

Hanwha Ocean Brochure

COMPANY HISTORY

1970s

- 1973** Groundbreaking for Okpo Shipyard
- 1978** Established Daewoo Shipbuilding & Heavy Machinery Co., Ltd. (DSHM)
- 1981** Held topping out ceremony for completion of Okpo Shipyard
- 1982** Delivered first chemical carrier, 'Bow Pioneer'
- 1983** Delivered Korea's first Drilling Rig, 'Doo Sung'
- 1994** Merged with Daewoo Heavy Industries Ltd.
- 1995** Achieved aggregate export of USD 10 billion
- 1999** Autonomous Underwater Vehicle 'Okpo 6000' selected as one of Korea's TOP 100 Technologies in 20C

2000s

- 2000** DHI's Shipbuilding Division became independent company
- 2001** Awarded most LNGC orders in the world and acquired OHSAS 18001 Certification for first time in Korean shipbuilding industry
- 2003** Named "World's Best Shipbuilder" by Maritime Asia's Lloyd's List
- 2004** Deployed first PI system in global shipbuilding industry
- 2005** Delivered world's first LNG-RV, which was selected as one of Korea's top 10 new technologies
- 2006** Awarded orders worth over USD 10 billion
- 2007** Received Transparent Management Award, USD 6 billion Export Tower Award at 44th Trade Day Ceremony, and set new record with orders surpassing USD 20 billion
- 2008** Received Korea IT Innovation Award and acquired ISO 27001 Certification
- 2009** Received USD 10 billion Export Tower Award and world's largest floating dock debuted at Geosje shipyard

2010s

- 2011** Delivered world's largest offshore Pazflor FPSO and installed in Angola
- 2014** Awarded the largest number of LNGC newbuilding contracts (37 LNGCs) which worth over USD 9 billion
Awarded the world's first Arc7 LNG Carriers
- 2015** Delivered the world's first LNG-powered containership
- 2016** Delivered the world's first FLNG for Malaysia's Petronas
- 2017** The first Korean Shipyard to deliver/export submarine abroad
Delivered the world's largest (263K) LNG-FSRU and the world's first icebreaking Arc-7 Ice Class LNG carrier which was ranked as the No.1 & 2 Great Ships of 2017 by Maritime Reporter (12/20)

2020 ~

- 2020** Delivery of the world's largest 23,000 TEU containership
- 2021** Opening of Digital Shipbuilding Center
Delivery of South Korea's first 3,000 Ton class submarine
Established 'ESG Administration' Organization
- 2023** Hanwha took over DSME,
Changed the corporate title to Hanwha Ocean
First domestic company to join the FMC

GEOJE SHIPYARD LAYOUT



YARD SIZE

4,900,000m²

TOTAL AREA

Covered Shop : 566,600m²
Open Working Area : 1,464,000m²
Total Outfitting Quay : 8,766.7m

FACILITIES

Dry Docks : 2EA
Heavy Zone : 3EA
Floating Docks : 3EA
Launching Barge : 1EA

- | | |
|-----------------|-------------------|
| 1 Drydock 1 | 6 RD-3 |
| 2 Drydock 2 | 7 RD-4 |
| 3 Heavy Zone G1 | 8 RD-5 |
| 4 Heavy Zone G2 | 9 Launching Barge |
| 5 Heavy Zone G3 | 10 Floating Crane |

Offshore & Plants Fabrication Area (Heavy Zone)










Hanwha Ocean's TOMORROW

ESG MANAGEMENT

Established organization to strengthen ESG management activities

- Newly founded of 'ESG Committee' under the Board of Directors (Acting for corporation wide ESG management activities)

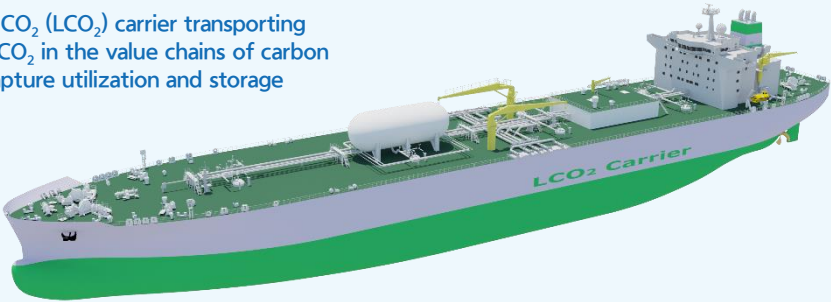
UN SDGs (Sustainable Development Goals) related with business portfolio of Hanwha Ocean

