

MARINE LUBRICANTS WEBINAR WEEK

WEBINAR

FRIDAY 20 JUNE
14:00-14:45 BST

Lubricants for conventional and emerging marine fuels

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Mark Brighty

Global Technical Manager – Large Engines

Richful

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A light gray world map is centered in the background of the slide, showing the continents of North America, South America, Europe, Africa, Asia, and Australia.

RMM Lubricants Webinar

Lubricants for Conventional and Emerging Marine Fuels

Mark Brighty – Global Technical Manager – 20th June 2025

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Richful Additive Company

Emerging Fuels to 2050 & Impact on Lubricants

Overview of OEM Cylinder Lubricant Recommendations

Technology solutions for your engines

Questions

- Richful founded in 1996
- 1300 employees
- Public company on Shenzhen Stock Exchange
- Currently 40 product categories and 200 finished products
- One of the largest additive manufacturers in China

Xinxiang Manufacture Base—Construction area 200,000m²

Richful 瑞丰新材



Business Footprint

Richful 瑞丰新材



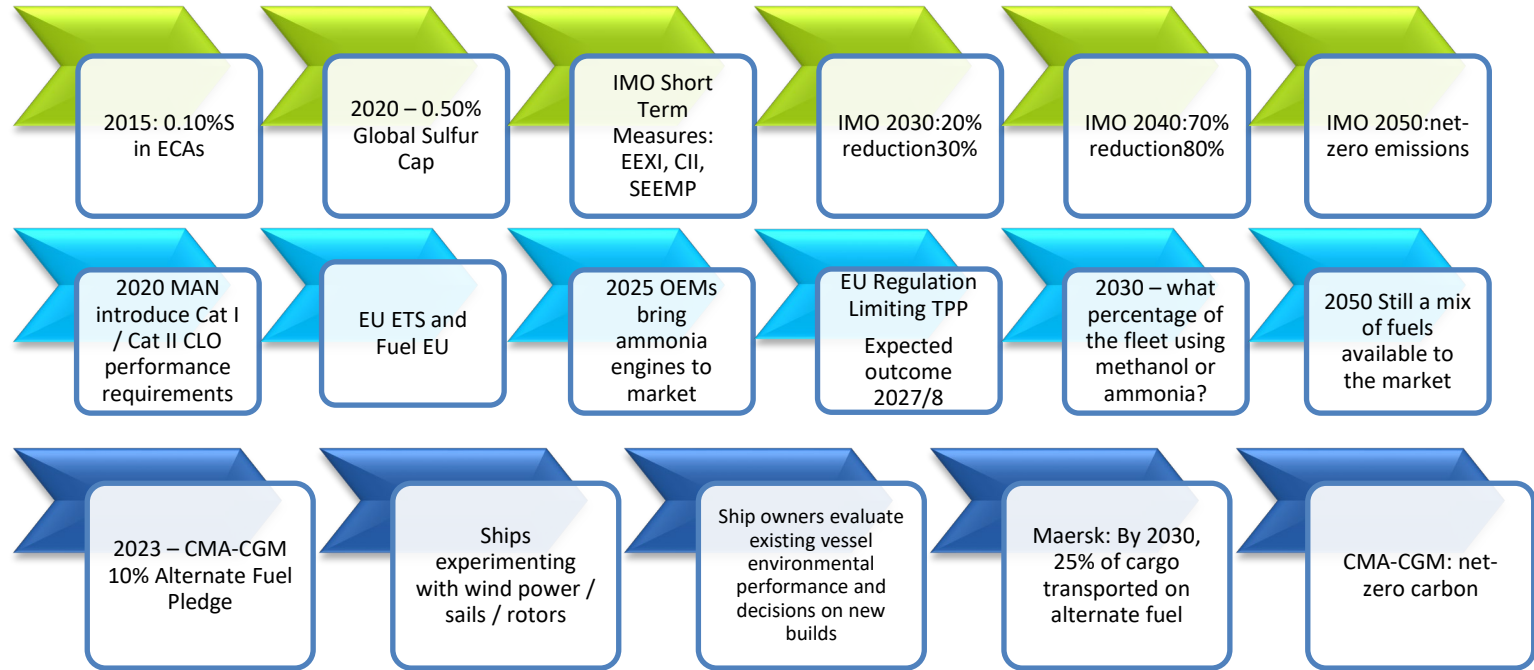
Take Responsibilities And Fulfill With Practical Actions

Richful 瑞丰新材

Aim to achieve carbon peaking and carbon neutrality goals, strive to be a green factory.

- 2 MW Green Power Project Approved
- Develop environmentally friendly and low-carbon products
- Launch carbon peaking and carbon neutrality programs

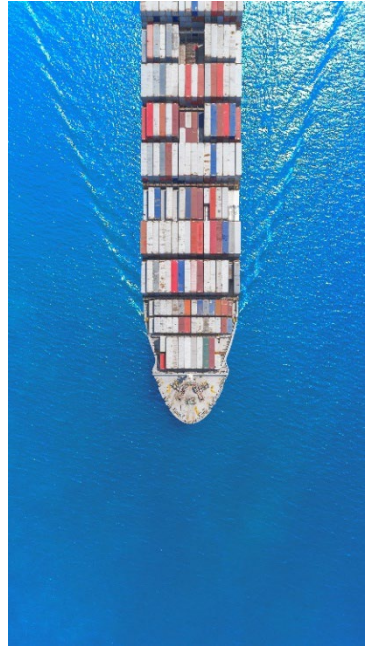
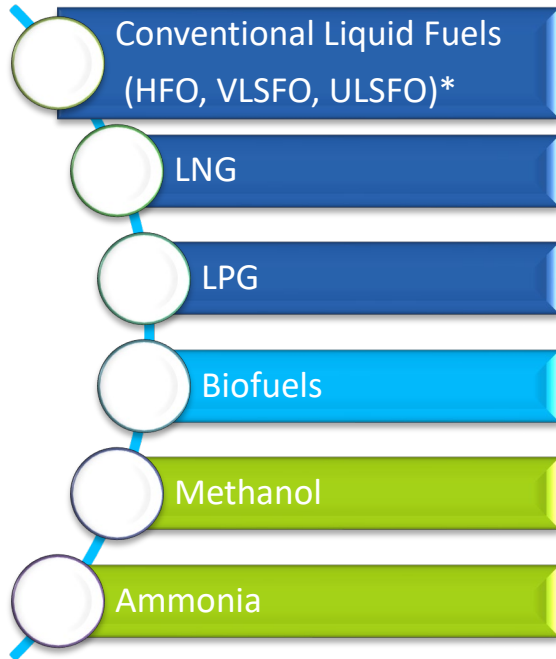
Shipping has never been so complex



