

Reference List of LNG Fuel Gas System

Reference List of LNG Fuel Gas System

6500HP Dual Fuel Harbor Tug



Project:

Ship type: 6500HP Dual Fuel Harbor Tug

Ship owner: CNOOC

Shipyard: Guangzhou Huangpu Shipbuilding Co., Ltd

Year of building: 2013

Ship Hull No.: H2344/H2345

Classification: CCS

Ship's Principal Dimensions:

Length overall: 41.25m

Length between perpendicular: 38.60m

Breadth moulded: 11.6m

Moulded depth: 6.0m

Design draft: 4.1m

Main engine: WARTSILA 6L34DF× 2sets

Main engine power(MCR): 2400kW/set×2

LNG Fuel Gas System Specification:

Type of LNG storage tank: Vacuum insulation tank (IMO“C” type tank)

Volume of tank: 25m³/set

Number of tank: 2sets

Material of tank: Stainless steel

Design temperature of tank: -163℃

Design pressure of tank: 0.9MPa

Fuel gas supply to gas fueled engine max. capacity: 500kg/hr for each engine

Gas supply pressure: 6~8bar

Gas supply temperature: 0~60℃

Delivery Date:

H2344 Oct, 2013

H2344 Nov, 2013

Gloryholder' s Scope of Supply:

• **Engineering design**

- System P & I diagrams (including all the auxiliary system)
- BOG calculation and management
- Risk analysis (according to IGF codes)
- Arrangement drawings of FGSS
- Electrical and control system
- ESD shutdown system
- Control logic sequence
- System operation manual
- LNG bunkering piping design

• **Fuel gas system equipments**

- LNG Storage tanks & TCS.
- LNG bunkering station
- LNG Vaporizer & Heater
- Water/Glycol auxiliary heating unit
- Ventilation system equipments
- Gas detection system
- Venting system equipments
- FGSS Main control cabinet
- LNG Bunkering piping (Vacuum insulation piping)

• **Installation and commission**

- System equipments Installation guidance on board.

Gloryholder Liquefied Gas Machinery Co., Ltd

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Reference List of LNG Fuel Gas System

- LNG bunkering piping installation and supervision on board
- Commissioning
- LNG bunkering operation on board
- System operation process guidance
- Gas trial
- Crew training

Fuel gas system equipments:

LNG bunkering station



LNG storage tank & Gas supply unit



FGSS main control cabinet



Water /Glycol unit



LNG bunkering operation



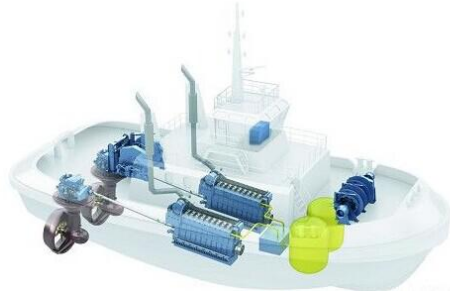
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Reference List of LNG Fuel Gas System

6500HP PURE LNG Fuel Harbor Tug



Project:

Ship type: 6500HP PURE LNG Fuel Harbor Tug

Ship owner: CNOOC

Shipyard: Zhenjiang Shipbuilding Co., Ltd

Year of building: 2014

Ship Hull No.: VZJ647-1401/VJZ647-1402

Classification: CCS

Ship's Principal Dimensions:

Length overall: 41.25m

Length between perpendicular: 38.60m

Breadth moulded: 11.6m

Moulded depth: 6.0m

Design draft: 4.1m

Main engine: Rolls Royce C26:33 L9AG

Main engine power(MCR): 2430kW/set×2

LNG Fuel Gas System Specification:

Type of LNG storage tank: Vacuum insulation tank (IMO“C” type tank)

Volume of tank: 30m³/set

Number of tank: 2sets

Material of tank: Stainless steel

Design temperature of tank: -163℃

Design pressure of tank: 0.9MPa

Fuel gas supply to gas fueled engine max. capacity: 500kg/hr for each engine

Gas supply pressure: 6~8bar

Gas supply temperature: 30±10℃

Delivery Date:

VZL647-1401 July,2015

VZL647-1402 August,2015

Gloryholder' s Scope of Supply:

• **Engineering design**

- System P & I diagrams (including all the auxiliary system)
- BOG calculation and management
- Risk analysis (according to IGF codes)
- Arrangement drawings of FGSS
- Electrical and control system
- ESD shutdown system
- Control logic sequence
- System operation manual
- LNG bunkering piping design
- LP Fuel gas supply piping design