UN SDGs	
<div><div>3</div><div>GOOD HEALTH AND WELL-BEING</div></div> <div>Ensure healthy lives and promote well-being for all at all ages</div>	<div><div>9</div><div>INDUSTRY, INNOVATION AND INFRASTRUCTURE</div></div> <div>Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</div>
<div><div>4</div><div>QUALITY EDUCATION</div></div> <div>Ensure inclusive and equitable quality education and promote lifelong opportunities for all</div>	<div><div>12</div><div>RESPONSIBLE CONSUMPTION AND PRODUCTION</div></div> <div>Ensure sustainable consumption and production patterns</div>
<div><div>6</div><div>CLEAN WATER AND SANITATION</div></div> <div>Ensure availability and sustainable management of water and sanitation for all</div>	<div><div>13</div><div>CLIMATE ACTION</div></div> <div>Take urgent action to combat climate change and its impact</div>
<div><div>7</div><div>AFFORDABLE AND CLEAN ENERGY</div></div> <div>Ensure access to affordable, reliable, sustainable and modern energy for all</div>	<div><div>14</div><div>LIFE BELOW WATER</div></div> <div>Conserve and sustainably use the oceans, seas and marine resources for sustainable development</div>
<div><div>8</div><div>DECENT WORK AND ECONOMIC GROWTH</div></div> <div>Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all</div>	<div><div>16</div><div>PEACE, JUSTICE AND STRONG INSTITUTIONS</div></div> <div>Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive at all levels</div>

FUTURE OF Hanwha Ocean

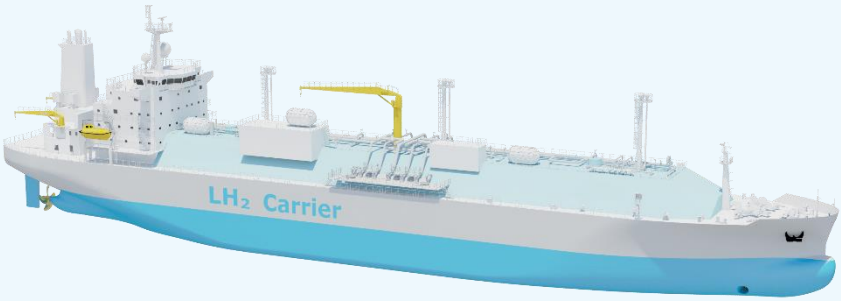
LCO₂ Carrier

Liquefied CO₂ (LCO₂) carrier transporting captured CO₂ in the value chains of carbon dioxide capture utilization and storage (CCUS).



LH₂ Carrier

Liquefied Hydrogen (LH₂) carrier using technology that will vastly expand cargo capacity of the green energy source.



COMMERCIAL SHIPS

With our heritage developed in Okpo bay, We are active across the entire spectrum of commercial ship:

We strive to maintain our position at the forefront of maritime innovation in a rapidly changing Seawater with answers to the needs in sustainability, digitalization and high-efficiency from the clients.