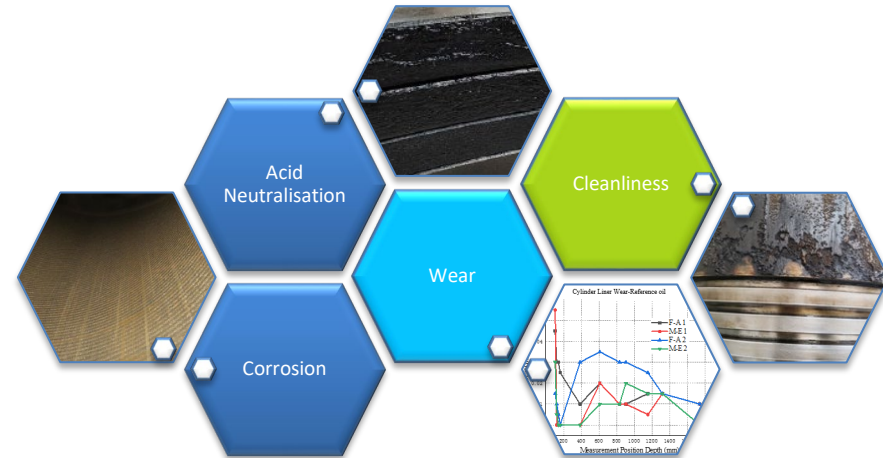
Evolving Regulations, Fuel types and OEM Engine Design all impact vessel decisions...& lubrication

R Regardless of which report one reads, the picture remains similar:

- Between today and towards 2050, there will be a myriad of fuels utilized by deep-sea shipping

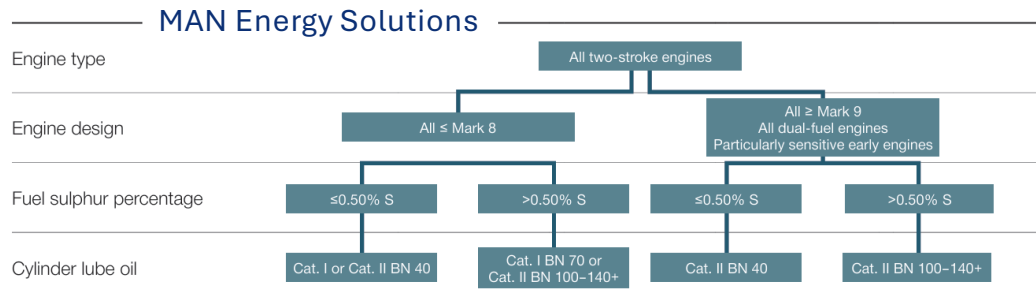


R These fuels have different combustion characteristics and by-products which the lubricant will need to manage



* HFO – Heavy Fuel Oil, VLSFO – Very Low Sulfur Fuel Oil, ULSFO – Ultra Low Sulfur Fuel Oil

R Deep-sea two stroke cylinder OEMs lubricant recommendations



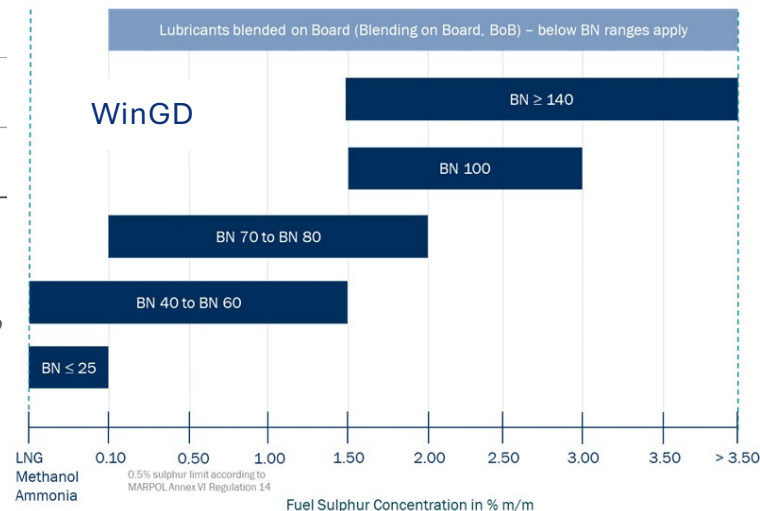
R Lubricant recommendations related to:

- Fuel Sulfur content

R Emerging / Alternate fuels relatively ‘unknown’

R Some methanol fuelled ships launched

- Engine service, condition and issues yet to be learned



Improved industry awareness of the correct OEM recommended fuel/engine/lubricant combination – it's not all about BN level, this is not the only performance consideration

R Full portfolio of Marine engine lubricant additives available

R Demonstrating performance from bench to engine



RF6313

Panel Coker – Test Engine

Protecting your assets

The choice your ship would make

Engine Type	Lubricating Point	Marine Lube	Marine Fuel	TBN	Richful Additive
2T Low-Speed	Piston Ring / Cylinder Liner	Cylinder Oil (MCL)	ULSFO, VLSFO	40 Cat I. / Standard	RF6315
			ULSFO, VLSFO, LNG, Bio-fuel, Methanol, Ammonia	40 Cat II. / Premium	RF6313
			HFO (with scrubber)	70-100-140	RF6314
	Crankcase / Servo System	System Oil	All	5-8	RF6303 & RF6304
4T Medium Speed	Piston Ring / Cylinder Liner / Crankcase	Trunk Piston Engine Oil (TPEO)	ULSFO, VLSFO, LNG, Bio-fuel, Methanol, Hydrogen, Ammonia	10-16	RF6326 & RF6327
			ULSFO, VLSFO, LNG, Bio-fuel, HFO (with scrubber)	20-50	

May 2025



Thank You

Chemistry-Enabled Solutions

The shipping industry needs collaboration and partnering to enable its voyage to decarbonisation

