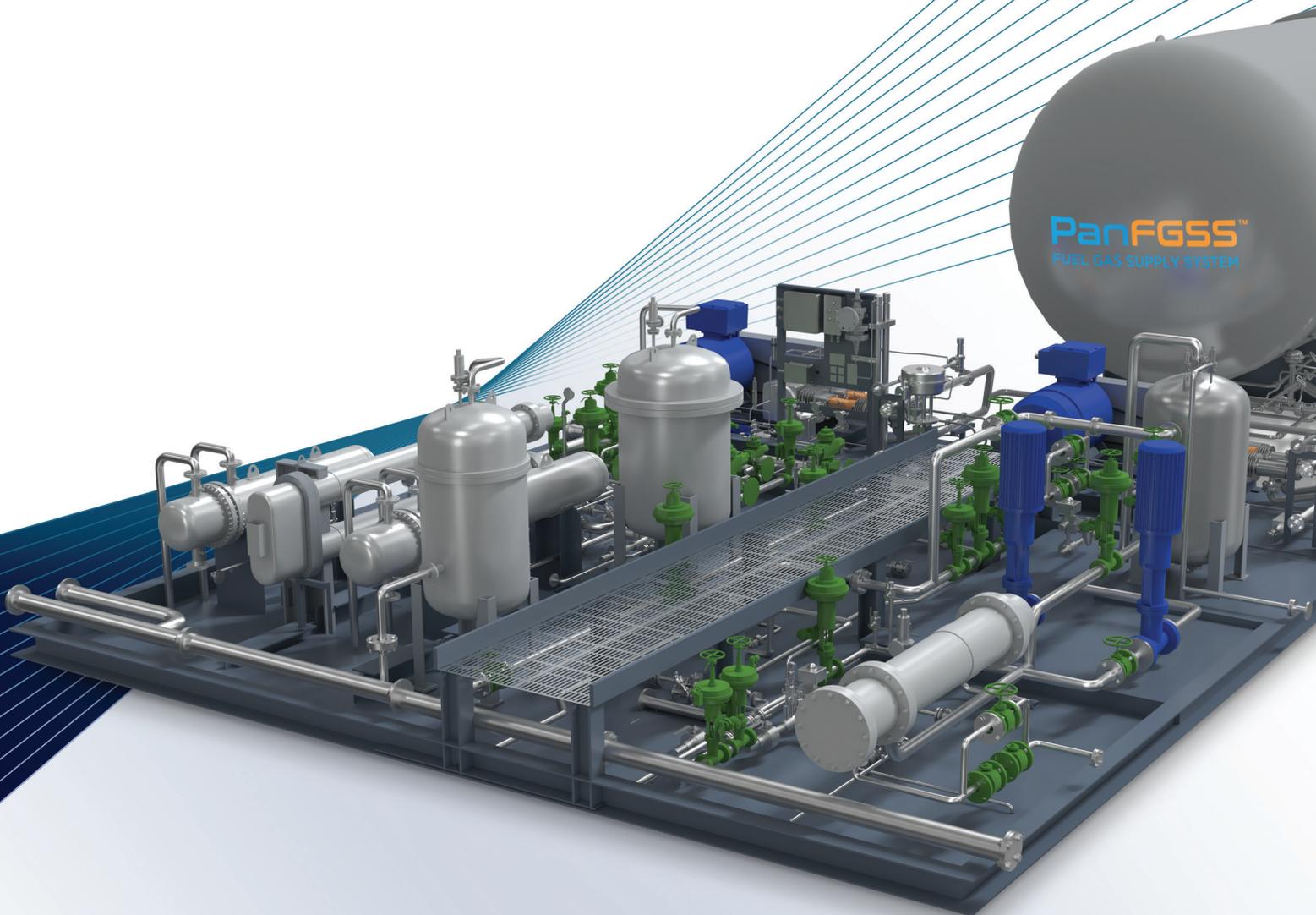


FUEL SUPPLY SYSTEM

Fuel Gas Supply System
Low-flashpoint Fuel Supply System



Panasia: We are heading to the future with eco-friendly solutions

PANASIA is a green energy solution provider that leads the way in building a future in which humans and nature coexist.

