

## A Study on the Entry of Korean Shipping & Logistics Company into the Offshore Plant Logistics Service Market

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**Abstract** : Korea is worldwide top manufacturer of offshore plant industry, while shown weakness in high-valued offshore plant service industry (OPSI). The governmental support policies and studies for fostering programs are centered on shipbuilding and engineering sector. On the other hand, offshore logistics service sector among the programs is neither included as governmental fostering support sectors nor ever-studied. Domestic shipping and logistics companies have many experience of handling various project, heavy-lift cargo and even super blocks on shipbuilding industry. However they are faced with lack of appropriate heavy carrier and others. So for their successful entering into offshore plant logistics market, systematic preparation, studies and supporting policies are highly recommended.

**Key words** : offshore logistics service market, domestic logistics company, fostering program, offshore logistics, offshore plant service industry(OPSI), offshore support vessel(OSV)

### 1. Introduction

The size of global offshore plant market is USD140 billion in 2010 and expected to be reach USD320 billion in 2020. It is 6~7% of growing rate. The demand on ordering offshore plant is rapidly increased with accumulating world-top class ship-building technology. New ocean market in offshore plant or resource development is expected to be expanded to the rate of 10% every year whereby expect also radical growth on logistics market related to offshore plant. Such a prospect shows the expansion of the size in offshore logistics market and means to open bigger entrance for local logistics companies.

But current local logistics companies are suffering in depression and facing lack of surplus capitals to invest and securing exclusive heavy transport vessels. High dependency on foreign heavy marine transport vessels of domestic major export companies and Engineering, Procurement, Construction(EPC) is also one of negative factors.

The strategic support at country levels required to expand market share for local logistics industry in the offshore plant logistic market which is esteemed as one of

future promising industries. Government should drive offshore logistics as new growth engine to foster local logistics companies into the global offshore plant market and make up global logistics network through appropriate supporting policy.

The lack of competitiveness in fleets, technical specialists, capable to handle mega sized project cargoes are the weak point of local logistics companies. Cooperation between EPC/export manufacturing companies and local logistics companies/carriers will output win-win effect. Opening training programs, organized by both academy and industry to improve required engineering skills of installment and high technique in transportation offshore products is needed.

The purpose of the study proposes to help local shipping & logistics company find new logistics market from growing offshore plant export in Korea.

But local logistics company was less interested in this offshore plant market than foreign competitors nor much experience they had in this business area compared to overseas major logistics companies.

So, in this study says offshore plant service industry (OPSI) explains how to be comprised of and involved in what service sector local logistics company should join as

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profit source in future for which propose effective entry measure by analyzing problem area to advance to this potential offshore plant logistics market.

OPSI is comprised of Operation & Maintenance(O&M) and supporting business by OSV. Currently local logistics company is joining rarely in transportation and installation sectors among supporting business of OPSI. So, this study just limited to logistics sector but needed to study future O&M area related to OPSI.

In local logistics studies, as there is no preceding research of offshore plant logistics nor correct data of offshore plant logistics company. But Korea is a fast-growing offshore plant manufacturing country and ranked one of top exporting countries worldwide. To this end, this study propose local shipping & logistics company enter into potential offshore logistics business area to create value-added in future.

As to method of study, because no data of logistics market of OPSI but this paper just have offshore plant industry in value-added creation portion viz. exploration (7%), design(8%), shipbuilding(35%), transportation(2%), installation(3%), commissioning(1%), O&M(40%), etc(4%). which basis local logistics company might have chance to enter into transportation, installation and future O&M sector as potential market of OPSI boomed by offshore plant export recently.

In this study method needs to first analyze market status of potential logistics-related sector of transportation, installation among OPSI so that local shipping & logistics company can advance to this new offshore logistics market.

## 2. The Status of Offshore Plant Service Industry(OPSI)

### 2.1 The Concept of OPSI

OPSI includes transportation, installation, operation & maintenance(O&M), decommission and support after building of offshore structure. It is divided by one operation business that is directly operated and managed offshore facilities to produce oil or gas, and another support business that serves various services to transport, install/uninstall, and utilize OSV(Figure 1).

In wide concept, exploration and planning before ship building are also considered as service industry, but in this paper the service industries are restricted in the process after ship building.