174K CBM
LNG CARRIER



172.4K CBM
ARC7
LNG CARRIER



91K CBM
VERY LARGE
LPG CARRIER





◆ ——— ◆
300K DWT
VERY LARGE
CRUDE OIL CARRIER



◆ ——— ◆
173.4K CBM
LNG FSRU

◆ ——— ◆
23K TEU
CONTAINERSHIP

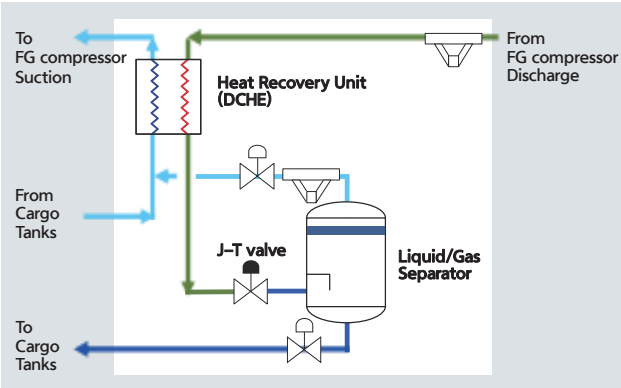


COMMERCIAL SHIPS TECHNOLOGY

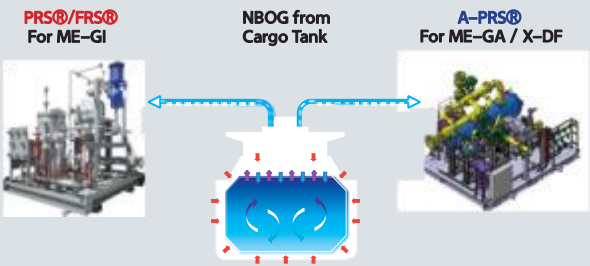
RE-LIQUEFACTION SYSTEM ◆

PRS® FAMILY

Fully optimized reliquefaction system with FGSS which composes an open-loop cycle using BOG as a refrigerant.

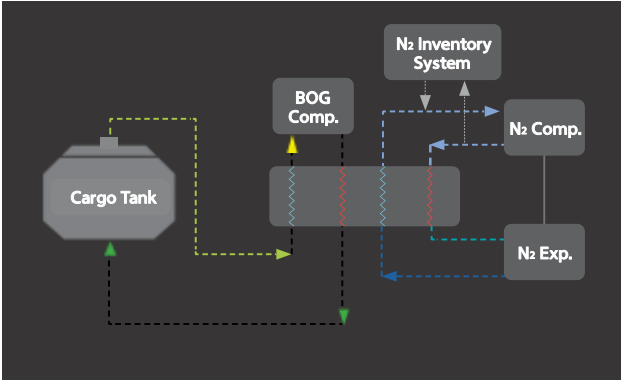
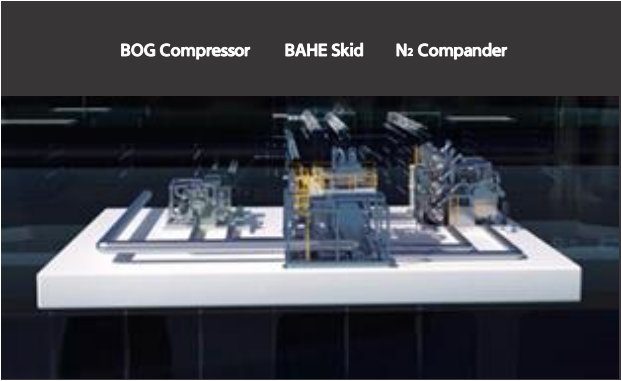


PRS® Family Re-liquefaction system



NRS® (NITROGEN REFRIGERANT SYSTEM)

The optimal full re-liquefaction solution for various capacities and types based on an independent reverse Brayton cycle integrated with cold BOG energy.



CARGO CONTAINMENT SYSTEM ◆

CARGO/FUEL CONTAINMENT SYSTEM

CCS for LNGC, LNG bunker vessel, and LNG fueled ship.
Hi-Mn CCS such as MCTIB® and Mc-C® can significantly reduce material cost and welding time compared to nickel alloy steel.

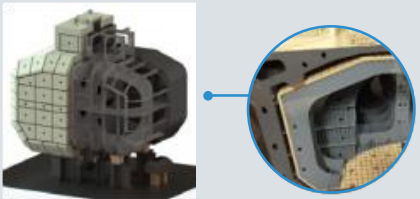
NO96

Widely
Applied CCS



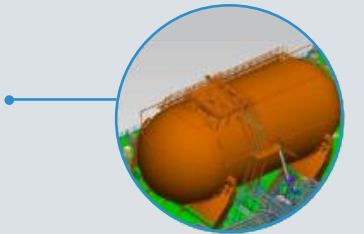
MCTIB®

Free Filling CCS
& Fuel Tank
(High-Mn)



Mc-C®

High-Mn Fuel
Tank (Type-C)



