

CIMAC UK National Members Association

J. Dodd

June 16th 2026, Nottingham

Who are CIMAC?

- CIMAC is the leading global non-profit association promoting the development of ship propulsion, train drive and power generation.
 - The association consists of National Member Associations and Corporate Members in America, Asia and Europe.
 - CIMAC provides a forum for technical interchange with all parties interested in piston engines, gas turbine systems, non-shaftline propulsion systems, automation and controls, system integration and digitalization solutions.
 - CIMAC acts as a global platform for discussion through a range of events, namely the CIMAC Congress (once every three years), CIMAC Circles, CASCADES and webinars.
- CIMAC has been granted consultative status with the International Maritime Organization (IMO).
- Association Structure of CIMAC
 - CIMAC's organisational structure is based on the [CIMAC Council](#), the [CIMAC Board](#), and the [CIMAC Strategy & Working Groups](#).
 - The CIMAC Council, which is the decision-making body responsible for CIMAC's policies, consists of the [National Member Associations](#) from individual countries and [Corporate Members](#) (in countries where there are no National Members Associations).

What does CIMAC do?



- ▶ CIMAC covers all aspects of large engines and associated systems
- ▶ From Stationary gas engines and locomotives to turbines and large marine 2 and 4 stroke engines
- ▶ Covers all conventional and new fuel types
- ▶ GHG, digitalization, IMO activity
- ▶ Working groups covering fuels, lubricants, after treatment and other topic areas

CIMAC UK National Members Association

- The purpose of CIMAC UK is to enable interested companies to join CIMAC activities
- Membership of CIMAC grants access to working groups and events
- Current CIMAC UK membership consists of
 - 20 corporate members
 - 4 private members
- Including representatives from a wide range of companies spanning the industry
 - Including but not limited to; regulatory bodies, insurers, additive and oil suppliers, fuel suppliers, equipment manufacturers, analysis companies, power plants
- As an organisation we are non-profit and arrange events through the year for the members
 - Members days to engage on topics of interest
 - Visits – for example to this conference
 - Giving younger members the opportunity to present to experienced members



Presentation topics from 2025 Members Day held at Lubrizol;

1. Overcoming the technical barriers of future fuels using additives
2. High-Pressure Dual-Fuel Combustion Systems for Sustainable Maritime Engines
3. Cashew Nutshell Liquid as a Biofuel: Use of Additives to Improve Engine Operability
4. Biofuels for Marine and Development of Alternative Specifications
5. Towards a Mono-Fuel Ammonia Engine with near zero tailpipe emissions of NOx and Unburned Ammonia



CIMAC

INTERNATIONAL COUNCIL
Power | Drives | Propulsion

The impact of future fuels on lubrication technology

James Dodd – Marine and Large Engine Industry Liaison Manager
June 17th, 2026

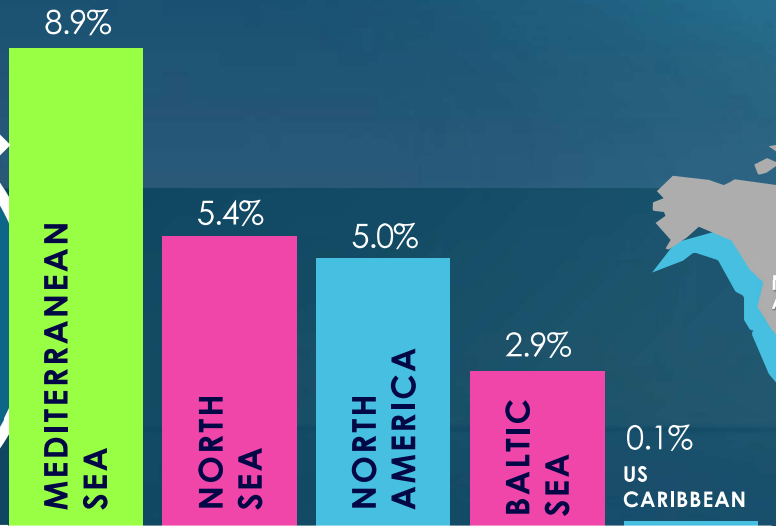
Marine industry objectives



Infineum toolbox of solutions



Percentage of time spent in ECAs, 2023 (total fleet)