At PANASIA, we are continuously working to take risks and develop technologies powered by nature based on the standards of nature across various areas, from the air solutions to the water solutions, and to our energy solutions.

We offer high-quality ICT-based products by adopting our unique "SMART PANASIA" system, which encompasses all processes from product planning to design, production, and to services, and allows our technologies to learn and evolve on their own.

With its core technologies and years of experience, PANASIA has become a global leader that uses its technology to respond to demands in various environmental areas.



WATER SOLUTIONS



Ballast Water Treatment System (UV type)



Measurement Control System



WTS for Exhaust Gas System (Chemical / Membrane)

AIR SOLUTIONS



De-SOx System (Scrubber)



De-NOx System (SCR)



Engine Exhaust Recycling System (iCER)

ENERGY SOLUTIONS



Hydrogen Generation System



Carbon Capture and storage System (CCS/OCCS)

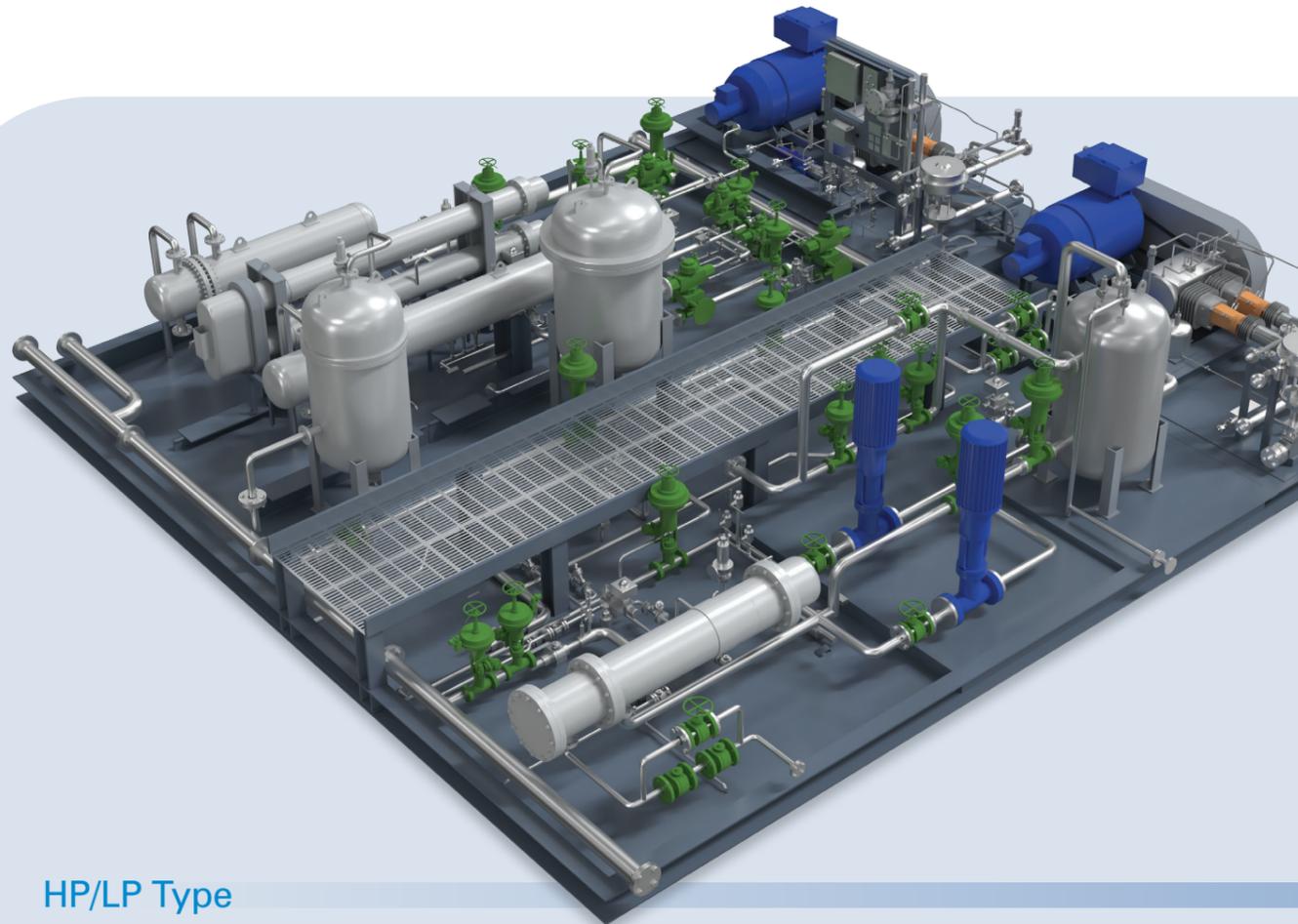


Fuel Supply System (FGSS/LFSS)



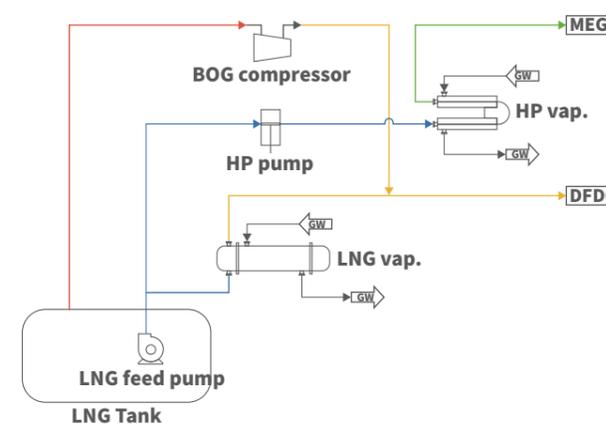
▣ Design Data

HP Pump	Dis. Press. 300 bar reciprocating pump X 2 sets
LNG Feed Pump	Dis. Press 12 bar submersible centrifugal type pump X 2 sets
LP Vaporizer	Temp : -163°C → 45°C (Cold side)
HP Vaporizer	Temp : -163°C → 45°C (Cold side)
Glycol Skid	Glycol Water (Water 50 : Glycol 50) Glycol Water Pump : Vertical Inline Centrifugal type X 2 sets Heat Exchanger : Shell&Tube or Equivalent Glycol Water Tank : abt. 0.5 m ³
LNG Storage Tank	IMO Type-C Single Shell Tank IMO Type-C Double Shell Tank IMO Type-C Lattice Tank Material 9% Nickel Steel or Equivalent

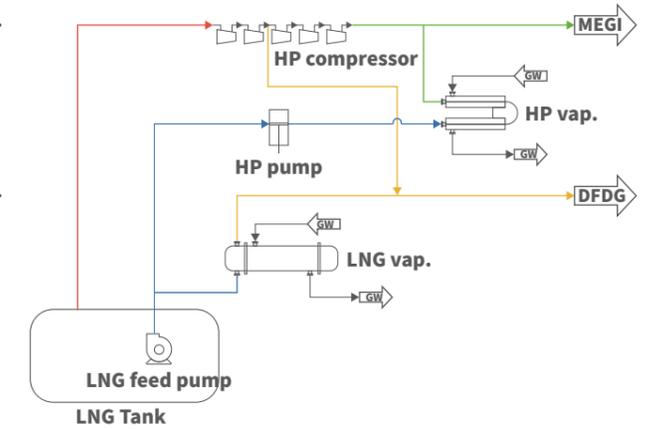


HP/LP Type

▣ PFD - HP/LP WITH BOG COMP.



▣ PFD - HP/LP WITH HP COMP.



▣ Application

LNG Fuelled Small/Mid-size ship

The FGSS have been in service on almost any type of marine application on container vessels, tankers of all size, bulk carriers, car carriers, RoRo and general cargo vessels.