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Jurgen Binder

Lead Engineer

Win GD

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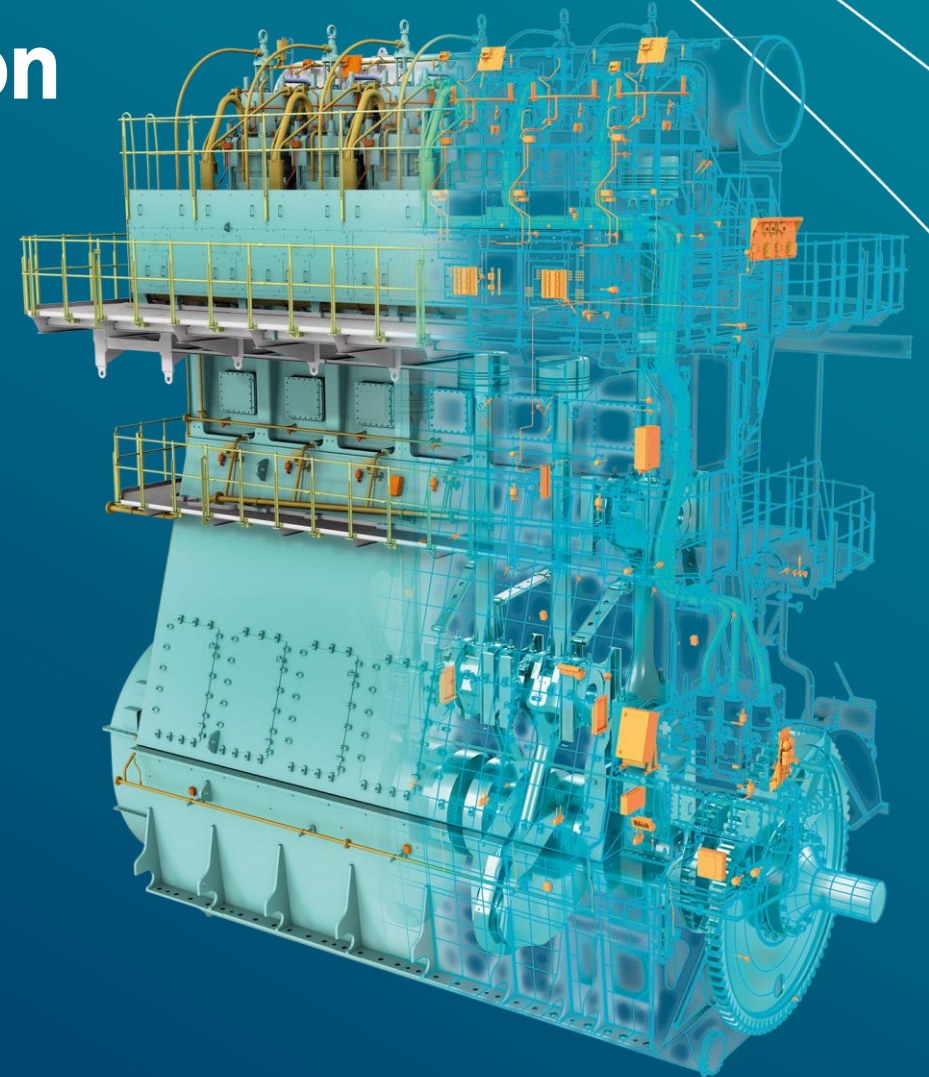
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Navigating Fuel-Driven Lubrication

