

# Restructuring of the Ship & Offshore Structure Segment

## Shift of merchant ship construction to China

March 31, 2017

Kawasaki Heavy Industries, Ltd.

# Table of contents

- 1. Introduction**
- 2. Business environment recognition**
- 3. Results of consideration**
- 4. Reconstruction plan for merchant ship business**
- 5. Reinforcement of risk management**  
**: Applied to all the Segments**
- 6. Organization · Schedule**

# 1. Introduction

---

## (1) Background and purpose of consideration of restructuring

The Ship & Offshore Structure segment have experienced a slump in the past few years and also large losses have been recorded in the past two years. The restructuring committee has considered the operation policy from now onward, including the continuity of the business.

## (2) Fundamental strategy for the consideration

The rational and feasible policy most appropriate for increasing enterprise value.

## 2. Business environment recognition

---

### (1) Demand outlook

It is unclear when the shipping market recover and the excessive construction capacity resolve. However, the strengthening of environmental regulations is a good opportunity.

- The short term demand for LNG carriers is unclear due to factors such as gas liberalization, the timing of nuclear power station restart and the LNG price. LPG carriers are also suffering a slump in demand due to the effects of the large number of delivery between 2014 and 2016.
- However, the demand for LNG and LPG carriers is expected to recover and expand in the future due to the growth in the demand for LNG and LPG as a clean energy with a low load on the environment.
- In addition, it is possible to expect that the strengthening of international environmental regulations related to emissions of substances such as NOx ,Sox and CO2 will lead to an expansion of the demand for LNG and LPG fueled ships, including dual fuel ships.

# 2. Business environment recognition

## (2) SWOT analyses

<p><b>&lt;Opportunities&gt;</b></p> <ul style="list-style-type: none"><li>• Strengthening of environmental regulations</li><li>• Expansion of LNG and LPG demand driven by emerging countries</li><li>• Renewal demand at joint venture partner in China</li></ul>	<p><b>&lt;Threats&gt;</b></p> <ul style="list-style-type: none"><li>• Concerns about strong yen, slump in oil price</li><li>• Excessive construction capacity in Korea and China, accepting of low price orders</li><li>• Sluggish shipping market</li><li>• Intensifying participation in high-value-added ships</li></ul>
<p><b>&lt;Strengths&gt;</b></p> <ul style="list-style-type: none"><li>• Gas related technology built up in past construction of LNG and LPG carriers</li><li>• Quality and cost competitiveness of Chinese joint venture companies (NACKS and DACKS)</li><li>• Technology to reduce energy consumption and environmental load, including for propulsion systems, ability to develop hull form</li><li>• Submarines</li></ul>	<p><b>&lt;Weaknesses&gt;</b></p> <ul style="list-style-type: none"><li>• High cost structures of domestic works</li><li>• Insufficient knowledge about the offshore structure sector</li><li>• Insufficient capability of risk management, such as estimation accuracy and risk evaluation ability</li></ul>

Joint venture partner in China: China COSCO Shipping Corporation Limited (The COSCO group and the China Shipping Company consolidated, and founded in February, 2016)

NACKS: Nantong COSCO KHI Ship Engineering Co., Ltd., DACKS: Dalian COSCO KHI Ship Engineering Co., Ltd.

# 3. Results of consideration

---

## (1) Merchant ship sector

- Based on the assumption that the severe shipbuilding market will continue for the time being, all possible options including corporate spin-offs, alliances etc. were considered.
- However, at the current time when the entire industry is in a slump, there is no solution that will immediately achieve the minimization of business risks, the avoidance of the effects of factory closures and the smooth completion of existing orders including offshore service vessels all at once.
- At the current time, we judge that the most rational option to increase enterprise value is to reduce construction in Japan and shift it to China.
- As a result of considering the feasibility of the aforementioned strategies, the conclusion was reached that the achievement of Before-tax ROIC (Return on Invested Capital) of 8% or higher was quite achievable.