Container Ship



Bulk-Carrier



Deck Cargo Vessel



General Cargo Ship



Oil/Chemical Tank



Tug Boat

▣ Main Component



LNG Storage Tank



LNG Feed Pump



HP Pump



BOG Compressor
(with BOG Pre Heater)



LNG Vaporizer



Glycol Water System



HP Vaporizer



Control System

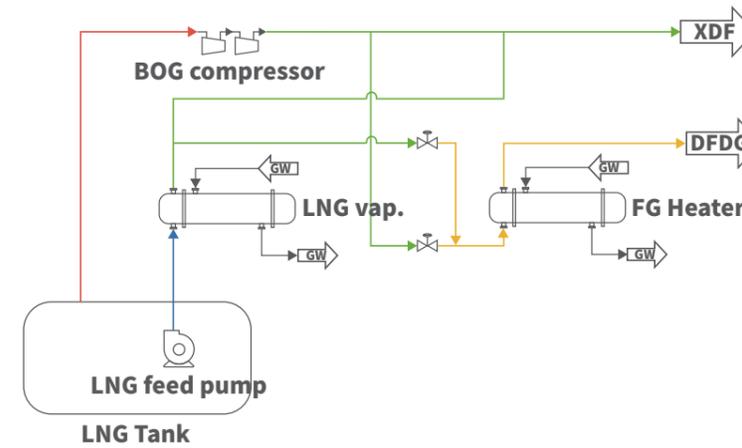
▣ Design Data

LNG Feed Pump	Dis. Press 18 bar submersible centrifugal type pump X 2 sets
LP Vaporizer	Temp : -163°C → 45°C (Cold side)
Glycol Skid	Glycol Water (Water 50 : Glycol 50) Glycol Water Pump : Vertical Inline Centrifugal type X 2 sets Heat Exchanger : Shell&Tube or Equivalent Glycol Water Tank : abt. 0.5 m ³
LNG Storage Tank	IMO Type-C Single Shell Tank IMO Type-C Double Shell Tank IMO Type-C Lattice Tank Material 9% Nickel Steel or Equivalent
LP BOG Comp.	Injected Screw Type (16bar) X 1 set



LP Type

▣ PFD - LP WITH BOG COMP.



▣ Application

LNG Fuelled Small/Mid-size ship

The FGSS have been in service on almost any type of marine application on container vessels, tankers of all size, bulk carriers, car carriers, RoRo and general cargo vessels.



Container Ship



Bulk-Carrier



Deck Cargo Vessel



General Cargo Ship



Oil/Chemical Tank



Tug Boat

▣ Main Component



LNG Storage Tank



LNG Feed Pump



BOG Compressor
(with BOG Pre Heater)