Source: Clarksons Research, Fuelling Transition, April 2024



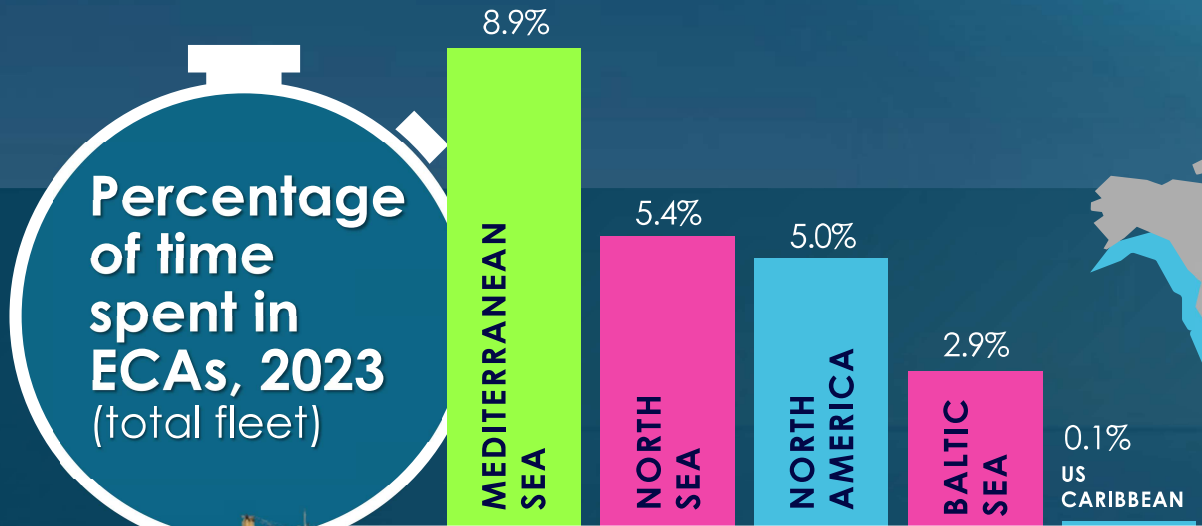
ECA: 0.1% m/m SOx & Tier III NOx



0.1% m/m SOx and PM & Tier III NOx



0.1% m/m SOx and PM



Source: Clarksons Research, Fuelling Transition, April 2024



■ ECA: 0.1% m/m SO_x & Tier III NO_x
■ 0.1% m/m SO_x and PM & Tier III NO_x
■ 0.1% m/m SO_x and PM