• **Fuel gas system equipments**

- LNG Storage tanks & TCS.
- LNG bunkering station
- Gas supply unit
- Water/Glycol auxiliary heating unit
- Ventilation system equipments
- Gas detection system
- Venting system equipments
- FGSS Main control cabinet
- LNG Bunkering piping
- Fuel gas supply piping

• **Installation and commission**

- System equipments Installation guidance

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Reference List of LNG Fuel Gas System

- on board.
- LNG bunkering piping & LP gas supply piping installation and supervision on board
- Commissioning
- LNG bunkering operation on board
- System operation process guidance
- Gas trial
- Crew training

LNG storage tank & TCS



Water /Glycol unit



Fuel gas system equipments:

LNG bunkering station



Gas supply unit



FGSS main control cabinet



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Reference List of LNG Fuel Gas System

15K Dual Fuel Chemical Tanker



Project:

Ship type: 15K Dual Fuel Chemical Tanker
Ship owner: Terntank Rederi A/S
Shipyard: AVIC Dingheng Shipbuilding Co., Ltd
Year of building: 2014
Ship Hull No.: AD0024/25/57/58
Classification: BV

Ship's Principal Dimensions:

Length overall: 147m
Length between perpendicular: 143.50m
Breadth moulded: 22m
Moulded depth: 11.7m
Design draft: 8.7m

Main engine: WARTSILA 5RT-flex50DF×1set
Main engine power(MCR): 5850kW/set

LNG Fuel Gas System Specification:

Type of LNG storage tank: Vacuum insulation tank (IMO“C” type tank)
Volume of tank: 315m³/set
Number of tank: 2sets
Material of tank: Stainless steel
Design temperature of tank: -163℃
Design pressure of tank: 0.5MPa
Fuel gas supply to gas fueled engine max. capacity: 920kg/hr
Gas supply pressure: 16bar
Gas supply temperature: 0~60℃

Delivery Date:

AD0024	June,2016
AD0025	Sep,2016
AD0057	Oct.2016
AD0058	Mar,2017

Gloryholder' s Scope of Supply:

- **Engineering design**
 - System P & I diagrams (including all the auxiliary system)
 - BOG calculation and management
 - Risk analysis (according to IGF codes)
 - Arrangement drawings of FGSS
 - Electrical and control system
 - ESD shutdown system
 - Control logic sequence
 - System operation manual
 -
- **Fuel gas system equipments**
 - LNG Storage tanks & TCS.
 - Gas supply unit
 - Water/Glycol auxiliary heating unit
 - Ventilation system equipments
 - Gas detection system
 - Venting system equipments
 - FGSS Main control cabinet
 -
- **Installation and commission**
 - System equipments Installation guidance on board.
 - Commissioning
 - LNG bunkering operation on board

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Reference List of LNG Fuel Gas System

- System operation process guidance
- Gas trial
- Crew training

Gas supply unit



FGSS main control cabinet



Fuel gas system equipments:

LNG storage tank & TCS



Water /Glycol unit



LNG bunkering operation



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Reference List of LNG Fuel Gas System

60M Bulk Carrier



Project:

Ship type: 60M Bulk Carrier

Ship owner: WEICHAI Group

Shipyard: Hang Yu Shipbuilding Co., Ltd

Year of building: 2016

Ship Hull No.:

Classification: CCS

Ship's Principal Dimensions:

Length overall: 63m

Length between perpendicular: 60m

Breadth moulded: 12.6m

Moulded depth: 4.2m

Design draft: 3.55m

Main engine: WEICHAI 6M26NG

Main engine power(MCR): 400kW/set×2

LNG Fuel Gas System Specification:

Type of LNG storage tank: Vacuum insulation tank (IMO“C” type tank)

Volume of tank: 15m³/set

Number of tank: 1sets

Material of tank: Stainless steel

Design temperature of tank: -163℃

Design pressure of tank: 1.1MPa

Fuel gas supply to M/E :Max. 85kg/hr

Gas supply pressure: 320bar high pressure

Gas supply temperature: 0~60℃

Delivery Date:

Delivery Time: Until end of 2017

Gloryholder' s Scope of Supply:

- **Engineering design**
 - System P & I diagrams (including all the auxiliary system)
 - BOG calculation and management
 - Risk analysis (according to IGF codes)
 - Electrical and control system
 - Control logic sequence
 - System operation manual
- **Fuel gas system equipments**
 - LNG Storage tanks & TCS.
 - HP & LP Gas supply unit
 - Gas detection system
 - FGSS Main control cabinet
 - LNG bunkering piping
 - HP & LP gas supply piping installation and supervision on board
- **Installation and commission**
 - System Installation guidance on board.
 - Commissioning
 - System operation process guidance
 - Gas trial
 - Crew training

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Reference List of LNG Fuel Gas System

ESL Shipping 25k Ice Class Heavy Lift Bulk Carrier



Project:

Ship type: 25k Heavy Lift Bulk Carrier
Ship owner: ESL Shipping Ltd.
Shipyard: SINOTRANS & CSC JINLING
Year of building: 2016
Ship Hull No.: QS25000-1/2/3/4
Classification: DNV-GL

Ship's Principal Dimensions:

Length overall: 160.00m
Length between perpendicular: 157.05m
Breadth moulded: 26.00m
Moulded depth: 15m
Design draft: 9.50m

Main engine: MAN 5G45ME-C9.5-GI-TIII
Main engine power(SMCR): 6000kW/set×1

LNG Fuel Gas System Specification:

Type of LNG storage tank: Vacuum insulation tank (IMO“C” type tank)
Volume of tank: 390m³/set
Number of tank: 1sets
Material of tank: Stainless steel
Design temperature of tank: -163℃
Design pressure of tank: 0.7MPa
Fuel gas supply to gas fueled engine max. capacity: 970kg/hr
Gas supply pressure for M/E: 315±2bar
Gas supply temperature for M/E: 45±10℃
Gas supply pressure for A/E: 6.5±0.5bar
Gas supply temperature for A/E: 30±10℃

Delivery Date:

QS25000-1	Sep. of 2017
QS25000-2	Qct. of 2017
QS25000-3/4	~

Gloryholder' s Scope of Supply:

- **Engineering design**
 - System P & I diagrams (including all the auxiliary system)
 - BOG calculation and management
 - Risk analysis (according to IGF codes)
 - Arrangement drawings of FGSS
 - Electrical and control system
 - ESD shutdown system
 - Control logic sequence
 - System operation manual
 - LNG bunkering piping
 - HP Fuel gas piping
 - LP Fuel piping
- **Fuel gas system equipments**
 - LNG Storage tanks & TCS
 - LNG bunkering station .
 - LNG service tank
 - LNG HP Pump skid
 - HP& LP Gas supply unit
 - Water/Glycol auxiliary heating unit
 - Ventilation system equipments
 - Gas detection system
 - Venting system equipments
 - FGSS Main control cabinet
 - Nitrogen generator

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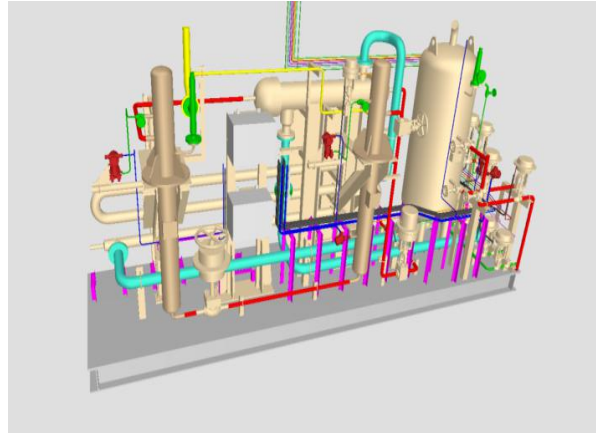
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Reference List of LNG Fuel Gas System

- High pressure nitrogen booster
- LNG Bunkering piping & insulation
- HP fuel gas piping
- LP fuel gas piping
- **Installation and commission**
 - System Installation guidance on board.
 - Commissioning
 - System operation process guidance
 - Gas trial
 - Crew training

HP & LP Gas supply unit

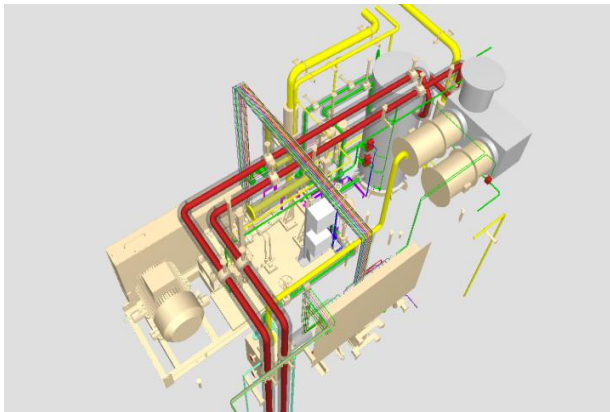


FGSS main control cabinet



Fuel gas system equipments:

