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D ear Reader

IBIA has just held yet another highly successful Convention, in Dubai. So it will be no surprise then that there is plenty about that event in our pages. However there is much more to report about IBIA than 'just' the Convention.

The IBIA Marketing and Events and the Regional reports reflect just how busy the past few months have been while the Calendar and Diary show that will continue through the New Year.

Importantly IBIA now has a new executive director, Alexander Prokopakis, whose letter follows mine. In addition Edmund Hughes has joined IBIA as its IMO representative. He is a prominent figure in the maritime community was the Head of Air Pollution and Energy Efficiency in the Marine Environment Division at the IMO and played a significant part in developing MARPOL Annex VI. Edmund's first Regulatory Round-up appears in this issue.

Staying with IBIA, for an insight into what motivates many of IBIA's members and, especially, its Board make sure you read my interview with IBIA board member Valeria Sessa, of Italian bunker trader ReSeaWorld. Her passion for the industry comes over loud and clear.

We are now just weeks before the EU Emission Trading Scheme brings shipping within its scope and this issue includes two articles looking in depth at the ETS.

The fact that the ETS is a trading system, rather than a flat levy, is not in general something that makes it attractive to the shipping industry. By large and large shipowners do not relish the prospect of trading emissions allowances.

So a raft of companies have appeared on the scene to assist shipowners and bunkering companies navigate the new regulation. In this issue Frederic Bouthillier and Gregoire Van den Abeele from specialist trader Vertis Environmental

Finance run through how the ETS works and sketch out what they see as potential opportunities for bunker suppliers.

Another group who are likely to be busy as the ETS takes effect are the lawyers. In our Legal section Dr Clemens Hillmer of Watson Farley & Williams (WFW) considers the extension of the EU Emission Trading Scheme (ETS) to include maritime emissions. In particular, he looks at who should be responsible for submitting emissions allowances and the potential complications where a shipowner has delegated the responsibility to comply with the ISM Code to a manager. Stand by for some interesting cases in due course.

Our Industry News notes a drop in volumes at Rotterdam and the detention of bunkering barges in South Africa which has stopped bunkering in Algoa Bay. More positively it reports Monjasa's purchase of two tankers to provide storage capacity for its West African bunkering operations.

These days, however, the vast majority of press releases that cross my desk are about decarbonisation, in one way or another. That is reflected by much of the content of *World Bunkering*. Environmental News provides an overview of developments, including an extension of California's strict anti-pollution regulations to cover most ships in the US state's main ports.

As usual we also home in on various alternative fuels and technologies that have the potential to take the shipping industry to its zero carbon goal. Until recently nuclear power was not considered a realistic option for commercial shipping, with possible the exception of icebreakers.

Probably most in the industry still hold to that view but Mikal Bøe, the founder and CEO of UK-based Core Power, explains he believes why uptake of nuclear energy in the maritime sector is "inevitable".

Meanwhile our geographical features cover Northern Europe and the Far East. As has been heralded for some time, we report that the use of a bunker measurement system for bunker vessels in Antwerp-Bruges and Rotterdam will soon be mandatory. That of course has been the case in Singapore for a good few years now. We report how the island republic is now leading the way in the digitalisation of bunker processes.

Finally, we are approaching the festive season once more. For us at *World Bunkering* it is also when we rush to make sure the first issue of 2024 is ready in good time for the IBIA Dinner in February.

I look forward to, once again, seeing many of you at the Grosvenor House Hotel.

Best wishes

David Hughes
Editor





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Editor: David Hughes
anderimar.news@googlemail.com

Project Manager: Alex Corboudé
alex@worldbunkering.net

Publisher & Designer: Constructive Media
ibia@constructivemedia.co.uk

On behalf of: IBIA Ltd, 107 Cheapside,
London EC2V 6DN, United Kingdom

Tel: + 44 203 951 9615
Email: ibia@ibia.net Website: www.ibia.net

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Dear IBIA members and friends,
buongiorno

It was with mixed emotions that I delivered my opening speech at my last IBIA Convention, in Dubai, as the Chair of our Association. Looking back, this year has been a memorable one.

I would like to take a moment to commemorate the life of a truly influential figure, Capt. Antonio Cosulich, my uncle and former Chairman of the Fratelli Cosulich Group, and the second ever Chair of IBIA, who passed away in November 2023. Not only do we mourn his passing but also celebrate the impact he had on our organisation and the marine industry at large.

Many of you met my uncle and know how special a person he was. He was kind and generous with everyone and had the ability to put you at ease.

I personally feel very privileged having had the opportunity to spend significant time with him, learning from him, and having him as a role model both professionally and personally.

Back to IBIA now. Our membership has grown significantly, reflecting our collective strength. We have inaugurated our 4th Regional Board, focused on the Middle East, under the expert guidance of Colin Holloway. We welcomed our new Executive Director, Alexander Prokopakis, as well as IBIA's representative to the IMO, Edmund Hughes. I am confident that these transitions signify not just change, but evolution.

The strength of IBIA is truly a reflection of its members – individuals who commit their expertise and time into elevating our industry. I extend my gratitude to the Global Board for their unwavering support during my tenure as Chair. Equally, our Secretariat's relentless efforts ensure IBIA stands as a beacon of excellence.

As we stand at the significant milestone of IBIA's 30th anniversary, it is with respect and admiration that we recognise our

founding members, whose dedication has shaped the landscape of the bunker industry. IBIA is not just an entity but a collective of all those who have been a part of our journey - past, present and the promising future. To each of you, your contributions are the pillars upon which our association proudly stands today.

Celebrating milestones, our 2023 Convention in Dubai was a great success, reaching capacity weeks before the event and providing participants with a platform to learn, contribute, exchange ideas, and do business. Our 2024 Annual Dinner in London is already sold out and promises to be, once again, the highlight of the marine fuel industry year.

This is a testament to the unwavering trust and value our members, sponsors, and supporters place in IBIA and a demonstration of how relevant our organisation is.

In closing, as the Chair of IBIA, I thank each of you for being part of IBIA's journey. As we have said many times, IBIA is a member-led organisation and it is with your initiative that we can make a difference.

