



ISO 9001
Certificate No. A 0858
ISO 14001
Certificate No. B 0110
OHSAS 18001
Certificate No. C 0082



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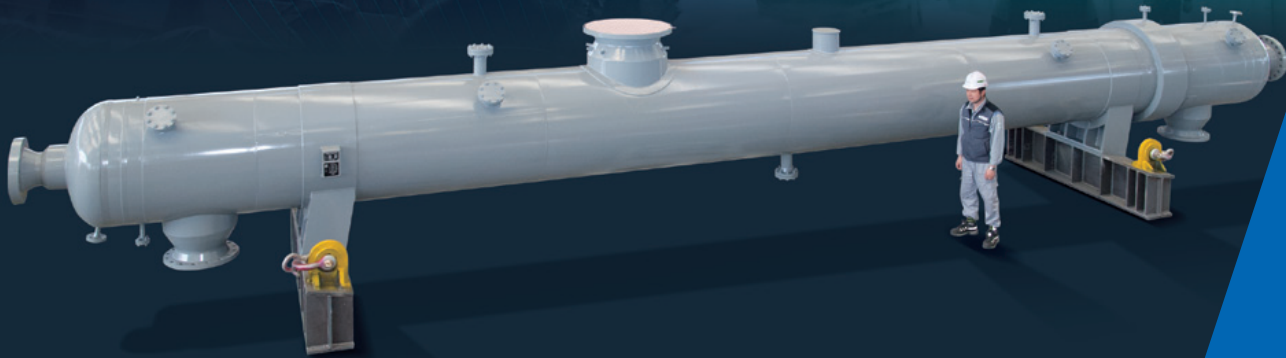


▶ Cryogenic Heat Exchanger and System Engineering **Global Leader**

LNG Vaporizer

LNG Terminal / FSRU Regasification System

- Expert Design via various LNG experience
- Proven Manufacturing Technology and References
- Operation Service
- Package Supply



DongHwa Entec

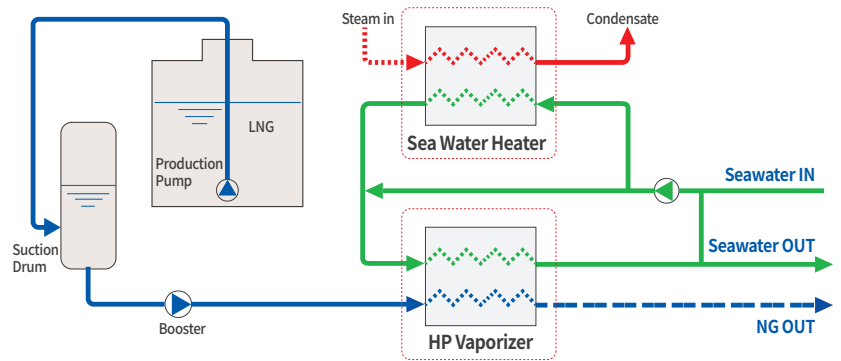
LNG Vaporizer

• LNG Terminal / FSRU Regasification System

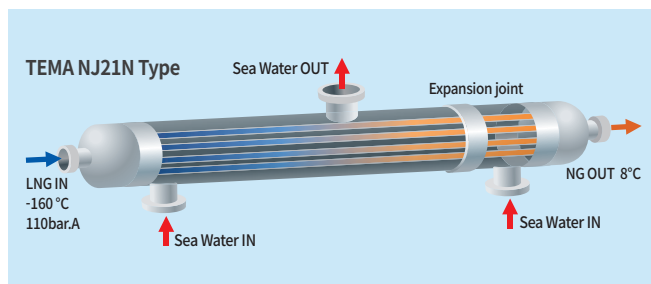
Sea water direct heating

Combined open / closed loop
with seawater and steam heating

- Min. equipment
- Simple control
- Min. Energy consumption
- High pressure vaporizer :
Shell and Tube type heat exchanger



○ General Design Data



ITEM	200 MMSCFD	150 MMSCFD
Heat exchanged (kW)	36,656	28,031
Design pressure (bar.G)	Shell 7.0 / Tube 135.0	Shell 7.0 / Tube 135.0
Design code	ASME, Class	ASME, Class
Tubes	OD : 19.05mm Length : 13.50m	OD : 19.05mm Length : 13.00m
Shell ID	1450mm	1350 mm

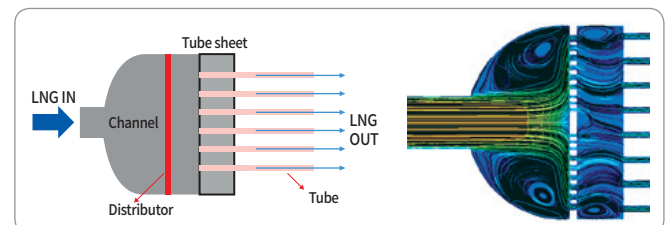
○ Other Application

- A. LNGC Cargo Handling System Low Pressure Vaporizer**
- Design temp : -190°C / Design Pressure : 10 bar
- B. Natural gas-fired Power Plant**
- Design temp : -190°C / Design Pressure : 40 bar

