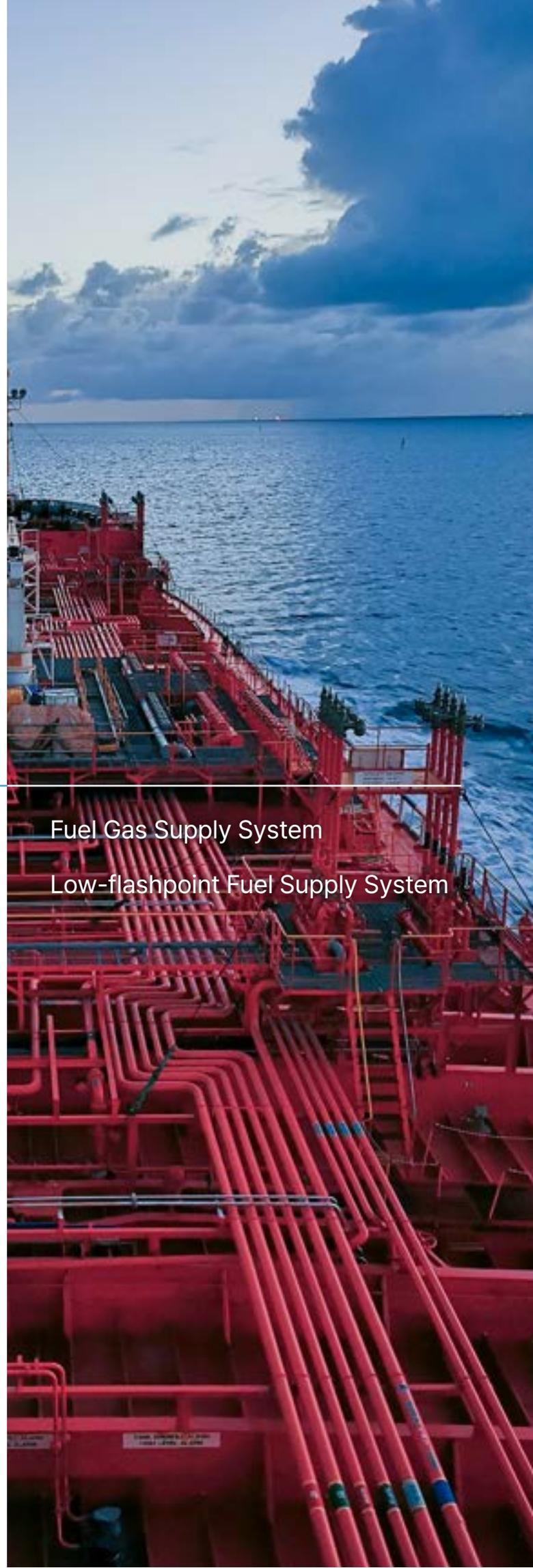




ABOUT GAS SOLUTION

S&SYS PRODUCT BROCHURE

S&SYS BROCHURE | GAS SOLUTION



Fuel Gas Supply System

Low-flashpoint Fuel Supply System

About PURIGAS™

PURIGAS™

PURIGAS™ — Integrated Solution for Alternative Fuel Supply

PURIGAS™ is the package solution for alternative fuel supply system.

It is named after S&SYS's Ballast Water Management System, Purimar™, means PURE and Intelligent GAS storage and supply system.

Since LNG, LPG, Methanol and Ammonia are considered the eco-friendly fuel for IMO's SOx, NOx and GHG emissions restriction, a lot of ship owners are deeply looking into the alternative fuel supply system as best option for this barrier although CAPEX and installation space are heavy obstacles to adapt on board.

Energy & Storage Overview

This table compares the key characteristics of various marine fuels (MGO, LNG, Methanol, LPG, and Ammonia). It provides a clear overview of each fuel's calorific value, density, emission reduction potential, storage conditions, supply pressure, and required tank volume, helping determine the optimal fuel choice based on vessel operating conditions and environmental regulations.

	Marine Gas Oil (MGO)	Liq. Natural Gas (LNG -162°C)	Methanol (CH3-OH)	Liq. Pet. Gas (LPG)	Ammonia (NH3)	
Specific Energy	42.7 MJ/kg	50.0 MJ/kg	19.9 MJ/kg	46 MJ/kg	18.6 MJ/kg	
Density	840 kg/m³	430-470 kg/m³	800 kg/m³	470-590 kg/m³ (508 at 15°C)	600 kg/m³	
Emission Reduction Compared to HFO Tier II	SOx	Base	90-99%	90-97%	92%	100%
	NOx	Base	20-30%	30-50%	84%	Compliant with Regulation
	CO2	Base	24%	11%	10-14%	- 90% (Using pilot oil)
	PM Particulate Matter	Base	90%	90%	90%	- 90%
Boiling Temperature	200°C-370°C	-161°C	64.7°C	-44°C ~ -40°C	-33.34°C	
Flash Point (Low flash point : < 60°C)	63-87°C	-188°C	11°C	-106 ~ -100°C	132°C	
Fuel storage condition	Liquid	Liquid	Liquid	Liquid	Liquid	
Storage temperature	25°C	-162°C	25°C	-32.6°C (at 0.5 barg)	-24.7°C (To be discussed)	
Supply Pressure	7-8 bar	300 bar	13 bar	50 bar	83 bar	
Required Tank Volume	1,000 m³	1,600 m³	2,300 m³	1,500 m³	3,000 m³	



FGSS

Fuel Gas Supply System (PURIGAS™- LN)

S&SYS proudly presents PURIGAS™, an innovative full package solution for LNG fuel supply systems.