Timothy Cosulich,
Chair





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SETTING SAIL FOR A NEW CHALLENGE

Commitment to support and advance the bunkering industry

As I step into the role of Executive Director of IBIA, I am honoured to lead, with the direction of the Chair and Board, this esteemed organisation into a new era of challenges and opportunities. The world of bunkering is evolving rapidly, driven by environmental concerns, regulatory changes, and technological advancements. In this editorial, I would like to outline my view for the future and how IBIA will play a pivotal role in shaping the industry.

The bunkering industry has always been at the heart of global trade, providing the lifeblood (fuels) of vessels that transport 90% of goods across the world's oceans. However, as environmental concerns become more pressing, and regulatory changes demand cleaner and more sustainable fuels, the industry is at a crossroads. It is with a deep sense of responsibility and enthusiasm that I assume the role of Executive Director at IBIA.

IBIA's commitment to a sustainable future is unwavering. We recognise that the transition to cleaner fuels is not only necessary for the environment but also represents a significant business opportunity. Our association is dedicated to fostering innovation and collaboration to ensure the bunkering industry can meet the challenges ahead. We will work closely with our members, regulators, and industry partners to promote the development and adoption of alternative fuels and technologies that reduce greenhouse gas emissions.

Navigating the regulatory landscape is essential for our industry and we are privileged in IBIA to have on board our Secretariat team as the IBIA IMO Representative an experienced and knowledgeable expert, Dr. Edmund Hughes. Dr. Hughes as a previous member of the IMO Secretariat was responsible for MARPOL Annex VI, including IMO 2020 and energy efficiency for ships.

He is following and participates in numerous Correspondence Groups, Committees and Working Groups of the IMO and informs IBIA members.

IBIA will continue to be at the forefront of regulatory discussions, advocating for practical and effective regulations that ensure a level playing field for all stakeholders. We aim to provide our members with the necessary tools and knowledge to comply with regulations while remaining competitive.

It is well known that IBIA supports greater transparency in the bunker sector, with bunker licensing and mass flow meters (MFM) as suggested solutions. We welcome Rotterdam and Antwerp-Bruges' recent announcement regarding implementation of MFM and strongly encourage other international bunker ports to consider their adoption.

We believe this will help create a level playing field for companies that want to offer a quality service and improve trust in our sector.

Technology is rapidly changing the way bunkering operations are conducted. From digital platforms to real-time monitoring and reporting, IBIA will promote the adoption of innovative solutions that enhance efficiency and transparency in bunkering. We will facilitate knowledge sharing and collaboration among industry players to harness the full potential of these advancements. In this direction the IBIA Digitalisation Working Group launched a comprehensive digitalisation survey with the goal of providing a holistic overview of the bunker value chain. Our Working Group believes that wide participation will foster invaluable insights for the industry. Results and actions to follow soon.

The bunkering industry is a 'glocal' one, with global and local characteristics and IBIA's reach extends to all corners of the world.

We will continue to foster international, regional and local cooperation and partnerships to address shared challenges. Our aim is to provide a unified voice for the industry on the global stage and ensure that bunkering remains a safe, efficient, and environmentally responsible activity.

In conclusion, I am excited about the opportunities that lie ahead for IBIA and the bunkering industry. As Executive Director, I am committed to working closely with our members and industry stakeholders to navigate the challenges and embrace the changes that the future holds. Our shared commitment to sustainability, regulatory compliance, and technological advancements will set the course for a brighter and more prosperous future for the bunkering industry.

I encourage all industry players to join us in shaping the future of bunkering. Together, we will set sail into a more sustainable and prosperous era.

Sincerely,
Alexander Prokoapakis
IBIA Executive Director
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FEBRUARY		
7 - 8	2 Days Basic Bunkering Course SS600:2022 & SS684:2019	Singapore, Asia
26	IBIA Annual Dinner 2023	London, United Kingdom
MARCH		
20 - 21	2 Days Advanced Bunkering Course SS600:2022 & SS684:2019	Singapore, Asia
APRIL		
17	IBIA Asia Annual Dinner	Singapore, Asia

BUNKER INDUSTRY EVENTS 2024

JANUARY		
23 - 25	Maritime Week Africa	Cape Town, Africa
FEBRUARY		
5 - 7	Middle East Bunkering Convention	Dubai, United Arab Emirates
MARCH		
6 - 7	Green Ports and Shipping Congress	Singapore, Asia
12 - 14	CMA Shipping	Stamford, United States of America
APRIL		
15 - 19	Singapore Maritime Week	Singapore, Asia
23 - 25	IBC (International Bunker Conference)	Oslo, Norway
MAY		
6 - 9	Portugal Shipping Week	Lisbon, Portugal
21 - 23	Maritime Week Americas	Panama
JUNE		
3 - 7	Posidonia	Athens, Greece
17 - 19	Maritime Week Las Palmas	Las Palmas de Gran Canaria

**All dates were correct at time of going to print but may be subject to change, please refer to IBIA's website (<https://ibia.net/events/>) for any updates*

REFLECTIONS ON THE IBIA ANNUAL CONVENTION 2023

Charting the course for the future of bunker and shipping Industries

We have recently celebrated the resounding success of our Annual Convention 2023. Hosted on the iconic Queen Elizabeth 2, a floating hotel majestically moored in Port Rashid, Dubai, the event was nothing short of spectacular. With 250 delegates and sponsors, this year's Convention re-affirmed its place as a key event in the bunker and shipping industry calendar.

This year's Convention brought together a diverse group of leaders, experts, and professionals from across the globe. Special thanks go to Captain Mohamed Al Ali, Senior Vice President, Offshore Logistics, ADNOC Logistics & Services, our keynote speaker and all the industry specialists and panellists who added such value to the Convention. These industry stalwarts shared invaluable insights, tackled pressing challenges, and explored the latest advancements in the sector. The discussions centred around pivotal topics such as sustainability, regulatory changes, and technological innovations. For a more in-depth analysis of these discussions, readers can refer to the special report in this issue by Jack Jordan, Managing Editor of *Ship & Bunker*.

