LNG Fuel Gas Systems
Our references include LNG fuel gas systems for:

- All major engine makers (MAN, Wärtsilä, Win GD, Caterpillar/MAK, Rolls Royce)
- All types of engines: 2-stroke, 4-stroke (Otto- or Diesel-process)
- Gas supply ranging from 4 bar g to 350 bar g
- All major classification societies (ABS, BV, CCS, DNV-GL, LR)
- Many different types of vessels (Container vessel, ConRo vessel, product tanker, car carrier, cruise vessel, gas/chemical tanker)

Introduction

Natural gas is a clean and environmentally-friendly fuel. It is of growing importance to the marine industry and shipping to meet low emission standards. Engines are available in a broad range of capacities with different engine technologies (2-stroke, 4-stroke, Otto- or Diesel-process) requiring different gas supply systems.

TGE Marine offers LNG fuel gas systems for all types and sizes of engines. Our services and supplies cover the complete onboard system comprising storage, handling and processing of LNG from the bunker station to the fuel gas master valve at the engine, also including control & safety systems and auxiliary systems.
Technology

Type Low Pressure Vacuum insulated tank
- Vacuum insulated tank
- Stainless steel cold box for process equipment welded to tank
- LNG pump in suction vessel
- Bottom outlet to fuel gas pump with double-wall piping
- Tank design pressure 10 bar g for easy BOG handling
- Gas to engine: 4 bar g or 16 bar g

Type Low Pressure Foam insulated tank
- Foam insulated type C tank
- No bottom outlet
- Submerged fuel gas pump and BOG compressor
- Tank design pressure 4 bar g for easy BOG handling
- Gas to engine: 4 bar g or 16 bar g
Type High Pressure Fuel Gas System

- Foam insulated type C tank
- No bottom outlet
- Submerged fuel gas pump, high pressure pump, and BOG compressor
- Tank design pressure 4 bar g for easy BOG handling
- Gas to main engine: 350-400 bar g

Gas to main engine: 350-400 bar g
LNG fuel tanks

TGE Marine has successfully supplied more than 400 IMO type C tanks as cargo tanks to gas carriers with capacities of up to 14,000 m³ per tank. Based on our proven track record we offer LNG fuel tanks of IMO type C which can be delivered in any size.

Over many years, type C tanks have had an excellent safety record in the gas tanker market. Due to its fail safe design this is the only tank technology for marine LNG application which does not require a secondary barrier in order to cope with the risk of LNG leakages.

TGE Marine offers both, vacuum insulated and foam insulated type C tanks. Foam insulated tanks can be fabricated in a variety of shapes and sizes including conical, bilobe and trilobe design for good volume efficiency. Tanks are installed in a horizontal or vertical arrangement. Vacuum insulation is superior for applications requesting minimum boil-off rates but is significantly more expensive and limited to tank capacities of about 1,000 m³.
New Semi Submersible Crane Vessel for Heerema, The Netherlands
Shipyard: Sembcorp Marine, Singapore
Year of completion: 2018 (under construction)
Classification: LR
Scope: Low pressure fuel gas system for 4-stroke dual fuel engines. Eight vertical foam insulated tanks installed vertically in the columns of the hull and four parallel fuel gas processing trains.

1,000 TEU Container vessel for Wessels, Germany
Shipyard: tbc
Year of completion: 2017
Classification: BV
Scope: Fuel gas system with 480 m³ foam insulated tank installed in the forecastle.
26,500 dwt ConRo vessel for Crowley Maritime, USA
Shipyard: VT Halter Marine, USA
Year of completion: 2017
Classification: DNV-GL
Scope: High pressure fuel gas system with 3 x 770 m³ vacuum insulated tanks.

124,000 GT Cruise vessel for Aida, Germany
Shipyard: Mitsubishi Heavy Industries, Japan
Year of completion: 2016
Classification: DNV-GL
Scope: Fuel gas system for LNG supply by truck in harbor.
3,800 Pure Car Carrier for UECC, Norway
Shipyard: Nantong Cosco Kawasaki Shipyard, China
Year of completion: 2016
Classification: LR
Scope: High pressure fuel gas system with 760 m³ foam insulated tank.

35,000 m³ Ethane carrier for Navigator Gas Ltd, United Kingdom
Shipyard: Jiangnan Shipyard, China
Year of completion: 2016
Classification: GL
Scope: Complete gas handling system, LNG fuel gas tanks, high pressure fuel gas system for MAN ME-GI dual fuel main engine and low pressure fuel gas system for 4-stroke dual fuel auxiliary engines.
1,400 TEU Container vessel for CONTAINERSHIPS Nord, Finland
Shipyard: Guangzhou Wenchong Shipyard Co. Ltd., China
Year of completion: 2019
Classification: ABS
Scope: Low pressure fuel gas system for 2-stroke dual fuel main engine and 4-stroke duel fuel auxiliary engine with three vertical foam insulated tanks.

16,300 DWT Chemical tanker for Furetank Rederi AB, Sweden
Shipyard: AVIC Dingheng Shipbuilding, China
Year of completion: 2019
Classification: BV
Scope: Low pressure fuel gas system for 4-stroke main engine and inert gas generator with two vacuum insulated tanks.
Conversion of 3,750 dwt Product Tanker for Bergen Tankers, Norway

Shipyard: Noryards, Norway
Year of completion: 2015 (for conversion to gas propulsion)
Classification: BV
Scope: Fuel gas system with vacuum insulated LNG tank.