Our LNG FGSS has been successfully designed, tested and delivered to customers, ensuring complete satisfaction.

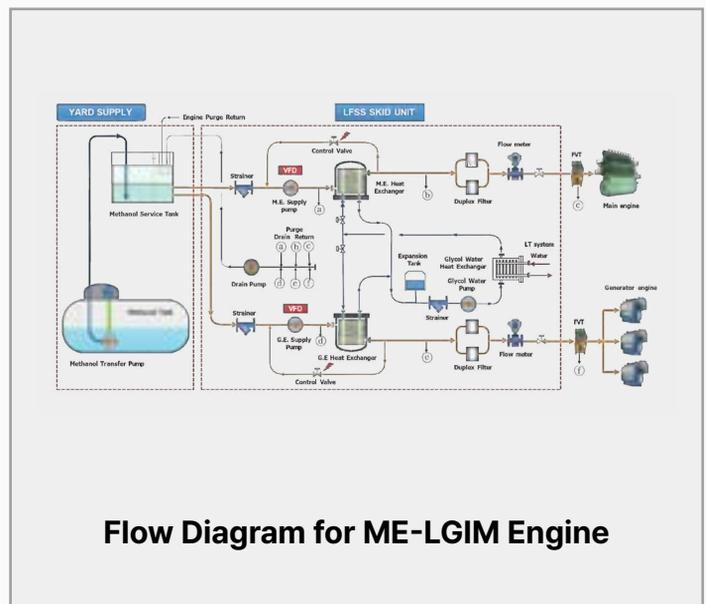
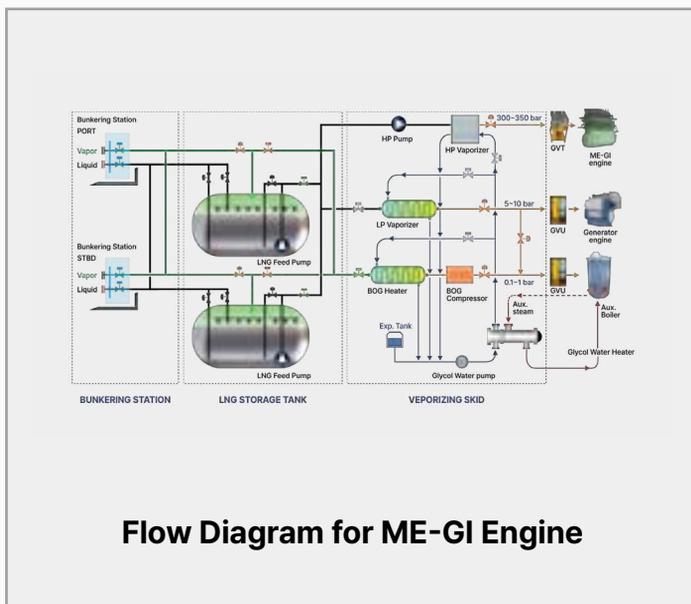
We offer fully optimized LNG Fuel Gas Supply Systems (FGSS) from initial concept through final commissioning. Our turnkey solutions are compatible with all major engine platforms—ME-GI, X-DF, and DFDE—ensuring seamless integration and reliable performance.

LFSS

Low-flashpoint Fuel Supply System (PURIGAS™-ME)

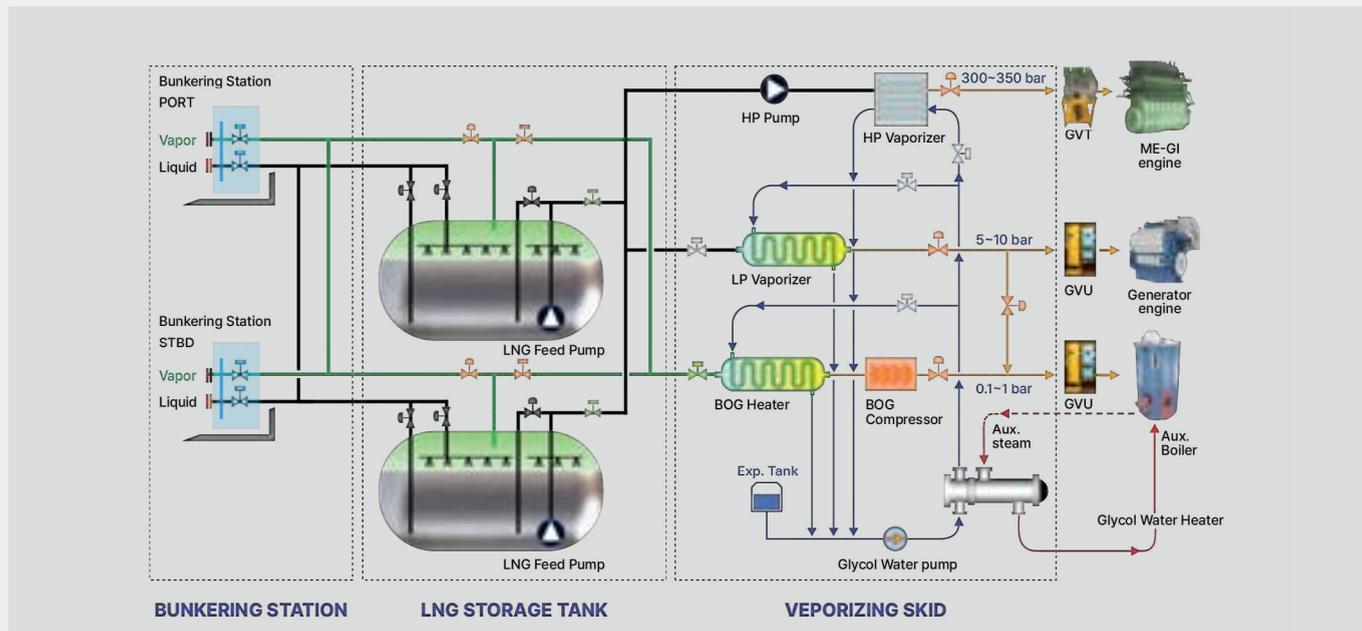
PURIGAS™-LFSS (Low-flashpoint Fuel Supply System) has been developed by S&SYS based on its accumulated expertise in methanol-related equipment and engineering technologies.