Compliance

Switch to **0.1% S fuel**

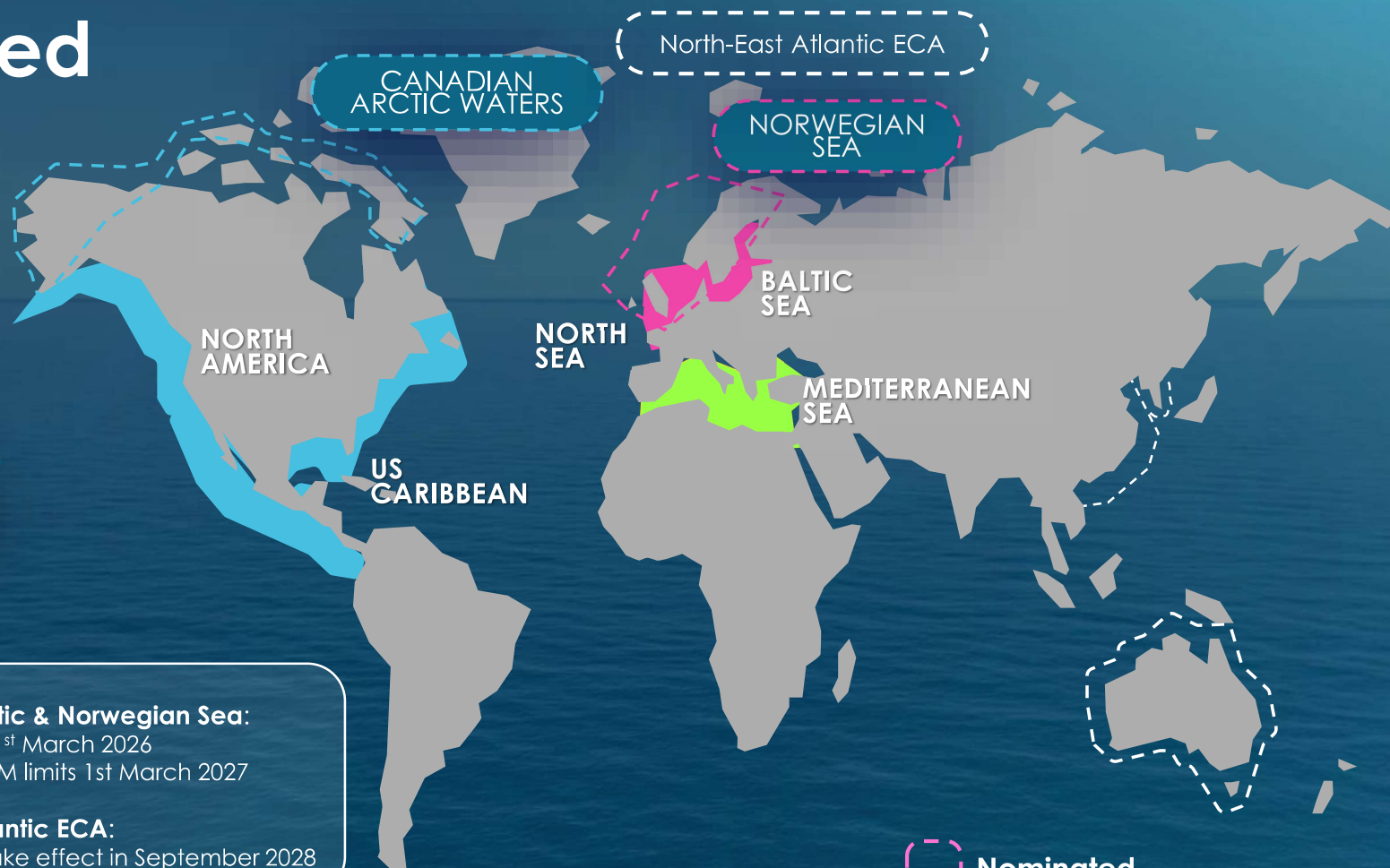
Use a **scrubber**


Switch to **alternate fuel**

Use **fuel additives**

Fuel, additive and lubricants **compatibility** essential

Approved & Nominated ECAs



 **Canadian Arctic & Norwegian Sea:**

- NOx limits: 1st March 2026
- Sulphur & PM limits 1st March 2027

North-East Atlantic ECA:

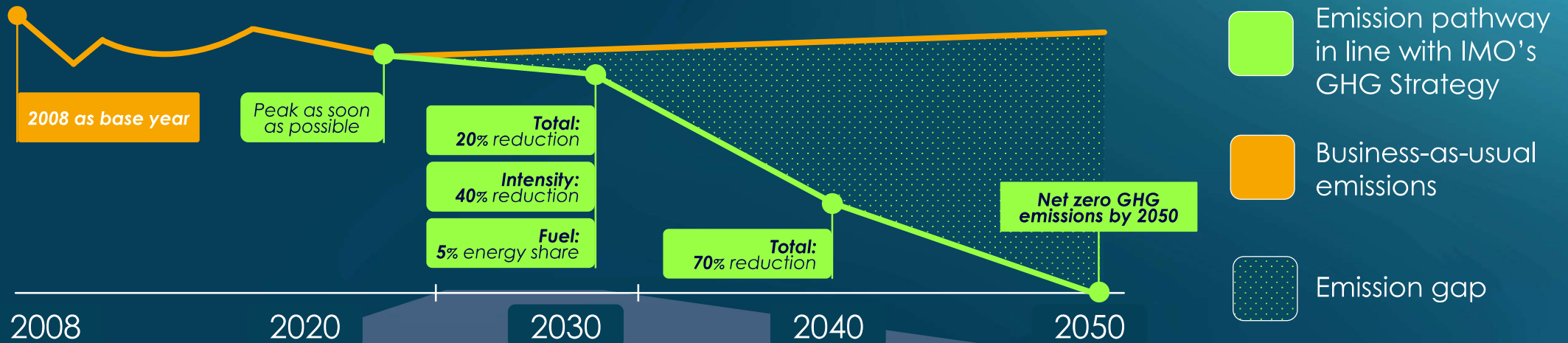
- SOx limits take effect in September 2028

 **Nominated**

Note: areas are indicative only, for full Lat/Long information visit imo.com

IMO strategy on GHG reductions

Units: GHG emissions -



OEM hardware readiness -



OEM hardware readiness -

OEM	LNG	LPG	Methanol	Ammonia	Hydrogen
Everllence 2T	B&W ME-GA B&W ME-GI	B&W LGIP B&W ME-GIE	B&W ME-GI B&W ME-LGIM	2023: start of single cylinder test 2024: full scale engine test 2025: first Ammonia engine, B&W ME-LGIA	MITSUI E&S Co. Ltd. (demo)
WinGD	X-DF	X-DF-P	X-DF-M	X-DF-A (2025-2026)	
Everllence 4T	Everllence DF range		L21/31 DF-M	2020: AmmoniaMot consortium	2030: 100% H2
Wärtsilä	Wärtsilä DF range		Wärtsilä Methanol series	Wärtsilä 25 Ammonia	2026: 100% H2



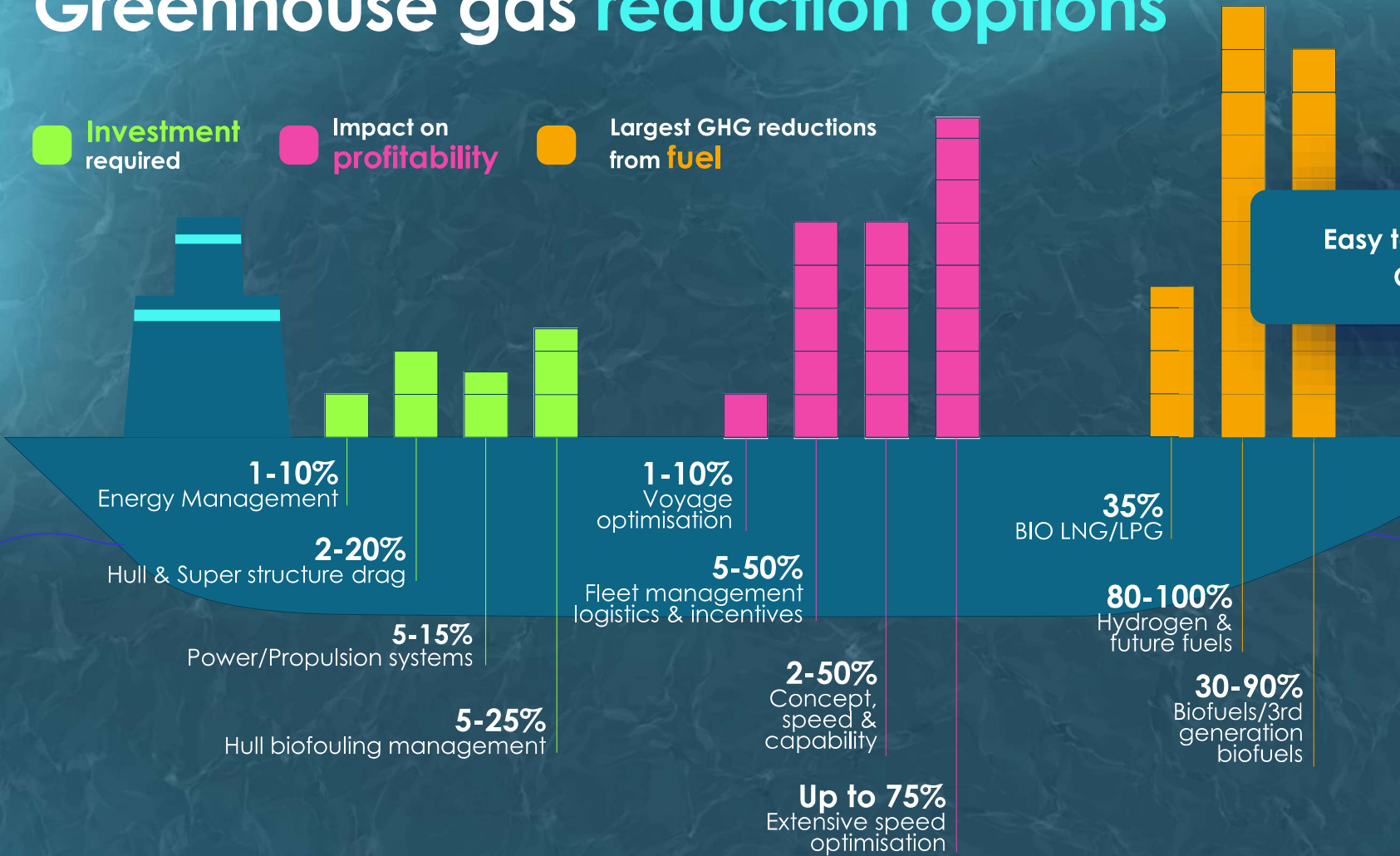
Additives enables the transition with new technology for fuel and lubricants



