

Welcome To

# LNG MARINE

Powering the Seas through Sustainable Energy Solutions

23<sup>rd</sup> JULY 2021



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The Petronas LNG bunkering business is a reflection of the company's commitment to sustainability as a progressive energy and solutions partner and supports the International Maritime Organization (IMO) goal of reducing greenhouse gas (GHG) emissions.

”

Emry Mohd Tamrin  
Head of Petronas Marine

# Our Core Business

**LNG Marine** business includes the design, ownership, building, operating and maintenance of specialized vessels for LNG bunkering – providing a cleaner alternative fuel for all types of ships and marine vessels.



Develops LNG bunkers and other marine vessels' functional / basic engineering and design specification



Jointly builds and owns LNG bunker and other marine vessels



Supervise the newbuilding of LNG bunker and other marine vessels



Operations and maintenance of LNG bunker and other marine vessels



Chartering of LNG bunker and other marine vessels

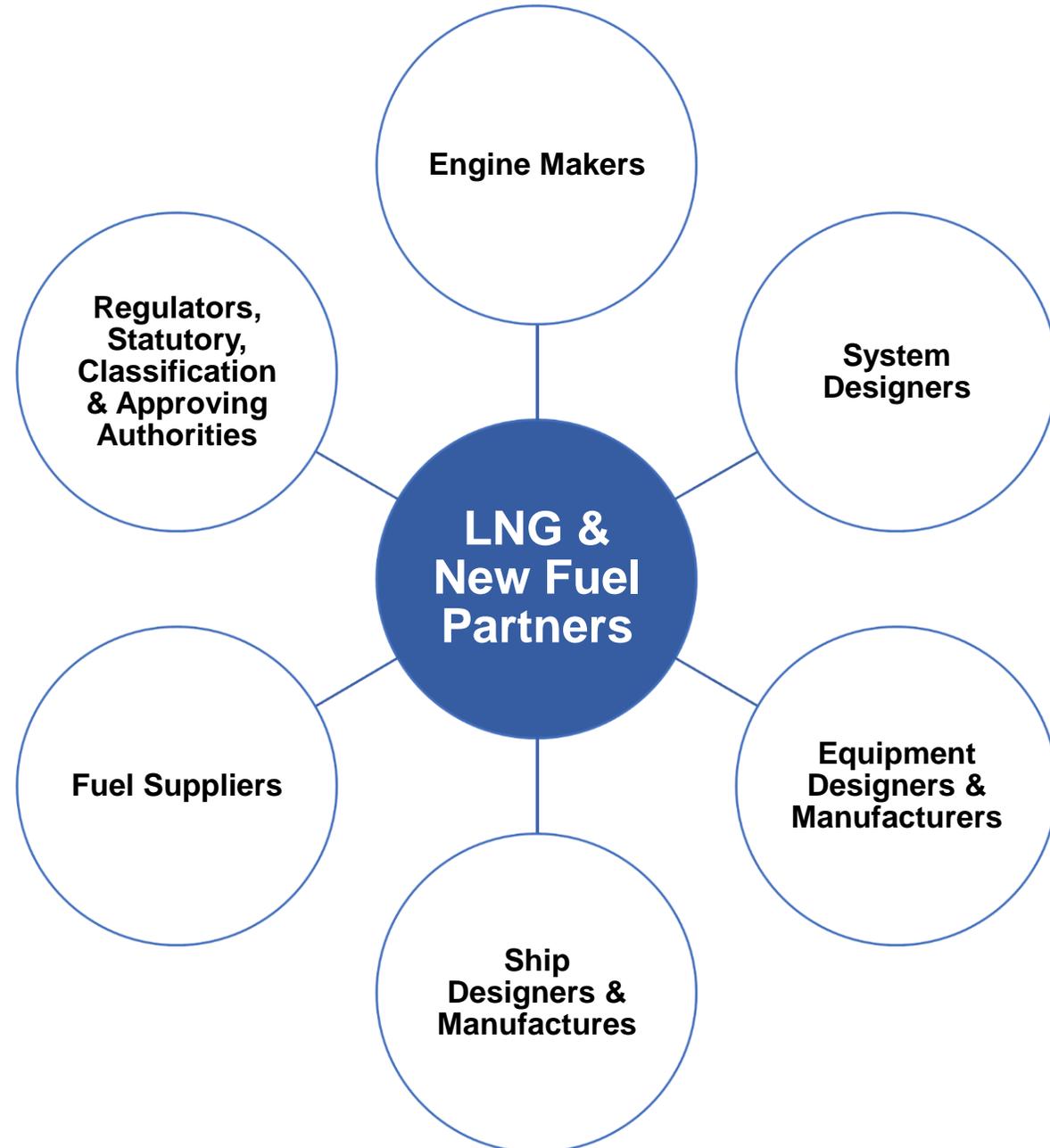


Advisory and consultancy in LNG bunker and other marine vessels

# Our Partners

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**LNG Marine** participates in projects with partners across the value chain to deliver efficient, effective and cost-competitive LNG bunkering and new fuel solutions.