Leveraging S&SYS's proven technology and know-how, PURIGAS™-LFSS provides customers with the most cost-effective and reliable packaged system for ME-LGIM engines, achieving low CAPEX (capital expenditure) and OPEX (operating expenditure).

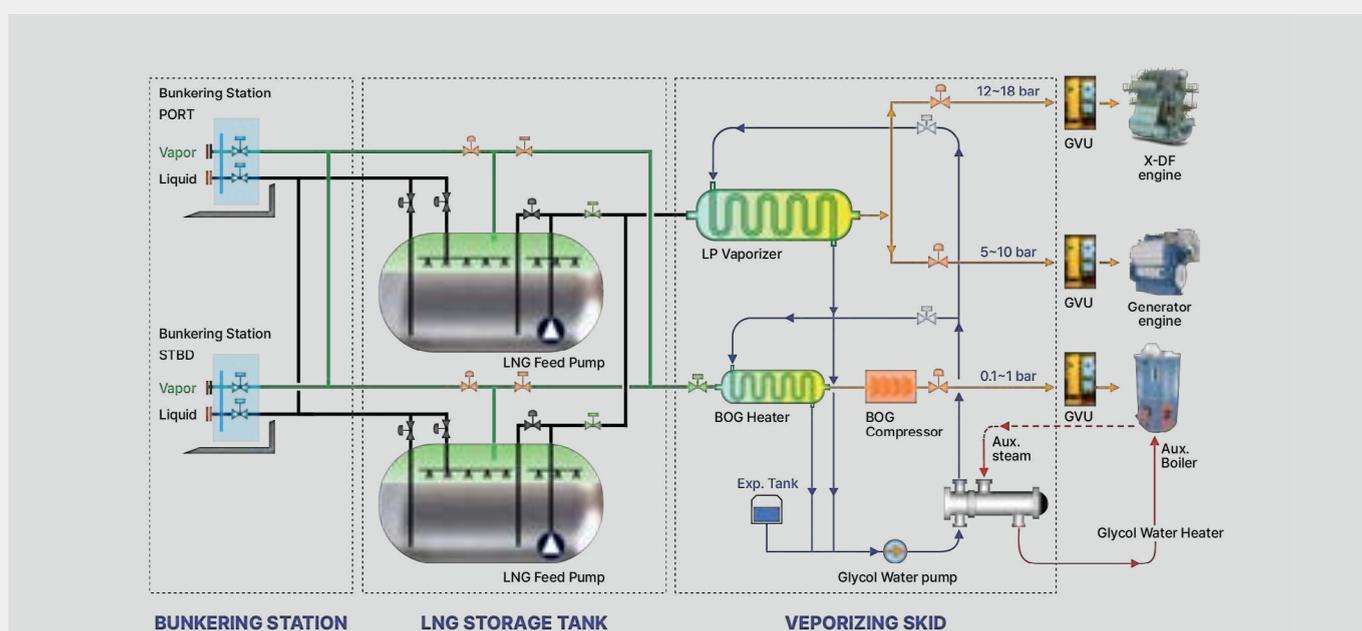


FGSS (LNG)