A special acknowledgment is due to our sponsors, whose unwavering support and shared values have been instrumental in elevating IBIA's status within the industry. We extend our heartfelt thanks to our sponsors at various levels, including Diamond sponsor Oilmar Shipping and Chartering DMCC, Platinum sponsor Oil Market & Trading International, Gold sponsor Cockett Marine Oil, Silver sponsors such as Almafraaq and Arte Bunkering, and our Bronze sponsors Green Fuels International DMCC, Glander International Bunkering, Inatech, Seahawk Services, Star Bulk, StormGeo, Tallon and ZeroNorth. Our appreciation also goes out to our supporting associations, BIMCO and the International Chamber of Shipping, as

well as our media partners Ship & Bunker, and media sponsors, *World Bunkering*, Bunkerspot, Manifold Times, Mundo Marítimo and S&P Global Commodity Insights.

A highlight of the Convention was the Bunker Surveyors Course, led by experts Nigel Draffin, Chris Turner, and Navin Singh. This intensive programme covered key aspects like fuel types, regulations, safety procedures, and accurate fuel quantity calculations. The course emphasised the importance of ethical practices and professionalism, preparing participants for a successful career in bunker surveying.

As we approach the holiday season and the new year, preparations are underway for the iconic IBIA Annual Dinner, set to be held at the luxurious Grosvenor House Hotel in Mayfair, London, on February 26, 2024. This prestigious event, a staple in the bunker industry's calendar, is known for its unparalleled networking opportunities and memorable experiences. With the dinner almost at full capacity, we extend our gratitude to our early sponsors Gold sponsors, Arte Bunkering, Sea Crown Services, Oilmar Shipping and Chartering DMCC, Silver sponsor, Gulf Petroleum Services and advertisers Terpel and Petro Inspect. We invite others to seize the remaining opportunities to showcase their brand at our prestigious member event.

The year 2023 has been phenomenal for IBIA. Our engagement with members and the wider industry has been unparalleled, marked by successful events including the Asia Dinner, IBIA Italy Conference in Genoa, IBIA Africa Conference in Accra, Ghana, and our presence at SIBCON. As we welcome back Sofia Konstantopoulou from maternity leave, we are excited about the future endeavours and high-level engagements planned by our Marketing and Events team.

Closing this remarkable year, we look forward to continuing our journey with our growing membership and the broader industry. We remain committed to steering the bunker and shipping industries towards a sustainable and prosperous future.

I would like to extend our warmest wishes to everyone for a happy, prosperous, and healthy end to the year and eagerly anticipate the opportunities and challenges that 2024 will bring. The IBIA Annual Convention 2023 has set a new benchmark for industry gatherings, and we are excited to build on this success in the years to come.

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Tahra Sergeant
Regional Manager (Africa)
& Global Head, Events
tahra.sergeant@ibia.net
+27 799907544



IBIA Code of Conduct

Abiding by this Code of Conduct shows that members support our common goal: to promote the widespread adoption of a common set of ethical values within our industry. We believe that when the entire industry acts with the highest ethical standards that this will be to the benefit of us all.

Fair Business

- We conduct our business in a fair and transparent manner
- We will always act in the best interest of each business partner and are honest with the stakeholders involved in our business
- We only engage in business using compliant products, and deliver the quality and quantity agreed with our business partners
- We always act in good faith

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- We respect confidential information and do not unlawfully use any intellectual property

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- We seek to minimise our environmental impact and the risk of environmental damage
- We will always ensure employees' health, safety and security
- We offer equal opportunities, prohibit unlawful discrimination and respect human rights
- We offer the same opportunities for professional development to all our employees

Transparency

- Our accounts and records are kept accurately and reflect the true state of the company and its operations
- During audits or investigations, we fully cooperate with the authorities
- We will not receive or give any gift or entertainment of disproportionate value
- We are fully committed to preventing both money laundering and terrorist financing

This Code of Conduct is endorsed by the International Bunker Industry Association (IBIA). IBIA encourages members to abide by this Code of Conduct and to endorse it.



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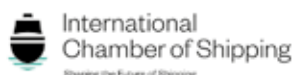
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IBIA ANNUAL CONVENTION 2023: NAVIGATING THE FUTURE OF THE SHIPPING & BUNKER INDUSTRY

The 2023 IBIA Annual Convention in Dubai united industry leaders to discuss the Shipping & Bunker Industry's future, focusing on innovation, digitalisation, and decarbonisation as Jack Jordan, Managing Editor of Ship & Bunker, reports

The IBIA Annual Convention in Dubai was a gathering of 250 bunker industry experts, offering a blend of insightful discussions and networking opportunities. The Queen Elizabeth 2, a historic ocean liner now a floating hotel, served as a grand backdrop, symbolizing the transformative changes in shipping over the last fifty years.

The week kicked off with Nigel Draffin taking a group through the IBIA Bunker Surveyor Course. This was Nigel Draffin's second visit to the QE2 – the first having been as a Riversdale Technical College student in 1969, before the vessel had passed its sea trials.

The IBIA Annual Convention started with a cocktail reception on the Tuesday evening, and offered the opportunity for delegates, speakers and sponsors to network prior to the formal conference sessions on the following day.

Alexander Prokopakis, who, in his new role as the IBIA Executive Director, extended a warm welcome to all delegates, sponsors, and speakers. Timothy Cosulich, in his role as IBIA Chair, paid homage to his uncle, the late Antonio Cosulich, a former IBIA Chair. He expressed his sentiments, saying, "Many of you have met Antonio, and you know how special a person he was; very kind and generous, and always willing to help. I think we're here not only to commemorate, but also to celebrate the possibility that we had in spending time with him. And personally,

I feel very privileged having had the opportunity to spend time with him to learn from him, but also to have him as a role model professionally and personally."

Mass Flow Meters

The increasing use of mass flow meters (MFMs) by the bunker industry was one of the major themes of the conference. With the port authorities at Rotterdam and Antwerp-Bruges having announced in October that they would follow Singapore in making MFMs mandatory for bunker deliveries from 2026, the IBIA convention saw wide-ranging discussions of the effect their introduction could bring.

Timothy Cosulich said the meters' cost could be as little as \$0.02/mt when considered over the lifetime of a bunker barge, and that his business had seen gains after their introduction in Singapore in 2017.