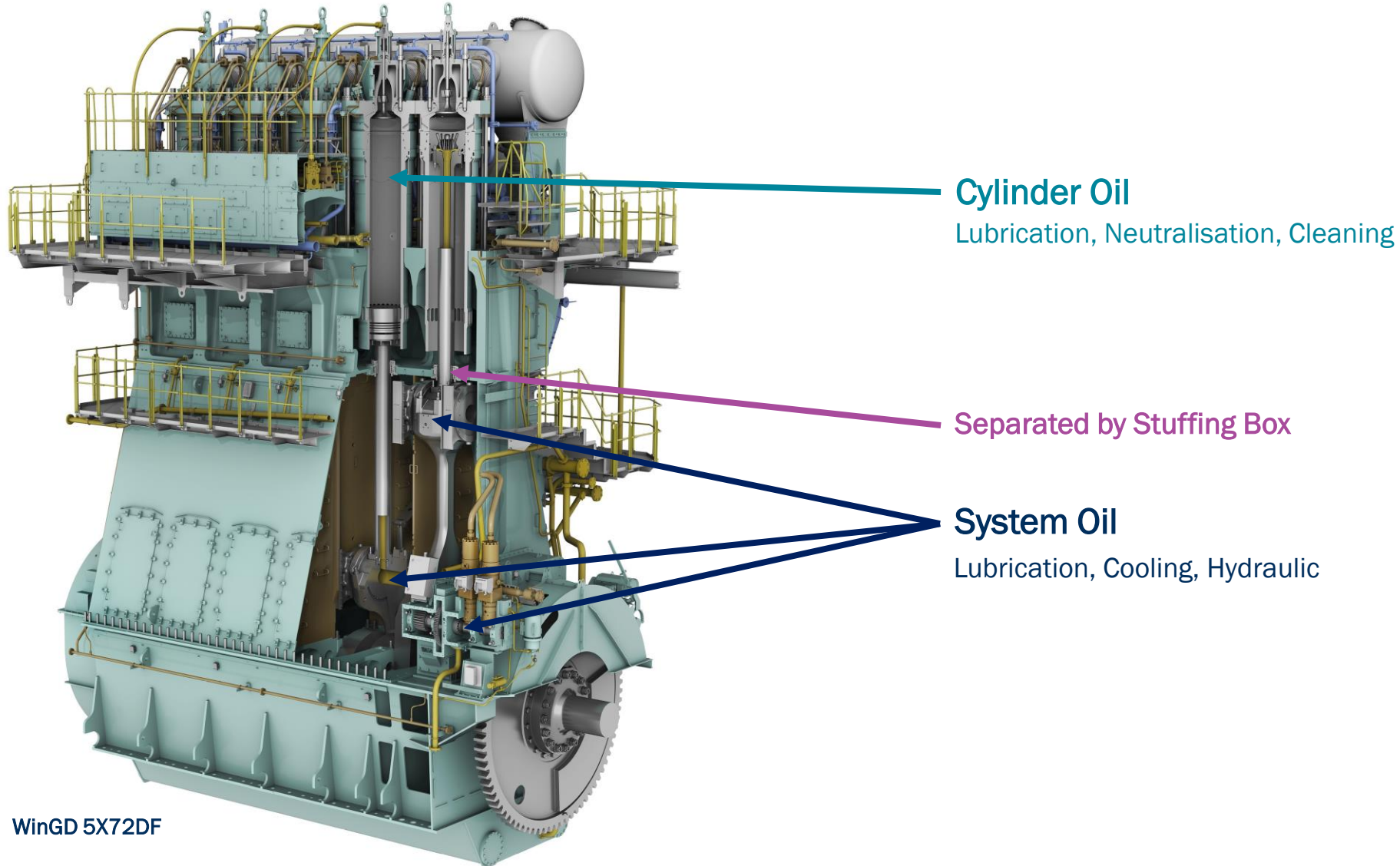
Marine Lubricants Webinar Week 2025

Lubricants for conventional and emerging marine fuels



WIN GD

Lubrication of Two-Stroke Marine Engines



WinGD 5X72DF

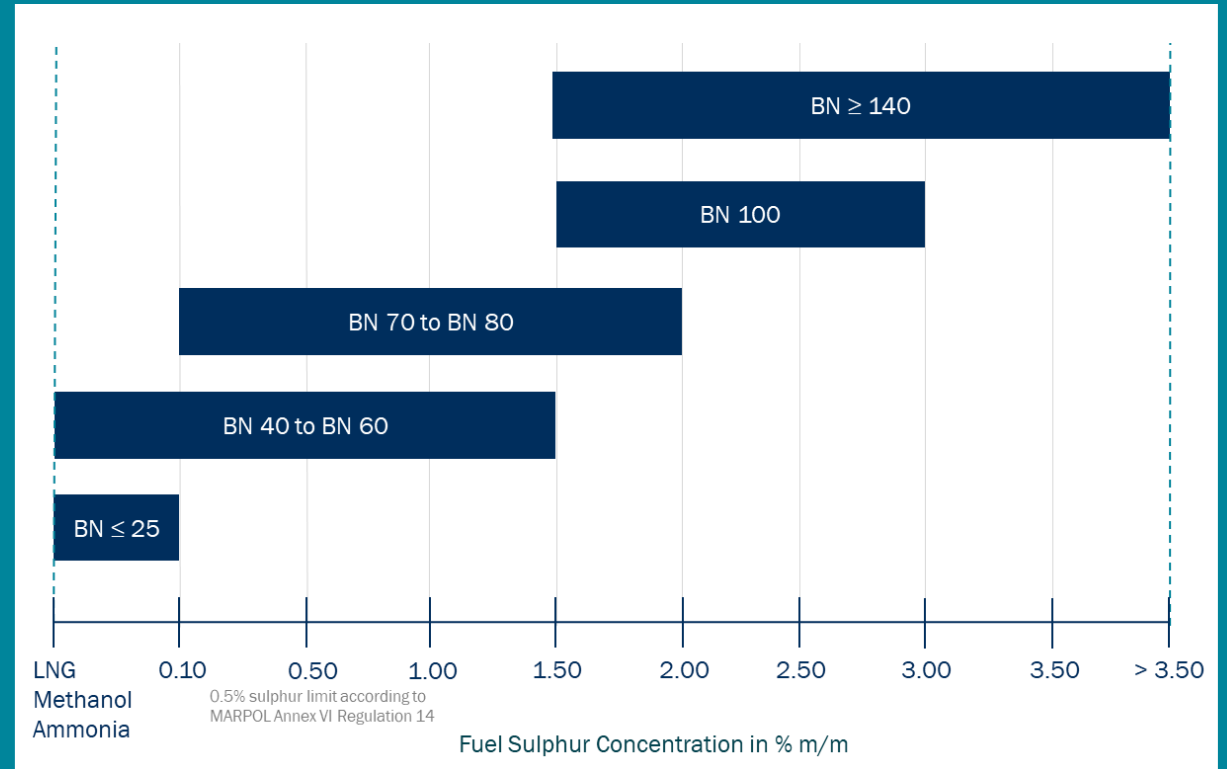
Oil Selection

System Oil

- Choose from validated products
- Independent of fuel

Cylinder Oil

- Choose from validated products
- Base Number selection based on fuel in use
- Independent of engine type and technology level



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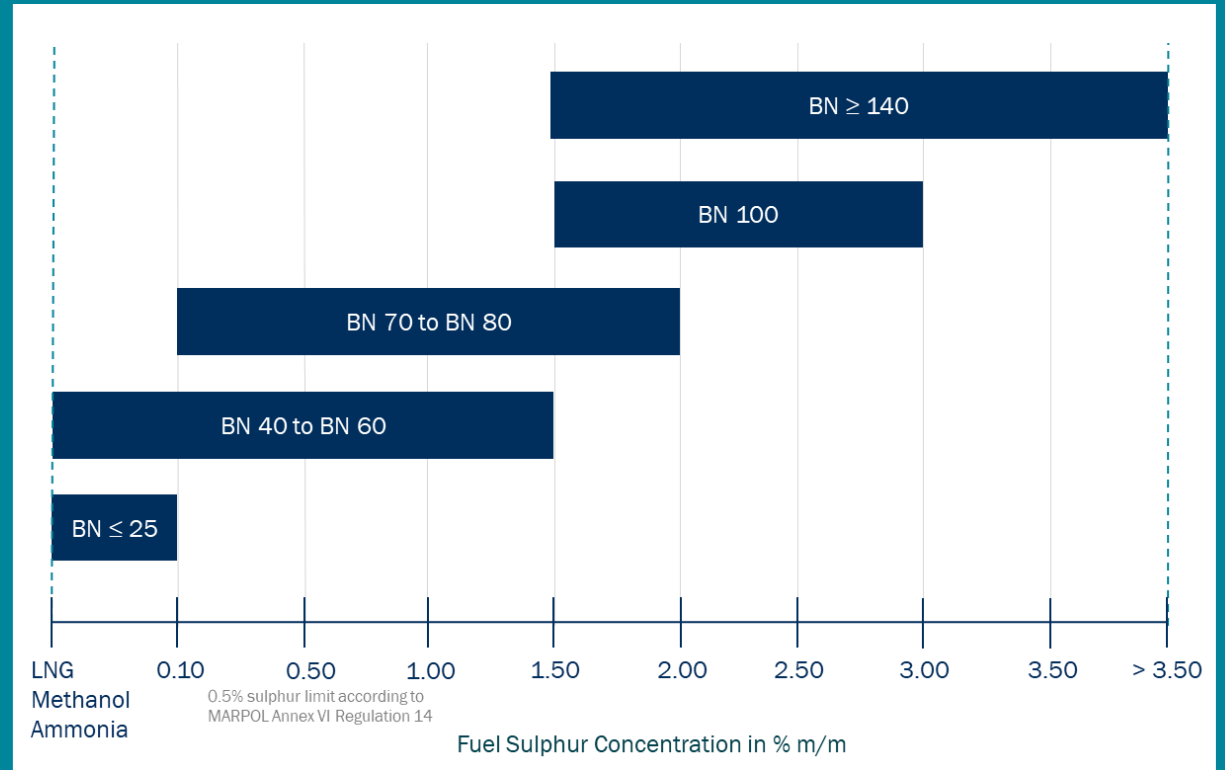
Where to find validated products, guidelines etc.?



Validated Lubricants

List of validated cylinder lubricating oils

Oil supplier	Oil name	BN	BN range	LNG	Ammonia	Methanol	Fuel sulphur concentration										
							0.00% to 0.10% S	0.10% to 0.50% S	0.50% to 1.50% S	1.50% to 2.00% S	2.00% to 2.50% S	2.50% to 3.00% S	3.00% to 3.50% S	> 3.50% S			
Example Supplier	Example CLO40	40	40 - 60														
	Example CLO40 SUPER	40	40 - 60	LNG validated													
	Example CLO70	70	70 - 80					Monitor									
	Example CLO100	100	80 - 100						Monitor								
	Example CLO140	140	≥ 140							Monitor							



WinGD Guidelines and supporting documents for engine lubrication:
<https://wingd.com/design-development/engine-technologies/tribology-fuels-lubricants>

Future Fuels

Lubrication of WinGD X-DF Dual Fuel Engines

X-DF



Lubricants:

BN \leq 60

General usage (tested on liquid fuels)

LNG validated (tested on LNG)

> 10 years experience

Future Fuels

Lubrication of WinGD X-DF Dual Fuel Engines

X-DF-M



Lubricants:

BN \leq 60

General usage and LNG validated lubricants recommended

X-DF



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General usage and LNG validated lubricants recommended

X-DF



Lubricants:

BN \leq 60

General usage (tested on liquid fuels)

LNG validated (tested on LNG)

> 10 years experience

X-DF-A



Lubricants:


BN 40

Proven track record

Thank you

Propelling
shipping towards
a greener future

WinGD Ltd.
Schützenstrasse 3,
8400 Winterthur, Switzerland
www.wingd.com

A large, circular splash of water is centered on the right side of the slide. The water is clear and dynamic, with droplets and ripples. Overlaid on this splash is the text 'FUEL FLEXIBLE ENGINES' in a bold, white, sans-serif font, arranged in three lines. The background of the slide is a dark teal color, and a large, light teal circular shape is partially visible on the left side, framing the splash.

