

www.dsme.co.kr

Daewoo Shipbuilding &
Marine Engineering Co., Ltd.

The Ultimate Evolution
Global DSME

DSME

- 02 Company History
- 04 CEO Message
- 06 DSME World Records
- 08 Core Values / Value Chain
- 10 HSE / Quality Management

- 14 Commercial Ships
- 20 Offshore Products Plant
- 28 Naval Ships & Passenger Ships

- 38 Engineering &
Production Supporting R&D
- 42 Okpo yard Layout
- 44 Customer Service
- 46 Global Network

- 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
- 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
- 2002. Changed official corporate title to DSME and adopted corporate core values, 'Trust' and 'Passion'
- 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
 - . Achieved safety result of 10 million man-hours with IIF in Qatar LNGC project
- 2009. Received USD 10 billion Export Tower Award and world's largest floating dock debuted at DSME shipyard
- 2011. Delivered world's largest offshore Pazflor FPSO and installed in Angola
 - . Delivered world's largest Ro-Pax, "TANIT", to Tunisia Ferries
- 2012. Awarded first LNG-FPSO order from Petronas, to be installed in Malaysia
 - . Completed construction of Novus II wind power plants installed in Nova Scotia, Canada
 - . Awarded most orders in the world, USD 14 billion, reached total of USD 10 billion in offshore plant orders for first time in global shipbuilding industry

-
- 2013. Delivered world's largest 18,270 TEU containership
 - . Contracted for world's largest (263K) LNG-FSRU
 - . Awarded largest number of drillship newbuilding contracts (7 drillships)
 - . Awarded contract for high-spec Jack-Up Rig from Maersk Drilling
 - 2014. Awarded the largest number of LNGC newbuilding contracts (37 LNGCs) which worth over USD 9 billion
 - . Awarded the world first Arc7 LNG Carriers
 - . Reached the total of USD 10 billion in Gas Carrier (LNGC+LPGC) orders for the first time in the world shipbuilding industry
 - . FGSS was selected as 10 most outstanding mechanical engineering by the Korean Federation of Mechanical Engineers Societies
 - . Steel cutting for the next-generation 3,000 ton submarine which was developed entirely with its own technology
 - . Awarded the mega size Contract of Modular Plant for Kazakhstan
 - 2015. Delivered the world's largest 19,224 TEU containership
 - . Delivered the world's first LNG-powered containership featuring DSME technology
 - . Constructed the world's first LNG carrier featuring an LNG-powered engine (ME-GI) and an onboard reliquefaction system (PRS®)
 - . ISO 55001 asset management certification acquired from the British Standards Institution
 - 2016. Delivered the world's first FLNG for Malaysia's Petronas
 - . Frame agreement signed with Chevron, giving DSME the rights of first negotiation for upcoming offshore projects
 - 2017. Delivered the world's largest Jack-up Rig. (01/04)
 - . The first Korean Shipyard to deliver/export submarine abroad
 - . Industry leading membrane type cargo tank 'SOLIDUS' developed successfully. (10/26)
 - . 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)
 - 2018. Announcement of a turnaround in operating profit in 2017
 - . Delivery of LNG carriers featuring the world's first Full Re-liquefaction System (FRS)
 - . Launches South Korea's first 3,000-ton submarine
 - . Opening of the DSME and Seoul National University, Siheung R&D Center

CEO MESSAGE

Since our establishment in 1973, DSME has become the world's premium shipbuilding and offshore contractor in commercial ship, offshore platform, drilling rig, FPSO/FPU, and naval vessel business sector.

We have overcome a number of challenges by reinforcing our core competencies and concentrating more on developing high-tech products to satisfy clients' needs.

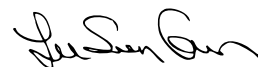
We would like to point out that DSME will lead shipbuilding industries by providing solutions based on technological superiority.

Throughout preceding activities in R&D, we continue to widen our solutions keeping a step ahead of global trends, such as integrated LNG solutions across the whole value chain ranging from liquefaction, transportation to regasification technology, eco-friendly and smart ship. Our final goal is Zero Emission Vessels (ZEV) through Net-Zero Carbon Emissions. The same meaningful journey is underway in the fields both our offshore business and special ship division.

Across the whole operation, DSME is continuing to achieve higher efficiency and optimized technologies that will create and capture long-term value for our customers providing them with economical, well-designed & executable solutions under our motto for great innovation "The Game Changer".

We would like to thank you for the continued support and trust shown throughout the years, and expect greater opportunities to be explored together in the near future. It continues to be our mission to build a better future through our ventures by exploring the vast opportunities offered by the world's ocean.

Sung Geun Lee
President & CEO





The Ultimate Evolution

GLOBAL DSME

WORLD TOP LEADER OF
LNG CARRIERS



COMMERCIAL SHIP

Delivered

1,145
vessels

As of 30 April, 2019



**OFFSHORE
PRODUCT**

Delivered

104
units



**NAVAL &
SPECIAL SHIP**

Delivered

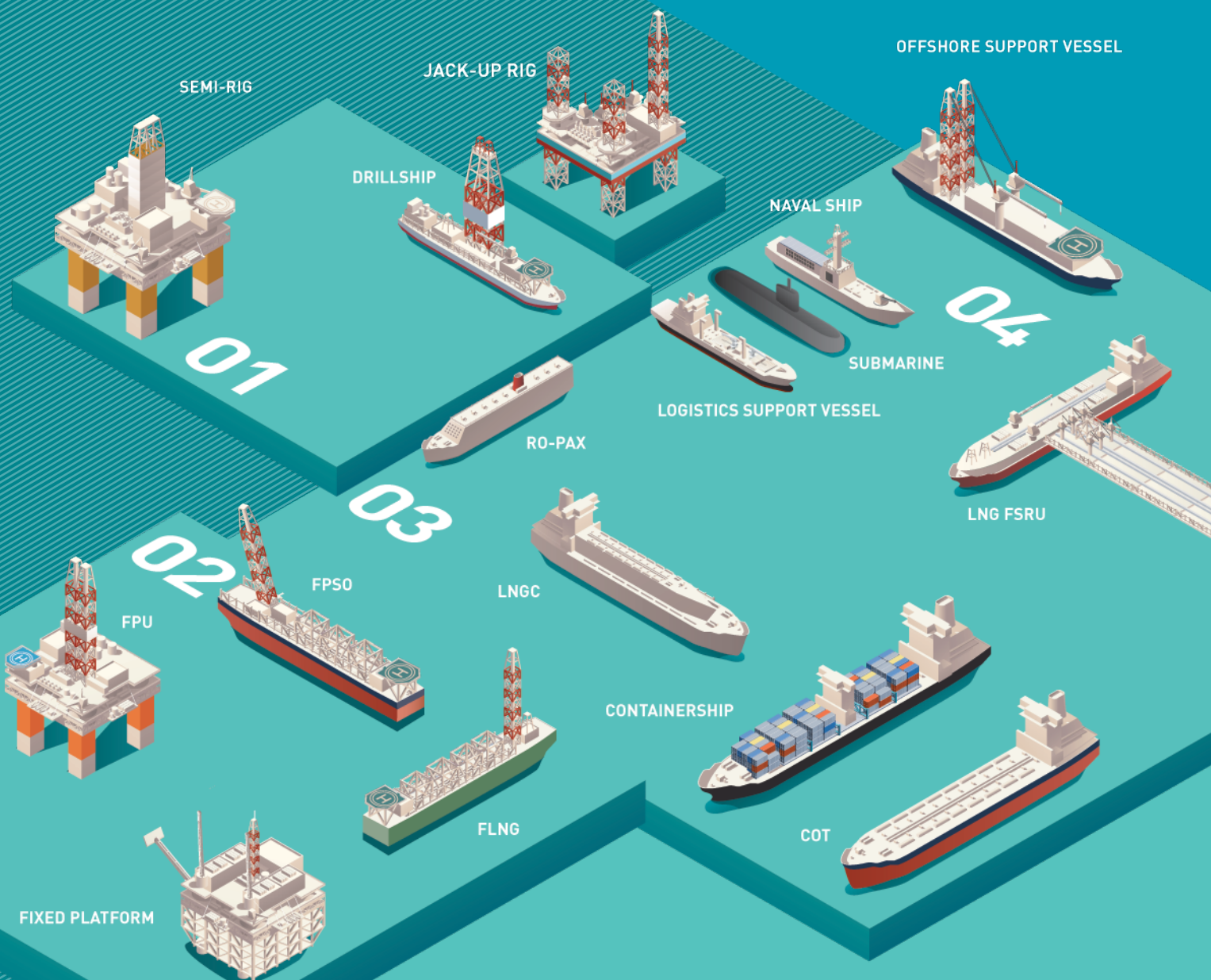
84
vessels

CORE VALUES



VALUE CHAIN

With our value chain, DSME will continue to focus on its proven core EPC/EPCIC ability to ensure our Clients' Success





TRUST

We intend to gain client confidence through transparent management and the sharing of knowledge. Moreover, we aim to win client trust by respecting their rights and values.



PASSION

Passion symbolizes the energy that resides in every DSME employee. Passion at work can be described as a symbol of one's conviction to achieve a personal goal in the corporate world.

DRILLING & DEVELOPMENT



PRODUCTION & STORAGE



TRANSPORTATION



SUPPLY & SERVICE & NAVAL ESCORT



HSE

DSME'S HSE CREDO

We, the management and staff of DSME, value, respect and care for every person and stakeholder and all our HSE activities will continuously serve and promote these core values.