Greenhouse gas reduction options



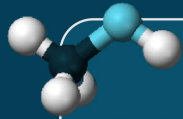
■ Investment required
 ■ Impact on profitability
 ■ Largest GHG reductions from fuel



Easy to implement and cost effective CII reduction measures needed

Multi-fuel options will be used until fuel availability is realised

% figures are approximate GHG reduction potential



Methanol The bridge

stores the lowest
emission fuels
for marine
engines

60%
lower

Nitrogen
oxide

99%
lower
future

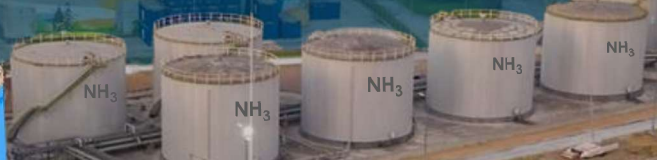
Sulphur
oxides

95%
lower

Particulate
matter

7%
lower

Carbon
dioxide
(ttw)



Infineum

Global methanol terminals



Methanol Bunkering

15 Active
20 Under development



LNG Bunkering

198 Active
78 Under development



Source: Clarksons Research 121st Tracking - Green Technology Uptake
Source: AFI, 2023

Colours of Methanol:

0 100 200 300 400 500 600 700

Savings **Increase** CO₂eq. Change compared to MGO


 Made from **blue hydrogen** -
 Mainly natural gas and carbon capture
 E-Methanol (RES+DAC)

-99%





 Made from **Green hydrogen** -
 Biomass and renewable electricity
 BioMethanol

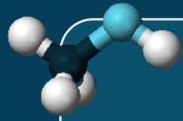
-65%


 Made from **Grey hydrogen** -
 Natural gas – most common form today
 Methanol (natural gas)

12%

MGO (Baseline)