**FUEL
FLEXIBLE
ENGINES**

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Baskaran Balakrishnan

Manager, Global Marine Lubricant Support Product & Technology

Chevron

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Innovative Marine Lubrication for Regulatory Compliance: The HDAX 9700 Case Study

Baskaran Balakrishnan

Manager, Global Marine Lubricants
Product and Technology Support



marine lubricants



Agenda

01 Shipping Industry decarbonisation journey

02 Role of marine lubes in decarbonisation

03 Chevron's innovative lube solutions



Lowering the carbon intensity of shipping

It will be a series of incremental steps, and there will be no one fit-for-all solution.



marine lubricants

Why

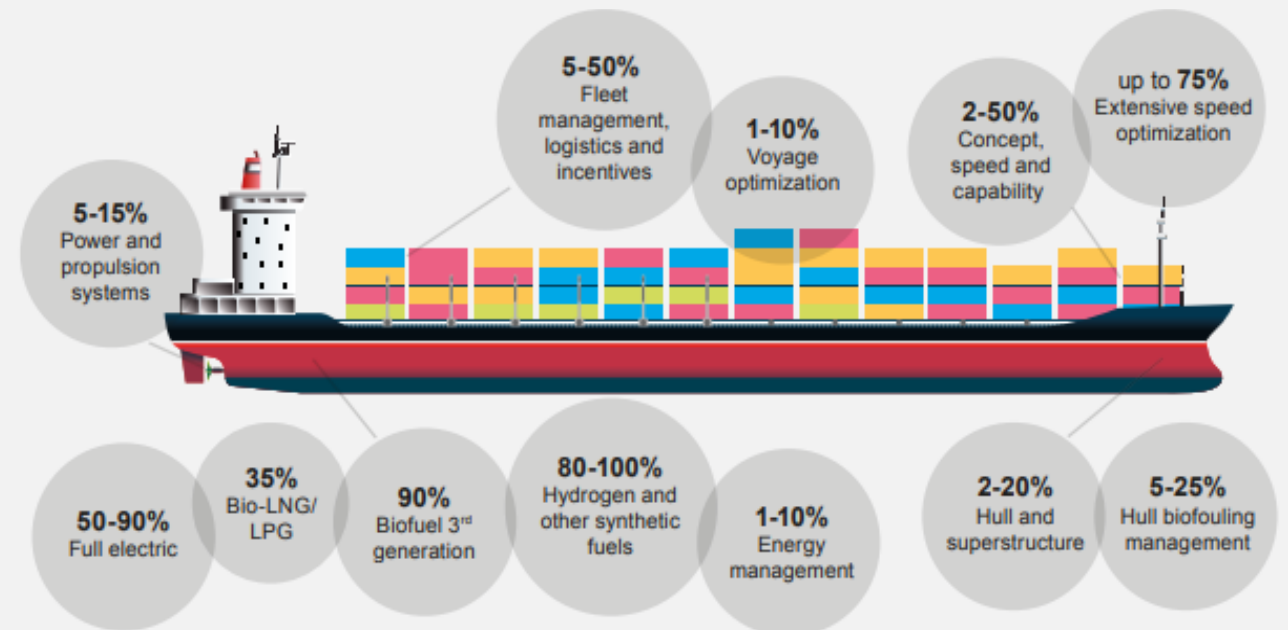
Shipping accounts for 3% of greenhouse gas (GHG) emissions. With global trade increasing, it is on track to be **10% by 2050** with no intervention

What's needed

Regulations and policies, including a price on Carbon, to level the playing field

How

Design, operational and economic solutions

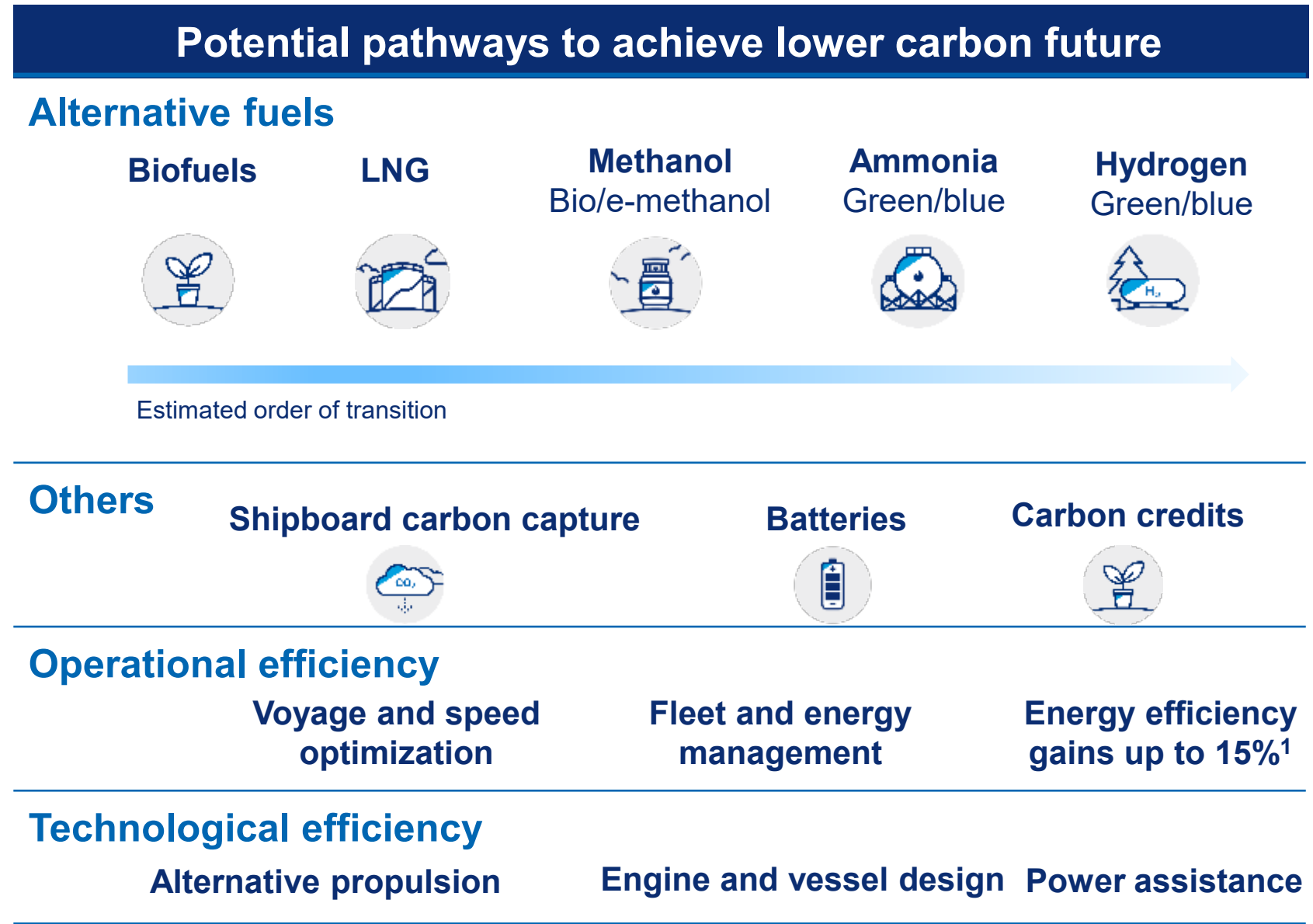


Source: IMO, Freepik

Lowering the carbon intensity of the marine industry

Actions needed to meet GHG reduction targets

Regulatory environment	
<p>IMO ambition</p> <p>Zero emission by 2050</p> <p>Uptake of zero GHG emission energy sources: 5% by 2030</p>	<p>EU Emissions Trading System (ETS)</p> <p>Maritime emissions covered from 2024</p>
<p>Fuel EU maritime</p> <p>Target reductions from 2025</p>	<p>IMO</p> <p>CII, EEXI/EEDI*</p> <p>To be developed: technical element economic element</p>



