



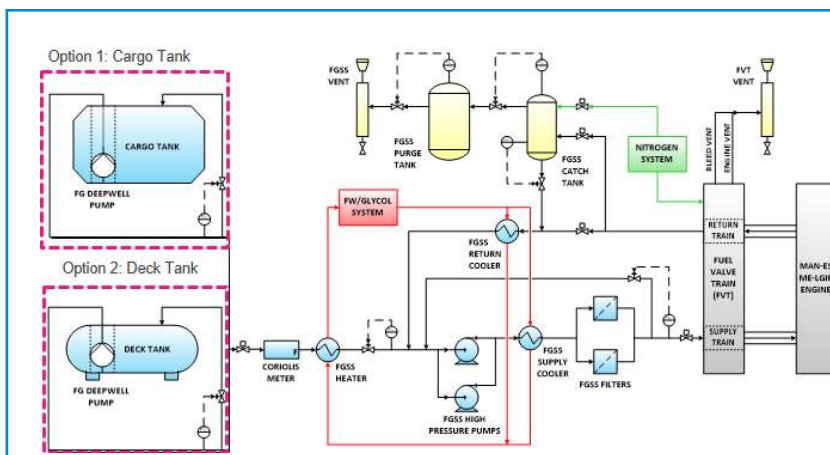
## ecoFGSS<sup>®</sup>

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.

ecoFGSS<sup>®</sup> - Babcock LGE's liquefied petroleum gas (LPG) Fuel Gas Supply System - has been developed to meet the growing demand for LPG as a marine fuel for a range of vessels. The system is designed with safety and operability at its heart, minimising crew interactions whilst providing a continuous and reliable fuel supply for the vessel.

## Holistic approach for optimum efficiency

ecoFGSS<sup>®</sup> conditions the LPG as a liquid to the required temperature, pressure and flowrate before delivering it to the vessel's main engine. On liquefied gas carriers, ecoFGSS<sup>®</sup> is integrated with the cargo system, thereby ensuring a seamless relationship between 'cargo' and 'fuel'. This holistic approach ensures optimum efficiency.



### General arrangement overview of ecoFGSS<sup>®</sup>

ecoFGSS<sup>TM</sup> can utilise fuel from either a cargo tank or deck tank.

## Ease of operation

Crucially, for ease of vessel operability, crew interaction is minimised by automating functionality as much as possible, without compromising safety. ecoFGSS® has been developed in conjunction with MAN-ES for their ME-GI and ME-LGI engines, which ensures that fuel is available to the engines 24 hours a day, seven days a week.

## Newbuild and retrofit applications

Due to the modular design of the fuel conditioning skid, ecoFGSS® can be incorporated on new-build vessels, as well as retrofitted on existing vessels - both gas carriers and non-gas carriers alike.

## Alternative fuel applications

Babcock's LGE business ecoFGSS® systems offer significant flexibility to shipowners, with different designs available based on operating and design requirements.

### These systems include designs using:

- › Deck mounted side channel Low Pressure (LP) pumps (for LPG at ambient temperature)
- › Deck tank mounted LP (EFP) pumps (for LPG at ambient or refrigerated temperatures)
- › Cargo tank mounted LP (EFP) pumps (for fully refrigerated LPG)

In addition to ecoFGSS® for LPG carriers, LGE is developing a suite of fuel gas supply systems for alternative fuels. These include ethane and methane (LNG) as well as our ecoFGSS-FLEX® which can utilise LPG or ammonia - a truly flexible solution for shipowners on the transition towards zero carbon energy for shipping. LGE is also actively developing solutions for future fuels including liquefied hydrogen.

With a variety of configurations available, we are able to work with our customers to develop a solution which works best for their vessel and operations.

### ecoFGSS®/HFO specification comparison

| Engine | Fuel type | Energy density (MJ/kg) | Energy density (MJ/m³) | Required tank volume relative to HFO | Delivery pressure (barg) | Delivery temperature (°C)       |
|--------|-----------|------------------------|------------------------|--------------------------------------|--------------------------|---------------------------------|
| ME-GI  | HFO       | 40                     | 36,000                 | 1.0                                  | ~10 bar                  | Variable dependent on viscosity |
| ME-GIP | LPG       | 46                     | 26,680                 | 1.35-1.45                            | 53 (liquid)              | 25-45                           |

### Required tank volume range covers fully refrigerated LPG to LPG at ambient temperature

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

Our longstanding reputation in the industry, plus strong relationships with suppliers and shipyards has enabled us 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.

### Get in touch

Babcock International Group, Rosyth Business Park, Rosyth, Dunfermline, Fife, KY11 2YD

E: [lge.sales@babcockinternational.com](mailto:lge.sales@babcockinternational.com)

W: [www.babcockinternational.com/lge](http://www.babcockinternational.com/lge)