We Shall:

THE GOLDEN RULE OF HSE

Never, under any circumstance, compromise any HSE standards.

INCIDENT PREVENTION

Proactively take incident prevention measures by identifying hazards and risks and immediately eliminate or mitigate any dangerous elements

HEALTH MANAGEMENT

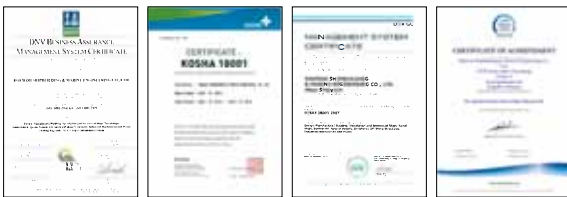
Continuously strive to improve the work environment, create an illness-free workplace, and enhance the quality of life and health of every person

ENVIRONMENTAL CARE

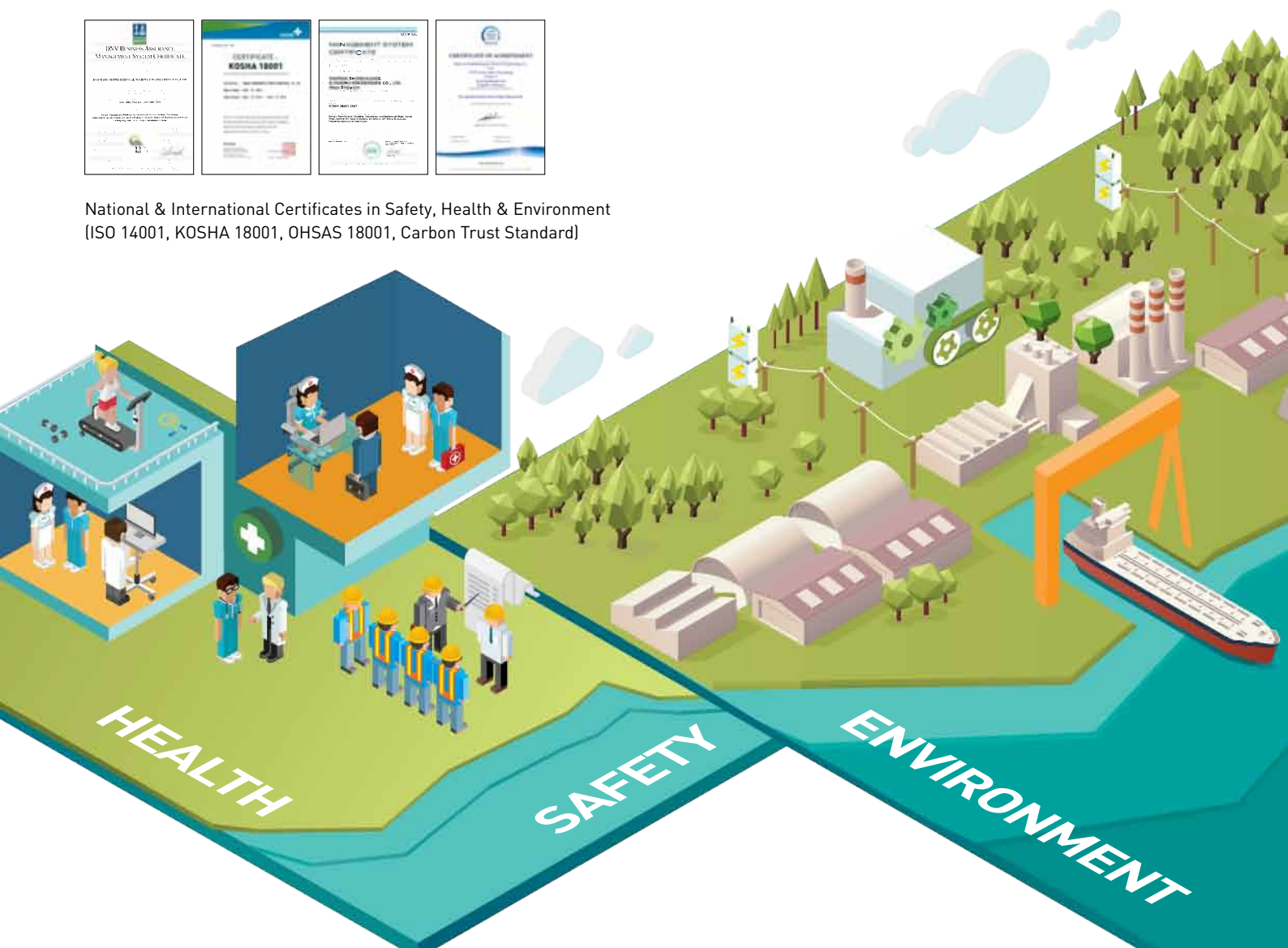
Proactively engage in environmental care activities to achieve a pollution-free eco-friendly shipyard

INDIVIDUAL COMMITMENT

Each conduct ourselves in a manner consistent with our HSE principles and standards



National & International Certificates in Safety, Health & Environment (ISO 14001, KOSHA 18001, OHSAS 18001, Carbon Trust Standard)



QUALITY MANAGEMENT

QUALITY PHILOSOPHY

As the world's leading shipyard, we willingly create the highest value and share deep trust with our customers.

PRACTICAL MIND OF QUALITY PHILOSOPHY

1. Fulfill the promise made to our customers in advance of their requests.
2. Always bear in mind that each person is responsible for the product and performance quality of DSME.
3. Strive continuously to improve the quality of products & services.
4. Always remember that we are producing the world's best products at the world's leading shipyard.
5. Complete our assignments correctly the first time.

DSME maintains certificates that prove our readiness and competitiveness to meet any request from our customers.



- ISO 9001:2015 Management System Certificate
- ISO/TS 29001:2010 Management System Certificate
- Defense Quality Assurance System
- Testing Laboratory
- Calibration Laboratory





BUSINESS PORTFOLIO

We believe that refinement and integration of the key factors below into our business make us a global leader.

- Design flexibility and customization
- Focus on high efficiency and environmentally friendly design development elements
- Expert competency in project management
- Process innovation
- High level of quality

DSME pays attention to the voices of clients, respects their values, and believes client success is our success.

We pursue the highest level of quality for every product, and are always willing to go closer and closer to clients as a true partner through EPCIC in our commercial ship, offshore, and naval ship business sector.



COMMERCIAL SHIPS

DSME maintains and further strengthens its competitiveness in the shipbuilding industry through continuous efforts to integrate the world's leading technologies and methods into its work processes and end products.

Utilizing 900 ton goliath cranes at its No.1 and 2 docks to maximize design and production efficiency with the world's three largest floating docks, DSME provides its customers with top quality vessels including LNG Carriers, FSRU, Ultra Large Containerships, VLCC, ULOC and VLGC.



LNGC, Maran "Maran Gas Spetses"

CLASS : ABS
DIMENSION (M) : 294.9(L) X 46.4(B) X 26.5(D)
CAPACITY : 173,400 CBM
MAIN ENGINE : MAN B&W 5G70ME-C9.5-GI X 2 SETS

01

LNGC, Teekay "Creole Spirit"

CLASS : DNV-GL
 DIMENSION (M) : 291.4(L) X 46.4 (B) X 26.5(D)
 CAPACITY : 173,400 CBM
 MAIN ENGINE : MAN B&W 5G70ME-C9.2-GI X 2 SETS

02

Arctic LNGC (Arc 7), Sovcomflot "Christophe de Margerie"

CLASS : BV/RMRS
 DIMENSION (M) : 299(L) X 50(B) X 26.5(D)
 CAPACITY : 172,600 CBM
 MAIN ENGINE : WARTSILA 12V50DF X 4 SETS &
 WARTSILA 9L50DF X 2 SETS



01



02

01

263K LNG-FSRU, MOL "FSRU Challenger"

CLASS : BV
DIMENSION (m) : 345(L) X 55(B) X 27(D)
CAPACITY : 263,000 CBM
MAIN ENGINE : MAN 9L51/60DF X 4 SETS

02

VLGC, BW "Malacca"

CLASS : LR
DIMENSION (m) : 226(L) X 36.6(B) X 22.2(D)
CAPACITY : 84,000 CBM
MAIN ENGINE : MAN B&W 6G60ME-C9.2



01



02

03

VLCC, HMM "Universal Leader"

CLASS : LR/KR
 DIMENSION(M) : 336.0(L) X 60.0(B) X 29.5(D)
 CAPACITY : 300,000 DWT
 MAIN ENGINE : MAN B&W 7G80ME-C9.5 X 1 SET

04

Containership, Maersk "Munich Maersk"

CLASS : ABS
 DIMENSION (M) : 399(L) X 58.6(B) X 33.2(D)
 CAPACITY : 19,630 TEU
 MAIN ENGINE : MAN B&W 7G80ME-C9.5 X 2 SETS



03




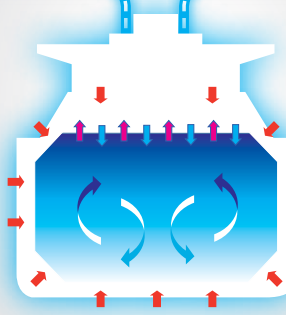
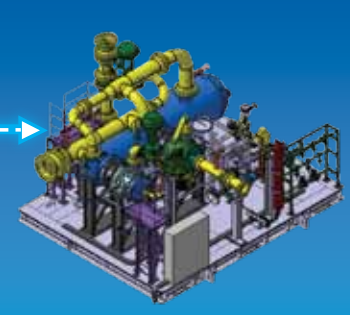
04