HP LNG pump skid



Water / Glycol skid



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Reference List of LNG Fuel Gas System

Gothia Tanker Alliance 16300DWT Chemical Tanker



Project:

Ship type: 16300DWT Chemical Tanker

Ship owner: Gothia Tanker Alliance

Shipyard: AVIC Dingheng Shipyard

Year of building: 2016

Ship Hull No.: AD0026 / AD0027 / AD0028 /
AD0029

Classification: BV

Ship's Principal Dimensions:

Length overall: 149.90m

Length between perpendicular: 146.64m

Breadth moulded: 22.80m

Moulded depth: 12.10m

Design draft: 8.85m

Main engine: WARTSILA 9L34DF x1 set

Main engine power(SMCR): 4500kW/set

LNG Fuel Gas System Specification:

Type of LNG storage tank: Vacuum insulation
tank (IMO“C” type tank)

Volume of tank: 300m³/set

Number of tank: 2sets

Material of tank: Stainless steel

Design temperature of tank: -196℃

Design pressure of tank: 0.7MPa

Fuel gas supply to gas fueled engine max.
capacity: 864kg/hr

Gas supply pressure: 6.5~10bar

Gas supply temperature: 30±10℃

Delivery Date:

AD0026 April 2018

AD0027 July, 2018

AD0028 Oct, 2018

AD0029 Jan, 2019

Gloryholder' s Scope of Supply:

- **Engineering design**
 - System P & I diagrams (including all the auxiliary system)
 - BOG calculation and management
 - Risk analysis (according to IGF codes)
 - Arrangement drawings of FGSS
 - Electrical and control system
 - Control logic sequence
 - System operation manual
- **Fuel gas system equipments**
 - LNG Storage tanks & TCS.
 - Gas supply unit
 - Water/Glycol auxiliary heating unit
 - Ventilation system equipments
 - Gas detection system
 - Venting system equipments
 - FGSS Main control cabinet
- **Installation and commission**
 - System Installation guidance on board.
 - Commissioning
 - System operation process guidance
 - Gas trial
 - Crew training

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Reference List of LNG Fuel Gas System

SIEM Car Carriers 7,500 CEU POST – PANAMAX LNG – PCTC



Project:

Ship type: 7,500 CEU POST – PANAMAX LNG - PCTC

Ship owner: Siem Car Carriers

Shipyard: Xiamen Shipbuilding Industry Co., Ltd

Year of building: 2017

Ship Hull No.: 463A/B

Classification: ABS

Ship's Principal Dimensions:

Length overall: 199.90m

Length between perpendicular: 190.00m

Breadth moulded: 38.00m

Moulded depth: 14.80m

Design draft: 8.65m

Main engine: MAN 7S60MEGI Tier III x1 set

Main engine power(SMCR): 12,614 kW/set

LNG Fuel Gas System Specification:

Type of LNG storage tank: Single wall with PUF insulation tank (IMO“C” type tank)

Volume of tank: 1,800 m³/set

Number of tank: 2sets

Material of tank: 9%Ni steel

Design temperature of tank: -196℃

Design pressure of tank: 0.4MPa

Fuel gas supply to M/E:Max. capacity 2,785 kg/hr

Gas supply pressure for M/E: 315±2bar

Gas supply temperature for M/E: 45±10℃

Gas supply pressure for A/E: 6.5±0.5bar

Gas supply temperature for A/E: 30±10℃

Delivery Date:

463A April 2019

463B Nov, 2019

Gloryholder' s Scope of Supply:

- **Engineering design**
 - System P & I diagrams (including all the auxiliary system)
 - LNG tank & insulation design
 - BOG calculation and management
 - Risk analysis (according to IGF codes)
 - Electrical and control system
 - Control logic sequence
 - System operation manual
- **Fuel gas system equipments**
 - LNG bunkering station skid
 - LNG Storage tanks & dome cover
 - HP & LP Gas supply unit
 - BOG handling skid
 - Water/Glycol auxiliary heating unit
 - FGSS Main control cabinet
 - Nitrogen generator system
- **Installation and commission**
 - System Installation guidance on board.
 - Commissioning
 - System operation process guidance
 - Gas trial
 - Crew training