# 3. Results of consideration

---

## (2) Offshore structure sector

- We judge that further time and costs will be necessary for the accumulation of the expertise such as technical skill needed for the offshore structure sector.
- In addition, as the market is affected by the unstable oil price, we have selected to withdraw from the offshore structure sector, with the offshore service vessel for Norway that is currently in progress to be the final construction.

# 4. Reconstruction plan for merchant ship business

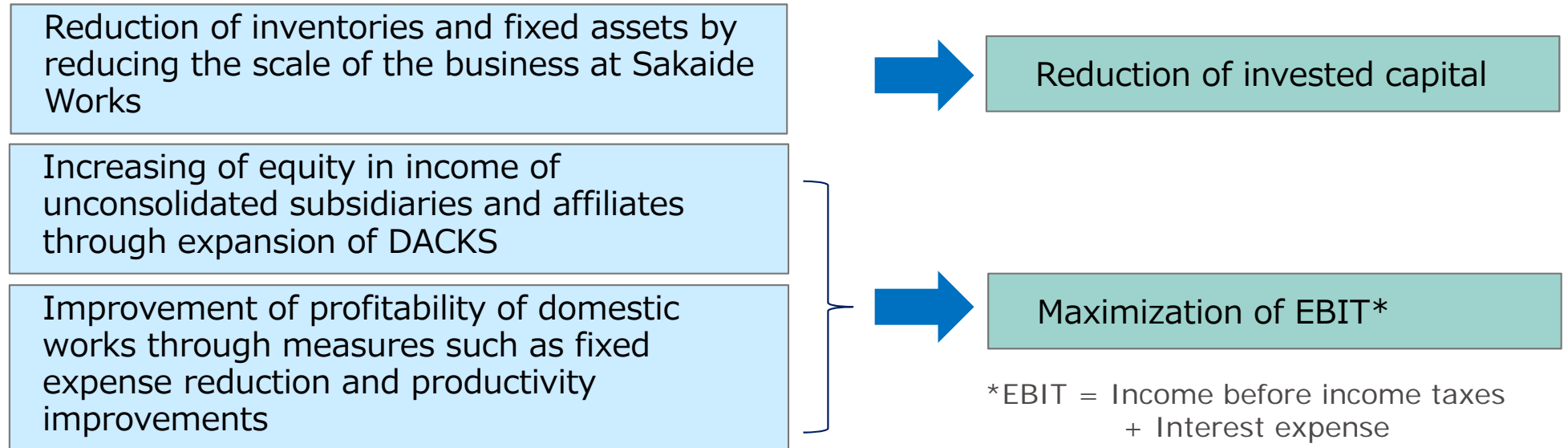
## (1) Fundamental strategy

**Target: Achievement of Before-tax ROIC of 8% or higher across the entire Ship & Offshore business**

**Fundamental strategy: Shift of merchant ship construction from Japan to China**

**Schedule for achievement: Target for FY2020 (with the assumption of ¥100/US\$)**

Sakaide Works	Two docks → One dock
NACKS	Maintain two docks
DACKS	One dock → Two docks





## 4. Reconstruction plan for merchant ship business

---

### (1) Fundamental strategy

- Utilize gas related technology and environmental load reduction technology and while reducing the number of orders, accept orders mainly for gas related ships(\*1)
- Reduce the scale of business within Japan by approximately 30% compared with the current scale, as appropriate for the volume of orders accepted
- Concentrate domestic construction in Sakaide Works (hereinafter "Sakaide"). Strengthen the engineering and other functions of bases (Kobe to focus on submarines)
- Deepen integrated operations such as joint procurement and sharing construction with NACKS and DACKS
- Use the full capacity of the Company to complete the ships already ordered (Construction will be completed by the middle of 2019)

