

# Using LNG as Marine Fuel

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## INTRODUCTION

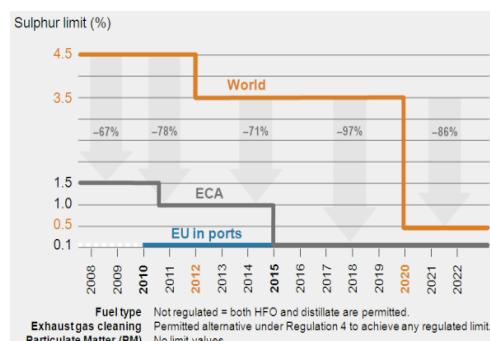
The use of liquefied natural gas (LNG) as bunker fuel is now a proven and available solution to reduce vessel pollution and meet IMO's new emission control regulations. There are three noticeable drivers that, when implemented together, make the use of LNG as fuel one of the most attractive options for ship owners and operators:

1. Changing to LNG can effectively reduce sulphur oxide emissions during vessel operation. DNV's research shows that 90% to 95% of sulphur oxides can be reduced through the use of LNG fuel. LNG is one of the fuels that currently comply with the sulphur emission requirements in the Emission Control Area. It will meet the

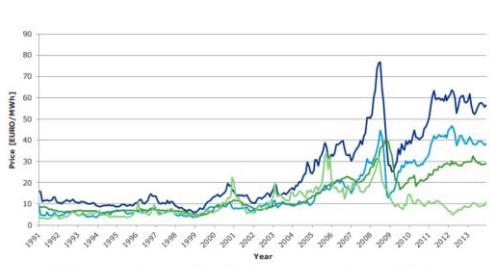
requirements for worldwide shipping in 2020.

2. Compared to traditional ship fuel, LNG fuel has lower carbon content, therefore changing to LNG fuel can reduce 20% to 25% of carbon dioxide (CO<sub>2</sub>) emissions.
3. Based on the current fuel price, LNG is expected to cost less than marine gas oil (MGO) and marine diesel oil (MDO)

### IMO sulphur limits for year 2008-2020



### Historical price of LNG & oil



## AIM/OBJECTIVES

The aim of this project is to develop an innovative commercial solution for the maritime industry by promoting LNG as an alternative of marine fuel. Within the project the following specific objectives will be addressed:

1. To identify the key challenges faced by the maritime industry, such as the increasingly stringent regulations regarding exhaust pollution, and the low economic efficiency of traditional marine fuels.
2. To provide an analytical and critical examination of the options available to meet the requirements of the maritime industry.
3. To develop an innovative solution by introducing LNG as an alternative of marine fuel and to examine the feasibility of overcoming the challenge of reducing exhaust pollution and to improve the economic efficiency of maritime operations.

## EXPECTED RESULT

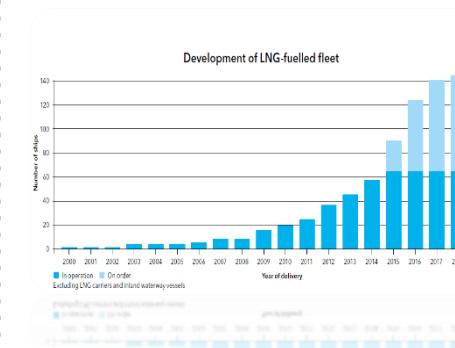
This research is expected to offer ship owners and shipping companies an innovation commercial solution

### Emission Control Area



of switching from traditional fuel oil to LNG fuel and provide the latest knowledge of using LNG as marine fuel to ship owner. Help them to optimize the fleet structure to reduce operation cost and promoting their competitiveness.

### Development of LNG fuelled fleet



**Yifan Wang**  
 He was awarded a Bachelor of Engineering in Naval Architecture and Ocean Engineering in 2014 at Shanghai Maritime University and received his MSc in ship and shipping management in 2015 from Southampton Solent University. He is currently a PhD research student with Southampton Solent University on China Centre (Maritime) and doing research about using LNG as marine fuel.