# Our Team

## **Dato' Capt. Ahmad Sufian bin Abdul Rashid (Chairman)**

A true leader in the maritime industry, with more than 50 years of experiences in marine industry in various top positions, including LNG ship and port management

## **Zahar Mohd Hashim bin Zainuddin (Executive Director)**

Class 1 Professional Marine Engineer with over 40 years in marine and oil & gas industry, including LNG ship design, construction and operations & maintenance. Previous roles include General Manager LNG Fleet Operations PETRONAS Tankers, Vice President of MISC Bhd, and CEO of Sabah International Petroleum (SIP).

## **Saravanan Krishna (Head of Operations)**

Class 1 Professional Marine Engineer with more than 30 years experience in marine industry including LNG ship design, construction, operations & maintenance, as well as LNG bunkering management. Previous roles include Former Chief Engineer of LNG ship, Managing Director of BP Shipcare, and an LNG bunkering consultant.

## **Tuan Haji Othman (Director)**

Over 40 years of experience in the marine industry including LNG ship design, certification and registration. Previous roles include Marine & Country Manager of LR, CEO of BV, and Chairman of BV Malaysia.

## **Rozainah Binti Awang (Executive Director)**

A chartered accountant with over 20 years of experience in offshore businesses, marine and oil & gas industry. Previous roles include Director of Malaysia Marine and Heavy Engineering Holdings Berhad, and Labuan Reinsurance (L) Limited, as well as Vice President of Finance /CFO in MISC

## **Rameses Gustar (Project Manager)**

More than 15 years of experience in FPSO/FSO detailed design, project management and LNG ships operation. Previous roles include Project Manager (MVOT) of MISC and Lead Marine Engineer of M3nergy Offshore Limited.

**Our leadership team consists of highly experienced business and technical leaders in shipping, LNG ship management, LNG shipbuilding, oil & gas and corporate leadership.**

# Challenges We Address

1

**Climate Crisis:** The United Nations Intergovernmental Panel on Climate Change (IPCC) warned that we only have twelve years to reduce GHG emissions and prevent the worst impacts of climate change.

2

**Marine Industry:** The shipping sector is responsible for more than 2% of global emissions (approx. 1 billion tonnes of carbon). If the industry was a country it would be the sixth biggest polluter, above Germany.

3

**Growth in Shipping:** Unless the industry changes course quickly, maritime shipping could account for 17% of total annual CO2 emissions by 2050.

4

**Emissions Reduction:** The International Maritime Organization (IMO) has agreed on an ambition to reduce GHG emissions from shipping by at least 50% by 2050. Also, they have set a target for ships to reduce SO2 emissions from 0.5% in 2020 to 0.1% by 2030.

# Our Solutions

## LNG FUEL AS AN EFFECTIVE SOLUTION

- Reduces ships carbon footprint by 40% to 60%
- Lowers EEDI Rating and Carbon Intensity of vessels by 20%
- Reduces NOx emissions by up to 80%
- Almost eliminates SOx and particulate matter (PM)
- Proves a cost-competitive fuel choice compared to conventional marine fuels
- Forecasted stable price of LNG and reliable supply of natural gas

## LNG BUNKER AS AN ENABLER

- LNG Bunker Vessels (LBV) enables efficient LNG Bunkering for LNG Fuel Ships (LFS)
- The greater number of LBVs result in higher number LBVs, which consequently improves carbon footprint of shipping
- Standards and regulations for LNG bunkering already exists
- LNG-fuelling infrastructure makes it more commercially viable and feasible than alternatives

# Our Technology

**LNG Marine** develops design and operational technology for LNG bunker vessels (LBV) and LNG fuel ships (LFS) to promote the growth of LNG as fuel in ships in the near term.

## WHAT MAKES US DIFFERENT?

1

We have **pioneered and can fulfill 16 different LNG Bunkering supply conditions** to maximise efficiency and versatility during bunkering operations for better environmental impact.

2

The technology we develop acts as a key enabler for ships to transition towards cleaner, low-carbon fuel choices.

3

This technology also helps to continuously improve operational efficiency and optimisation of LBVs and LFS fuel systems for greater GHG reduction.

# Technology Roadmap

Immediate-Term  
(2021-2023)



Mid-Term  
(2023-2028)



Long-Term  
(Beyond 2028)



**Create a Snowball Effect**

- Expand LNG bunker operations as well as LNG Fuel Ships
- Venture into alternative fuel bunker vessels, such as hybrid vessels, ammonia, synthetic-LNG, bio-LNG and methanol

**Make an Impact Now**

- Enable the growth in LNG for ships, acting as a key enabler for more ships to use cleaner fuel.
- Implement continuous improvements in operational efficiency and optimisation of LBVs and LFS fuel systems

**Build Conditions for Success**

Introduce new fuel ships to further improve carbon decarbonising towards zero carbon emissions in the long term



For additional information or clarification, please contact us through any of the platforms below.



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