COMMERCIAL SHIPS TECHNOLOGY

RE-GASIFICATION SYSTEM

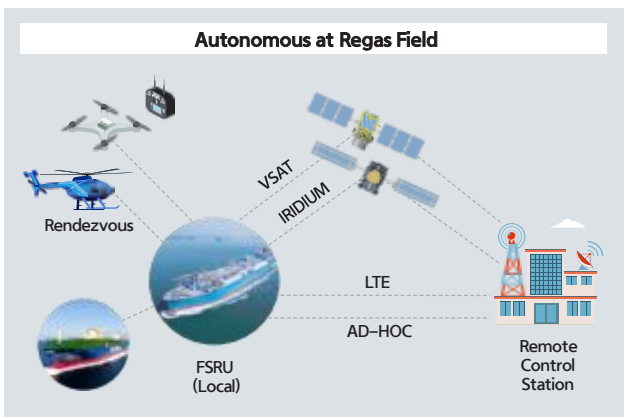
CPR (CRYO-POWERED REGAS) SYSTEM

Cryogenic power generation utilizing cold energy of LNG while regasification for low OPEX and low emission.



AUTONOMOUS REGAS SYSTEM

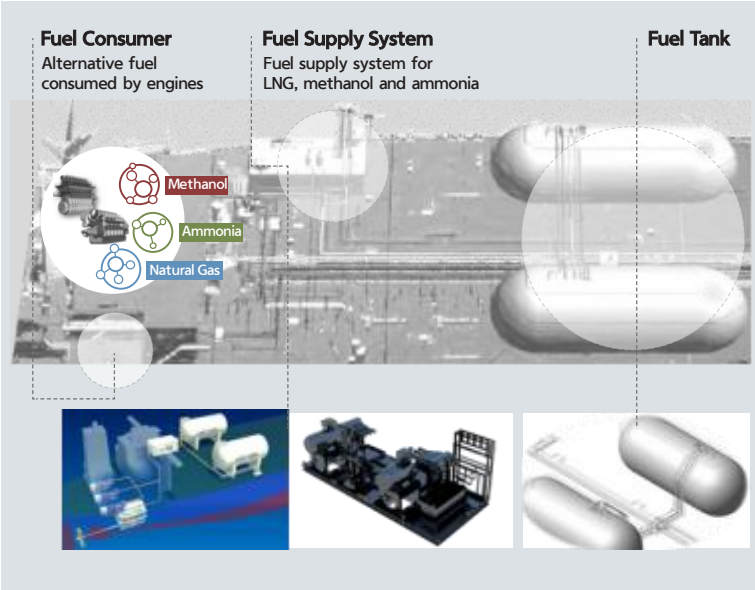
Automated control logic and data networking system provides improved working conditions and allows operators to control the regasification unit in a remote station.



ALTERNATIVE FUELED VESSEL (LNG/METHANOL/AMMONIA)

ALTERNATIVE FUEL SUPPLY SYSTEM

LNG, methanol, and ammonia fueled vessels for decarbonization.



Alt. fueled VLCC with FGSS



Alt. fueled containership with FGSS



OFFSHORE PRODUCTS & PLANTS

As a TOP-TIER EPCIC CONTRACTOR, We have experienced in executing a wide range of offshore products such as Fixed Platforms, TLPs, FPU's, FLNG and FPSOs, as well as Drillships, Rigs, Semi-Submersible, Jack-up Rigs, and Modular Plants with Project Management skills proven through its successful completion of large scale offshore projects. In addition to conventional offshore projects, We are also applying our skills and resources to handle renewable energy projects such as Wind Turbine Installation Vessel (WTIV), Floating Offshore Wind (Substructure) and Offshore Substation.

TCO-FGP
MODULAR
PLANTS

Hanwha Ocean have successfully delivered TCO-FGP Modular Plants with 42 Million Manhour LTI Free.

PETRONAS
SATU FLNG



INPEX
ICHTHYS
FPSO



EXXON KIZOMBA
"B" TLP





◆ ——— ◆
EQUINOR
(STATOIL)
GINA KROG
FIXED PLATFORM



◆ ——— ◆
ALLSEAS PLATFORM
DECOMMISSIONING
AND PIPELAY VESSEL
("Pioneering Spirit")



◆ ——— ◆
CAT.D
SEMI RIG



◆ ——— ◆
MAERSK
JACK-UP RIG

◆ ——— ◆
TRANSOCEAN
DRILLSHIP



NAVAL SHIPS

We are a leading contractor for turn-key naval projects, such as state-of-the-art submarines, surface combatants and auxiliary vessels. Beyond delivery, we also provide a variety of support solutions including training and integrated logistics support (ILS).