Optimising marine lubricants for future maritime fuels



Fuel
agnostic



Circular
economy



Oil-condition
monitoring



Fuel
efficiency



Aftertreatment
-devices
compatibility

HDAX 9700: Fuel-agnostic Chevron trunk piston engine lubricant Run on LNG and marine distillate fuels without oil change

- Major OEM endorsements
- No lube change when switching between marine fuels with <math><0.1\%</math> S
- Proven field performance with distillate, Biofuel and LNG
- Currently being tested with MeOH and ammonia
- Enables longer life for aftertreatment devices
- Global supply reliability

Medium speed dual fuel (DF) engine oil

Fuel agnostic lubricant: HDAX 9700

From a Fuel (<0,10%S) use perspective

Gaseous fuel: (L)NG

Liquid fuel: distillate

(NGEO) HDAX® 5200
Optimised for gas operation

Limited corrosion protection
time restricted use on
distillate fuel

Adverse effect on
engine deposit

(Marine TPEO) Delo® 1000 Marine
Optimised for distillate fuel operation

HDAX® 9700
Optimised for diesel and gas operation

Unrestricted use without the need for oil change, helping maintain optimal engine performance

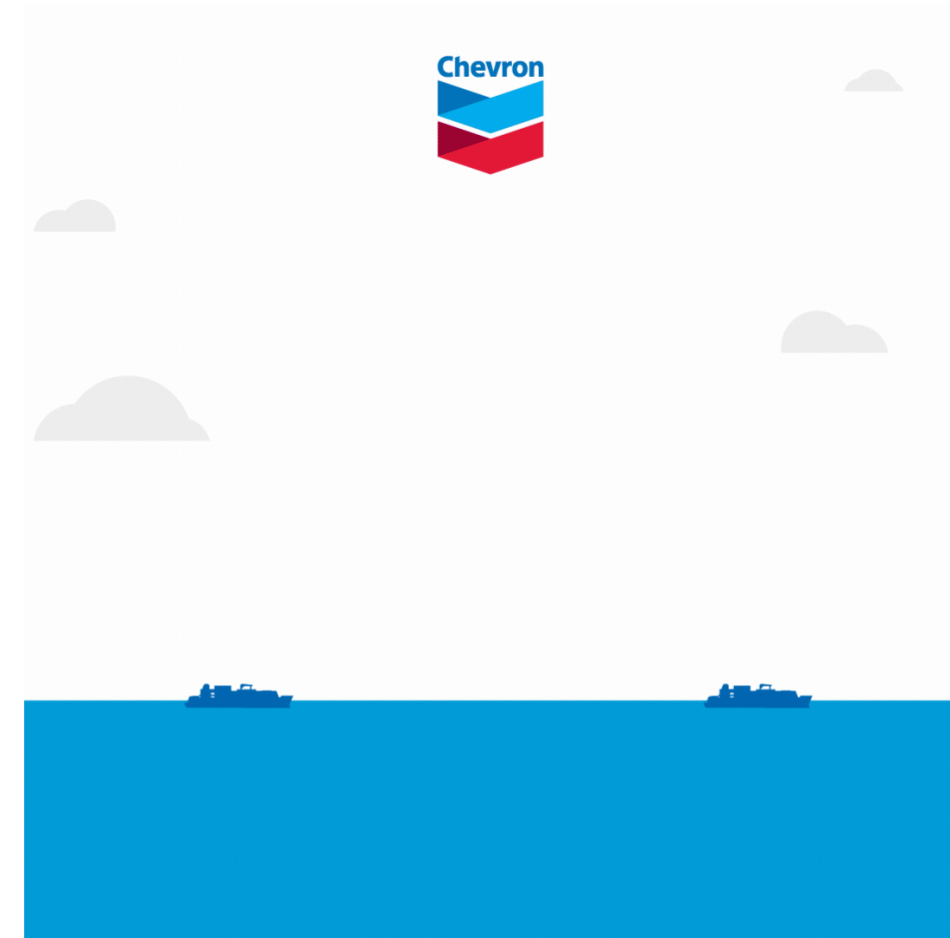
Take-aways



The marine fuels market is changing and will continue to change to meet legislative goals while balancing costs and availability



Lubricant solutions need to be fuel-agnostic, support lower engine maintenance, be fuel efficient, and be compatible with after-treatment devices to support the shipping industry, which ever fuel option is chosen



HDAX[®] 9700, can be used with both gaseous fuels, such as Liquefied Natural Gas (LNG) and low sulphur liquid fuels, such as distillate and biofuels, without the need to match one oil to one fuel.

Chevron Marine Products' new lubricating oil has a lot to offer, and this is highlighted in a White Paper that outlines how four stroke engine operators can benefit from the new lubricating oil's versatility.

[read more](#)

HDAX 9700:
Enabling The Future
Of Fuel Flexibility





marine lubricants

Thank you



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John MacKenzie
Commercial Director – Europe
VPS