Martijn Heijboer of the Port of Fujairah said the Middle East's top bunkering hub was considering bringing in a similar mandate, although the plans were still at early stages.

IBIA's Edmund Hughes suggested that it will be the cost motive as much as the regulatory requirements that will drive the most uptake of MFM systems, with the need to count carbon emissions making accurate bunker delivery measurements critical.

"We've talked about carbon pricing coming; companies, when they're going to pay the carbon price, will want to make sure they're just paying what they need to pay and not anything else," Edmund Hughes said.

"I think it's going to become a commercial imperative as much as a regulatory one."

Some questions were also raised over whether the licensing system at Rotterdam and Antwerp-Bruges would be robust enough to prevent attempts at tampering with the meters.

"The MFM is a device -- if you want to find a way around it, you can," Timothy Cosulich said.

"It's the institution behind it -- in Singapore that's the port authority -- driving the enforcement, the implementation of the rules and punishments and so on.

"My strong wish and encouragement for the port authorities of the ARA region is really that this enforcement is there, that the punishment is there for those that break the rules."

In a pre-recorded video played to the conference, Thomas Ting of the MPA reminded the convention that Singapore is not finished with adapting its MFM regulations. The next stage of its plans will involve installing data-loggers on each



bunker barge, automating the flow of data from the MFM to the regulators and further cutting down on human error.

Digitalisation

The digitalisation of the bunker industry was another major theme under discussion, and one closely connected to the uptake of MFMs.

Kenneth Juhls of ZeroNorth Bunker, chair of IBIA's digitalisation working group, presented the results of a recent IBIA survey on the topic.

The online survey was carried out in October, open to all industry stakeholders, and had 60-70 respondents.

Of those, more than 80% said they either had a digital strategy already or were working on one. Most also said they were investing enough in digitalisation, and that they knew which service providers could assist them with their strategy.

But when asked to identify the main barriers for a successful digitalisation of the industry, concerns over transparency joined 'change management mind-set' as the top two responses by participants.

They were also the only two choices selected by more than 30% of respondents, besting other options such as 'solutions not good enough', 'lack of investment capacity', 'silo-thinking', 'complex operational business' and 'no existing standard'.

Transparency comes in many forms, and Kenneth Juhls noted a key factor for many companies is that their data is commercially sensitive.

"It's clear that there is resistance to transparency; I don't necessarily think that's a bad thing, obviously everyone wants to protect their business, and there's a commercial edge in what we all do."

Some discussions at the event also pointed to a level of 'app fatigue' among bunker buyers – with several major marine fuel firms now having their own digitalised supply offering, some buyers are now

expressing frustration about having to log in to a wide variety of online services to procure fuel.

Decarbonisation

Finally, decarbonisation remains the largest elephant in the room at any gathering of the bunker industry.

With the IMO's carbon intensity indicator regulation now in place, a revised global GHG strategy adopted this year and the EU's emissions trading system for shipping around the corner, the reality of decarbonisation is starting to bite.

Simon Bennett, deputy secretary general of the ICS, set the scene with a warning of what faces shipping if it cannot keep up with its commitments on GHGs.

"The first thing to understand is that the governments are really serious," he said.

"If we fail in decarbonising our sector, then ultimately we're going to be faced with the rationing of maritime transport.

"As well as being a disaster for our industry, that will be a disaster for global prosperity."

Cem Saral, CEO of Cockett Group, said we could see a change in the marine fuels supply landscape as alternative fuels come to dominate.

"Right now we have the three hubs of Singapore, Rotterdam and Fujairah.

"When we look 10-15 years ahead, at the alternative fuel landscape that we see today, such as ammonia, methanol and LNG, a significant portion does not overlay on the map we have today.

"We are looking at the global south as one of the key drivers of alternative fuels in terms of production."

And Bunker Holding's Maria Skipper Schwenn said she wanted to see more focus on the shipping firms slower to move in the decarbonisation race.

"Most of you here in this room that are involved in bunker trading are dealing with

the second or third movers; by second movers I mean those that are just looking perhaps to do a trial of biofuel but nothing more than that," Maria Skipper Schwenn said.

"And then third movers are the ones that are still just sitting there, ducking their heads and saying, 'Oh, this will probably go away, we're not going to do anything until you really force us to.'"

"These second and third movers, they constitute the majority of the world fleet; and not only that, but they're also made up of small and medium-sized enterprises only operating about five vessels per company.

"For them to look into this huge regulatory hurricane just around the corner, it's a huge elephant for them to digest.

"We're not going to see this transition succeed unless we keep the second and third movers on board."

During the Convention, there were several outstanding presentations from IBIA members. A highlight was Clement Sim, Marine LNG Business Development Manager at Shell, who captivated the audience with a detailed presentation on LNG and its role in maritime decarbonisation. Additionally, Filimon Antonopoulos, Managing Director of Tallon Commodities Ltd., delivered an insightful presentation focusing on the Management of Carbon Emissions and Fuel Prices in the Shipping Industry, further enriching the event's discourse.

The IBIA Annual Convention serves as a vibrant platform for industry professionals to share ideas and gain insights during various sessions. Additionally, it provides valuable moments during lunches and coffee breaks for attendees to network with familiar colleagues, meet new partners, and engage in fruitful conversations. A highlight of the event was the Convention Dinner, where delegates enjoyed an exquisite al fresco dining experience on the back deck of the QE2, culminating in a delightful and memorable evening.





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NAVIGATING GROWTH, ENGAGEMENT AND OPPORTUNITIES

IBIA continues to help Africa's bunker industry advance, focusing on growth, training, and expanding our geographical footprint

As the Africa Regional Manager for IBIA, I am pleased to report on our recent activities, upcoming events, and strategic outlook for the future of the bunker industry in Africa.

Following the success of the recent IBIA Africa Conference, it's clear that our collaboration with regional working groups and authorities has been instrumental in promoting IBIA in the region. The Regional Board is currently in the process of defining IBIA's level of involvement with these groups. Our active participation in pivotal regional meetings is crucial. They provide IBIA with the platform to directly support members, ensure our voice is heard and keep abreast of unfolding discussions. IBIA will continue to serve as a guiding source of information, pooling in experts who can provide invaluable advice.