Flow Diagram for ME-GI Engine

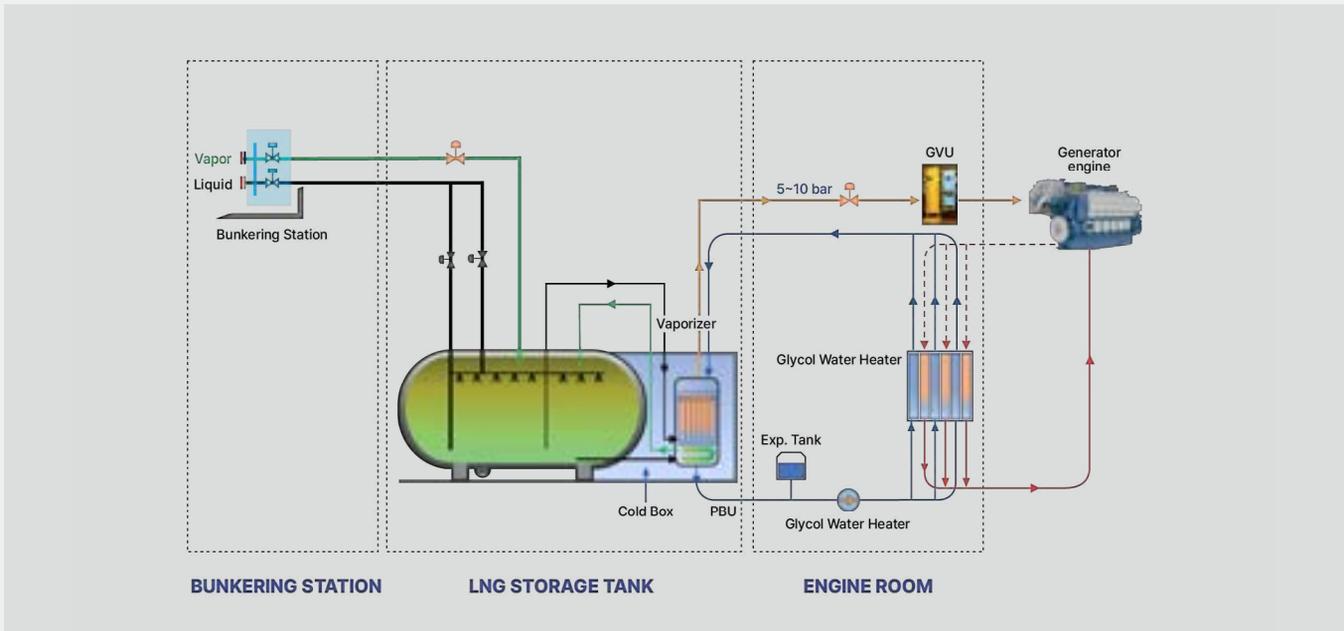


Flow Diagram for X-DF Engine

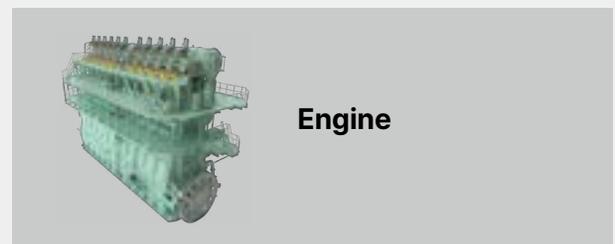
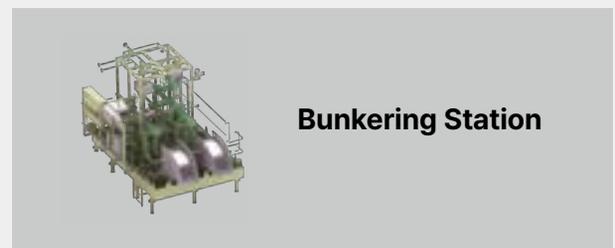




Flow Diagram for DFDE for Small Vessel



Equipment for PURIGAS™



FGSS (LNG)

Bunkering Station

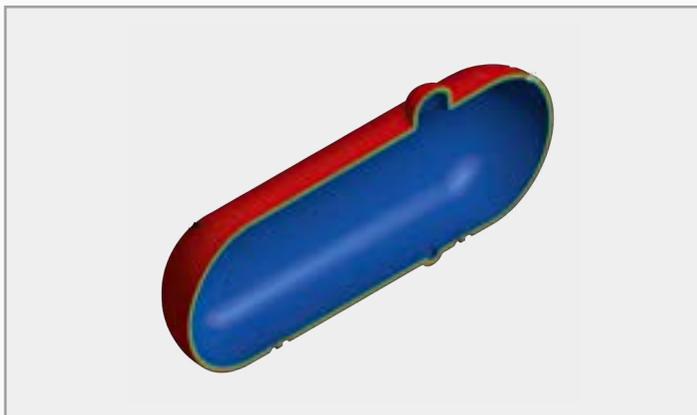
- Quantity : 2 sets(Port & Starboard shipside)
- Liquid Line : 4~8" Pipe
- Vapour Line : 4~6" Pipe
- Dimension(In accordance with SGMF guidance)
 - Distance of manifold flanges inboard from ship's side : 1,100mm
 - Horizontal distance Between Flange centers : 1250 mm
 - Vertical distance Between Flange center & working platform : *mm(*depend on ship's specification)



Type-C LNG Storage Tank

Design specification

- Independent Type-C tank(IMO/IGC)
- Single shell(with PUF) or Double shell(VACUUM with Perlite)
- Design pressure : 3~9 bar.G
- Working pressure : 1~9 bar.G





FGSS SKID

Skid Configuration

- LNG HP pump unit
- LNG Vaporizer unit
- Glycol water supply system
- BOG compressor (Option)