KSS-III
SUBMARINE
(ROKN CHANGBOGO-III)

TOTAL SOLUTION PROVIDER



Technology
Transfer



Technical
Assistance (TA)



Integrated Logistic
Support



Government to
Government Contract



Financing



Offset

SUBMARINE



DESTROYER
(ROKN KDX-III)





FRIGATE

LOGISTICS SUPPORT
VESSEL
(UK TIDE CLASS TANKER)



ASR
(ROKN AUXILIARY
SUBMARINE RESCUE)



SMARTSHIP

Hanwha Ocean Smartship Platform & Solution

Monitoring & Diagnosis
Remote Maintenance Assistance

Automated & Simple Operation
[LFS*, GMS*, ALS*, SG*, Rotor etc.]

- * LFS : LNG Fueled Ship
- * GMS : Gas Management System
- * ALS : Air Lubrication System
- * SG : Shaft Generator

- Remote Fleet Monitoring
- Voyage Data Analysis
- Optimum Operation Consulting
- 3D Based Vessel Monitoring

Onboard Platform
Open, Flexible and Robust
Secure Network Inside and
Outside of Ship Connectivity
with Various Protocols

Navigation Guidance
Collision Avoidance Support

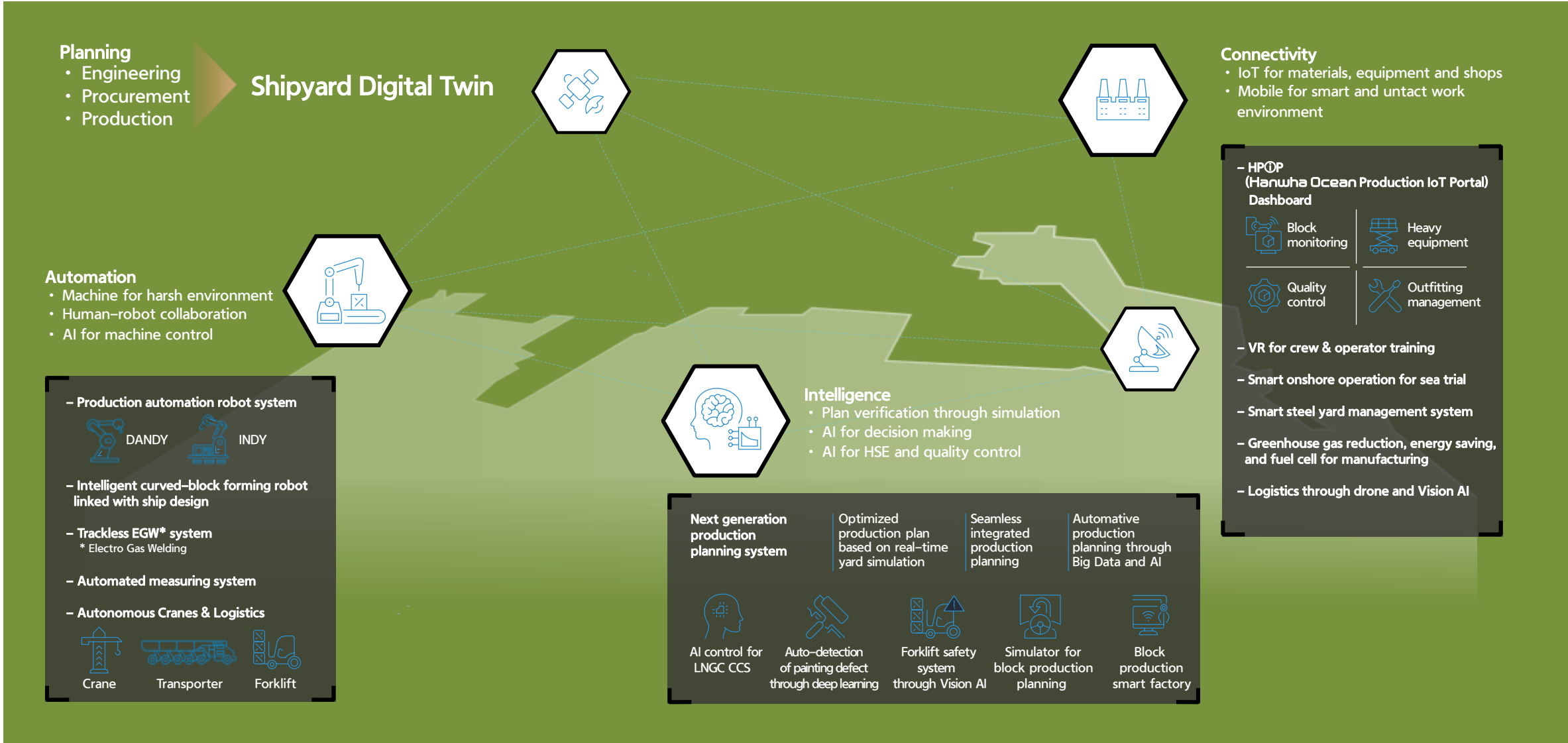
Voyage Planning
Performance Monitoring
Eco-Friendly Operation