LNG Vaporizer



Glycol Water System



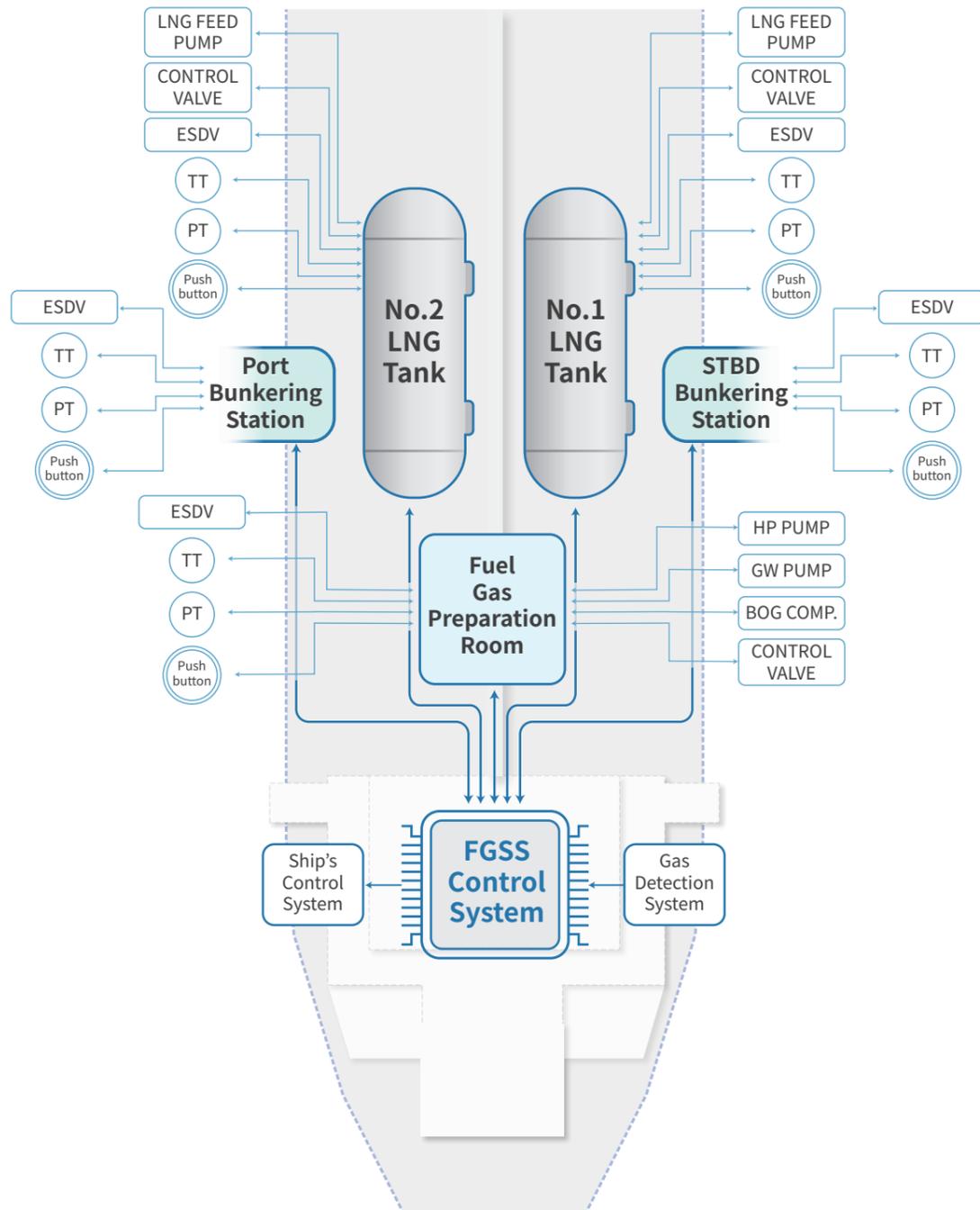
Control System

FGSS Control System

The Panasia FGSS Control System provides optimized control and monitoring functions tailored to the specifications required by each equipment.

Furthermore, with our broad range of experience of BWTS and Scrubber system in control logic, PANASIA can also provide high performance in controlling HP Pump, Vaporizer, Glycol water.