COMMERCIAL SHIPS TECHNOLOGY

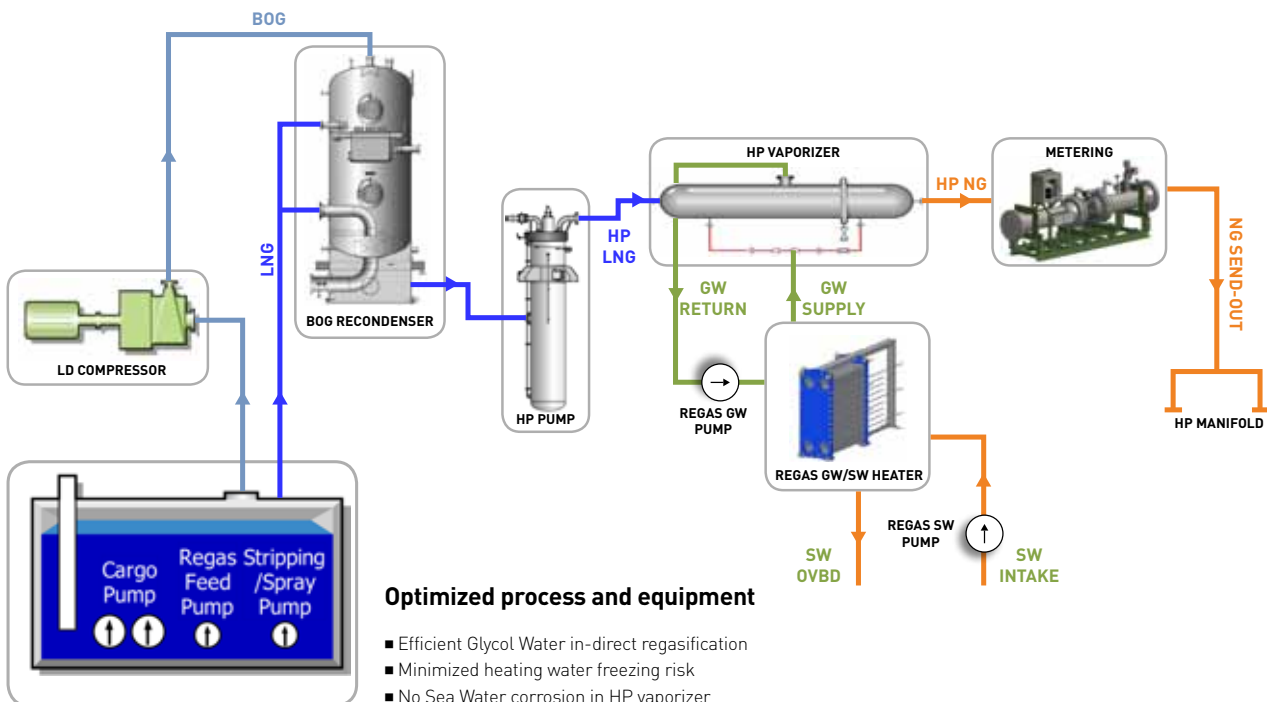
RE-LIQUEFACTION SYSTEM

Partial and full re-liquefaction system upon owner's request

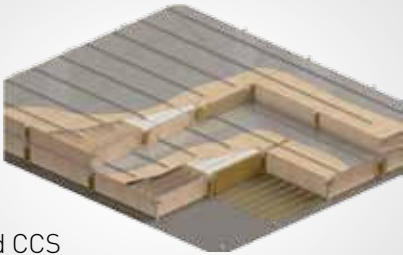
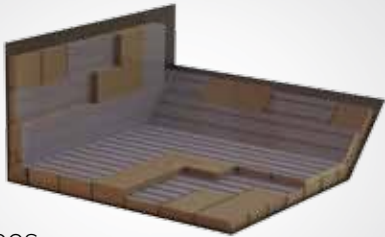
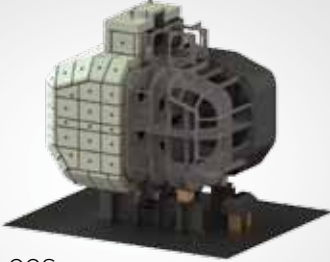
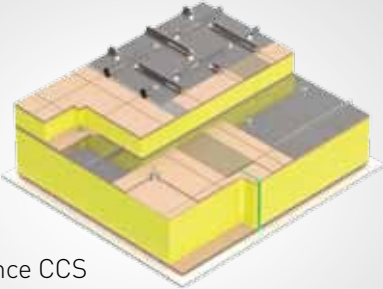
Applicable for both MEGI and X-DF engine

For MEGI	Cargo Hold	For X-DF
 <p>PRS®/FRS®</p> <ul style="list-style-type: none"> Optimized for high-pressure 2 stroke engine Re-liquefaction capacity <ul style="list-style-type: none"> - PRS (60 %) / FRS (100 %) Simple configuration <ul style="list-style-type: none"> - No refrigerant process - No additional rotating machine 		 <p>A-PRS®/MRS-P®/MRS-F®</p> <ul style="list-style-type: none"> Optimized for low-pressure 2 stroke engine Re-liquefaction capacity <ul style="list-style-type: none"> - A-PRS (60 %) / MRS-F (100 %) Methane refrigerant system [MRS-F® only] <ul style="list-style-type: none"> - BOG as refrigerant - Full re-liquefaction at anchoring state

RE-GASIFICATION SYSTEM(IN-DIRECT)

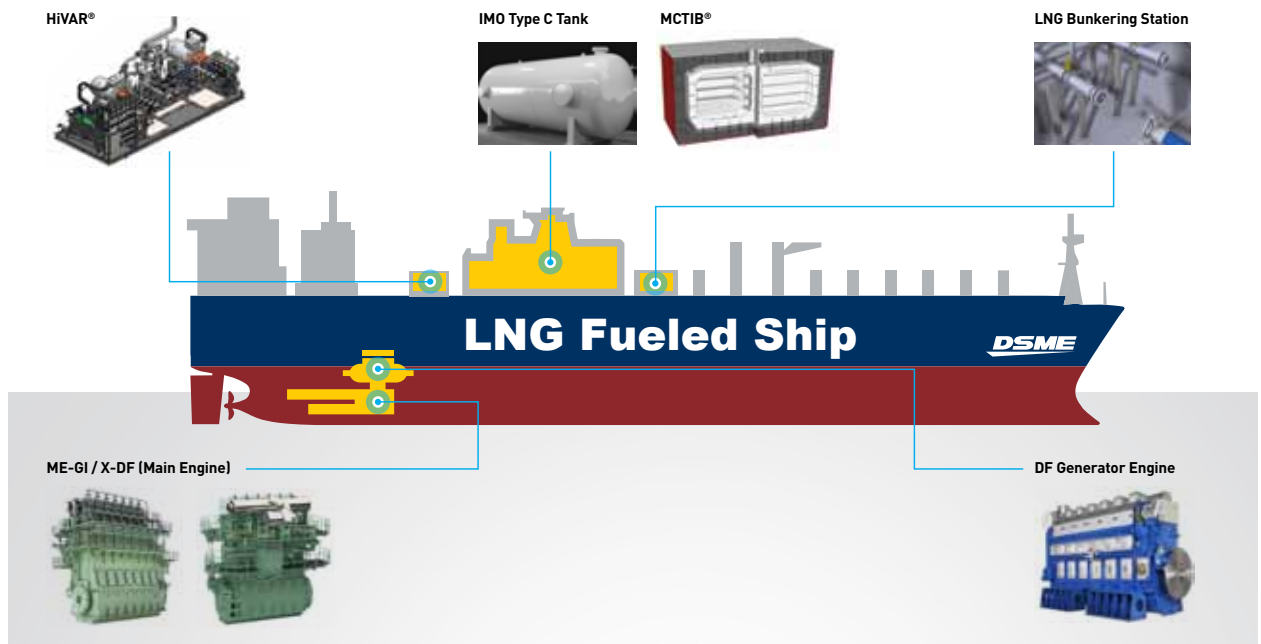


CARGO CONTAINMENT SYSTEM

<p>N096 GW</p>  <p>Widely Applied CCS</p>	<p>DCS16</p>  <p>Cost Effective CCS</p>
<p>MCTIB®</p>  <p>Cargo Free Filling CCS</p>	<p>SOLIDUS®</p>  <p>High Performance CCS</p>

LNG FUEL SYSTEM

DSME HiVAR®, The most efficient fuel gas supply system



OFFSHORE PRODUCTS & PLANTS

As the world best EPCIC contractor, DSME has been providing total solutions to our valuable clients for a wide range of offshore oil and gas development projects

As a TOP-TIER EPCIC CONTRACTOR, DSME has experienced in executing a wide range of offshore products such as Fixed Platforms, TLPs, FPU's and FPSOs as well as Drillships, Semi- Submersible Rigs, Jack-up Rigs, and modular plants with project management skills proven through its successful completion of large scale offshore projects.

In addition to convention offshore projects, DSME is capable to deliver newly developed facilities including FLNG, de-commissioning vessels and FSPP etc.