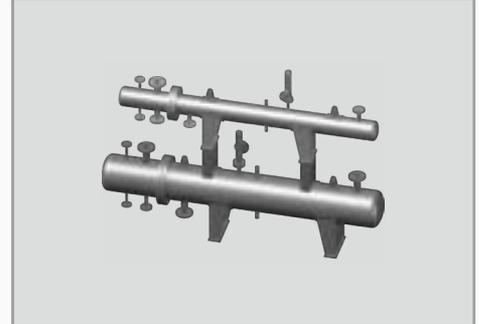
Vaporizer

PCHE(Printed Circuit Heat Exchanger) 타입

- Proper for high pressure
- Diffusion Bonded
- Chemically etched fluid channels

Merit

- Minimize area and size of heat exchange
- Maximize heat transfer efficiency



Vaporizer

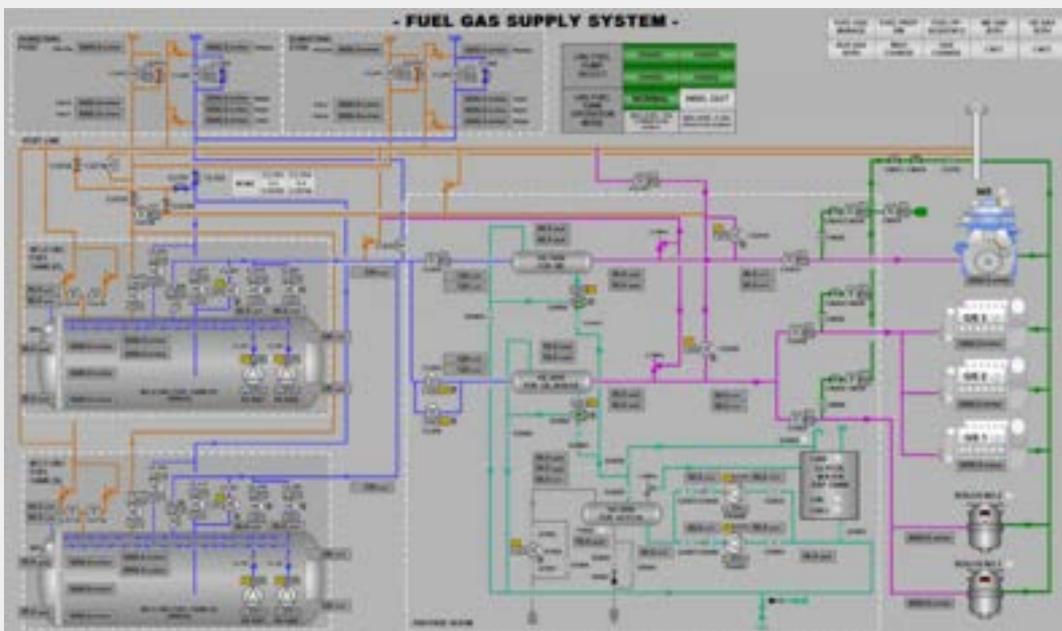
Shell & Tube Heat Exchanger type

- Proper for low pressure
- Most commonly used

Merit

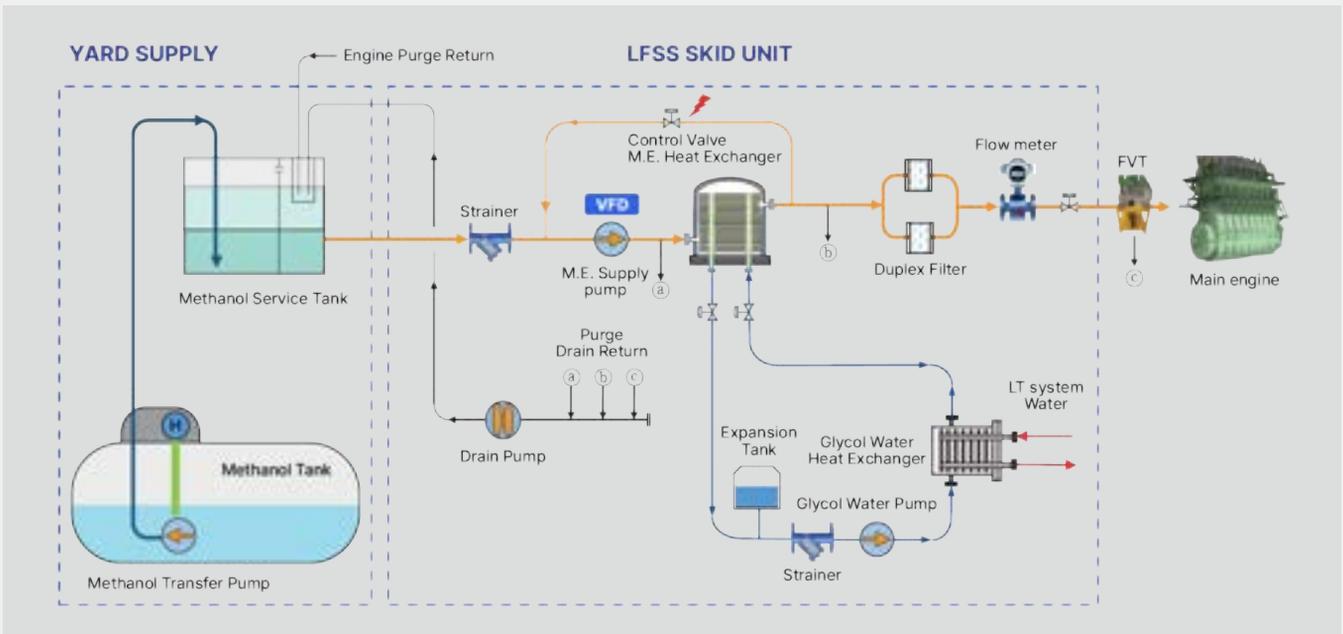
- Low cost
- Easy maintenance

FGSS Control & Monitoring Mimic (SSAS-Master)