Our commitment to member engagement continues as we plan to facilitate regional online member meetings. This will not just cater to our existing Africa membership, but also invited authorities and potential members. We are also keen to have speakers who can impart their experiences in effective collaboration with regulators and in elevating bunker standards.

One area where we have recognised the need and have seen positive impacts is training. The success of our training initiatives in Ghana is testament to this. We are currently exploring potential courses and venues to expand this success and cater to a broader African audience.

While the growth trajectory for IBIA Africa membership has been encouraging, there are untapped regions poised for potential growth. We have identified North Africa and East Africa as these regions where our team is actively working to establish contacts for potential new members.

IBIA's commitment to Africa is unwavering. We are driven by the goal of ensuring that the bunker industry thrives, grows, and adapts to the unique challenges and opportunities presented by the African bunkering scene. As we chart our course, your feedback, participation, and support remain invaluable.

Should any of our members wish to engage further regarding the above, you are encouraged to contact me directly. If you would like to engage with the IBIA Africa team, or become a member of IBIA, explore opportunities to be a speaker,

sponsor or find out more about our local activities, engagements, and events, please contact me.

I would like to take this moment to warmly thank our Africa Membership for your support and continued dialogue this year and wish you all a healthy and happy festive season.

Tahra Sergeant
Regional Manager (Africa)
& Global Head, Events
tahra.sergeant@ibia.net
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USE OF MASS FLOW METERS (MFM)

I am pleased to note the announcement from the Port of Rotterdam and Port of Antwerp-Bruges mandating the use of mass flow meters (MFM) from 2026 onwards. IBIA has always been vocal in our support of greater transparency in the bunker sector, with the use of MFM as one of the solutions

As the digitalisation agenda continues to develop within the bunkering sector, the use of MFM will greatly support the streamlining of end-to-end bunkering processes including the use of electronic bunker delivery notes (BDN).

On this note, to further enhance the efficiency and transparency of the bunkering process in Singapore, the Maritime & Port of Authority of Singapore (MPA) has announced the launch of its digital bunkering initiative to implement electronic bunkering processes and documentations (including e-BDN) effective 1 November 2023. Singapore has conducted more than 100 trials since January 2023, involving more than 20 companies in the bunkering ecosystem.

Although this initiative will not be a mandatory requirement until end of 2024, MPA will use this period from now till then, to gather feedback to improve these solutions and work on other enhancement including automating the data flow from MFM.

During this period, licensed bunker suppliers, ship owners, operators and crew are encouraged to make use of mobile and cloud solutions approved by MPA to complete and issue the digital bunkering documents – these 'whitelisted' digital solutions will automatically relay bunkering-related information required by MPA, thereby streamlines workflow, increased productivity and enhances crew safety by eliminating the need for physical transfer of documents between vessels.

To support these developments and to facilitate digitalisation of current bunker processes within bunker supply chains, the industry-led Singapore Standards Council is developing a new specification for digital bunkering supply chain documentation and revising the existing SS648:2019 Code of Practice for Bunker Mass Flow Metering to incorporate electronic bunkering documentation.

Singapore, being a global bunkering hub, has always set the standard for other bunkering ports to follow, and we can look forward to more ports taking the lead from Singapore when it comes to embracing digitalisation within the bunkering sector.

Methanol Developments in Asia

Q3 of 2023 appears to set the pace for methanol bunkering in Asia. After the successful completion of a methanol bunkering supply in Singapore, it was announced that a methanol and ammonia bunkering standard that will cover refuelling, operational and safety requirements for the delivery of methanol and ammonia is being developed. The standard for methanol bunkering will take into consideration the experience Singapore has had from the methanol bunkering pilot and is expected to be ready by 2025.

In China, it was announced that, initiated by Chibusco, the China Petroleum Circulation Association (CPCA) and the China Entry-Exit Inspection and Quarantine Association (CIQA) have released their first standards for methanol bunkering operations and quality control.

The Marine Methanol Fuel Waterborne Refuelling Regulations and Marine Methanol Fuel are the first standards in China for methanol bunkering operations and quality controls.

The China Classification Society (CCS) and Bureau Veritas (BV) have also issued Approval-In-Principle (AIP) certificates to Chibusco and Cosco Shipping Heavy Industry for a 7,800-ton dual-fuel powered green methanol bunkering vessel.

We are seeing an accelerated pace from the industry in this region, in their decarbonisation efforts and we look forward to supporting our members on this front – especially when it comes to training. I hope to provide an update on our training plans in the next issue.

Siti Noraini Zaini
Regional Manager, IBIA Asia
+65 6472 0916
Siti@ibia.net
www.ibia.net





JOINT IMO INITIATIVE

IBIA and ICS submit fuel standard proposal

IBIA and the International Chamber of Shipping (ICS), which represents over 80% of the world's merchant fleet, and which represents the global bunker industry, have submitted a joint proposal to the shipping industry's global regulator - the UN International Maritime Organization (IMO) - for a Global GHG (greenhouse gas) Fuel Standard.

Following the agreement in July 2023 by IMO Member States of a net zero GHG emission target for shipping, and that a new suite of GHG reduction regulations should be adopted in 2025, ICS and IBIA have submitted their simplified proposal to the next round of IMO negotiations in March 2024.

The objective is to progressively reduce the GHG intensity of marine fuels and create a market for the production of zero and near zero GHG fuels, to help ensure achievement of the net zero GHG emissions target by 2050.

Within the proposal, ICS and IBIA set out draft amendments to Annex VI of the MARPOL Convention in terms of maximum permitted GHG intensity of marine fuels in 2030, to be followed by an aggressive tightening of this standard in 2040.

In addition to helping to make achievement of net zero emissions possible, the initial GHG intensity standard set for 2030 will support shipping to meet the new IMO target (also adopted by governments in July 2023) that between

5% and 10% of the energy used by shipping must be generated by 2030 from zero or near-zero energy sources. The exact standard for the required reduction in the GHG intensity of marine fuel would be subject to negotiation between governments.

Significantly, the ICS/IBIA proposal provides for a crucial streamlined voluntary "energy pooling compliance mechanism" to address the possibility of fuel producers being unable to supply new fuels in sufficient quantities. This will allow for ships to continue to trade should sufficient quantities of fuels of the required GHG intensity not be made available by energy producers, but without increasing the sector's total GHG emissions.