 TTW other GHG (CH₄+N₂O)
  TTW CO₂
 WTT



Methanol

is amongst the lowest emission fuels for marine engines



Proven, approved and straightforward to implement



Readily available storage and handling facilities



Single fuel option for main and auxiliary engines

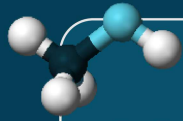


Easy to store and handle on board ship

Benefits



Infineum



Methanol
is amongst
the lowest
emission fuels
for marine
engines

Challenges



Corrosion

Component damage
Safety
Fuel leaks/system failures



Lubricity

Fuel system
damage
Reduced
efficiency

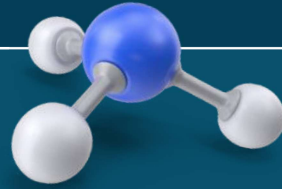
Increased maintenance costs



**Additives
solve
potential
lubricity
concerns**



No CO₂,
sulphur or
particulate
emissions
when
combusted



Ammonia
provides a
carbon free
option

70 %

of the 185 million tonnes
produced goes to
make fertilizer



Infineum

Colours of Ammonia:

0 100 200 300 400 500 600 700

Savings **Increase** CO₂eq. Change compared to MGO

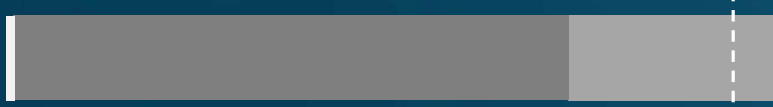
 Made from **blue hydrogen** -
Mainly natural gas and carbon capture



 Made from **Green hydrogen** -
Biomass and renewable electricity



 Made from **Grey hydrogen** -
Natural gas – most common form today



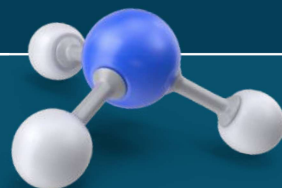
MGO
(Baseline)

 TTW other GHG (CH₄+N₂O)  TTW CO₂  WTT

Benefits

Reduced CO₂
equivalent

Some infrastructure
in place



Ammonia
provides a
carbon free
option

Partnerships needed
to secure supply



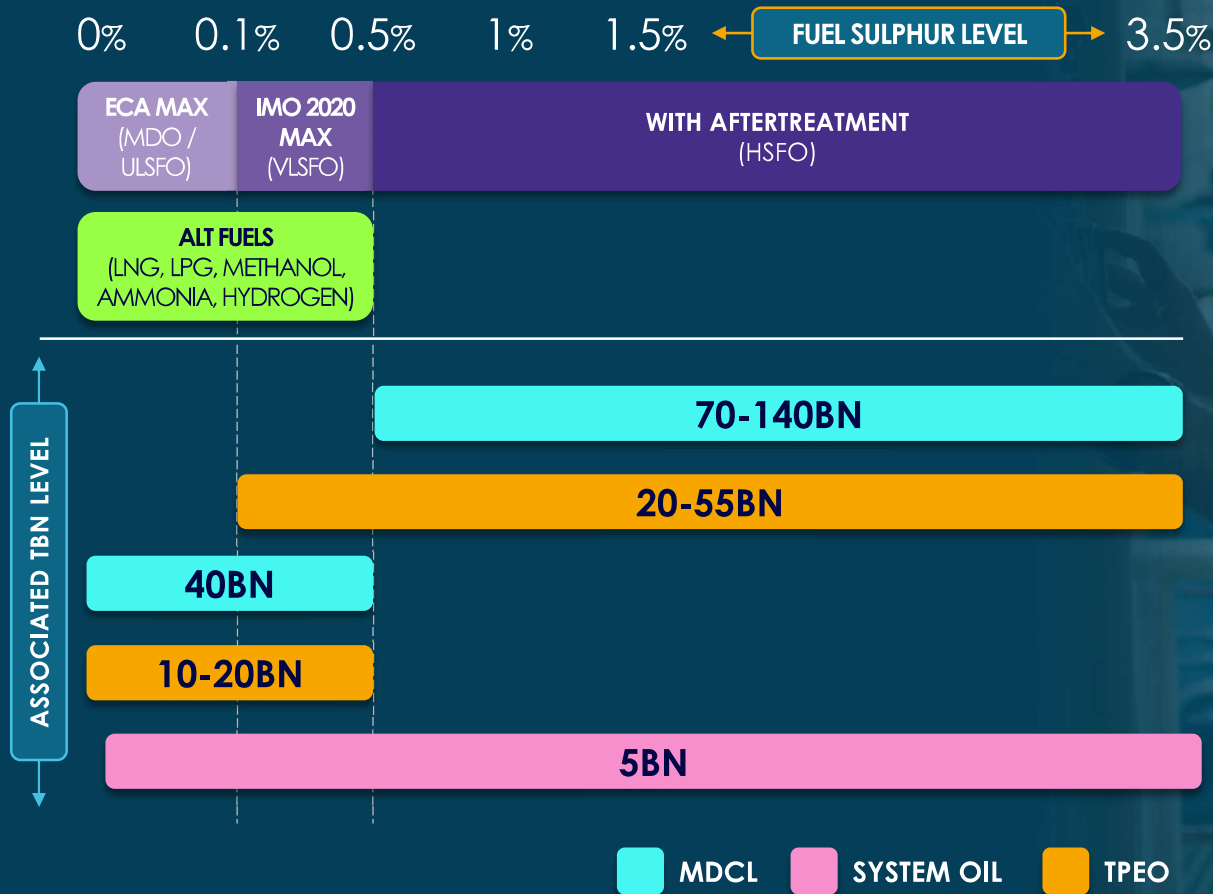
Need significant
investment,
innovation
and infrastructure