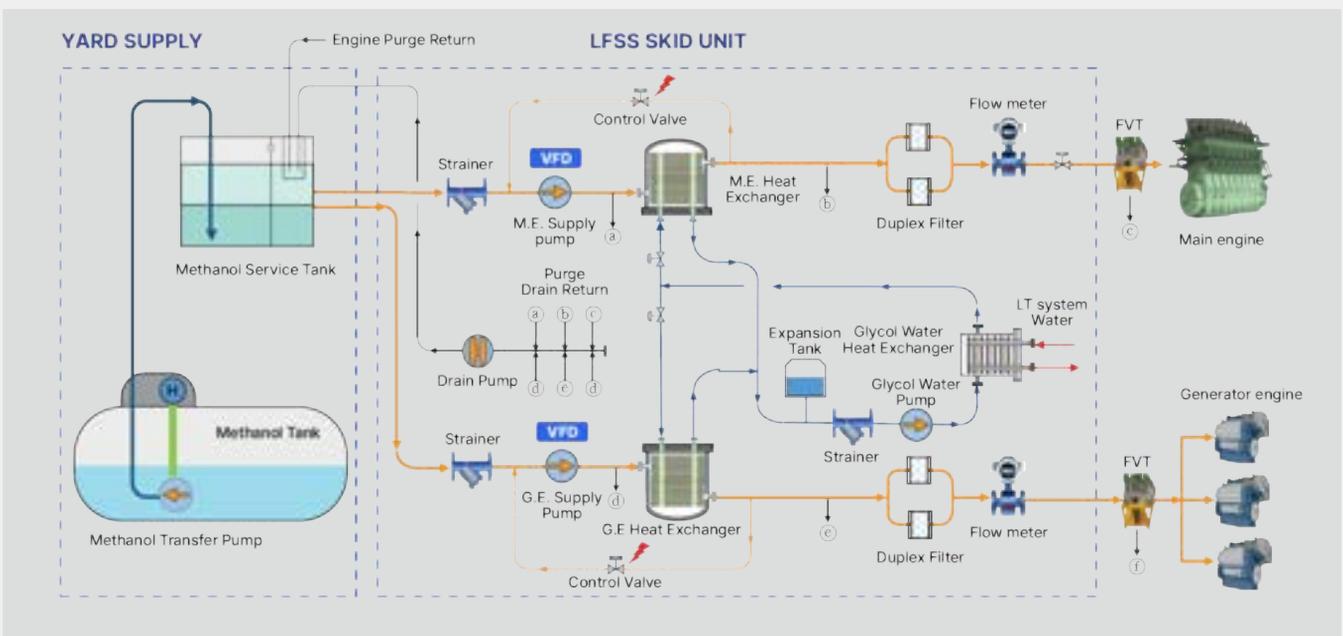


LFSS (METHANOL)