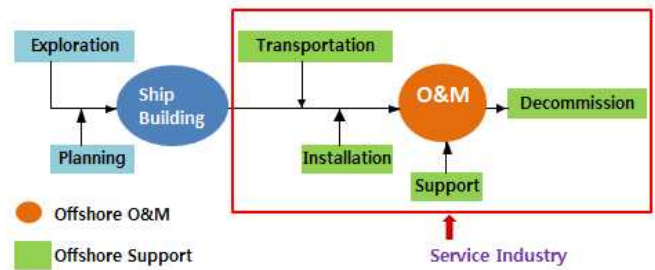


Fig. 1 Categories of OPSI

### 2.2 World Offshore Logistics Market

Worldwide specializing in offshore heavy transport market is pre-occupied and formed monopolistic market by world leading companies such as Dockwise, Biglift, Jumbo and Netherlandish Carriers, and German shipping companies, SAL, Rickmers Line. They serve not only transportation but provide total service including inland transportation and installation in loading/discharging place and have various technical careers and specialist in offshore logistics.

Especially marine structures in offshore are ranged from thousands to ten thousand tons products. For example, Dockwise operates lots of Semi-Submersible ships by FO-FO(Floating On Floating Off) and exclusively occupies this market. The oil plant belongs to the high value-added industry and gain USD10 million per one transit, but has high barriers to enter, such as expensive transporter fleet, advanced marketing skills, technical engineering and so on.

### 2.3 The Domestic Offshore Logistics Market

Domestic companies, Hyundai Merchant Marine Co., Ltd.(HMM), Dong Bang Transport Logistics Co., Ltd., Hanjin Transportation Co., Ltd., CJ Korea Express Corporation, Sebang Co., Ltd., KCTC Co., Ltd.(Mega Line), Pantos Logistics Co., Ltd. are providing transportation service in heavy lift cargo but still showing in high portion focused on onshore(inland transportation).

Lately they secure Self-propelling(Submersible) vessel by Ro-Ro(Roll On Roll Off) and actively try to enter into new global market. Yet it is self-estimated insufficient to reach the global level to compete with global advanced offshore specialists.

In the global offshore transportation market, domestic companies occupy a minor position. The weak points are lack of fleet competitiveness and lower technical capacity

for large and heavy structures. And also lack of engineering skills requiring installation at destination after ocean transportation and marketing ability in attracting offshore plant cargoes are pointed out as problems.

The weak competitiveness of domestic logistics companies and pre-occupation of advanced foreign companies are main reasons of high dependency on foreign carriers. But the matter should solve step by step for successful entry into the high value markets. Advanced foreign companies, i.e, Dockwise and Biglift have costliness equipments and do not stop to invest for purchasing. Moreover the global market tendency shows increasing in the size of platform(topside), 10,000~30,000 ton, so the change of float follows simultaneously. Netherlandish Dockwise exclusively takes its position and currently Cosco, China joins into this business, bringing technique from Noble Denton and building a submergible barge.

Some domestic logistics companies and shipping companies have submergible barges and surplus energy to jump into the market, if they are assisted some technical aids of offshore plant technology services(OPTS). It is known a few of them was already either in business or have plans to perform. But long-term strategies are needed in Korea.

### 2.4 Characteristics of OPSI

High value-added and fast growing industry, OPSI stands 50% of total value-added of offshore plant industry after building, including exploration and planning, will be charged 60~70% of the total(Ahn, 2010).

## 3. The Status of Offshore Support Business

### 3.1 Transportation

Transportation means that transport offshore facilities from the shipyard to the gas & oil blocks by huge Barge/Ocean Tug Boat or Heavy Transportation Semi-submersible Ship(Dockwise, 2012). Netherlandish Dockwise, specialized in offshore logistics, is monopolistic sharing over 80%. It is established on 1993 and has 1,200 employees, 5 Open-stern vessels, 12 Closed-stern vessels and 2 Dock-type vessels. 2012 it earned revenue of USD539 million and net profit of USD40 million(Table 1).

Table 1 Business Turnover of Dockwise (unit: \$mil.)