Simon Bennett, Deputy Secretary General of the International Chamber of Shipping, explained: "The International Chamber of Shipping recognises the importance of meeting our decarbonisation targets, not only for shipping but for the world. Our joint proposal provides flexibility to enable compliance by ships should fuels of the required GHG intensity not always be available. This simplified approach avoids the need for an overly complex system, as proposed by the European Union, whereby "compliance units" or "remedial units" would need to be registered with or purchased from a central IMO registry."

He concluded: "The proposed method of pooled compliance would be a private arrangement between shipping

companies and would avoid unnecessary administrative burden for governments, including developing countries' administrations whose support will be vital to move forward at IMO."

Edmund Hughes, IBIA's representative at IMO, added: "The bunker industry fully supports an internationally agreed GHG fuel standard for 2030 which will help to create a global market for marine fuels with a reduced GHG intensity, including sustainable biofuels largely supplied as blends which many existing ships are expected to use to enable them to comply. We fully agree with shipowners, as represented by ICS, that the design of the global fuel standard needs to be kept as simple as possible if, as identified by the 2023 IMO GHG Strategy, governments wish to have a workable system in place within the next 18 months, that can be uniformly and consistently implemented and that keeps the administrative burden for bunker operators and suppliers to a minimum".

The ICS/IBIA joint proposal will be considered by an IMO intersessional working group on GHG reduction in March 2024, immediately preceding the next critical meeting of the IMO Marine Environment Protection Committee (MEPC81).

The proposal is designed to support a global economic measure to ensure that they work together to deliver on the IMO's revised strategy.

NEW MEMBERS

CORPORATE A

Bunker Trader

Michael Kietz**The Bunker Firm**

Europe

Trader, Charterer

Francisco Lakanu**Stratos Trading Limited**

Africa

Supplier (Physical), Trader

Joe Tierney**Delta Energy Fuel Supply
& Trading BV**

Europe

Supplier (Physical), Service

Piero Padroni**Krohne Italia**

Europe

Service

Alok Sharma**Inatech**

Europe

Bunker Trader, Broker

Bassam Almahmoud**Aram Petroleum Limited**

Middle East

Ship Owner, Charterer

Justin Murphy**ADNOC**

Middle East

Financial, Trader

Filimon Antonopoulos**Tallon Commodities Ltd**

Europe

Trader, Broker

Oguz Atac**MGN Energy Bunkering LLC**

Middle East

Surveyor, Service

Capt. Bo Huang**Teamhead Marine****Surveyors Co. Ltd.**

Asia

Supplier (Physical), Storage

Roy Meyvis**BB Energy Belgium SRL**

Europe

Port, Storage

Luz Marina Espiau Moreno**Autoridad Portuaria de
Santa Cruz de Tenerife**

Europe

Bunker Trader, Trader

Petros Makris**Pema Corporation Ltd**

Europe

Service

Nikolaos Lazarikos**Milaha**

Middle East

Surveyor

Frederic Verdonck**Verdonck Bunker Surveys**

Europe

CORPORATE B

Trader, Supplier (Physical)

Francisco Lakanu**BFS Trading Fzco**

Middle East

Surveyor

Navin Singh**Viking Marine Services
Pte Ltd**

Asia

Surveyor, Service

Capt. Bo Huang**Amur Marine Survey Pte.Ltd.**

Asia

INDIVIDUAL

Port Authority

Capt. Kavidev Newoor**Mauritius Ports Authority
MPA**

Africa

Bunker Supplier

Alsadik Baaboud**Alsadik Ahmed A Baaboud
Shipping Co.**

Middle East

Storage, Broker

Gnandi Raidou Nanto**BMOG**

Africa

Other

Yinghao Xu**Yinghao Xu**

Europe

Bunker Supplier, Broker

Ioanna Skalkou**Enegex Shipping Fuels**

Europe

Charterer, Ship Owner

Pedro Vergara**Cia Naviera Valparaiso SpA**

Americas

Other

Jacqui Phillips**Awyr Las Software Ltd**

Europe

Supplier (Physical), Ship Owner

Weng Fei Tang**Seven Seas Oil****(Hong Kong) Limited**

Asia

Trader, Ship Owner

Mahmut Antalyali**Sima Petrol S.A.**

Europe

Trader, Ship Owner

Fabioula Antalyali**Sima Petrol S.A.**

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Agent, Trader

Gregoire van Den Abeele**Vertis Environmental
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Imran Shaikh**Atlas Oasis**

Middle East

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REGULATORY ROUND-UP

Edmund Hughes reports on developments at the IMO

It is a great pleasure to find myself writing this as your representative to the IMO. I will not only seek to relay constructively the position of IBIA to the membership of the Organisation but also to ensure that the voice of the bunkering industry is heard and acknowledged across the wider maritime sector in the coming energy transition for shipping.

2023 IMO GHG Strategy

Much has been said and written already about the adoption by IMO last July of its revised 2023 Strategy for the Reduction of GHG emissions from ships. This strategy is a momentous moment for international shipping as it sets the agenda for the sector for the next couple of decades. Politically it is very significant as, unlike the initial strategy adopted in 2018, this instrument was adopted without reservation. That means 175 Member States all agreed that this is the policy template that international shipping should follow to achieve net-zero GHG emissions from international shipping by or around 2050.

Whilst this is not a 'mandatory' instrument, which is the way international shipping is regulated, it would be a significant misjudgement to think that this will not have lasting impact. That impact, will be seen most quickly in the adoption of "mid-term measures" by 2025 which will be mandatory and consist probably of "a goal-based marine fuel standard regulating the phased reduction of the marine fuel's GHG intensity" (a technical element) and possibly "an economic element, on the basis of a maritime GHG emissions pricing mechanism".

In addition to the "net-zero" mid-century goal, the 2023 Strategy identifies some other clear goals that will be the focus for this decade including that by 2030

– at least 5%, striving for 10%, of fuels, technologies, energy sources to be 'zero or near-zero GHG emission' and carbon intensity of fuels to decline over this decade. I have already identified that a global standard for GHG fuel intensity is likely to enter into force by 2028. In addition, to respond to the call for greater operational energy intensity the Carbon Intensity Indicator (CII) requirement is likely to be strengthened.