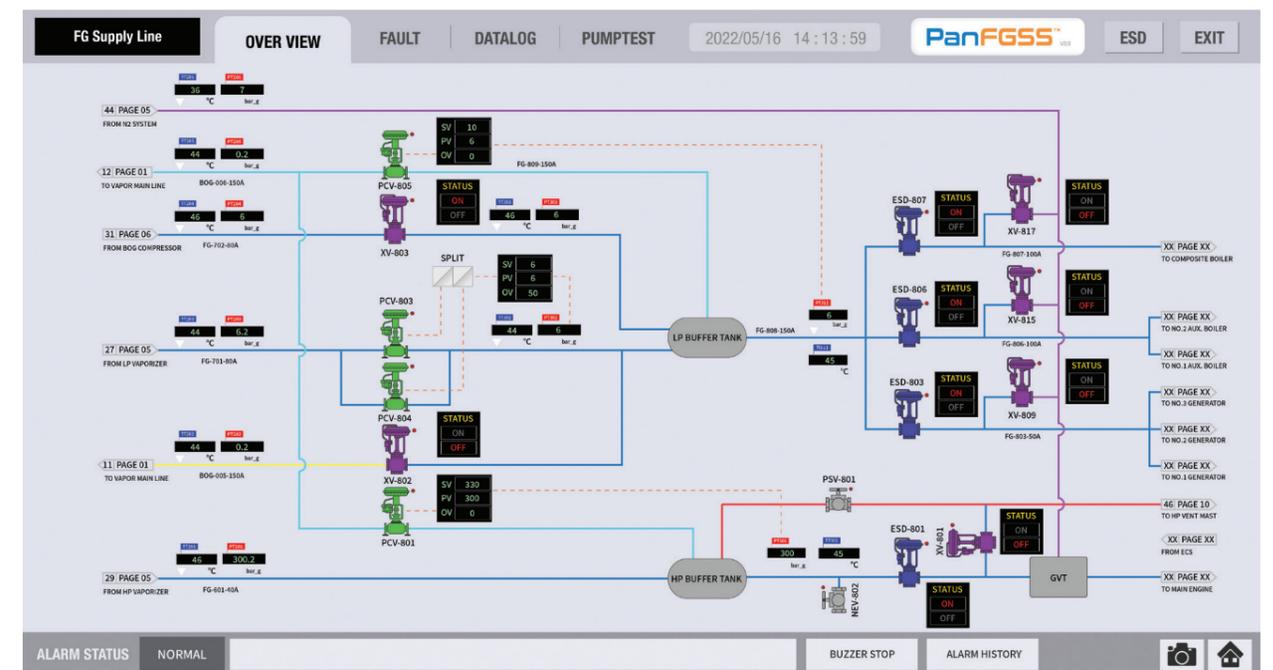
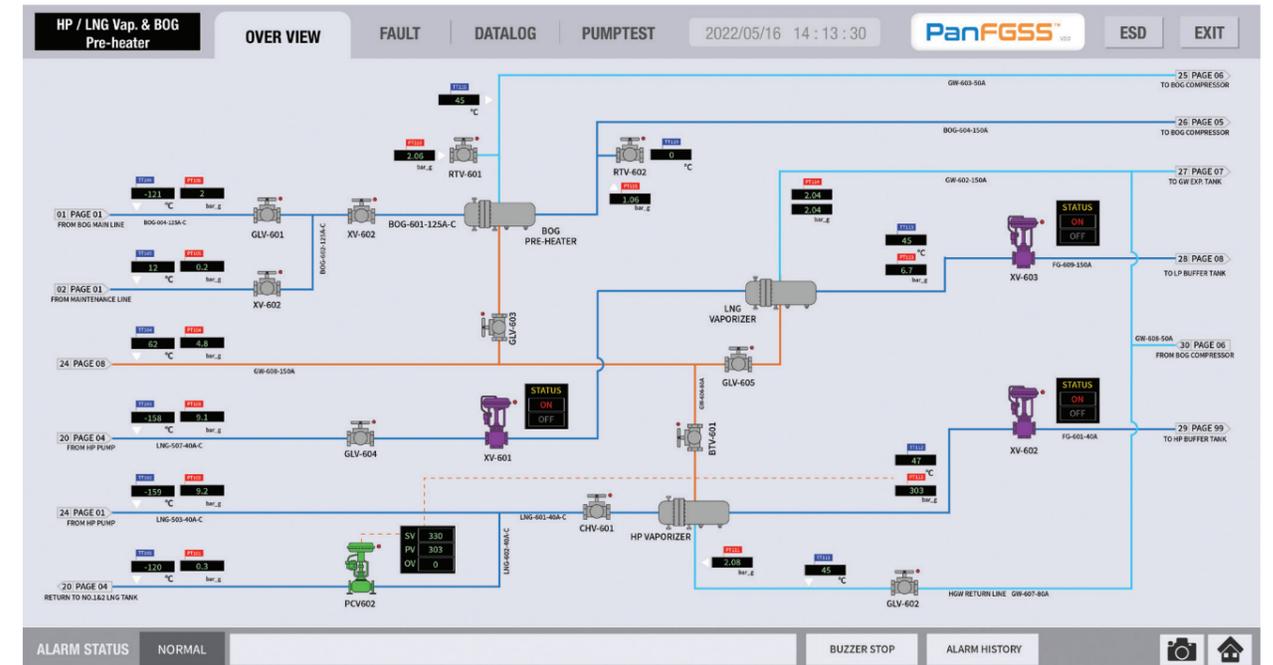
FGSS Control System Logic



FGSS Control Panel



Pan FGSS HMI (Human Machine Interface)