Classification	2012	2011	2010
Revenue	539	399	439
Operating Profit	71	12	69
Net Profit	40	2	17
Total Assets	2,209	1,618	1,628

### 3.2 Installation

Installation is to set equipment like pipelines, underwater tools in the entry of oil blocks to produce oil & gas. Heerema, McDermott and Seipem are leading companies in this field(Choi, 2012). Due to required advanced technologies and equipment, the entry into this market for late comers is harsh. Derrick Laybarge, Derrick Barge, DP Deep water Construction, Heavy Lift Vessel, Self-Propel Crane Vessel, Heavy Lift/Lay Barge and so on are used(Table 2).

Table 2 The Possession Status of Offshore Installation Vessels, 2010 (over 2,000 ton)

Company	Barge /Vessel	type	Max. Lifting Revolving (st)
Heerema	Balder	DP Deepwater Construction	3300 + 2200
	Hermond	S S Crane Vessel	5000 + 3000
	Thialf	DP Deepwater Construction	7810 + 7810
McDermott	DB 50	DP Derrick Laybarge	3527
	DB 101	S S Derrick Barge	2700
	DB 30	Derrick Laybarge	2800
Seipem	S-700	DP Deepwater	7840 + 7840

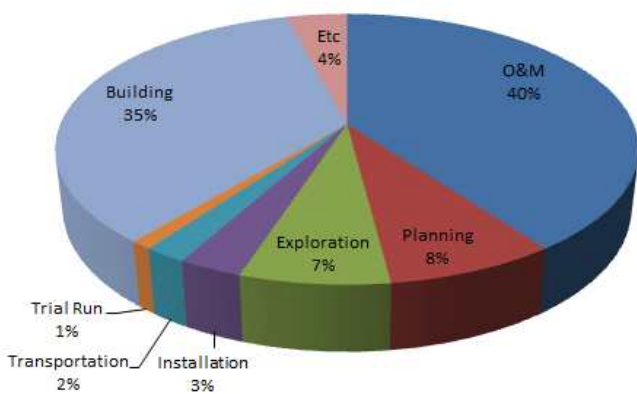


Fig. 2 Rate of Generation of Value Added in Offshore Plant Industry

		Construction	
	Castro Otto	Derrick Laybarge	2000
	S-300	DP Deepwater Construction	2400
Seaway Heavy Lifting	Stanislav Yudin	Heavy Lift Vessel	2750
	Olg Strashnov	DP Heavy Lift Vessel	5500
HHI	HD-2500	Heavy Lift/Lay Barge	2500
COOEC	Lan Jing	Self-Propel Crane Vessel	8600
	Lan Jiang	Derrick/Lay Barge	3800

Required equipments for seabed pipe lines are Pipelay Vessel, Derrick/Lay Barge and etc. Allseas, McDermott, Seipem and Global are known as leading installation companies.

McDermott, established on 1923, is specialized in installation of pipe line in offshore, and has more than 14,000 employees and 16 set of install equipment (McDermott, 2012). 2012 gained revenue of USD3,641 million and USD223 million in net income (Table 3).

Table 3 Business Turnover of McDermott (unit: \$mil.)

Classification	2012	2011	2010
Revenue	3,641	3,445	2,403
Net Profit	203	151	236
Total Assets	3,333	2,934	2,511

In addition to Heerema Marine Contractors, Saipem and Allseas are also leading companies.

### 3.3 Decommission

#### 1) The Status of Decommission

Decommission is to remove or dispose offshore relevant facilities which completed economical usage period or lost its function caused by exhaustion of resources or natural disaster like typhoon.

Statistically offshore facilities are into the disposal step after installation (PTTEP, 2008). These days the environmental issues are risen globally, the importance of decommission also has high portion. 1989 IMO recommended terms for the disposal of substructure under

4,000 tons and all offshore structures. The market is expected to be expanded around the Asia-pacific region, Gulf of Mexico and the North Sea. Figure 3 shows the comparison of decommission sequence.