(\*1): LNG and LPG carriers, dual fuel ships, LNG fueled ships, etc

# 4. Reconstruction plan for merchant ship business

---

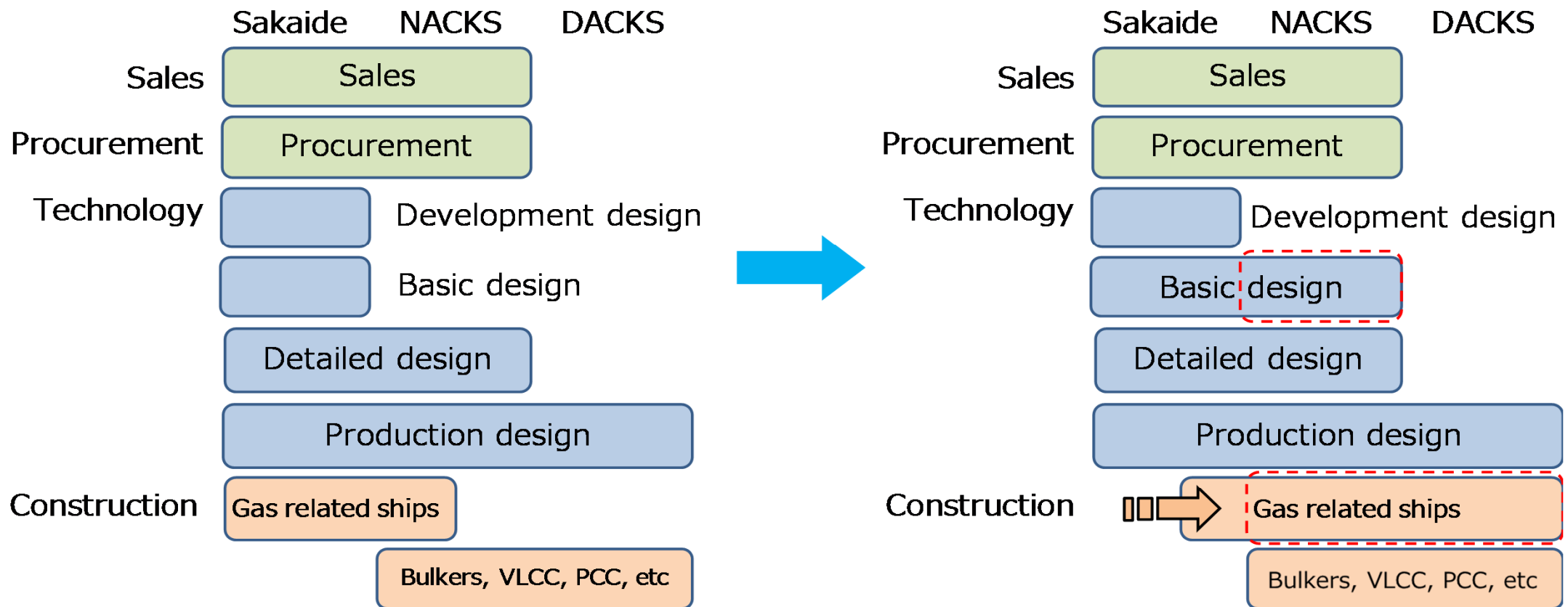
## (2) Deepening of integrated operations with China

- Reduction of domestic construction capacity  
(Sakaide : Two docks → One dock)
- New capital investments will be limited to China  
(DACKS : One dock → Two docks)
- At Sakaide, the base functions of human resource development, engineering and productivity improvement will be reinforced
  - Further improvement of quality and productivity at NACKS and DACKS through the dispatching of instructors from Sakaide and the reinforcement of the acceptance of trainees and interns from NACKS and DACKS
- Promotion of sharing construction between Sakaide, NACKS and DACKS
  - The division between Sakaide and NACKS of the construction for lot contracts in orders received at Sakaide
  - Sakaide processes some of the aluminum tanks for LNG carriers constructed at NACKS
  - NACKS and DACKS produce the hull blocks for ships constructed at Sakaide
- It will be possible to receive orders at the target price through the utilization of the quality and cost competitiveness of NACKS and DACKS and the deepening of integrated operations.

# 4. Reconstruction plan for merchant ship business

## (2) Deepening of integrated operations with China

The involvement of the Company's Head Office in the joint ventures in China will be strengthened in order to deepen the integrated operations, such as the sharing of strategy with joint venture partner in China.



