

# Regasification vessel 의 시장 전망과 기술 동향

이 동 현\*

## Introduction For Market & Technical Trend of Regasification Vessel

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**Abstract** : 최근 미주의 급격한 LNG 수요와 더불어 Safety, 환경 및 테러의 문제를 안고 있는 육상 LNG terminal 의 대안으로 등장한 LNG Regasification Vessel 의 시장 전망과 미주 지역의 엄격한 환경 규제를 만족시키기 위한 Regasification Vessel 의 기술 동향에 대해 고찰하였다.

**Key words** : Regasification Vessel, Environment-Friendly design, Dual-fuel, Steam turbine, Silicone paint, Selective Catalytic Reduction(SCR), No sea water discharge, NOx emission

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### Introduction To Regasification Vessel

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### Introduction To Regasification Vessel

**1. Regasification Vessel 선조 시장 향후 전망**  
 → 북미동부의 RV 수요 성장 예상

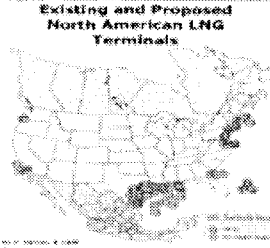
- ① 미국의 LNG 소비량 지속 증가
- ② Safety, 환경, 테러 위험으로 육상 Receiving Terminal 건설 어려움  
 → Terminal에서 반경 3.8km내 주거지 차폐 등책 필요함  
 → NIMBY 현상
- ③ 부동식 가격 상승으로 해상 Receiving Terminal 건설시 비용 증가
- ④ 기존 Pipeline의 높은 Tariff로 Offshore Bury 건설을 경제성 부재
- ⑤ 송유관/개수/시멘트관 → 해저 동북부 열안지형 석유 시멘트 용해성

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### Introduction To Regasification Vessel

**2. Existing and Proposed North American LNG Terminal Vessel**

Existing and Proposed North American LNG Terminals

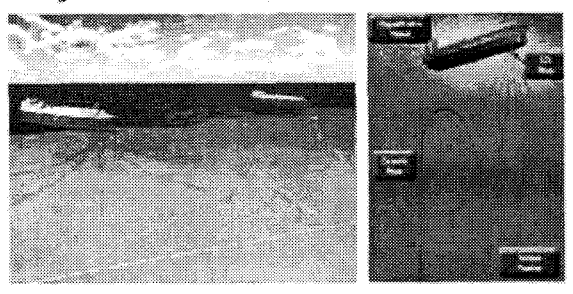


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### Introduction To Regasification Vessel

**3. Regasification Vessel 의 개요도**



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### Introduction To Regasification Vessel

#### 4. Regasification Vessel의 구성

Item	Specifications	Remarks
Regasification plant	High pressure pump LNG/boiler & steam/boiler heat exchanger, Boiler circulation pump, Control system, and etc.	
LNG feed pump	3 sets Boiler vent/boiler	
Accessories for Regasification plant	Sea flow meter Suction strainer & accessories Steam pipe & pipe insulation Additional vent monitor & etc.	
Off-board monitoring system	Non-invasive Turbine system	
Dynamic positioning equipment	Thrusters	
Environmental package	NOx emission control (SCR), Sea water discharge control, Silicon based anti fouling system	Buyer's option

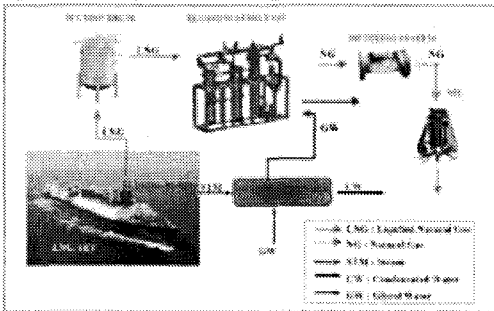
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#### 5. 환경 규제 및 Environment Friendly Design

Item	Specs	Advantages
Air Emission	Regas operation NOx emission prohibition system 적용	• Steam turbine with special NOx reduction device • Electric DP with dedicated Regas Boiler
Emission To Sea	No sea water surge for re-gas operation No cooling sea water discharge No overboard rain water (oil) emitted by deck	• Steam heating • Sea water heating with circulation inside • Minimized cooling sea water intake in ballast tanks • Drained to ledge holding tanks.
No-Tox Paint	Biocide free antifouling	• Silicon based anti fouling system

### Introduction To Regasification Vessel

#### 1) Indirect system heating




### Introduction To Regasification Vessel

#### 2) Silicone paint

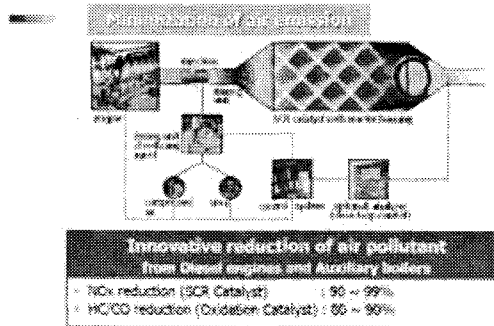
Protection of Environment

- Application of Biocide free paint
- Ultra-smooth, slippery surface
- Low surface energy (surface tension)
- Chemical durable, retaining its smooth glossy surface over extended periods



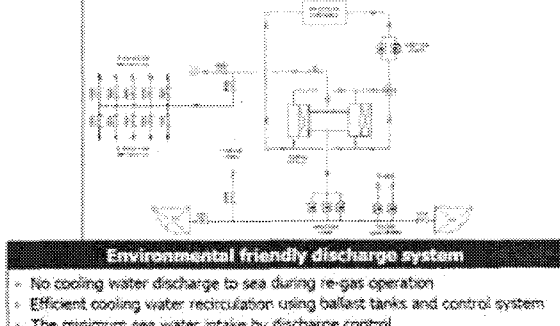
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#### 3) SCR unit (Selective Catalytic Reduction)



### Introduction To Regasification Vessel

#### 4) Cooling Water Discharge Control



**Environmental friendly discharge system**

- No cooling water discharge to sea during re-gas operation
- Efficient cooling water recirculation using ballast tanks and control system
- The minimum sea water intake by discharge control