Flow Diagram for ME-LGIM Engine

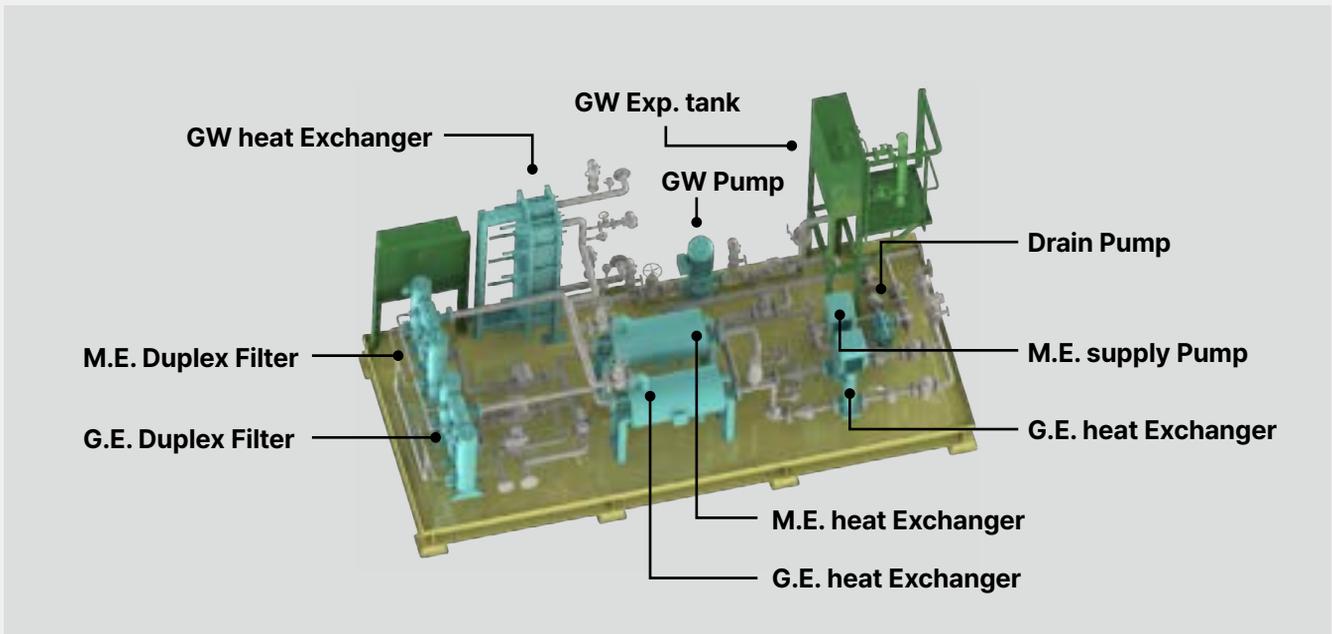


Flow Diagram for XDF-M Engine

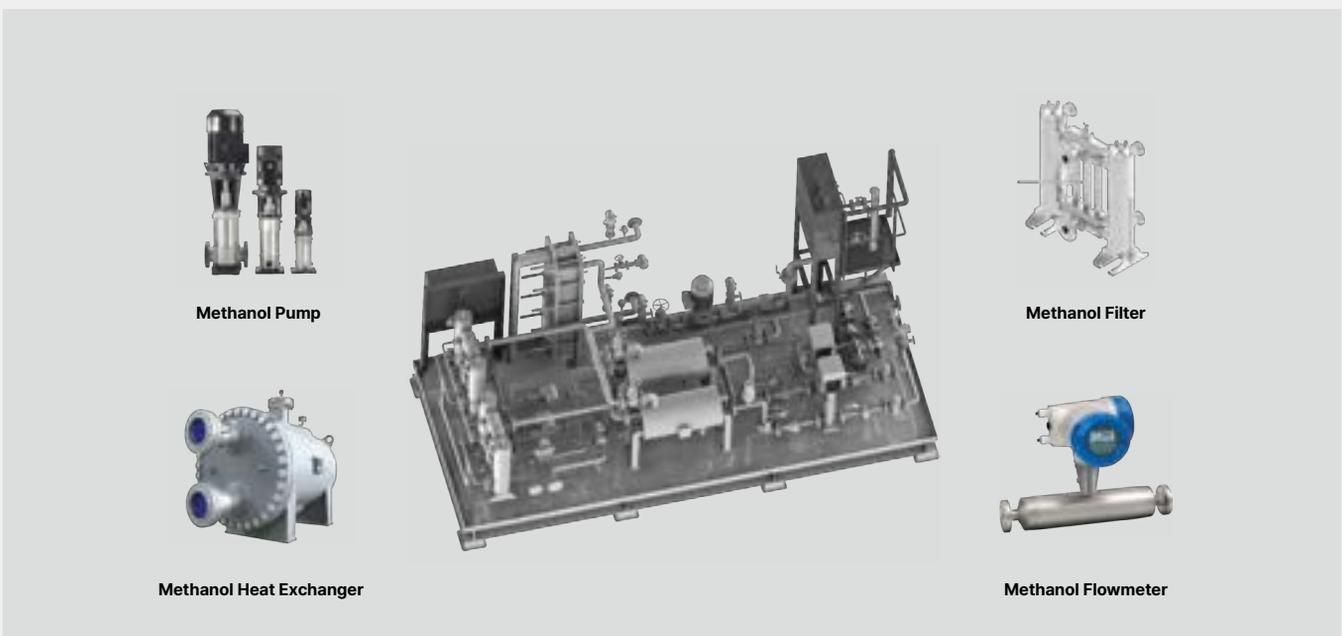




LFSS SKID UNIT for Main Engine and Generator

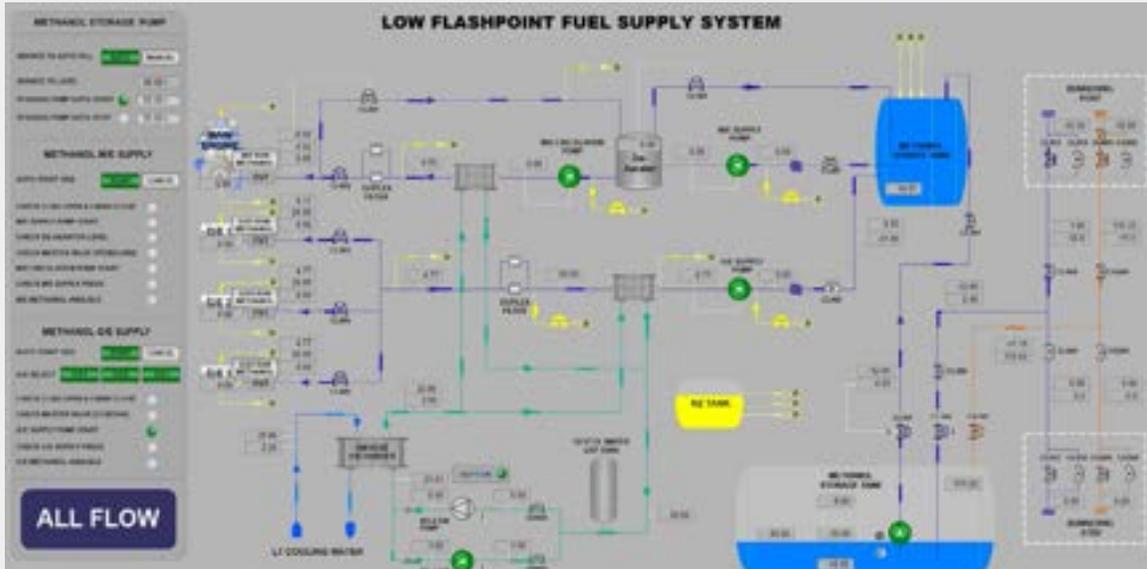


Equipment for LFSS



LFSS (METHANOL)

LFSS Control & Monitoring Mimic (SSAS-MASTER)