○ Design Concepts

A. Steady Uniform Flow

Distributor installation on the channel

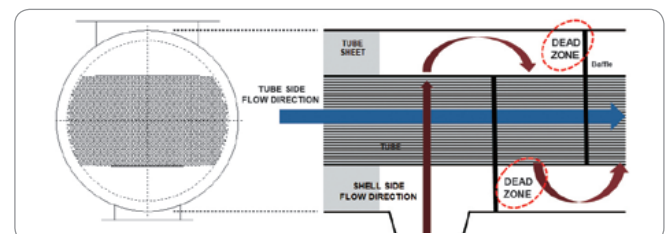


B. Anti-corrosion(Material of Tube : SMO 254)

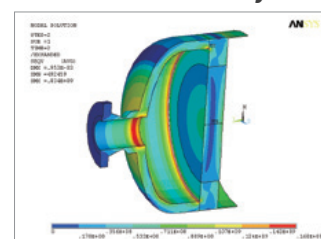
To prevent corrosion due to seawater

C. Anti-Freezing

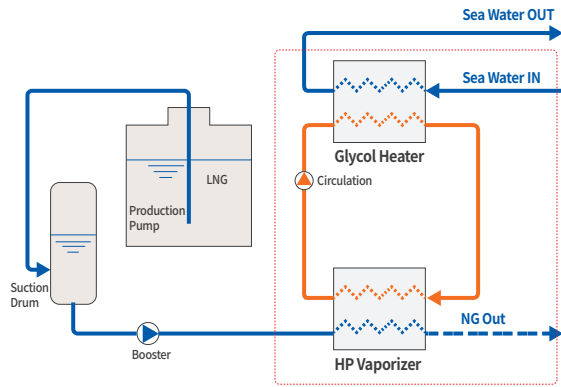
- Seawater inlet located in the low-temperature region
- To minimize shell side dead zone



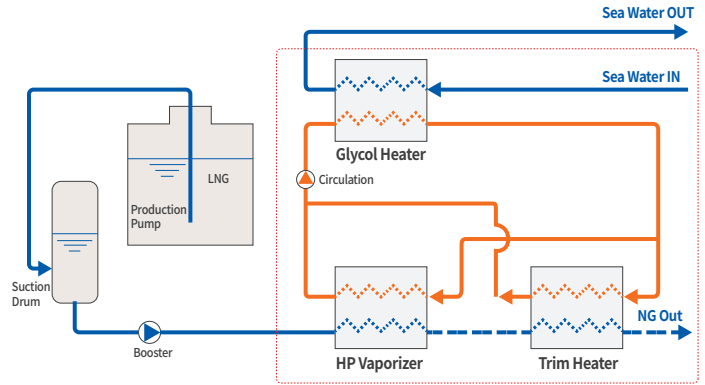
D. Structural stability evaluation / Quality Assessment



Package Solution of In- Directing Glycol Water Heating System

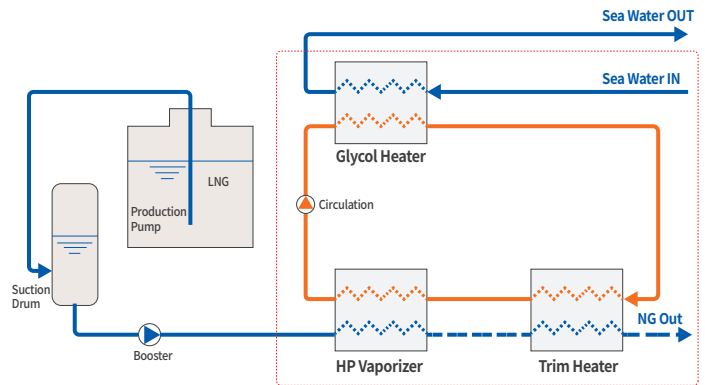


Case 1



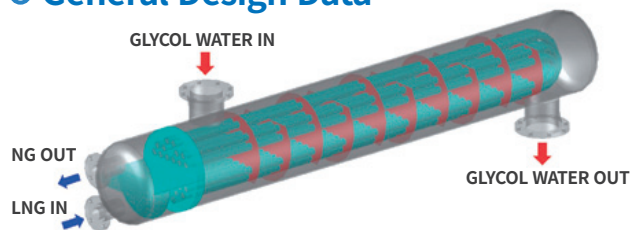
Case 2

	Supply Scope	Glycol Flow
Case 1	HP Vaporizer Glycol heater	
Case 2	HP Vaporizer Trim Heater Glycol heater	Serial
Case 3	HP Vaporizer Trim Heater Glycol heater	Parallel



Case 3

General Design Data



A. Advantage

1. Capacity : Max. 250 mmscfd
2. Design pressure : 135 bar.G
3. Counter flow → High efficiency
4. Easy overhaul → Removable bundle

B. Supply items

1. HP vaporizer : Max. 250 mmscfd/set
2. Trim heater
3. Glycol heater
4. Glycol pump
5. Glycol tank

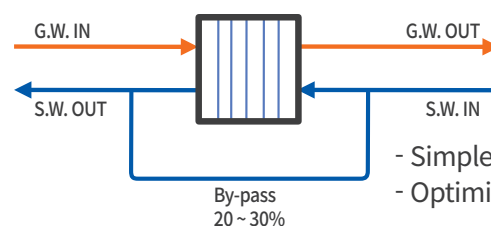
Design Concepts

A. Monitoring system



- Convenient maintenance
- Prolong the chemical cleaning and overhaul period

B. Optimized control system



- Simple control
- Optimized equipment



Head Office and Factory (Land Area: 15,574 m² / Building Area: 13,845 m²)



Hwajeon Office and Factory (Land Area: 20,127 m² / Building Area: 20,087 m²)



Energy, Environmental Tec. Lab. (Land Area: 4,465 m² / Building Area: 3,365 m²)



DongHwa Entec (Shanghai) Co., Ltd. (Land Area: 33,350 m² / Building Area: 18,457 m²)

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