Gloryholder Liquefied Gas Machinery Co., Ltd

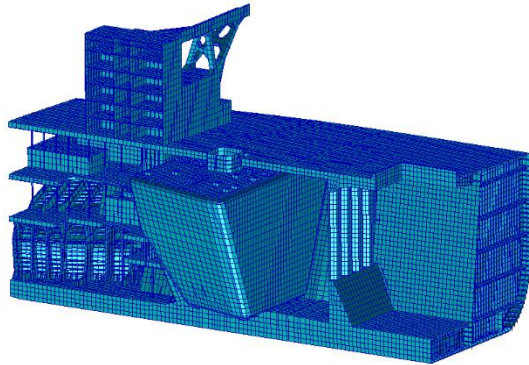
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Reference List of LNG Fuel Gas System

400K VLOC LNG Ready



Project:

Ship type: VLOC LNG Ready

Ship owner: Vale

Shipyard: SWS

Year of building: 2016

Hull No.: H1438

Classification: DNV-GL

Ship's Principal Dimensions:

Length overall: 360.0m

Length between perpendicular: 353.0m

Breadth moulded: 65.0m

Moulded depth: 30.4m

Design draft: 22.0m

Service speed: 14.8 Kn

Main engine: MAN B&W 7G80ME-C9.5

Main engine power(MCR): 29,400kW/set

LNG Storage Tank Specification:

Type of LNG tank: Type "B" tank)

Volume of tank: 12,500m³/set

Number of: one(1) set

Material of tank: 9% Nickel steel

Design temperature of tank: -196°C

Design pressure of tank: 0.7bar G

Gloryholder's Engineering Scope:

- Process engineering and flow diagrams (including all the auxiliary system)
- P&I diagrams for the fuel gas system
- LNG fuel gas system calculation sheet
- Risk analysis
- BOG calculation and management
- General arrangement drawings
- LNG tank arrangement
- Piping arrangement
- Equipment lists
- Electrical schematic diagram
- Electrical Wiring diagram
- Instrument lists
- System operation manuals
- Crew training

Delivery Time:

July , 2018

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Reference List of LNG Fuel Gas System

TRF Shipping 157,500t Oil Tanker



Project:

Ship type: 157,500t Oil Tanker LNG Ready

Ship owner: TRF Ship Management AS

Shipyard: New times shipbuilding co., ltd

Year of building: 2014

Ship Hull No.: 0315809/10/11/12/13

Classification: LR

Ship's Principal Dimensions:

Length overall:276.00m

Length between perpendicular:270.40m

Breadth moulded: 48.00m

Moulded depth: 23.20m

Design draft:16.00m

Main engine: MAN B&W 6G70ME-GI×1set

Main engine power(MCR): 15,100kW/set×1

LNG Fuel Gas System Specification:

Type of LNG storage tank: Single wall tank with PUF insulation. (IMO type "C" tank)

Volume of tank: 600m³/set

Number of: 2sets

Material of tank: Stainless steel

Design temperature of tank:-163℃

Design pressure of tank: 0.35MPa

Fuel gas supply to gas fueled engine max.

Capacity: 2372kg/hr.

Gas supply pressure: 320bar high pressure

Gas supply temperature: 30~60℃

"Gloryholder's Engineering Document:

- Process engineering and flow diagrams (including all the auxiliary system)
- P&I diagrams for the fuel gas system
- LNG fuel gas system calculation sheet
- Risk analysis
- BOG calculation and management
- General arrangement drawings
- LNG tank arrangement
- Piping arrangement
- Equipment lists
- Electrical schematic diagram
- Electrical Wiring diagram
- Instrument lists
- System operation manuals

Delivery Time

May, 2016

Gloryholder Liquefied Gas Machinery Co., Ltd

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Reference List of LNG Fuel Gas System

Dynacom Shipping 158,000t Oil Tanker



Project:

Ship type: 158,000t Oil Tanker LNG Ready
Ship owner: Dynacom Tankers Management Ltd.
Shipyard: New times shipbuilding co., ltd
Year of building: 2015
Ship Hull No.: 0315814/15/16/62/63/64/ **BV**
Ship Hull No.: 0315817/18/65/ **ABS**
Ship Hull No.: 0315861/ **DNV-GL**
Ship Hull No.: 0315866/ **NK**

