

## ecoVGC<sup>®</sup> Vent Gas Cooler

Enabling innovative, multi-functional enhancements, VGC<sup>®</sup> provides significantly increased capacity and efficiency at lower capital and operating costs.

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.

ecoVGC<sup>®</sup> is a multi-functional enhancement to the traditional compression based reliquefaction systems employed on liquefied gas carriers which transport cargoes such as LPG and ammonia, and petrochemical gases like ethane and ethylene.

### Introduction

Based on a novel application of known and proven technologies, **ecoVGC<sup>®</sup>** provides increased reliquefaction plant capacity and the ability to carry cargoes with high incondensable or volatile content which conventional reliquefaction systems could not handle. The system has been installed on more than 84 LPG carriers since 2012.

### Features

**ecoVGC<sup>®</sup>** can be switched between two modes of operation to optimise performance, depending on the cargo and voyage demands:

- › Coefficient of Performance mode - where the **ecoVGC<sup>®</sup>** functions as a second economiser to maximise reliquefaction capacity, thereby increasing efficiency and reducing operating hours on the system for loading cool down and pressure maintenance.
- › Volatile components/Incondensibles mode - where the **ecoVGC<sup>®</sup>** allows cargoes such as commercial propane with high ethane content to be fully condensed, and minimises cargo losses to the atmosphere during grade changing operations.

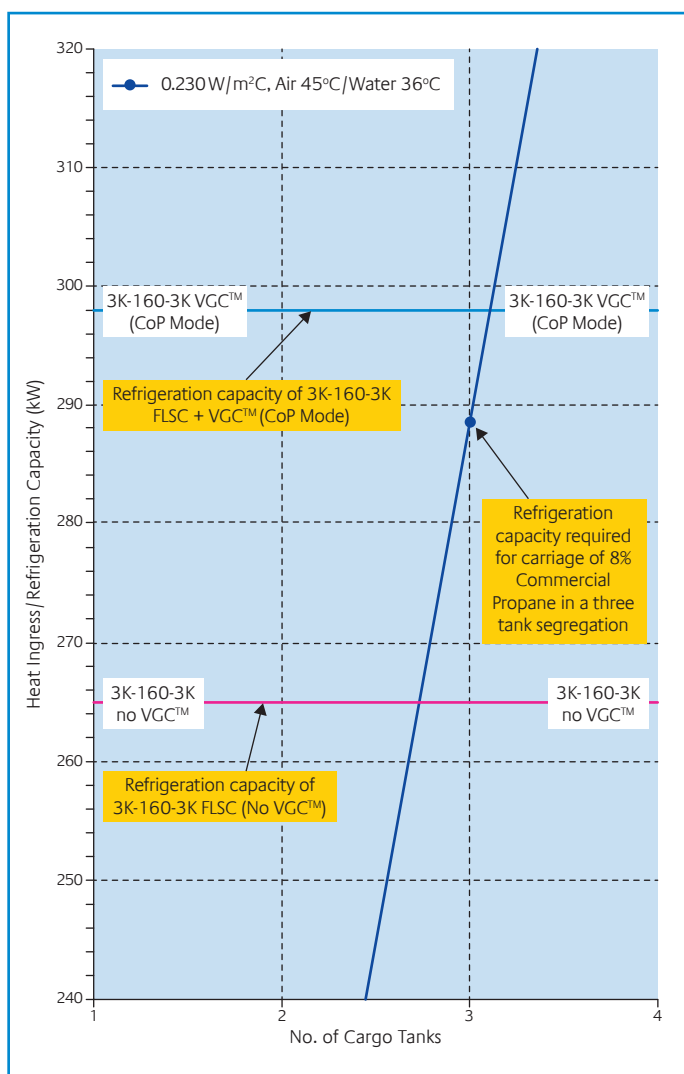
Both modes of operation have been granted a number of international patents.

**ecoVGC<sup>®</sup>** provides significant advantages over the conventional system, including increased efficiency and a lower capital and operating cost - a truly value add solution.

ecoVGC <sup>®</sup> Feature	Benefit
Replace the traditional four compressor reliquefaction plant with a three compressor solution.	25% reduction in reliquefaction plant maintenance (reduced OPEX and CAPEX).
Initial capital expenditure recouped through operational saving.	Increased efficiency with lower power consumption of up to 15%, with reduced generator fuel consumption.
Increased refrigeration capacity.	Reduced loading times up to 20% and up to 15% reducing running hours.
Capable of operating with high nitrogen levels.	Reduced cargo loss during purging - economic and environmental benefits.

# ecoVGC® refrigeration capacity

Carriage of 8 mol% commercial propane



The ecoVGC® can provide a significantly higher refrigeration capacity during the carriage of 8 mol% Commercial Propane, compared to the cargo handling system alone.

- › The refrigeration capacity required for fully refrigerated carriage of a 3 tank segregation of Commercial Propane (8 mol% ethane) is **288 kW**.
- › The refrigeration capacity of a single BCAG 3K-160-3K compressor (32 barg) at these conditions is **265 kW**, which rules out this selection.
- › Utilisation of the VGC® increases this refrigeration capacity value to **299 kW** which is sufficient for carriage of a 3 tank segregation of Commercial Propane (8 mol% ethane).

## Contact us:

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