



Scalable design

## FGSV0™ - LNG Bunkering Solution

Scalable LNG cargo handling and fuelling solution with CNG storage and utilisation capabilities

**Fuel Gas Supply Vessel Zero (FGSV0™) is a scalable LNG bunkering vessel solution which uses novel applications of tried and tested technologies to allow quick and clean ship-to-ship bunkering to various ships such as ferries, containers and cruise ships, plus distribution to onshore industrial consumers.**

### Introduction

This innovative design provides a solution to IMO, SOLAS, MARPOL and ECA regulations by eliminating release of boil-off and flash gas to the atmosphere during normal operations, a true zero-emissions solution.

Forecasting and analysing vessel operations allows for optimised compressed natural gas (CNG) storage and utilisation as fuel, reducing the environmental footprint and providing an economic benefit to the owner. Babcock has worked closely with shipowners and end consumers to develop a best fit solution based on the operating profile.

The Babcock FGSV0™ system captures boil off gas (BOG) from the cargo tanks, which is compressed and stored as compressed natural gas (CNG) and used as fuel for the vessel.

FGSV0™ can be installed on LNG fuel gas supply vessels, like the one below:



7,500m<sup>3</sup> GSV

## Features of the Gas Supply Vessel

### Gas Supply Vessel (GSV) Simulator Software

Unique proprietary software developed in-house allows for verification of proposed design criteria against given vessel voyage profiles. The software can assess all of the key design parameters such as:

- › Cargo tank capacity
- › CNG storage capacity
- › Compressor capacity
- › Ship speed
- › Bunkering operations
- › Voyage length

The output from the voyage profiling software allows for rapid assessment of design suitability and indicates opportunities for refinement.

### Cargo Loading

The GSV is flexible, cargo can be loaded directly via the manifolds or using the flexible hoses, therefore allowing loading cargo from shore, such as LNG terminals or other ships like FSRU's.

### Bunkering Operations

The fuelling of a wide range of receiving vessels is possible due to the inclusion of powered hose reels and crane in addition to flexible pump configurations.

The vessel is highly manoeuvrable and can rotate 360° its own length in approximately two minutes.

## CNG Plant

The FGSV0™ technology allows CNG to be used as the primary fuel source on the LNG vessel. When not loading or offloading cargo, natural BOG from the cargo tanks is compressed up to CNG pressure (~220 bar) using a reciprocating compressor.

This is then stored in CNG tanks. During cargo discharge with vapour return, all excess gas (flash gas) is also compressed into the CNG storage tanks. In this way CNG is stored for later use when it is required most, for example, ship propulsion.



7,500m<sup>3</sup> GSV

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