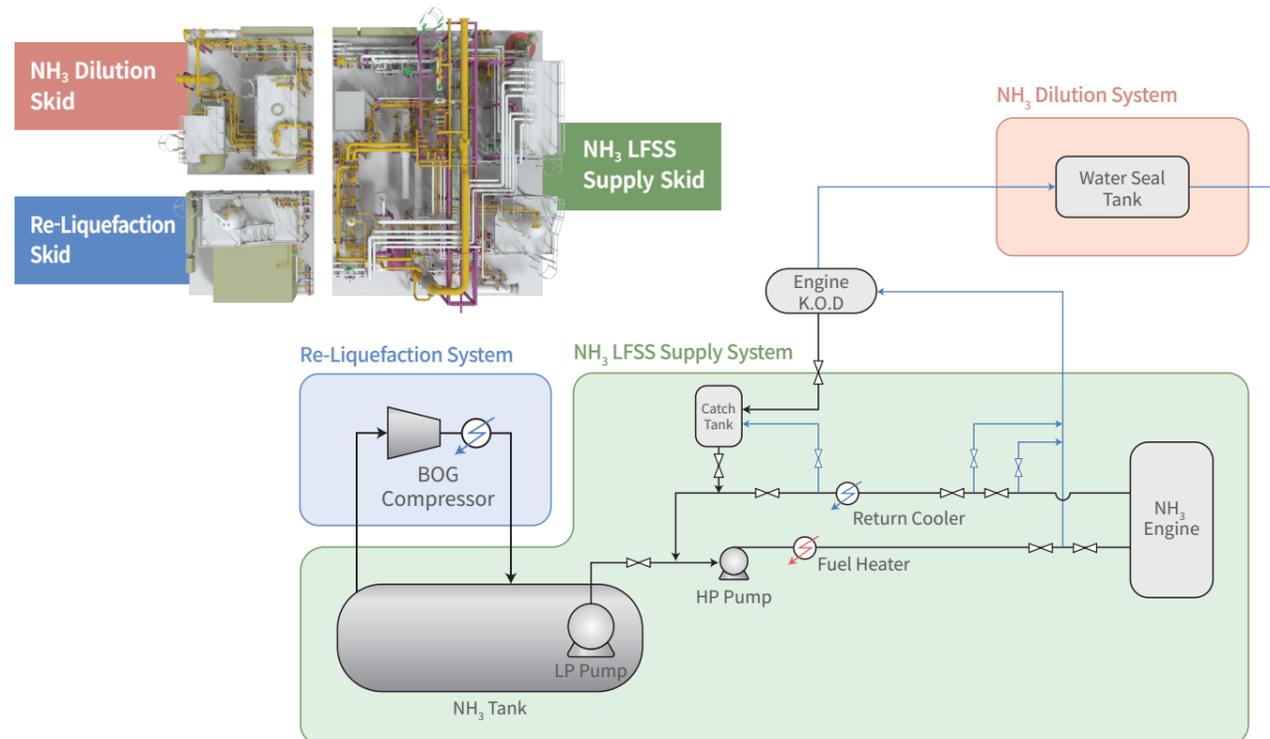
LFSS Ammonia Low-flashpoint Fuel Supply System

Ammonia LFSS

- LP Pump** Dis. Press. 18 bar Multi-stage centr. Pump X 1 set
- HP Pump** Dis. Press. 88 bar Metering Pump X 1 set
- BOG Compressor** Dis. Press. 18 bar Oil Injection Screw Water Cooled X 1 set
- Vaporizer** Temp: -24°C → -18.7°C
- Water seal** Temp: -24°C → 60°C
- LFSS Skid** IMO Type-C Single Shell Tank. (abt. 5m³)
Material 9% Nickel Steel or Equivalent
LP, HP Pump
- Heat Exchanger** Shell&Tube or Equivalent
- BOG Compressor Skid** BOG Compressor & Separator
- Dilution Skid** IMO Type-C Single Shell Tank. (abt. 5m³)
- Heat Exchanger** Shell&Tube or Equivalent
- Aqueous NH₃ Pump** Dis. Press 7bar Diaphragm pump X 1 set



Ammonia Package Concept



Advanced Smart Services in Panasia

**3 OVERSEAS SUBSIDIARIES +
47 GLOBAL SERVICE NETWORKS (37 COUNTRIES)**

Global Service Network

PANASIA Headquarter & 1st Factory



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PANASIA 2nd Factory



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To reflect PANASIA's corporate philosophy of seeking eco-friendly and sustainable value, this booklet was printed with naturally biodegradable soy ink that makes paper recycling easier.