As I see it there are three main elements to the decarbonisation of shipping: the ship (including the seafarer), the port and the fuel/energy. If you draw a Venn diagram of these elements then bunkering is right at the centre. The implications are therefore clear in that going forward use of alternative fuels is expected to grow: biofuels, methanol, LNG then (after 2030?) hydrogen and ammonia. Most significantly is that as part of the 2023 Strategy upstream emissions from production and supply of fuels ("pathways") are to be accounted for in future regulations and those pathways will need to be verified to demonstrate compliance with regulations. Indeed, to reflect that MEPC in July adopted resolution MEPC.376(80), Guidelines on Life Cycle GHG Intensity of Marine Fuels (LCA).

What are the implications for the bunker operators?

In addition to the EU-ETS (2024) and FuelEU Maritime (2025) requirements a likely global GHG fuel standard and a possible global "GHG emissions pricing mechanism" will increase the value on accurate and transparent fuel data as shipowners/fuel buyers and authorities increase their scrutiny of fuel data bringing additional risks. The consequence will be greater adoption of Mass Flow Metering with digitalisation and the use of AI offering potential solutions for bunker operators.

Biofuels and CII

Biofuels have an important role to play in the decarbonization of international shipping, certainly in the short to medium term.

Under IMO regulations for the CII the Guidelines (G1) identify that CO₂ emission conversion factor (Cf) is to be provided by fuel oil supplier, supported by documentary evidence. However, due to the lack of guidance for biofuels, and following concerns expressed that some flag States were applying a carbon factor of zero to ships in their fleet that were using biofuels that could lead to flag shopping, on 1 October 2023, Interim Guidance of Marine Biofuels came into force. This guidance covers biofuels that have been certified by an international certification scheme, and that provide a well-to-wake GHG emissions reduction of at least 65% compared to the well-to-wake emissions of fossil MGO of 94 gCO₂e/MJ (i.e. achieving an emissions intensity not exceeding 33 gCO₂e/MJ) according to that certification, may be assigned a carbon factor (Cf) equal to the value of the well-to-wake GHG emissions of the fuel according to the certificate multiplied by its lower calorific value (LCV).

One of the key reasons why sustainable biofuels are needed is because for many ships trading the oceans today, in addition to taking up as much of the low hanging improvements in energy efficiency as possible, the only solution to improving the Carbon Intensity Indicator (CII) for the ship is to adopt biofuels. For ships already rated E or even D they are going to be under increasing pressure, if not by enforcement authorities, then by charterers and other external stakeholders to improve their operational carbon intensity.



As highlighted on the previous page, in response to the 2023 Strategy the CII is likely to be strengthened and a review is ongoing for the CII requirements. IMO has invited international organisations to collect data and submit information and proposals during the current data gathering stage. For those of you who think this regulation is proving a little challenging to implement the review may bring some respite for certain ship types but at the same time it is likely to see the thresholds for achieving the ratings strengthened to bring the regulations in line with the 2023 Strategy "levels of ambition" for 2030.

The uptake of biofuels has also brought unintended consequences for bunker operators in relation to the carriage of biofuels. Bunker barges carrying up to B24 can remain certified under MARPOL Annex I. However, for B25 and higher blends then the bunker barge needs to be certified under MARPOL Annex II as the biofuel is considered a "noxious substance". Ironically, the IMO itself in recognising the growing use of biofuel blends issued

guidance under MARPOL Annex VI that blends up to B30 will be regarded in the same way as regular oil-based fuels. Use of B30 to B100 is also permitted for "engines certified in accordance with regulation 13 of MARPOL Annex VI which can operate on a biofuel or a biofuel blend without changes to its NOX critical components or settings/operating values outside those as given by that engine's approved Technical File."

As with the interpretation of carbon factor for biofuels, without IMO guidance we are likely to see varying interpretations of requirements occurring especially when we are dealing with matters under the sole jurisdiction of a national authority and the activity is taking place in territorial waters/inland waterways/port limits. The categorisation of biofuels have been prepared for the carriage of biofuels as cargo for transport internationally. There may be a case for an understanding to be agreed for the bunker industry for supply to ships for use as fuel so as not to be put in place an impediment to the uptake of biofuels by ships seeking to reduce their

carbon footprint...those ships cannot be supplied with biofuels if bunker barges cannot carry them!

Final Word

Finally, it would be remiss of me to fail to acknowledge the excellent work of my predecessor, Unni Einemo, who represented you so well at the IMO especially leading up to and following the introduction of IMO 2020. I very much hope to be able to continue that good work going forward.

A fair wind and good seas to all.

edmund.hughes@ibia.net



COMMITMENT AND RESPECT MATTER

IBIA board member Valeria Sessa, of Italian bunker trader ReSeaWorld, explains to David Hughes why relationships are so important to a family bunkering company

DH: How did you get into bunkering? Can you tell us something about your background and early career? Was bunkering a deliberate choice or did it just happen?

VS: My experience in the bunkering sector goes back many years. In my previous employment I made executive decisions regarding bunkering and I handled the supply for a large fleet. Thanks to this experience, my know-how and relationships developed over time. In 2016 I founded ReSeaWorld, a family company and a matter of personal pride.

ReSeaWorld is a small company in a big world, founded on the principle of serving the customer with the utmost respect and commitment to gain the best mutual satisfaction. Relationships have been and will always be our true family and company principles. Respect for our partners, both suppliers and customers and our competitors too, represent the pillars that have allowed us to be appreciated and valued on an international level. I find the people in this industry share a great passion for the sea and for our bunkering sector. For me, that's a real bonus.

DH: What are your current roles and responsibilities?

VS: I am the CEO of ReSeaWorld and my goal is to grow it more and more and for it to be recognised around the world for its style and competency. I want it to be a success especially because it is a company comprised of young people. I strongly believe in them and in a future that is being built day by day thanks to them and their energy. At our company professionalism is not just a standard, it is a guiding principle. With a foundation built on years of industry experience, we pride ourselves on delivering top-tier services.