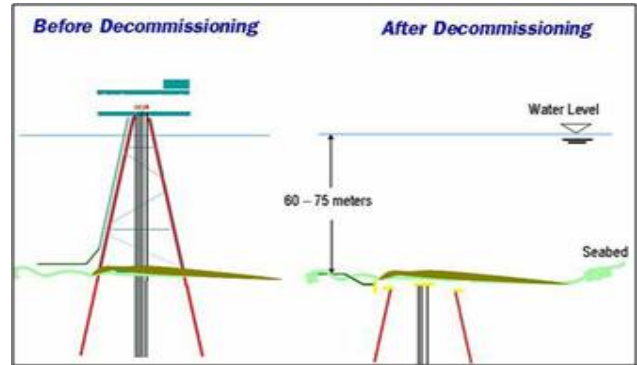


Fig. 3 Comparison of Decommission Sequence

It is divided by complete and partial decommission. Partial decommission is reused in various purpose for aquaculture, maritime jails, fish farms, artificial fishing banks.

#### 2) The Rate of Decommission as per Types

Louisiana State University estimated \$775,000 of cost for plugging and abandonment (P&A), \$280,000 of cost for platform decommission (Louisiana State University, 2009). Decommission cost of platform charges 29% in the total cost, considering 8% of P&A. Total cost, USD9.65 million for decommission is one offshore in US. Decommission cost of the platform is about USD3 million and total costs at USD10.34 million for decommission one offshore facility in Asia-pacific region (Fig. 4).

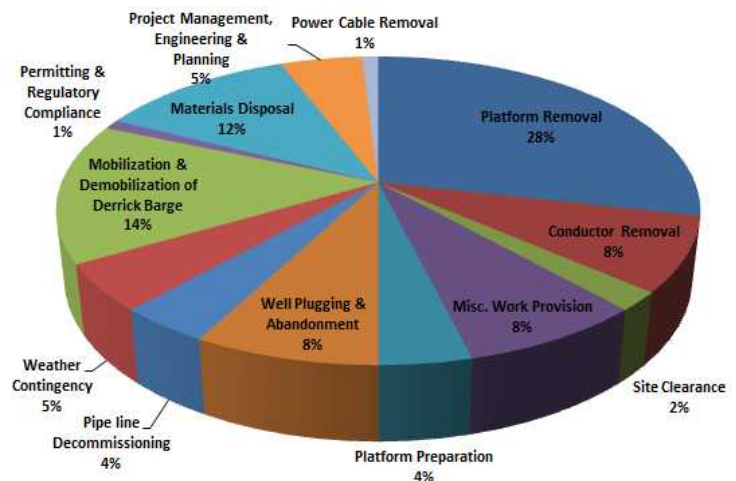


Fig. 4 Rate of Decommission as per Type of Offshore

### 3.4 Support

#### 1) The Status of Support

The support services are provided, using OSV for each required operational needs, and globally 7000 fleets of OSV are operated, centered from basement. Figure 5 shows various types of OSV. Float, Diving Support Vessel, Heavy Lift Crane Vessel, Heavy Transporter Vessel, Semi-Submersible, Pipe Laying Vessel, Well Intervention Vessel, Jack-up Accommodation are types of OSVs.

Offshore services are various; Seismic Survey, Diving, Salvage, Subsea Survey, Underwater Repair, Underwater Welding & Cutting and so on. Also include Catering Service for workers in the facilities, lubricant for Mud or Drill used in production, expendable supplies, maintenance and management of product facilities, and expeditious measures.

#### 2) Case: Halliburton

Offshore Supply Base should be placed nearby Oil & Gas Field. There are the basements on Houston in Gulf of Mexico, Aberdeen in the North UK and the North Atlantic Ocean, Dubai in the Middle East Asia, Singapore in Southeast Asia. Halliburton, established on 1919 is the biggest provider of oil & gas supplies and services. Hires approx. 60,000 workers and its revenue reaches to USD17,973 million net profit is USD1,835 million in 2010.

## 4. The Entry of Korean Logistics Companies into Offshore Transportation

### 4.1 Transportation

The recession in Logistics industry, followed by the global financial crisis, 2008 affected the interest and investment of relevant companies moving to transport offshore structures Shipping companies, HMM and HJ shipping have much intention to invest but do not have appropriate vessels and lack of infrastructures for handling and installation large oversized cargoes. Even if HMM has plans and its own vessel of 650ton lifting capacity and engineering technique, still not enough to compete with international levels.

### 4.2 Installation

Offshore projects are mainly turnkey projects, usually

controlled by advanced installation companies. Domestic large shipbuilders are carrying out the project for installation and trial run including building, but the stages for installation performance depends on foreign companies.