DSME has delivered the world's largest FPSO (TOTAL Pazflor FPSO in Angola)



01

PETRONAS SATU FLNG

DIMENSION (m) : 365 (L) X 60 (B) X 33 (D)
 LNG PRODUCTION CAPACITY : 1.2 MTPA
 STORAGE CAPACITY : 177K(LNG) / 20K (CONDENSATE)
 CARGO CONTAINMENT SYSTEM : GTT NO96 MEMBRANE (TWO-ROW)
 LIQUEFACTION PROCESS : DUAL N2 EXPANSION
 FIELD : KANOWIT, MALAYSIA
 SCOPE OF WORK : EPCIC
 CLIENT : PETRONAS
 SAIL AWAY : MAY 2016

02

INPEX ICHTHYS FPSO

DIMENSION (m) : HULL 336(L) X 59(B) X 31(D)
 PRODUCTION CAPACITY : OIL 80,000 BOPD
 GAS 86.6 MMSCFD
 STORAGE CAPACITY : 1,120,000 BBL
 MOORING : TURRET MOORING (INTERNAL)
 3 X 7 MOORING LINES
 FIELD : ICHTHYS, AUSTRALIA
 SCOPE OF WORK : EPCC
 CLIENT : INPEX OPERATIONS AUSTRALIA PTY LTD.
 SAIL AWAY : JULY 2017



01

EQUINOR(STATOIL) GINAKROG

PRODUCTION : OIL 25,000 BOPD
 GAS 9 MMSCFD
 WATER 4,000 BWPD

WEIGHT : 18,299 MT

CLIENT : STATOIL PETROLEUM AS

SAIL AWAY : JUNE 2016

SCOPE OF WORK : EPCH

FIELD : NORTH SEA

02

EXXON KIZOMBA "B" - SWHP

DIMENSIONS (m) : HULL 92.28 (L) X 92.8 (W) X 44.96 (H)

WEIGHT : HULL 12,207 MT

TENDON : 8 EA

RISER : 1 DRILL + 31 PRODUCTION

NUMBER OF PRODUCTION WELL : 33 EA

CAPACITY : OIL 250,000 BOPD
 WATER 230,000 BWPD
 INJECTION WATER 420,000 BWPD
 GAS 215 MMSCFD

CLIENT : ESSO EXPLORATION ANGOLA
 (BLOCK 15)

DELIVERY : MARCH 2005

SCOPE OF WORK : EPC

FIELD : OFFSHORE ANGOLA



01



02

03

TRANSOCEAN DRILLSHIP

DIMENSIONS (m) : 238(L) X 42(W) X 19(D)
 CAPACITY : VARIABLE DECK LOAD 23,000 MT
 DRILLING DEPTH 40,000 FT
 WATER DEPTH 12,000 FT
 DRILLING SYSTEM DUAL
 DESIGN : ENHANCED DSME 12000
 (RISER IN HULL)
 CLIENT : TRANSOCEAN
 DELIVERY : AUGUST 2016
 SCOPE OF WORK : EPC

04

SONGA CAT.D SEMI RIG

DIMENSIONS(m) : 116.00(L) X 97.00(B) X 35.75(H)
 CAPACITY : VARIABLE DECK LOAD 4,000 MT
 DRILLING DEPTH 8,500 M
 MAX. WATER DEPTH 500 M
 DESIGN : GVA4000 NCS
 CLIENT : SONGA OFFSHORE
 DELIVERY : MARCH 2016
 SCOPE OF WORK : EPC

05

MAERSK JACK-UP RIG

DIMENSIONS (m) : 88.8(L) X 105.1(W) X 12.0(D)
 LEG LENGTH : 206.8 M
 CAPACITY : DRILLING DEPTH 12,000 M
 WATER DEPTH 150 M
 DESIGN : GUSTOMSC CJ70
 CLIENT : MAERSK DRILLING
 DELIVERY : JANUARY 2017
 SCOPE OF WORK : EPC



03



04



05

OSV

OFFSHORE SUPPORT VESSELS

DSME combines its expertise in commercial ship newbuilding and wide knowledge of offshore project execution to fabricate offshore support vessels with high capacity. It has forged a proven track record of constructing large complex OSVs such as Platform Decommissioning, Heavy Lift Construction and S-Lay/J-Lay/Flexible Pipelay Vessels that serve various functions in the offshore energy industry.

01

ALLSEAS PLATFORM DECOMMISSIONING AND PIPELAY VESSEL ("PIO-NEERING SPIRIT")

DIMENSION (m) : 381.8 (L) X 123.75 (B) X 30 (D)
 MAIN SYSTEM : 48,000MT TOP SIDE LIFTING SYSTEM, 25,000MT JACKET LIFTING SYSTEM, S-LAY PIPELAY SYSTEM, 1 X 600MT MAIN CRANE, 1 X 65MT CRANE, 3 X 40MT CRANE
 DELIVERY : NOV 2014
 SCOPE OF WORK : EPCC
 CLIENT : ALLSEAS GROUP S.A.



01

02

HEEREMA DEEPWATER CONSTRUCTION VESSEL ("AEGIR")

DIMENSION (m) : 210.25 (L) X 46.2 (B) X 16.1 (D)
 MAIN SYSTEM : 3 X 2,400MT REEL, 1 X RJ-LAYING SYSTEM, 1 X 4,000MT HEAVY LIFT CRANE, 2 X 40MT KNUCKLE BOOM CRANE
 DELIVERY : JAN 2013
 SCOPE OF WORK : EPCC
 CLIENT : HEEREMA OFFSHORE SERVICES



02

FLOATING POWER PLANT



DSME's FSPP includes multiple functions of power generation, LNG storage, regasification and gas distribution. With this all-in-one solution, DSME's FSPP can generate and supply electricity to meet local demands.

FSPP (FLOATING STORAGE POWER PLANT)

POWER RATE	: 10MW ~ 750MW
GENERATION TYPE	: ENGINE / COMBINED CYCLE
LNG STORAGE CAPACITY	: MADE TO ORDER
CCS TYPE	: MEMBRANE
REGASIFICATION CAPACITY	: MADE TO ORDER



By maximizing its world best capacity coming from extensive offshore experience, DSME has widened its expertise in modular plant business. DSME successfully manages the vast volume of modular plant fabrication with its qualified resources from Okpo and other subsidiary yards - especially Ulsan Yard. Further, with its experiences from recent projects such as ZADCO UZ750, TCO FGP, DSME aims to expand its business area and provide high value added service as modular fabricator.

OFFSHORE PRODUCTS PLANT R&D

e-SMART DRILLSHIP

By incorporating feedback from drilling contractors, oil companies, and vendors, DSME has developed the latest DSME e-SMART drillship design featuring cozy accommodations, optimized mud/bulk system arrangement, increased deck and drill floor space. DSME e-SMART drillship is capable of operating in water up to 12,000 feet deep and in drilling depths of 40,000 feet.

ECO FRIENDLY

ENVIRONMENTALLY FRIENDLY

ENERGY SAVING

SAFETY ENHANCEMENT

MAINTENANCE EASY

ADVANCED OPERABILITY

RELIABLE FUNCTIONALITY

TOP COMFORT

- High Variable Deck Load 34,000 Tons (incl. FO 7,300 tons)
- A space for 2 x BOP stack and Maximum 6 x X-mas trees
- BOP stack : 20,000 psi x 7 Rams or 15,000 psi x 8 Rams
- A space for 5 x Mud pumps (7,500 psi) and 2 ROV
- 3 x Pipe and DP Cable Trunks Under Main Deck for Easy Access Maintenance and Prevention of Dropped objects



Mid-size Generic FPSO

To overcome low oil price condition, DSME have developed a function oriented Mid-size generic FPSO which has production capacity of 100 k BOPD with maximizing Standardization/Modularization, cost effective optimization of specification/standard, and collaboration with major vendors:

- COST EFFICIENT OPTIMIZED FUNCTIONS & STANDARDS

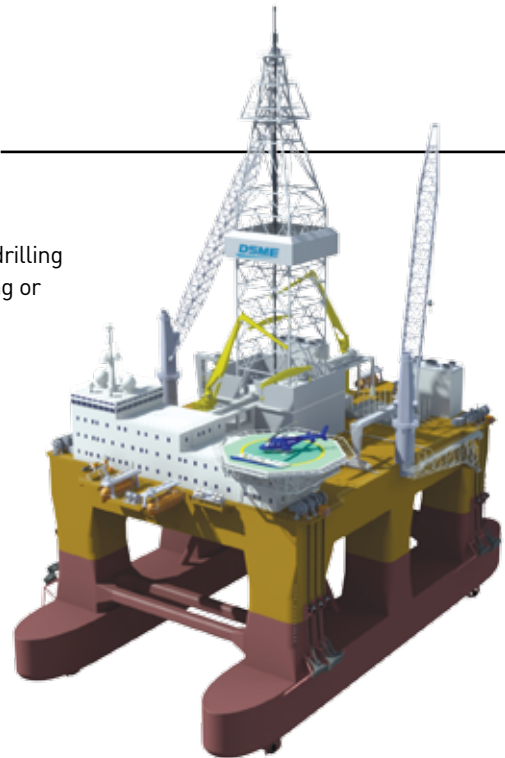
- DELIVERING FAST-TRACK SOLUTION THROUGH STANDARDIZATION/MODULARIZATION



DSME 4000M SEMI-RIG DESIGN

DSME has developed its own semi-submersible rig design, capable of drilling up to a depth of 30,000 feet while operating in thruster-assisted mooring or dynamic positioning mode in mid-water.

