammonia through wet neutralization by fresh water.
Finally, ammonia gas is released into the atmosphere at less than 25 PPM.

Business Milestone

P R S : Partial Re-liquefaction System
F R S : Full Re-liquefaction System
A-PRS : Advanced Partial Re-liquefaction System
M R S : Methane Refrigerant System
N R S : Nitrogen Refrigerant System
F G S S : Fuel Gas Supply System
L F S S : Low-Flashpoint Fuel Supply System

2016

03 PRS+Pilot Plant R&D

2017

04 H2460 PRS

08 H2441 FRS

10 IRSPP R&D

11 H2462 PRS + MRS

2018

03 LOIS R&D

2019

07 LPG LFSS R&D

09 FAT Facility

2020

03 H2498 PRS

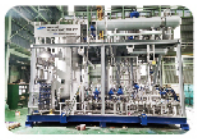
03 H2481 FRS

08 ARSPP R&D

10 H2505 A-PRS

12 30kW PEMFC R&D

2021



09 NRSPP R&D

10 H2512 NRS-CHES

2022

07 Ammonia Fuel Supply System R&D

11 KRISO Engineering Center Opened

2023

03 H2520 A-PRS

07 BCKB HP Compressor

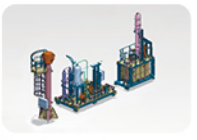
07 H2523 A-PRS

11 LCO2 CHS R&D

12 50K MR FGSS

2024

02 H2546 A-PRS



12 Ammonia Catch System R&D

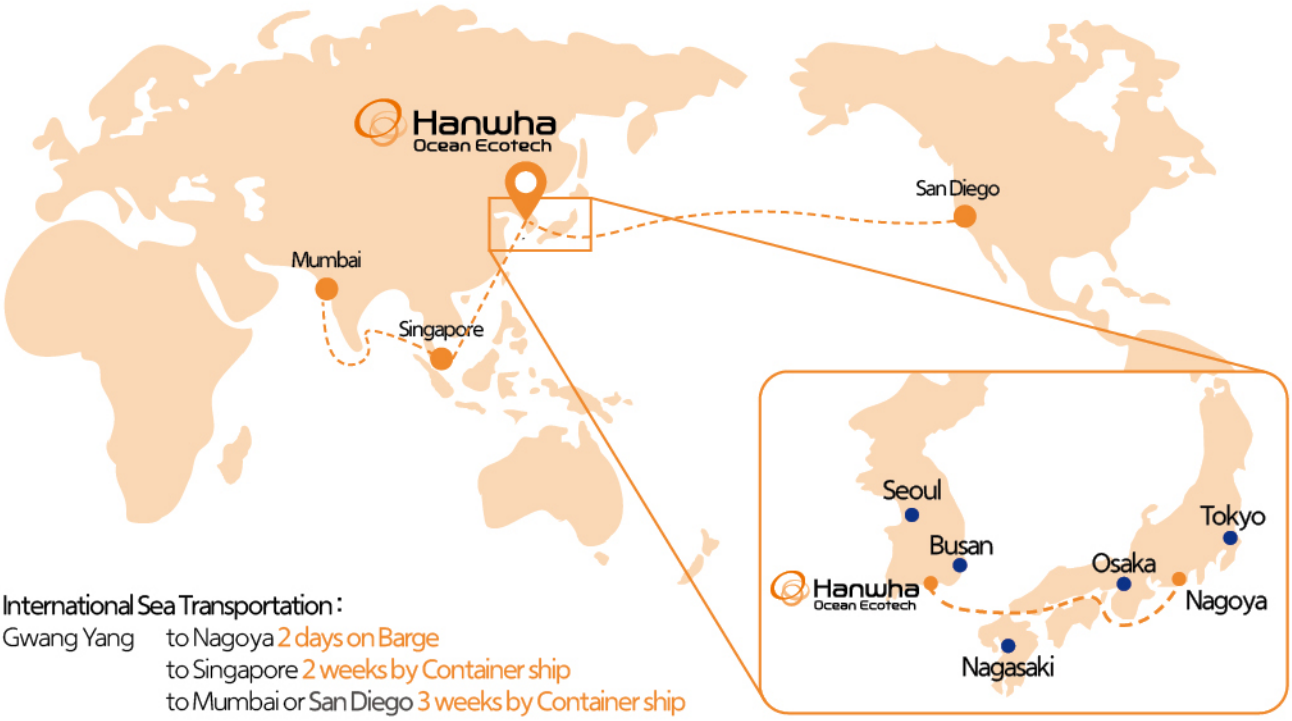
12 ICO2 Re-liquefaction System R&D

2025-2026

2025. 12 Independent development of ammonia Fuel Supply System Single business sales 30 billion

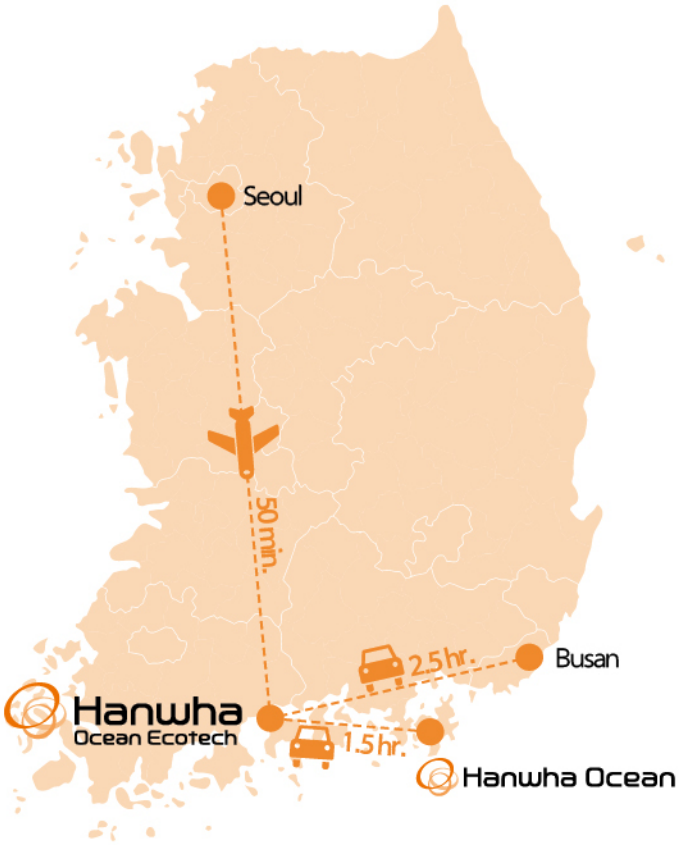
2026. 12 Development of hydrogen reforming/supply system

International Sea Transportation



International Sea Transportation :
Gwang Yang to Nagoya 2 days on Barge
to Singapore 2 weeks by Container ship
to Mumbai or San Diego 3 weeks by Container ship

Location(Domestic)



[Direction]
- Highway : About 4 hr. to Seoul
  About 2.5 hr. to Busan
  About 1.5 hr. to Hanwha ocean
- Rail : 3 hr. from Seoul to Suncheon Station
- Airport : About 50 min.
  from Kimpo to Yeosu Airport

[Transportation to Hanwha Ocean Okpo Yard]
- Overland(by Truck) : 3 hr.
- Seaway(by Barge) : 12 hr.

Location / Connect

111, Yulchonsandan 3-ro, Gwangyang-eup, Gwangyang-si, Jeollanam-do, Republic of Korea, 57765
Tel. +82-61-780-3000 **Fax.** +82-61-780-3600 **Website.** www.hanwhaoceanecotech.com