LFSS CONTROL SYSTEM

SAFETY AREA

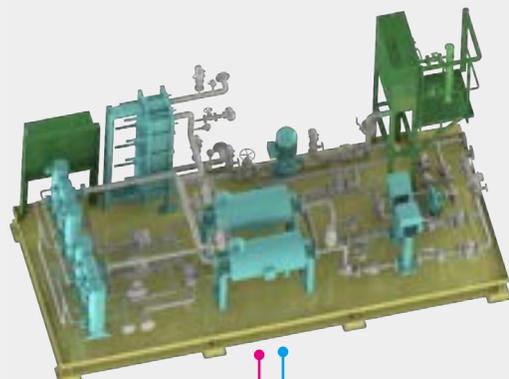


LFSS-PCS
System Cabinet

LFSS-ESD
System Cabinet

LFSS SKID UNIT

HAZARUS AREA



Other LFSS (Ammonia, LPG)

AMMONIA

Ammonia Fuel Supply System

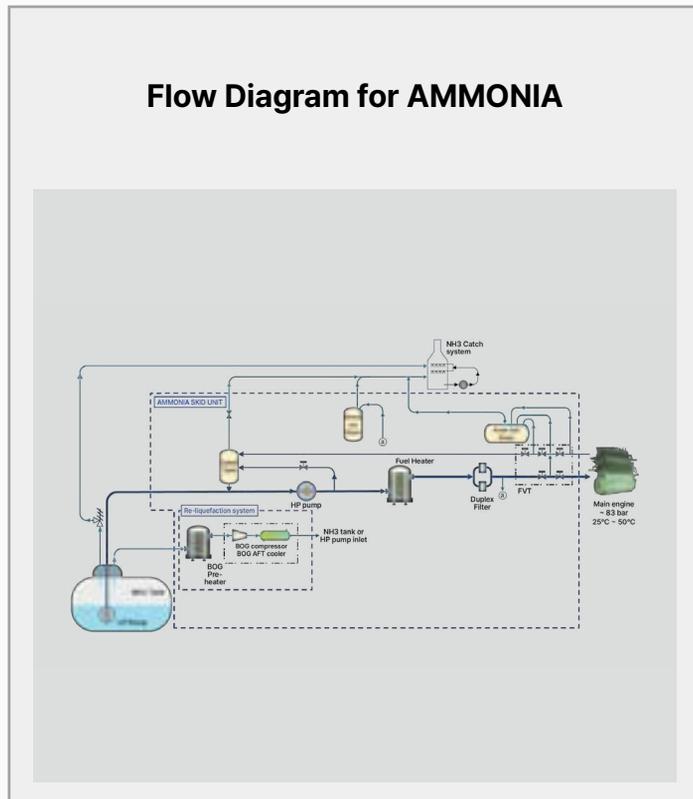
- Demand from governments and stakeholders around the world for the carbon-free fuel is widely growing, and ammonia seems likely to be a next alternative fuel.
- The Ammonia fuel supply system is being developed based on the technology of the LNG & LPG fuel supply system.

LPG

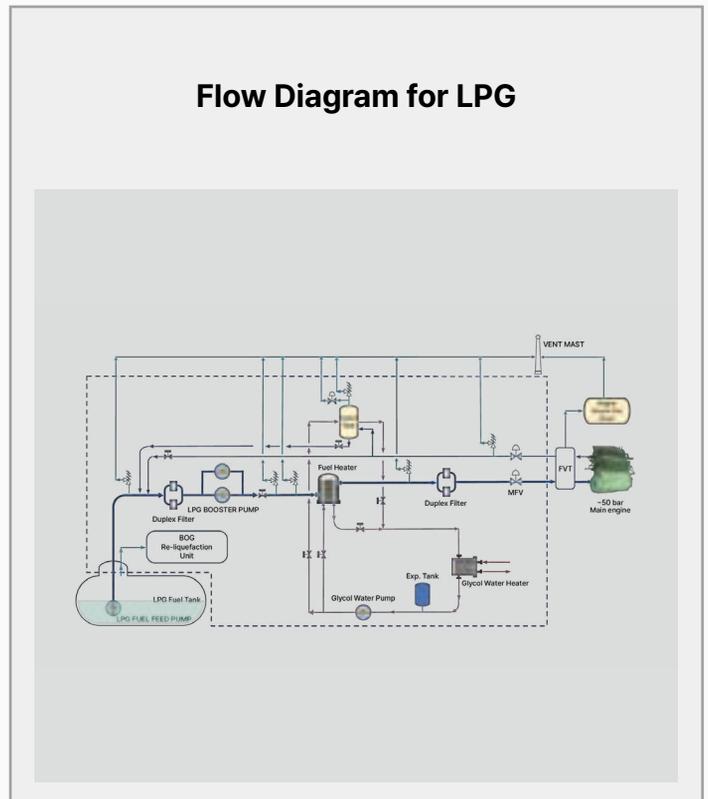
LPG Fuel Supply System (PURIGAS™-LPG)

- Liquefied Petroleum Gas (short as LPG) fuel supply system has been developed from the accumulated technology for other related fuel supply system (LNG, Methanol) and engineering capability of S&SYS.
- PURIGAS™- LPG fuel supply system will provide the most economical solution and the most reliable package system to our valuable customer with low CAPEX & OPEX in ME-LGIP engine.

Flow Diagram for AMMONIA



Flow Diagram for LPG





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