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Moving Forward

Leading the way for sustainable solutions

Managing lubrication across a multi-fuel fleet



Multi-fuel landscape



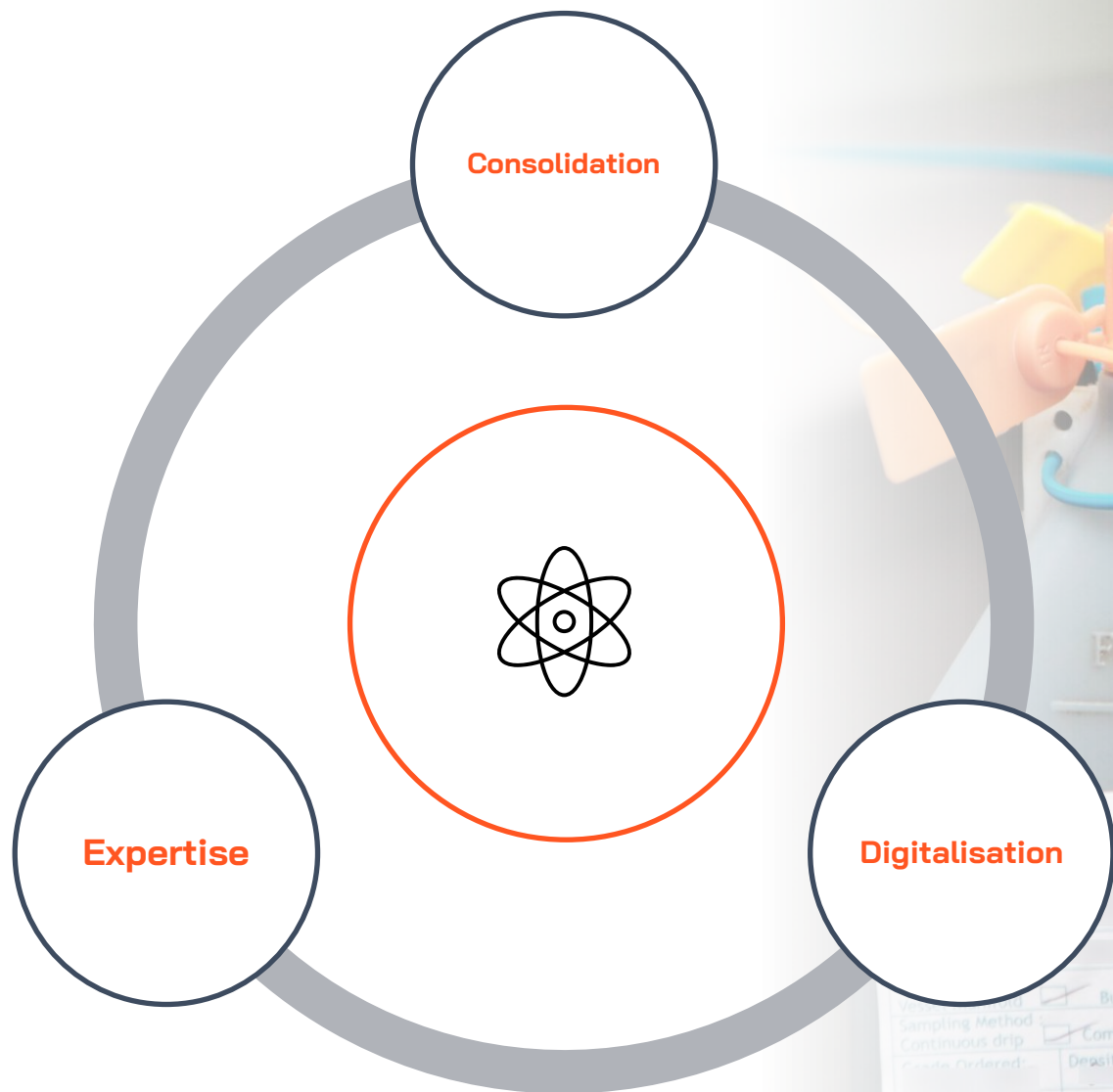
Shipping is no stranger to a **multi-fuel** landscape

Shipping **adapts & overcomes**

Leverage **expert partnerships** to navigate the change

successfully

Core elements for success



Consolidated Expertise

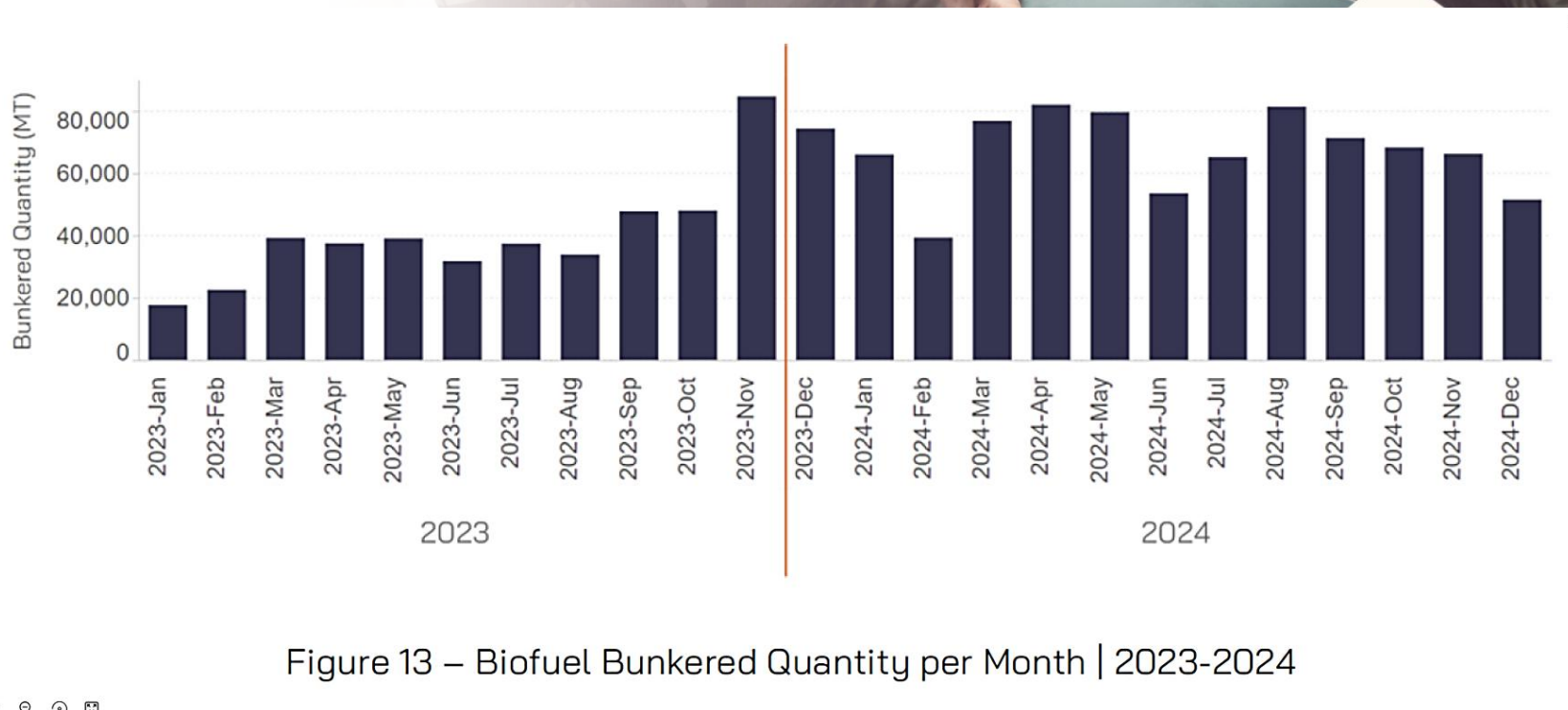
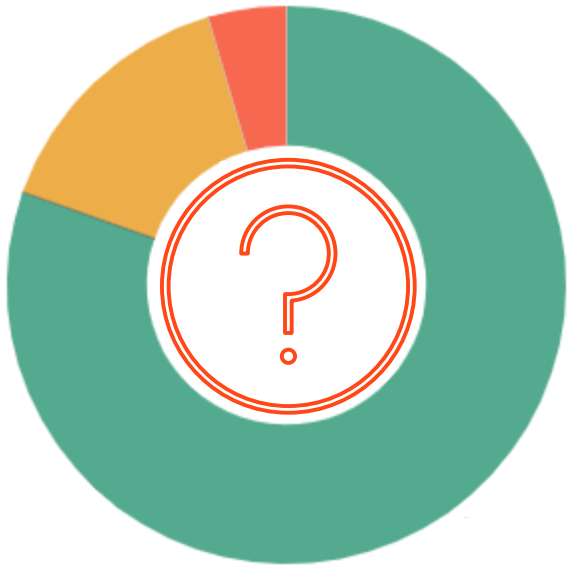