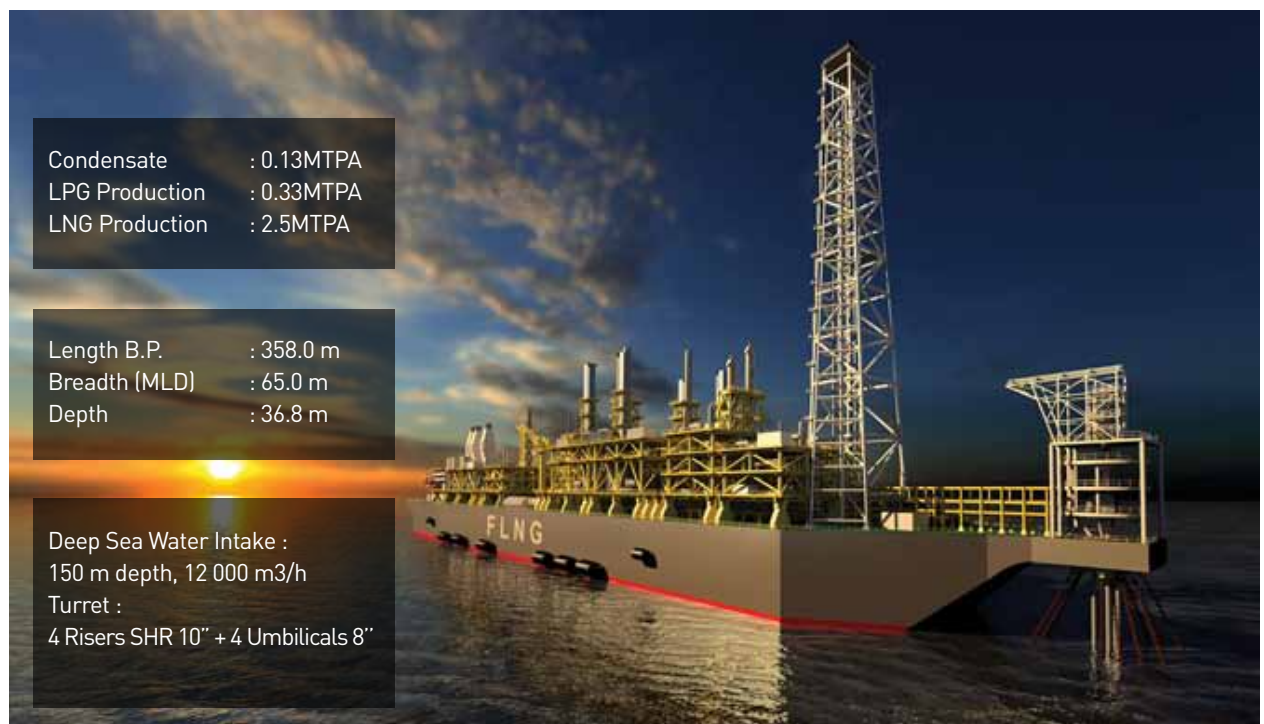
- Variable Deck & Column Payload of 4,000 tons
- Ergonomic L/Q Design
- Designed for Environmental Protection (CLEAN Design, Zero Discharge, BWTS, Nox Tier 3 etc)



2.5 MTPA Generic FLNG

In partnership with BUMI ARMADA BERHAD and SAIPEM SA, DSME have developed a generic FLNG which has production capacity of 2.5 MTPA based on the APCI SMR® Liquefaction Process including LPG and condensate production:

- **COST EFFICIENT- HIGH PERFORMANCE FLNG SOLUTION**
- **DELIVERING A "FIT-FOR-PURPOSE" SOLUTION TO MARKET**



NAVAL SHIPS & PASSENGER SHIPS

DSME is 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).

TOTAL SOLUTION PROVIDER

- Technology Transfer
- Technical Assistance (TA)
- Integrated Logistic Support
- Government to Government Contract
- Financing
- Offset

01

**KSS-III SUBMARINE
(ROKN CHANGBOGO-III)**

DIMENSION (m) : ABT. 83 (L) X 10 (B) X 15 (H)
DISPLACEMENT : ABT. 3,350 TONS (SURFACED)

02

**KSS-I SUBMARINE
(ROKN CHANGBOGO-I)**

DIMENSION (m) : ABT. 56 (L) X 6 (B) X 11 (H)
DISPLACEMENT : ABT. 1,300 TONS (SURFACED)

03

**KSS-II SUBMARINE
(ROKN CHANGBOGO-II)**

DIMENSION (m) : ABT. 65 (L) X 8 (B) X 13 (H)
DISPLACEMENT : ABT. 1,800 TONS (SURFACED)



02



03

01

DSME1400 SUBMARINE

DIMENSION (M) : ABT. 61 (L) X 7 (B) X 12 (H)
DISPLACEMENT : ABT. 1,450 TONS (SURFACED)

02

SUBMARINE OVERHAUL AND MODERNIZATION

- WEAPON CONTROL SYSTEM
- NAVIGATION SYSTEM
- SURVEILLANCE SYSTEM (RADAR, ESM)
- SONAR
- PERISCOPE
- ETC



01



02

03

**DW1000D DESTROYER
(ROKN KDX-III)**

DIMENSION (m) : ABT. 166 (L) X 21 (B) X 13 (D)
 DISPLACEMENT : ABT. 10,000 TONS
 SPEED : ABT. 30 KNOTS(MAX.)
 PROPULSION : COGAG SYSTEM WITH TWIN CPP
 ARMAMENT : AEGIS COMBAT SYSTEM / 1 X 5" GUN /
 1 X CIWS / 1 X SAAM / 80 X VLS /
 28 X KVLS / 16 X KSSM /
 6 X TORPEDOES / DECOY LAUNCHERS

04

**DW5500D DESTROYER
(ROKN KDX-II)**

DIMENSION (m) : ABT. 150 (L) X 17 (B) X 10 (D)
 DISPLACEMENT : ABT. 5,500 TONS
 SPEED : ABT. 31 KNOTS(MAX.)
 PROPULSION : CODOG SYSTEM WITH TWIN CPP
 ARMAMENT : 1 X 5" GUN / 1 X CIWS, 1 X SAAM /
 32 X VLS / 24 X KVLS / 8 X KSSM /
 6 X TORPEDOES / DECOY LAUNCHERS



03



04

01

**DW3000H FRIGATE
(ROKN FFX BATCH-II)**

DIMENSION (m) : ABT. 122 (L) X 14 (B) X 7 (D)
 DISPLACEMENT : ABT. 3,600 TONS
 SPEED : ABT. 30 KNOTS(MAX.)
 PROPULSION : CODLOG SYSTEM WITH TWIN CPP /
 2 X PROPULSION MOTORS
 ARMAMENT : 1 X 5" GUN / 1 X CIWS / 8 X KSSM /
 16 X KVLS / 6 X TORPEDOES /
 DECOY LAUNCHERS

02

DW 3000F FRIGATE

DIMENSION (m) : ABT. 124 (L) X 14 (B) X 8 (D)
 DISPLACEMENT : ABT. 3,650 TONS
 SPEED : ABT. 30 KNOTS(MAX.)
 PROPULSION : CODAG SYSTEM WITH TWIN CPP
 ARMAMENT : 1 X 76MM GUN / 2 X 30MM GUNS /
 1 X CIWS / 8 X SSM / 8 X VLS /
 6 X TORPEDOES /
 6 X CHAFF LAUNCHERS



01



02

03

**LOGISTICS SUPPORT VESSEL
(UK TIDE CLASS TANKER)**

DIMENSION (m) : ABT. 201 (L) X 29 (B) X 14 (D)
 DISPLACEMENT : ABT. 40,300 TONS
 SPEED : ABT. 15+ KNOTS
 PROPULSION : CODOG SYSTEM WITH TWIN CPP
 MAJOR SYSTEMS : 2 X CIWS / 2 X 30MM GUNS /
 RAS & FAS SYSTEM (3 STATION) /
 2 X DECK CRANES

04

**DW4000T ATS
(ROKN AUXILIARY TOWING SALVAGE)**

DIMENSION (m) : ABT. 108 (L) X 17 (B) X 8 (D)
 DISPLACEMENT : ABT. 4,700 TONS
 SPEED : ABT. 21 KNOTS (MAX.)
 PROPULSION : CODAD WITH TWIN CPP
 MAJOR SYSTEMS: MIXED GAS & AIR & SCUBA
 DIVING SYSTEM / DYNAMIC
 POSITIONING SYSTEM / 4-POINT
 MOORING SYSTEM / STRANDED
 SHIP PULLING & LIFTING
 SYSTEM / TOWING SYSTEM /
 UNDERWATER SEARCHING
 SYSTEM

05

**DW4000R ASR
(ROKN AUXILIARY SUBMARINE RESCUE)**

DIMENSION (m) : ABT. 102 (L) X 16 (B) X 8 (D)
 DISPLACEMENT : ABT. 4,300 TONS
 SPEED : 18 KNOTS (MAX.)
 PROPULSION : 2 X D/E WITH TWIN CPP
 MAJOR SYSTEMS: DEEP DIVING SYSTEM / SHALLOW
 & SCUBA DIVING SYSTEM /
 DYNAMIC POSITIONING SYSTEM
 / 4 POINT MOORING SYSTEM
 / UNDERWATER OBJECT
 CLASSIFICATION SYSTEM /
 SUBMARINE RESCUE SYSTEM/
 DECOMPRESSION CHAMBER



03



04



05

PASSENGER SHIP

DSME has built a variety of ferries for international owners, from fast ferries to the highest class luxury semi-cruisers, and earned acclaims for the quality and adaptability of its products. In 2012, DSME delivered 'Tanit', the world's first vessel to fully satisfy the "Safe Return to Port (SRtP)" requirements, to a Tunisian government company (Compagnie Tunisienne de Navigation). The vessel was selected as 'Significant Ship of 2012' by Naval Architect and 'Notable Newbuilding of 2012' by Fairplay Solutions.