Reduce construction in Sakaide and shift it to China

# 4. Reconstruction plan for merchant ship business

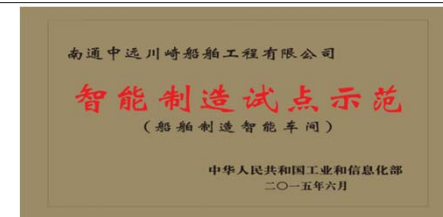
## (2) Deepening of integrated operations with China

	NACKS	DACKS
		
Joint venture partner	China COSCO Shipping Corporation Limited	
Year of foundation	1995	2007
Our investment ratio	50%	49% (Including indirect investment)
Main construction achievements	Large bulk carriers, mega container ships VLCC, Dual fuel PCTC	Large bulk carriers, VLCC/VLOC
Strengths	<ul style="list-style-type: none"> <li>[1] Cost competitiveness at the world's highest standards</li> <li>[2] Activities to bring about progressive FA</li> <li>[3] Relationship of great trust with customers formed by abundant manufacturing achievements</li> </ul>	<ul style="list-style-type: none"> <li>[1] State-of-the-art production equipment</li> <li>[2] Layout best suited to continuous construction of large ships</li> <li>[3] Application of NACKS success know-how</li> </ul>

Dual fuel PCTC



NACKS has constructed and delivered two 4,000 vehicle car carriers for Norway which were ordered to KHI. These were the first car carriers in the world equipped with dual fuel engines (ME-GI engine) made by KHI for the main engines and generator engine and it is possible to use both LNG and marine fuel (heavy oil).



NACKS is the only shipyard in China that obtained "Intelligent Manufacturing Certification". They actively utilize robots made by KHI.

# 4. Reconstruction plan for merchant ship business

## (3) Priority measures

Reduction of fixed expenses	The management resources that become excessive will be shifted to growth sectors such as energy
Productivity improvement	Introduction of the KPS (*2) activities, which were successful in the Aerospace Segment (Start with Sakaide and then extend to NACKS and DACKS)
Reduction of materials costs	Reduction of materials costs by using common specifications and joint purchasing with the ships constructed at NACKS and DACKS
Reinforcement of risk management	Reinforce checks before order acceptance and while they are in progress, improve estimation accuracy through the introduction of other Segments' methods etc.
Strengthening of technical development	Work together with the Corporate Technology Division to strengthen core competence such as environmental load reduction technology, low temperature and high pressure gas technology, liquefied hydrogen carrier and the use of AI

(\*2) Kawasaki Production System

Liquefied hydrogen carrier



# 5. Reinforcement of risk management

## : Applied to all the Segments

---

### (1) Aims of the reinforcement

- To actively take on the challenges of projects whilst eliminating risks as much as possible through rational and objective decision making.
- With a focus on the prevention of the occurrence of losses, the early detection of changes in the situation and the prompt action, strengthen the cooperation between the Head Office and the Segments, and contribute to the improvement of enterprise value.

# 5. Reinforcement of risk management : Applied to all the Segments

## (2) Reinforcement measures

Before order acceptance	In addition to the conventional activities, make the volume of the risk visible in each stage of a project, identify the project risk factors in advance and use the knowledge of each Segment regarding matters such as the technical aspects, in order to improve the check functions and estimation accuracy.
In progress	From April, establish a project risk management committee headed by the Company's President. For projects in progress, reinforce continuing follow-up support.
After completion	Unearth the knowledge and initiative examples hidden at each Segment, share them throughout the Company and also use them for matters such as the evaluation of technical difficulty and the improvement of estimation accuracy.

## 6. Organization · Schedule

---

Start up a restructuring execution committee headed by the Company's President from April, and supervise the following

- Evaluation of reform progress  
Periodically checks of the status of the progress up to the end of fiscal 2018. However, the necessary action will be quickly taken in response to changes in the market conditions.
- Final decision on order acceptance and approval of management plans
- Promotion supervision of management reform measures such as introduction of KPS and reduction of material costs etc.



Kawasaki, working as one for the good of the planet  
“Global Kawasaki”