Figure 13 – Biofuel Bunkered Quantity per Month | 2023-2024

Technical Management – Digital Systems

- Consolidation
- Broaden your field of vision
- Compare and contrast
- Integration

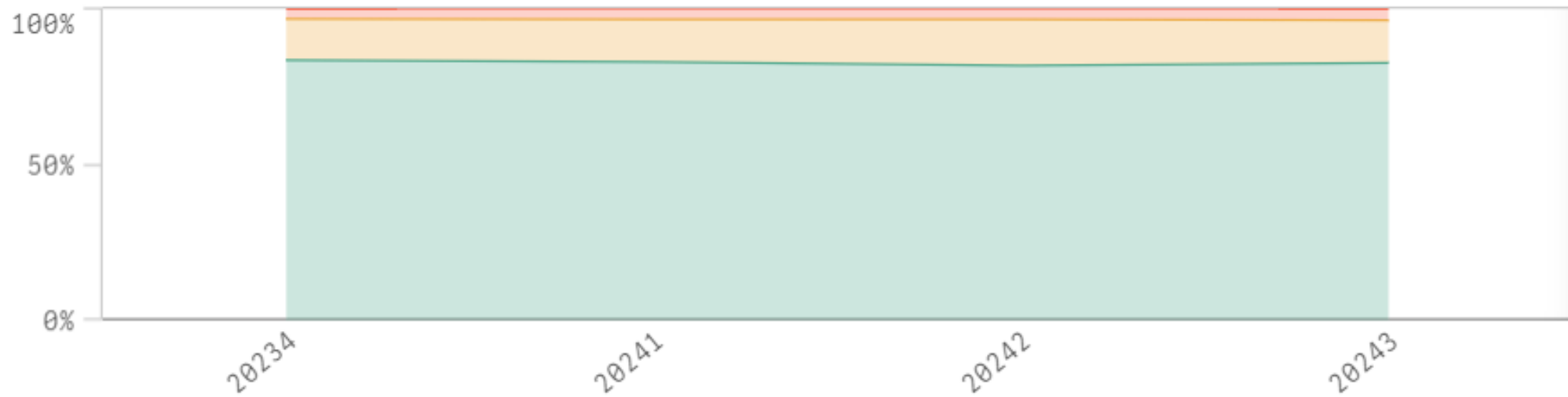
What does the data tell us?





Sustainability is at the forefront of peoples' minds. If we can make a 1% reduction,

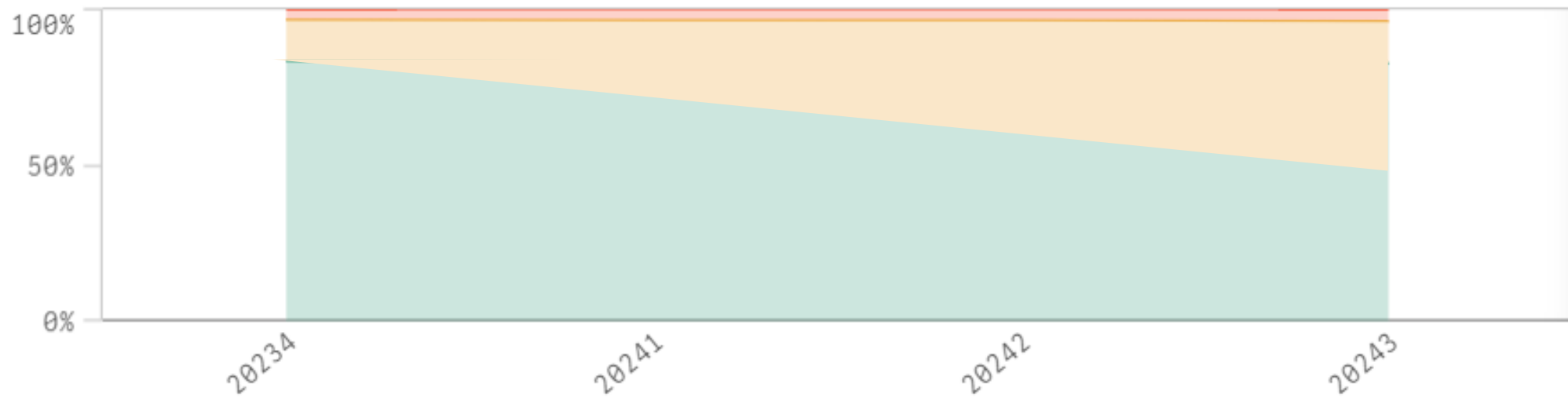
we can reduce the **CO2 footprint** of marine lubes **by 36K MT.**





Sustainability is at the forefront of peoples' minds. If we can make a 1% reduction,

we can reduce the **CO2 footprint** of marine lubes **by 36K MT.**





Thank You

EXPERIENCE ▶ INNOVATION ▶ SUSTAINABILITY

Contact

John MacKenzie

jmac@vpsveritas.com

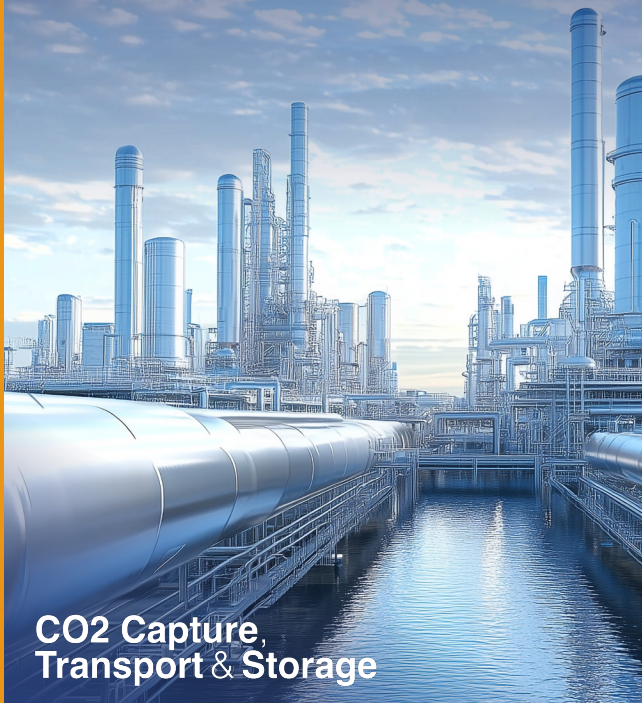


vpsveritas.com

UPCOMING EVENTS

8 SEP 2025 • MILAN

**CO2 SHIPPING,
TERMINALS & CCS
CONFERENCE EUROPE**



**CO2 Capture,
Transport & Storage**

9-10 SEP 2025 • SINGAPORE

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