01

01

ROPAX, COTUNAV TANIT

CLASS : BV
 DIMENSION (m) : 210.0 (L) X 30.0 (B) X 10.5 (D)
 PASSENGER / CARGO CAPACITY : 3,200 PASSENGERS (653 CABINS)
 AND 285 CREW (161 CABINS) /
 1,060 CARS (OR 91 TRAILERS +
 339 CARS)
 MAIN ENGINE : 4 X MAN 12V48/60CR



02

02

ROPAX, BSF BLUE STAR DELOS

CLASS : BV
 DIMENSION (m) : 145.9 (L) X 23.2 (B) X 8.4 (D)
 PASSENGER / CARGO CAPACITY : 2,400 PASSENGERS (31 CABINS)
 AND 87 CREW (53 CABINS) /
 427 CARS (OR 600LM + 146 CARS)
 MAIN ENGINE : 4 X MAN 16V32/40

NAVAL SHIPS R&D

OPERATIONAL CAPABILITY IMPROVEMENT

- Combat Management System (CMS) & Combat System Integration (CSI)
- Combat Performance/Effectiveness Analysis
- Total Ship Survivability (TSS) Analysis

NEXT GENERATION SUBMARINE

- Next Generation Submarine Design
- Submarine Weapon System
- Submarine AIP System

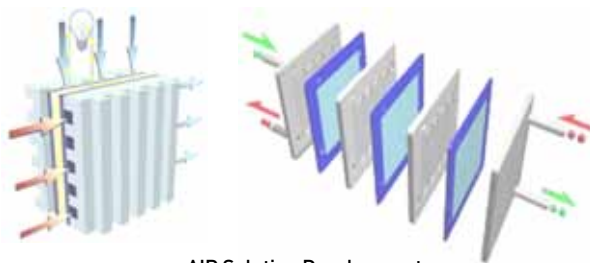
SMART SHIP TECHNOLOGY

- Naval Intelligent Autonomous System
- Combat Engagement/Engineering Simulator
- Unmanned Underwater/Surface Vehicle



AIR INDEPENDENT PROPULSION (AIP) SYSTEM

DSME has successfully developed the high- efficient AIP solution for achieving lengthened operational mission capabilities. In addition, the hydrogen supply system in AIP is being upgraded for increased efficiency of the system.



AIP Solution Development

TOTAL SHIP SURVIVABILITY (TSS) ANALYSIS

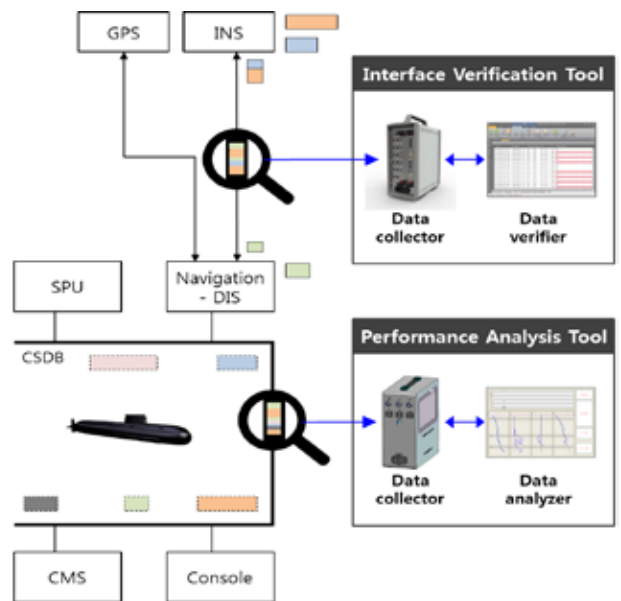
TSS requires the balance between customer's desire to maximize ship's survivability and limited resources assigned to build a warship. DSME has conducted TSS for several ROKN surface warships. These experiences help us to advise our customers how to incorporate TSS solutions to ship building procedures without increasing weight and cost.



TSS Solution Analysis

VERIFICATION AND ANALYSIS TOOLSET FOR COMBAT SYSTEM INTEGRATION (CSI)

DSME has developed a multipurpose toolset for designing and integrating submarine combat systems. The interface verification tool validates inter-system specifications at the system-design phase, and the performance analysis tool evaluates intra-system behaviors at the system-integration phase. The toolset was successfully applied to combat systems for the submarine renovation project. Furthermore, the toolset will be utilized for more advanced newbuilding submarines.



CMS: Combat Management System GPS: Global Positioning System
 CSDB: Combat System Data Bus INS: Inertial Navigation System
 DIS: Data Integration System SPU: Signal Processing Unit

Verification and Analysis Toolsets



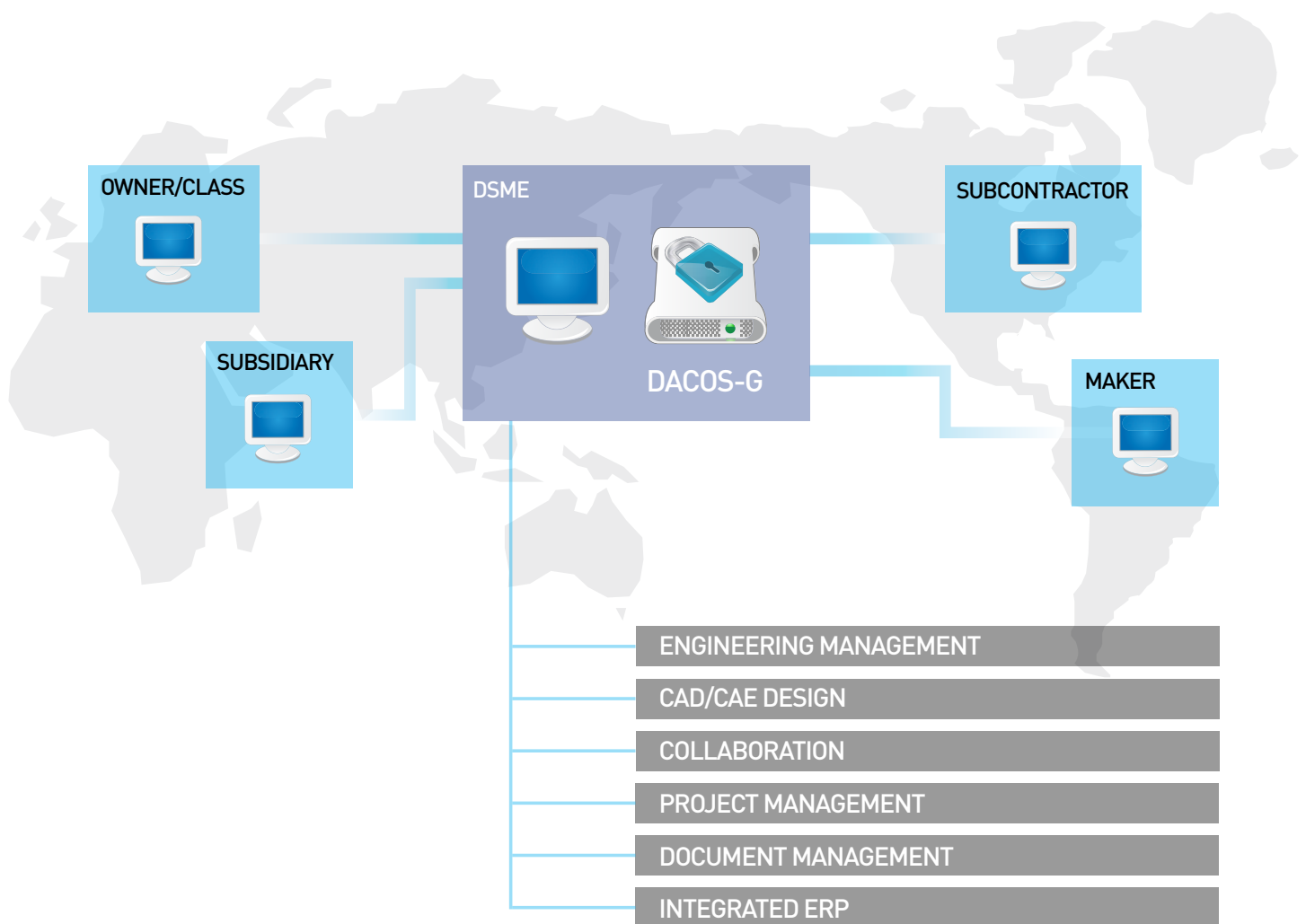
INSIDE

DSME



ENGINEERING & PRODUCTION SUPPORTING R&D

INFORMATION TECHNOLOGY



DACOS-G

(DSME ADVANCED CAD SYSTEM FOR OFFSHORE & SHIPBUILDING - GLOBAL)

DACOS-G is a total worldwide information system to support the engineering, procurement, construction and after service for DSME's products. All information created during the life cycle of product is systematically managed as is partner information from DSME affiliates and equipment makers, regardless of the time and place through DSME's DACOS-G.