*HS4®: Hanwha Ocean Smartship Solution

The screenshot displays the 'Hauptantrieb' (Main Drive) HMI screen. At the top, a title bar reads 'Hauptantrieb'. Below it, a large schematic diagram shows the motor's internal components, including the stator, rotor, and various sensors. The diagram is color-coded with red, yellow, and green. To the left of the schematic, there are several status indicators and data tables. The top left table shows 'Status' (Status) with values like 'Fehler' (Error) and 'Alarm'. Below it, a table lists 'Messwerte' (Measurement values) for various sensors. To the right of the schematic, another table shows 'Messwerte' for different parameters. At the bottom of the screen, a large graph displays 'Leistung' (Power) over time, with a red line indicating the power consumption. The graph has a time axis from 0 to 1000 seconds and a power axis from 0 to 1000 W. The red line shows a sharp peak around 500 seconds, reaching approximately 1000 W. Other lines in blue, green, and yellow represent different power components. The bottom right corner contains a small table with 'Messwerte' for 'Leistung' and 'Energie'.

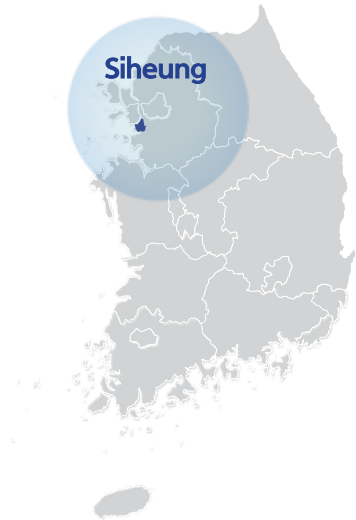
SMART TECHNOLOGIES

SMART & GREEN SHIPYARD



R&D FACILITIES

Hanwha Ocean’s newest test facilities and laboratories that enables Hanwha Ocean to develop decarbonization and digitalization technologies in the fields of ship, offshore, and defense industries.



SIHEUNG R&D CAMPUS



Towing Tank

(300m × 16m × 7m)

Scaled-model test facility for ship propulsion, maneuvering, and seakeeping performance in realistic sea conditions.



Cavitation Tunnel

(13m × 2.8m × 2.4m)

Propeller cavitation performance test facility for commercial ships and naval vessels.



Acoustic Water Tank

(25m × 15m × 10m)

Acoustic characteristics measurement and analytical test facility using underwater sound waves.



HS4® Shore Operations Center

Facility to provide web-based smart services utilizing marine data analytics with data collected via satellites in order to support clients more efficient and safer operation.



Eco-Friendly Fuel & Electrification LBTS

Electric propulsion by fuel cells and batteries, and demonstration of hybrid propulsion by SG*.

*SG : Shaft Generator

R&D FACILITIES



GEOJE SHIPYARD



Smart Yard Operation Center

Facility to optimize and improve production activities and support rapid decision making through connectivity, automation, and intelligent manufacturing.



Intelligent Production Technology R&D Center

Digital transformation research and eco-friendly and safe production devices development facility.



Energy System Research Center

Performance and endurance test facility for various LNG system.



Sloshing Research Center

Model test facility to predict and respond to sloshing loads.

GLOBAL Hanwha Ocean

Hanwha Ocean

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