Hyundai Heavy Industry has careers in installation project. At the beginning received order from ONGC, India for Marine Turnkey work, they subcontract attached construction of installation and pipe line to foreign companies, but gradually they gained techniques and have suitable equipment and enough capacity to handle by themselves. They performed offshore installation project in various area, India, using their own HD-2500 Derrick Barge(HMI, 2013).

Daewoo Shipbuilding & Marine Engineering(DSME) received orders for Marine installation and Platform Installation/Removal & Pipe-lay Vessel, valued for USD600 million from Allseas, Netherlands. Unlikely with the other vessel, Pipe-lay Vessel, has giant cranes which can lift 25,000 tons of Jacket and 48,000 tons of topside structures with platform/pipe installing line primarily in the world, and lift to install and dismantle topside a time.

KT Submarine operated various seabed installation such as Seabed Cable Project, Indonesia and section construction lay cables under the ground, pipeline construction in gulf of Thailand. It has 2 cable vessels and 5 seabed equipments.

LS Cable & System operated installation work of seabed electric cables, Indonesia and primarily in Korea received order of seabed cable project, New York, USA.

### 4.3 Entrance Strategies

Local shipping & logistics company should have strategic plans through cooperation with industry-academy-government-institute for successful entry to offshore plant logistics market as under.

1) Pursuing joint venture and M&A with advanced overseas logistics companies involved in shipbuilder and heavy transporter lines.

2) As pre-marketing plans, local shipping & logistics companies should join as main contractor i/o subcontractor of domestic offshore plant manufacture/EPC companies for easy access to offshore plant logistics market.

3) If local companies have no experience in handling offshore plant cargo, they should join as either subcontractor or partnership with global leading offshore logistics company to obtain technology of heavy lift project cargo handling as well as establish global offshore logistics network.

4) Local companies need to make mutual invest for purchasing heavy-lift fleets with local shipbuilder on win-win basis in respects of creating of new offshore plant cargo and new heavy transporter shipbuilding demand.

5) Government should also implement support policy for logistics company to help advance to offshore plant logistics sector as emerging market.

## 5. Conclusion

The world is on the era of 'Resource War' to meet demands. On this changing global business environments, domestic shipping & logistics companies are putting efforts to enter into global markets. Such a trend leads local companies perform more positively and seek to coping with changing logistics demands in future.

That means step further to open new niche market for high value-added service field like offshore plant logistics area. As earlier noticed, Korea is worldwide top-ranked country in offshore plant building, while offshore plant service field still showed nearly zero level.

The value-added proportion of offshore plant industry indicates 50% upto ship building, transportation(2%), installation(3%), O&M(40%), Other(5%). It is needed for local company to advance in transportation and installation field at first stage among offshore service to generate new growth engine for which local logistics company should advance step by step with the proposed measure summarized as below.

Firstly, Logistics companies need to have partnership either directly or indirectly with domestic exporting shipbuilder or EPC companies for pre-marketing in this field.

Secondly Need to learn advanced logistics technique from global offshore logistics company by participating joint operation at time of handling offshore plant.

Thirdly, Make mutual invest to purchase heavy transporter vessel to load large-scaled offshore plant between shipping & logistics companies and potential investors such as local major shipbuilder and the bank industry to compete with strong dominator of foreign offshore service provider.

Fourthly, the continuing cooperation with industry, academy, institute and government is needed to study offshore logistics area in conjunction with presently fostering ocean engineering in shipbuilding and technology for developing new offshore plant service industry.

Fifthly relevant institute and the parties of government need to introduce certificate course for offshore plant logistics and foster specialists with various training program such as an abroad internship in offshore logistics filed.

This study insists Korean shipping and logistics company advance in growing offshore plant service, though seems rather minimal portions on transportation and installation business as future niche market.

On further research direction, this paper suggests local shipping & logistics company should expand their offshore plant logistics business from current simply transportation upto Operation & Maintenance(O&M) sectors of OPSI for which the parties of logistics industry should collect the sourcing data of OPSI's O&M ,examine the feasibility of advancement to the niche market and study about how to learn the know-how from advanced offshore logistics global company.

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