

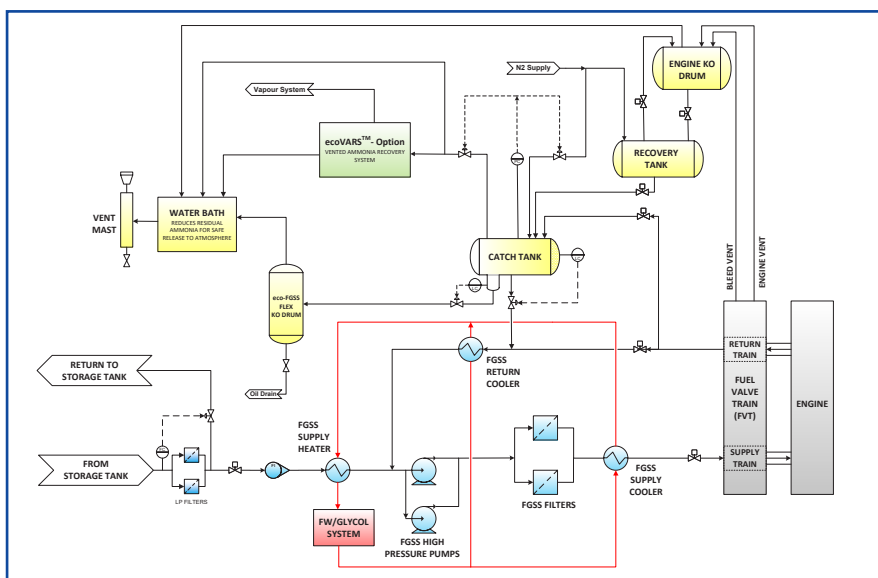


ecoFGSS-FLEX®

Babcock's LGE business is a world-leading provider of cargo handling and fuel gas supply systems for the liquefied gas markets. Our environmentally-focused technologies improve efficiency and enhance performance, delivering value to customers throughout the vessel's lifetime.

Fuel gas supply system for use today and in the future

ecoFGSS-FLEX® is the latest fuel gas supply system design from Babcock's LGE business which addresses the growing interest in ammonia as a marine fuel. Enabling the use of LPG or ammonia marine fuel, the system offers flexibility to shipowners, while future-proofing their assets and reducing emissions in line with global environmental legislation.



General arrangement overview of ecoFGSS-FLEX®

On liquefied gas carriers, ecoFGSS-FLEX® is integrated with the cargo handling system, ensuring a seamless relationship between “cargo” and “fuel”, optimising efficiency across the vessel.

Facilitating the marine industry's transition to net-zero

As the marine industry strives to reduce its environmental impact to reach net-zero, consideration of ammonia as a fuel has steadily gained momentum. The reason for this is due to some key characteristics of ammonia. Unlike traditional fuels, ammonia has reduced Sulphur Oxide (SOx) and particulate matter emissions, and as a carbon-free fuel source, can result in a very low greenhouse gas emission impact when compared with traditional fuels.

Flexible and compatible

Designed in close co-operation with major engine manufacturers, ecoFGSS-FLEX® can be delivered as a turnkey solution, utilising fuel tanks and bunkering systems for a seamless and holistic system, which can be installed on a wide variety of vessels.

Innovative abatement system - ecoVARSTM

Babcock LGE's Vented Ammonia Recovery System - ecoVARSTM - has been designed to integrate directly with ecoFGSS-FLEX®. Enabling for up to 90% recovery of vented ammonia back to the fuel storage tank, reducing the amount of ammonia that needs managed, ecoVARSTM provides economic, environmental and operational benefits to the vessel and operators.

Design built upon experience from ecoFGSS®

ecoFGSS-FLEX® has been designed on the basis of the market-leading LPG Fuel Gas Supply System ecoFGSS®. However, due to the physical properties of ammonia and the design considerations of the ammonia dual-fuel engines, the ecoFGSS-FLEX® design had to consider:

- › Increased flowrate – as the lower calorific value of ammonia requires ~2.5 times flowrate of LPG
- › Increased pressure – as delivery pressure is ~60% higher than LPG for efficient combustion
- › Management and venting of toxic product – stringent valve and piping specifications necessary

ecoFGSS-FLEX® / ecoFGSS® Specification Comparison

Product	Compatible Fuel	Flowrate (kg/hr)	Delivery Pressure (barg)	Delivery Temperature (°C)
ecoFGSS-FLEX®	Ammonia / LPG	0 - 5560	83 - 85*	25 - 45
ecoFGSS®	LPG	0 - 2750	53	25 - 45

*Delivery pressure dependent on engine manufacturer

Babcock LGE's ecoFGSS-FLEX® has been developed with more than 50 years' experience of liquefied gases within the marine market.

Our longstanding reputation in the industry delivering safe and reliable gas-handling systems, alongside our strong relationships with shipyards and our established supplier-base, has enabled Babcock LGE to provide a true value-add, and future-proofed, solution for our customers' assets.

Now more than ever, what we do matters: creating a safe and secure world, together.

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