Ship's Principal Dimensions:

Length overall:276.00m
Length between perpendicular:270.40m
Breadth moulded: 48.00m
Moulded depth: 23.20m
Main engine: MAN B&W 6G70ME-GI×1set
Main engine power(MCR): 15,100kW/set×1

LNG Fuel Gas System Specification:

Type of LNG storage tank: Single wall tank with PUF insulation. (IMO type "C" tank)
Volume of tank: 1900m³/set
Number of: 2sets
Material of tank: Stainless steel
Design temperature of tank:-163℃
Design pressure of tank: 0.35MPa
Fuel gas supply to gas fueled engine max.
Capacity: 2372kg/hr.
Gas supply pressure: 320bar high pressure
Gas supply temperature: 0~60℃

Gloryholder's Engineering Document:

- Process engineering and flow diagrams (including all the auxiliary system)
- P&I diagrams for the fuel gas system
- LNG fuel gas system calculation sheet
- Risk analysis
- BOG calculation and management
- General arrangement drawings
- LNG tank arrangement
- Piping arrangement
- Equipment lists
- Electrical schematic diagram
- Electrical Wiring diagram
- Instrument lists
- System operation manuals

Delivery Time

July, 2017

Gloryholder Liquefied Gas Machinery Co., Ltd

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Reference List of LNG Fuel Gas System

COSCO(DALIAN) 308,000t VLCC



Project:

Ship type: 308,000t VLCC LNG Ready

Ship owner: Dalian Ocean Shipping Co., Ltd

Shipyard: Dalian COSCO KHI SHIP Engineering Co., Ltd

Year of building: 2016

Ship Hull No.: DE045

Classification: LR

Ship's Principal Dimensions:

Length overall: 333.00m

Length between perpendicular: 324.00m

Breadth moulded: 60.00m

Moulded depth: 30.50m

Main engine: MAN B&W 7G70ME-GI

Main engine power(MCR): 31,150kW/set×1

LNG Fuel Gas System Specification:

Type of LNG storage tank: Single wall tank with PUF insulation. (IMO type "C" tank)

Volume of tank: 6000m³/set

Number of: 2sets

Material of tank: Stainless steel

Design temperature of tank:-196℃

Design pressure of tank: 0.4MPa

Fuel gas supply to gas fueled engine max.

Capacity: 4500kg/hr.

Gas supply pressure: 315bar high pressure

Gas supply temperature: 45±10℃

Gloryholder's Engineering Document:

- Process engineering and flow diagrams (including all the auxiliary system)
- P&I diagrams for the fuel gas system
- LNG fuel gas system calculation sheet
- Risk analysis
- BOG calculation and management
- General arrangement drawings
- LNG tank arrangement
- Piping arrangement
- Equipment lists
- Electrical schematic diagram
- Electrical Wiring diagram
- Instrument lists

Delivery Time

March, 2017

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Reference List of LNG Fuel Gas System

COSCO(DALIAN) 319,000t VLCC



Project:

Ship type: 319,000t VLCC LNG Ready

Ship owner: Dalian Ocean Shipping Co., Ltd

Shipyard: Dalian Shipbuilding Industry Corporation

Year of building: 2016

Ship Hull No.: T300K-77/78

Classification: CCS

Ship's Principal Dimensions:

Length overall: 333.00m

Length between perpendicular: 323.60m

Breadth moulded: 60.00m

Moulded depth: 30.50m

Main engine: MAN B&W 7G70ME-C9.5

Main engine power(MCR): 31,150kW/set×1

LNG Fuel Gas System Specification:

Type of LNG storage tank: Single wall tank with PUF insulation. (IMO type "C" tank)

Volume of tank: 3500m³/set

Number of: 2sets

Material of tank: 9% Nickel steel

Design temperature of tank: -196℃

Design pressure of tank: 0.4MPa

Fuel gas supply to gas fueled engine max.

Capacity: 4500kg/hr.

Gas supply pressure: 315bar high pressure

Gas supply temperature: 45±10℃

Gloryholder's Engineering Document:

- Process engineering and flow diagrams (including all the auxiliary system)
- P&I diagrams for the fuel gas system
- LNG fuel gas system calculation sheet
- Risk analysis
- BOG calculation and management
- General arrangement drawings
- LNG tank arrangement
- Piping arrangement
- Equipment lists
- Electrical schematic diagram
- Electrical Wiring diagram
- Instrument lists

Delivery Time

April, 2017

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