Challenges



Infineum

Protection in a multi-fuel multi-engine world



- >500,000 hours testing
- 2 and 4 stroke engines
- All conventional fuels
- And evaluating those coming in the future
- In Gpl and Gpll base stocks
- Approvals with all of the major OEMs

Continued challenges drive change



Performance challenges, driven by the introduction of further regulatory limits and market needs, will require the development of innovative solutions

Lubricant and fuel additives will be an integral part of many of the solutions

*by or around, i.e. close to, 2050

**reduction in carbon intensity compared to 2008



Summary

Challenges of the regulators, OEMs and other equipment suppliers are increasing the complexity of the engine system

The introduction of new fuels means the lubricant should be able to deal with different by-products

Lubrication development is enabling the combination of new hardware and fuels in an increasingly scrutinised industry

Lubricant additives allow engine operation in a multitude of scenarios (2T, 4T, dual fuel and others)

Thank you

The Infineum logo features a stylized, multi-colored circular graphic composed of overlapping loops in shades of green, yellow, and blue, positioned behind the word 'Infineum'.

Infineum

Formulating tomorrow together

Permission is given for storage of one copy in electronic means for reference purposes. Further reproduction of any material is prohibited without prior written consent of Infineum International Limited.

The information contained in this document is based upon data believed to be reliable at the time of publication and relates only to the matters specifically mentioned in this document. Although Infineum has used reasonable skill and care in the preparation of this information, in the absence of any overriding obligations arising under a specific contract, no representation, warranty (express or implied), or guarantee is made as to the suitability, accuracy, reliability or completeness of the information; nothing in this document shall reduce the user's responsibility to satisfy itself as to the suitability, accuracy, reliability, and completeness of such information for its particular use; there is no warranty against intellectual property infringement; and Infineum shall not be liable for any loss, damage or injury that may occur from the use of this information other than death or personal injury caused by its negligence. No statement shall be construed as an endorsement of any product or process. For greater certainty, before use of information contained in this document, particularly if the product is used for a purpose or under conditions which are abnormal or not reasonably foreseeable, this information must be reviewed with the supplier of such information.

Links to third party websites from this document are provided solely for your convenience. Infineum does not control and is not responsible for the content of those third party websites. If you decide to access any of those websites, you do so entirely at your own risk. Please also refer to our Privacy Policy.

'INFINEUM', 润英联, and the corporate marks comprising of 'INFINEUM' and the Infineum circle device are trademarks of Infineum International Limited.