

“Technological Innovation, Market Leadership!”

Introduction of Advanced Research Center

KSOE KOREA SHIPBUILDING &
OFFSHORE ENGINEERING



1. Introduction of Research Field(1/5)

1) Fundamental Technology Research Institute

Development of High Value & Efficiency Eco-Ship



Eco-friendly/High efficiency Ship

- Highest Eco Friendly Decarbonized Vessel
- Market Leading Dominant New Concept Vessel
- Innovative Fuel Saving High Tech.
- Creative Cost Reduction Economic Vessel

Eco-friendly Engine & Treatment System

- High Efficiency Hybrid M/E
- Multi-fuel HiMSEN Engine (Bio-fuel, VOC, H₂, NH₃)
- Dual-fuel SOFC System
- Emission/Ballast Water Treatment System (CO₂, CH₄, 3rd HiBallast)

Robust/Optimal Design for Structures

- Light-weighting / Optimization
- Low Noise/Low Vibration Design
- Enhanced Stealth / Mechanism Design
- Structural / Dynamic / Kinematic Analysis

Equipment Development /Engineering

- Commercialization of eco-friendly equipment
- Core Equipment of Multi-fuel Supply System
- Advanced Propulsion Machinery
- Marine Equipment Package Engineering (Durable reliability)

1. Introduction of Research Field(2/5)

2) Energy System Research Institute

Exclusive competitiveness by differentiated LNG technology



LNG/LPG System Solutions

- LNG Carrier CHS (Cargo Handling System)
- LPG Carrier LFSS (LPG Fuel Supply System) / CHS (Cargo Handling System)
- High efficiency Re-liquefaction System

Low Carbon / High Efficiency Shipbuilding

- Optimal FGSS design for LNG fueled ship
- Low Carbon / High Efficiency FGSS (Fuel Gas Supply System)
- High efficiency energy System

High-Efficiency Process for Ship and Offshore Plant

- FSRU Regasification System
- Offshore Plant Topside Process System
- Carbon-free fuel refinement/treatment/utilization technology

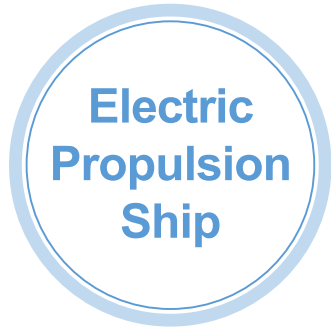
High-Efficiency/Low-Cost Safety-Based Design

- High-Efficiency/Low-Cost Safety-Based Design Technology
- Energy Storage System
- Performance Verification based on Digital Twin Technology

1. Introduction of Research Field(3/5)

3) Digital Technology Research Institute

Intelligent digital ship development



Eco / High Efficiency Electric propulsion solutions

- Hybrid electric propulsion solution using DC grid
- Full electric propulsion solutions using ESS
- Hybrid power solution
- Smart grid solution

Optimization / Efficiency Innovation platform

- Optimization solution
- Virtual commissioning
- Next-generation integrated control system
- Asset management solution

Core technology of future global innovative logistics

- Autonomous navigation solution
- PHM* solution for ship machinery system
- Next-gen. digital bridge
- CAPEX saving innovative ship

4th Industrial Revolution Solution

- Smart ship IoT platform development(ISS, HiEMS)
- Smart ship AI solution

* PHM: Prognostics and Health Management

1. Introduction of Research Field(4/5)

4) Production Technology Research Institute

Maximizing cost competitiveness with hyper-gap in production technology



Highly productive welding and Economical material

- Economical steel & welding consumable
- Low deformation & defect, highly productive welding process
- Automatized digital welding machine
- Welding deformation prediction and control

High performance materials and shipbuilding process

- Eco-friendly/multi-purpose coating materials & process
- High performance polymer and composite materials
- Anticorrosive materials and technology
- CAE based production process design/optimization

Digitalized production operation strategy

- Production performance monitoring
- Digitalization of operation index
- Data based production process optimization
- Simulation based digital factory

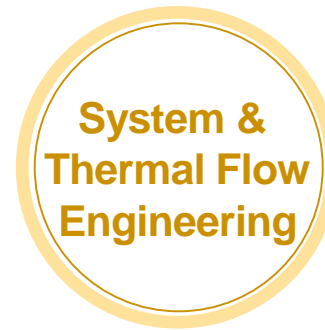
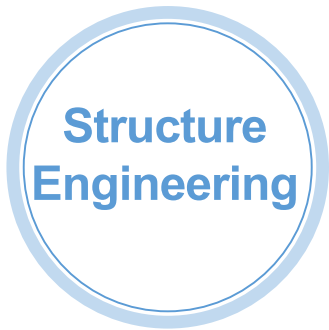
Intelligent manufacturing automation

- Unit process automation
- Fully automated production line
- Intelligent robotized manufacturing
- Autonomous factory automation

1. Introduction of Research Field(5/5)

5) Technology Center

Engineering Solutions for improving productivity of group companies



Engineering for Structural Design & Failures

- Structural Strength Design
- Prediction and Control of Welding Deformation
- Leakage Prevention of Cryogenic Valves
- Impact and Fatigue Analysis

Engineering for Materials, Corrosion and Coatings

- Failure Analysis for Materials and Coatings
- Optimization on Coating and Corrosion system
- Engineering solution for Polymer and Adhesive
- Technical consulting for materials and coatings

Enhancement & Optimization of Systems/Facilities

- Performance Verification of thermal system
- Ventilation optimization for public spaces
- Development of VOC removal system for large paint shop

Low Noise & Vibration Design Evaluation

- Ship/offshore platform noise & vibration control
- Machinery noise & vibration control
- Design evaluation of low vibration propulsion system
- Special Noise & vibration measurement