SMART PRODUCTION TECHNOLOGY

AUTOMATION AND SMART FACTORY

1. AUTOMATIC WELDING TECHNOLOGY

DSME provides the optimum total welding solution for the products, which aims at the comprehensive, efficient, and robust welding technology for the 'Smart Shipyard'. For better soundness and productivity, high-performance welding processes equipped with semi- or fully automatic system have been developed. As part of the recent research success, fully automated pipe welding machines and patented portable welding robot system, have been successfully applied in the shipyard to make the better quality and productivity.



2. IoT PLATFORM AND INFORMATION CLOUD

Through execution of Digital Transformation, DSME is trying to shift the yard from the human-centric production system to the information-driven one. Our valuable experience and know-how are converging with the advanced technology to transform DSME into the most innovative and competitive shipyard in the world. The IoT platform via multilaterally connected data networks enhances real-time production monitoring, and hence makes the shipyard safer, more efficient, and sustainable. The benefit of the information-based production system aims not only to enhance our business performance but also to provide higher quality and reliability to our customers.



ENVIRONMENT AND SAFETY

3. ECO-FRIENDLY PAINTING TECHNOLOGY

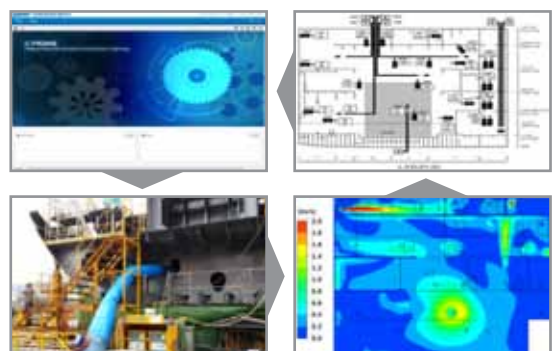
DSME has been developing and applying various eco-friendly painting technologies to achieve the 'Green Shipyard'.

- Higher solid paints can reduce the emission of VOCs up to 40% compared with conventional marine paints.
- Advanced abrasive materials for the blasting process can mitigate up to 80% of the dust less produced from surface preparation work than conventional abrasives.
- Intelligent spraying equipment and our unique painting practice called as CPS(Coating Procedure Specification) can minimize the excess use of paint materials.
- HAPs treatment facility keeps VOCs emission from spraying paint.



4. VENTILATION PROCEDURE SPECIFICATION (VPS) SYSTEM

The VPS is the philosophy and the standard working practice that can systematically share the standard ventilation information, and manage the clean air condition in the confined space of ship structures during construction. It also predicts and manages the total demand of ventilation resources and efficient response on demand to make the working environment more clean and safer. The VPS consists of a series of ventilation control data predicted by three dimensional CFD simulation and calibrated by the direct measurement of the air quality to meet the contaminant exposure criteria.



ENERGY SYSTEM RESEARCH CENTER

Energy System Research Center is specialized in conducting full-scale tests with cryogenic liquids such as LNG and LN2 for prototype systems, which helps assurance of the performance prior to ship application. Various LNG systems such as LNG CCS, fuel gas supply skid, regasification skid, and re-liquefaction skid have been tested at the laboratory.

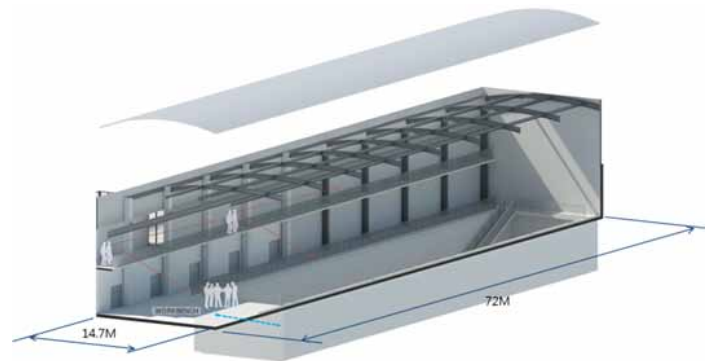
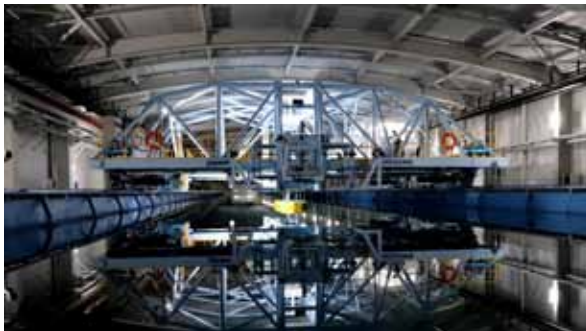


- 01** LNG/LN2 Storage
- 02** Regasification Skid
- 03** Fuel Gas Supply Skid
- 04** Reliquefaction Skid



DSME SIHEUNG R&D CENTER

DSME Siheung R&D Center, co-located with Seoul National University, is the heart of DSME's technological innovation. It accommodates various facilities for the R&D in the fields of ship, offshore, and defense industries. The center is also the hub for collaborations with government institutions, universities, and enterprises.



- Towing Tank
- Cavitation Tunnel
- Model Workshop
- Defense industry Laboratory
- Gas / Energy Laboratory (LBTS)
- Acoustic Laboratory

OKPO YARD 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 : 2EA
 Floating Docks : 3EA
 Launching Barge : 1 EA

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





Offshore & Plants Fabrication Area
(Heavy Zone)



5

9

8

3

4

CUSTOMER SERVICE

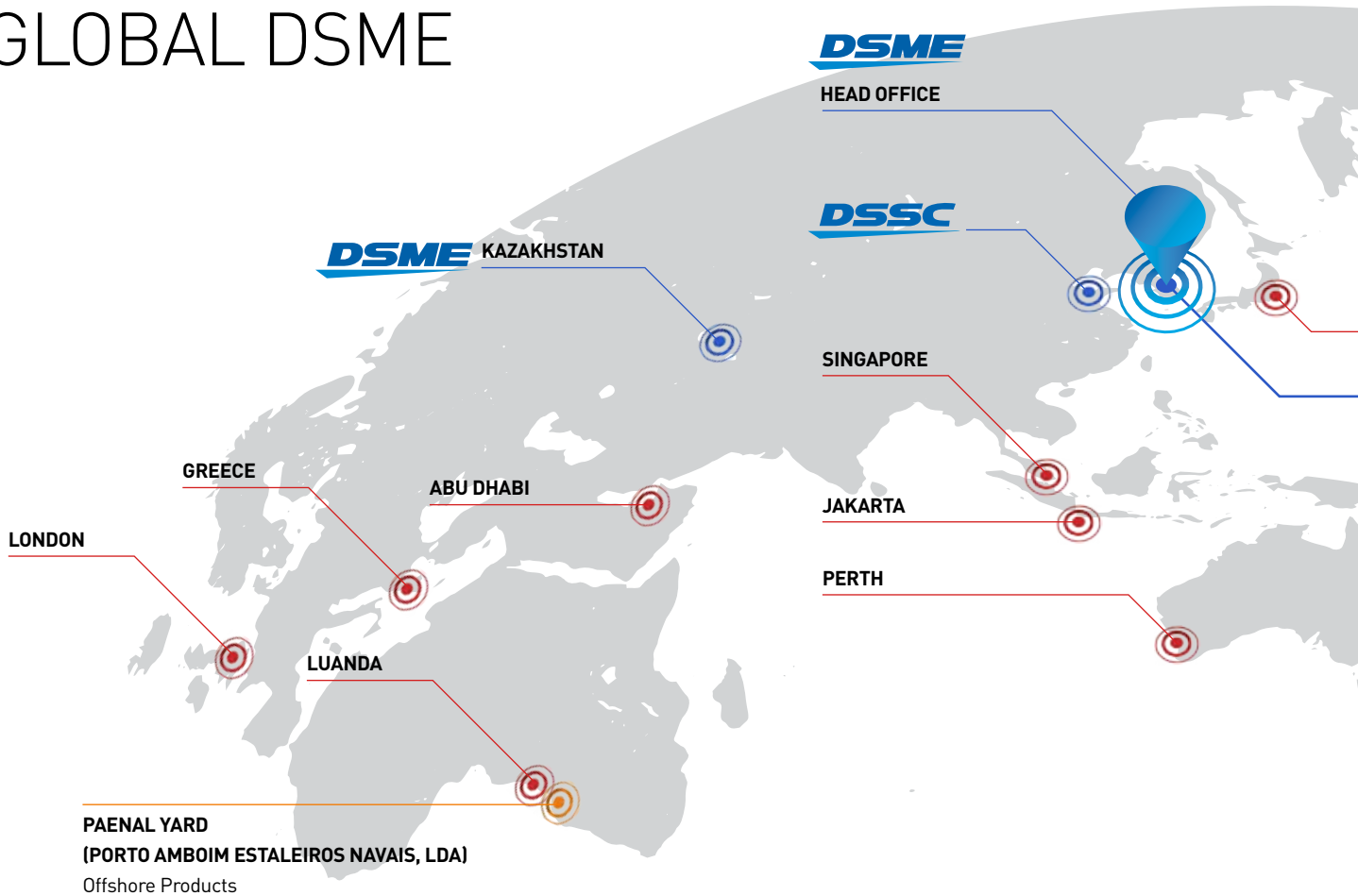


Geoje Island is the home of DSME and is well known for its mild climate, fresh air, clean beaches and beautiful coastlines. DSME provides a variety of convenient facilities to enhance the quality of life for clients and employees visiting or living in Okpo. DSME not only provides hotels, residences, and apartments for clients to stay in, but also provides office space so that clients can conduct business activities in comfort.



Other amenities include modern shopping centers and a golf course. Clients' children can also attend the Okpo International School, which teaches from kindergarten up to the 9th grade. Moreover, Daewoo General Hospital is located near DSME and is equipped with 17 clinics for the health and safety of employees and clients.

GLOBAL DSME



DSME

HEAD OFFICE (OKPO)

3370, Geoje-daero, Geoje-si, Gyeongsangnam-do, Korea

Tel : + 82 55 735 2114

Fax : + 82 55 681 4030

SEOUL OFFICE

125, Namdaemun-ro, Jung-gu, Seoul, Korea

Tel : + 82 2 2129 0114

Fax : + 82 2 756 4390

BRANCH OFFICES

LONDON

Unit C402, Westfield London Shopping Centre, Ariel Way, London W12 7FD, United Kingdom

Tel : + 44 20 3249 1150

Fax : + 44 20 3249 1151

GREECE

1, Possidonos Ave., 174 55 Alimos, Greece

Tel : + 30 210 422 6787

Fax : + 30 210 422 6788

HOUSTON

950 Threadneedle St., Suite 270 Houston, TX 77079, USA

Tel : + 1 281 679 1322

Fax : + 1 281 679 1328

TOKYO

6F. Akebono Daitetsu Building Arakicho 23-15, Shinjuku-ku, Tokyo 160-0007, Japan

Tel : + 81 3 5361 8241

Fax : + 81 3 5361 8242

LUANDA

Rua Rainha Ginga, nº 187, Edifício Rainha Ginga, Piso Intermedio, Imgombota, Luanda, Angola

Tel : + 244 222 027 818

ABU DHABI

#66, 12th Floor, Prestige Tower, Mohamed Bin Zayed City P.O Box 44737, Abu Dhabi, UAE

Tel : + 971 2 495 7075

Fax : + 971 2 555 2400

SINGAPORE / PERTH

Singapore : #14-01 Suntec City Tower 1, 7 Temasek Boulevard, Singapore 038987

Perth : Level 28, AMP Building 140 St. George Terrace Perth WA 6000, Australia

Tel : + 65 6336 0930 (Rep : 0940)

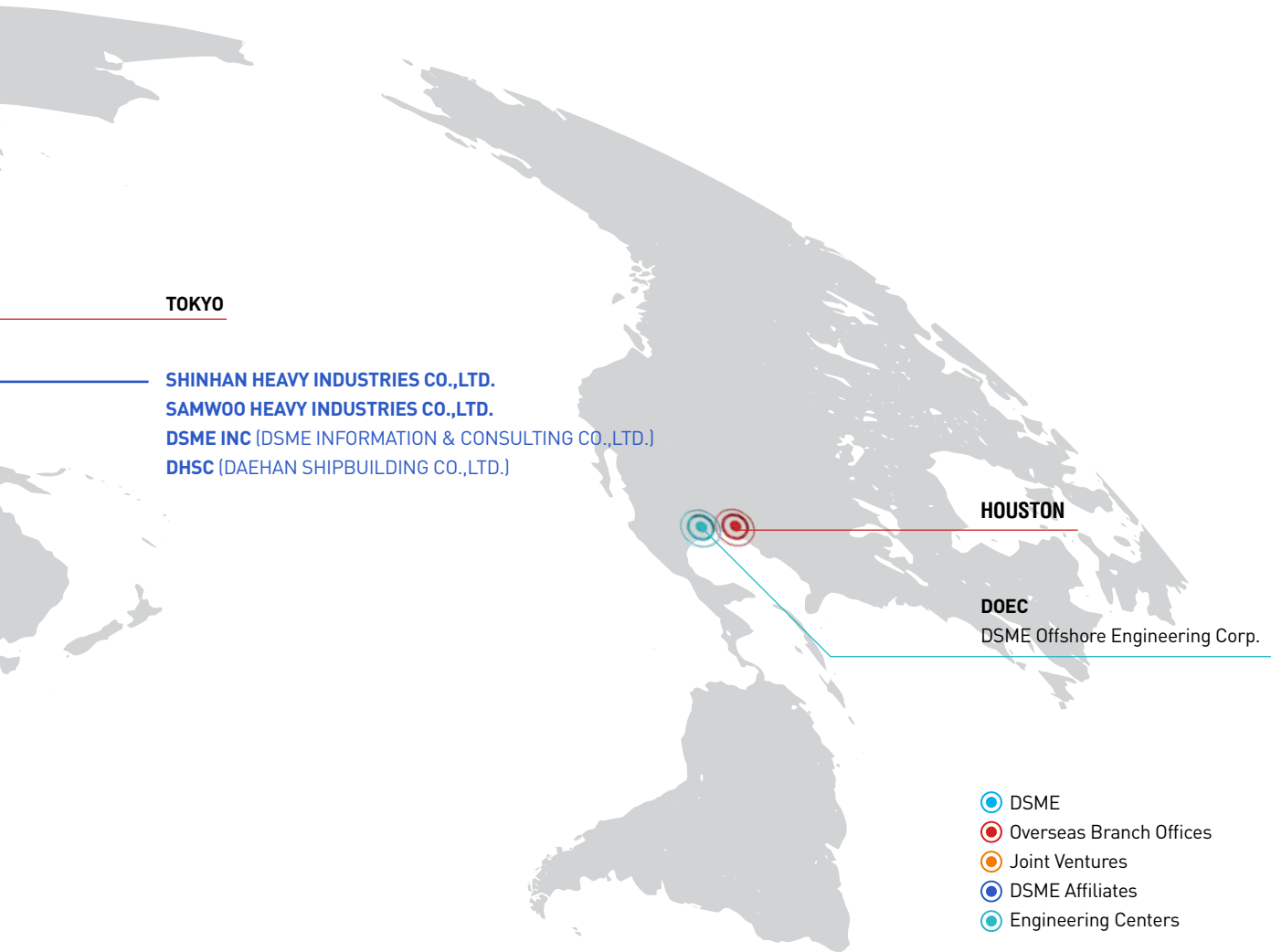
Fax : + 65 6336 2484 (Singapore)

JAKARTA

Menara Global 20Floor, B. Jalan Gatot Subroto Kav.27 RT.3, Kuningan Timur, Jakarta Selatan, Jakarta 12960, Indonesia

Tel : + 62 21 5288 0132

Fax : + 62 21 5288 0133

**TOKYO**

SHINHAN HEAVY INDUSTRIES CO.,LTD.
SAMWOO HEAVY INDUSTRIES CO.,LTD.
DSME INC (DSME INFORMATION & CONSULTING CO.,LTD.)
DHSC (DAEHAN SHIPBUILDING CO.,LTD.)

HOUSTON

DOEC
 DSME Offshore Engineering Corp.

- DSME
- Overseas Branch Offices
- Joint Ventures
- DSME Affiliates
- Engineering Centers

ENGINEERING CENTER

DOEC
(DSME OFFSHORE ENGINEERING CORP.)
 950 Threadneedle St., Suite 270 Houston,
 TX 77079, USA
 Tel : + 1 281 679 1322
 Fax : + 1 281 679 1328

JOINT VENTURES

PAENAL YARD
(PORTO AMBOIM ESTALEIROS NAVAIS LDA)
 Praia do Kissonde – Zona de stockagem da
 Sonangol, Porto Amboim, Kwanza Sul, Angola,
 Caixa Postal 256
 Tel : + 244-944-177-040

AFFILIATES

DSSC
(DSME SHANDONG CO., LTD.)
 264006, Bajiao Town, Yantai
 Economic & Technical Development Zone,
 Shandong Prov.,D.R.China
 Tel : + 86 535 308 2408
 Fax : + 86 535 308 1009

SHINHAN HEAVY INDUSTRIES CO., LTD.
 #117, Woobong-Ri, Onsan-Eup, Ulju-Gun,
 Ulsan, Korea
 Tel : + 82 52 240 5000
 Fax : + 82 52 240 5041
 www.shinerpia.com

DSME KAZAKHSTAN
 Office no.16, 18th floor, 5B, Business Center
 "Nurly Tau" Al-Farabi Av.17/1, Almaty city,
 050059, Kazakhstan
 Tel : + 7 727 390 0520

SAMWOO HEAVY INDUSTRIES CO., LTD.
 #1 Block #1 Local Industry Complex Yulchon
 Sepung-ri, Gwangyang-eup, Gwangyang-city,
 Jeollanam-do, Korea
 Tel : + 82 61 780 3000
 Fax : + 82 61 780 3600
 www.sw-hi.com

DHSC
(DAEHAN SHIPBUILDING CO.,LTD.)
 Chosunso Gil 498, HwaweonMyun, Haenam Gun,
 Cheonnam Do, Korea
 Tel : + 82 61 531 0114

DSME INC
(DSME INFORMATION & CONSULTING CO.,LTD.)
 3370, Geoje-daero, Geoje-si, Gyeongsangnam-do,
 Korea
 Tel : + 82 55 735 1100
 Fax : + 82 55 735 1200



Okpo Shipyard (Head Office)
3370, Geoje-daero, Geoje-si,
Gyeongsangnam-do, Korea
Tel : + 82 55 735 2114
Fax : + 82 55 681 4030

Seoul Office
125, Namdaemun-ro, Jung-gu,
Seoul, Korea
Tel : + 82 2 2129 0114
Fax : + 82 2 756 4390