Another role which I happily and proudly undertake is being a member of the IBIA Board of Directors, an invaluable experience from all points of view.

DH: You have long been involved in IBIA and are now on the board. Why is IBIA worth devoting time and energy?

VS: I have been a great supporter of IBIA since Antonio Cosulich invited me to participate in the prestigious annual IBIA Gala Dinner in London many years ago. I am profoundly grateful to him, a top professional of our sector.

IBIA allows us the opportunity to be in contact with people from all over the world who share the same passion for the maritime world and the bunkering industry. In the bunkering industry there is a need for courage. We have a duty to face the challenges of the future. If you are an IBIA member you are never alone. IBIA is playing an important role in everybody's interest to help the sector's operators perform in the best possible ways to decarbonise according to IMO guidelines. This is being achieved through high level cross-comparisons due to the active participation of IBIA members, who believe in the power of our association.

We know how important the value, the history, the enormous contact networks and the know-how of those who are part of IBIA. It represents the most important voice of the bunkering industry. Not only that, IBIA's strength and influence comes from each individual member. Together they form a single and unique global force. I am a great IBIA supporter, and I don't hide my passion for the association, having been a part of it for many years. Thanks to IBIA you enhance your skills every day, meeting new people thanks to working groups, conventions around the world, training sessions, networking and enjoying each other's company. In this way, you can face the challenges and obtain the best results for the shipping industry in everyone's interest.

DH: We are witnessing rapid change in the shipping and bunkering industries. Can you please sketch out what you see as the main challenges facing the industry and the implications for IBIA.

Perhaps you could mention the Mediterranean market and the implications of the ECA.

VS: Well, there are different challenges that the sector must face in this moment. The most imminent ones are due to a regulatory landscape that keeps changing. It can be fragmented and heterogeneous depending on institution or country. The goal is very noble, and it is imperative to decarbonise the maritime industry.

We have the technology, the know-how and the will to obtain great results but it is fundamentally important to receive the support of institutions to have a level playing field. Another big challenge is the worldwide adoption of mass flow meters (MFM) following the lead of Singapore. The use of MFM is getting more and more important in ARA range.

MFMs help maintain transparency and will contribute to the digitalisation of bunkering processes. This is a big change, and I am monitoring its evolution closely to advise our customers who are looking for answers.

There is also the adoption of biofuels and green fuels. They pose many challenges, one being the number of alternatives that are currently available. One thing is for certain, the adoption of these alternative fuels is inevitable. For sure the options will become clearer as time passes by, but the effort to decarbonise starts now. This is especially so since the entire Med area will be an IMO Emission Control Area (ECA) by 2025. This poses challenges on several levels, from availability of green fuels through to compatibility with existing engines, and logistical issues for physical suppliers regarding delivery, storage, and production.

DH: Given all the changes and challenges, especially with the imperative to get to net zero, how do you see the industry looking in 10 years' time?

VS: It is already obvious that the order book for vessels that use alternative fuels instead of conventional ones will increase during the next few years. Already many 'green vessels' are now sailing our seas. By 2035 demand for conventional fuels will decrease while newbuild vessels will adopt LNG as fuel, since it is already available. The most immediate solution to decarbonise is the adoption of biofuels, which I believe will be used more and more in the next few years. I think the use of ammonia as a marine fuel will grow but there are some issues regarding its toxicity. Hydrogen is very promising but there are serious challenges with its storage as a liquid.

All in all, we will monitor the evolution of the landscape, assisting our customers with the utmost commitment, always being thankful for their trust and facing the future together.



ReSeaWorld CEO - Valeria Sessa



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The **IBIA Basic Bunkering Course** is a programme of training modules designed to introduce new entrants or staff with limited knowledge of the bunker industry to the most important aspects of the bunker industry.

It consists of 5 modules each lasting just over 1 hour presented by IBIA Board member, Nigel Draffin, the renowned bunker industry expert, Author of 12 books on Bunkering.

The course materials have been peer reviewed by members of the relevant IBIA Working Groups.

The **Online training** course is recorded video content, it is not live. The duration of each module is up to 60 minutes.. The modules can be attended as stand-alone modules, however students will gain the best value by taking all five modules in the order suggested. On completion of the course, students will receive the '**IBIA Certificate of Attendance**'.

Nigel Draffin



Consultant and IBIA Board Member



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THE EU ETS, COMPLIANCE AND OPPORTUNITIES

Frederic Bouthillier and Gregoire Van den Abeele from Vertis Environmental Finance's shipping desk explain what the inclusion of maritime transport in the EU ETS will mean for shipowners and bunker suppliers

The incorporation of the maritime industry into the EU's Emissions Trading System (EUETS) in 2024 will force the sector to adhere to compliance obligations in order for the EU to reach its climate targets. While the sector is about to embark in the world's largest structured emissions trading scheme, shipowners and bunkers have a myriad of opportunities to explore.

Who is impacted?

Ships of more than 5,000 GT transporting cargo or passengers for commercial use are required to submit a Monitoring, Reporting and Verifying (MRV) report to the authorities. Under the new EU ETS scope for shipping, they will also be required to surrender their 2024 CO₂ emissions, in 2025. From 2025, the MRV will also include offshore vessels and cargo ships between 400 GT and 5000 GT. However, a review is to be done by the European Commission in 2026, to evaluate the need to include additional vessels in the ETS by 2027.

Which emissions must be accounted for?

Not all ships coming under the scope of the ETS will have to surrender the same number of emissions depending on the nature of their voyage. For voyages within EU ports of call, 100% of their emissions will have to be surrendered. For voyages either leaving or arriving in EU ports of call, 50% of their emissions will have to be surrendered. However, if by 2028 the IMO doesn't adopt a measure to reduce greenhouse gas (GHG) emissions that the EU deems sufficient, the European Commission will review the possibility of increasing this percentage.

Most industries were given free allocations of allowances to ease the transition into the ETS. For shipping, instead of free allocation, the compliance obligation will be phased in over three years. The following percentage of verified emissions will have to be surrendered: 40 % for 2024; 70 % for 2025 and 100 % for 2026 and each year thereafter.

We also have what can be considered a phase-in of GHG included in the MRV and ETS. From 2024, methane (CH₄) and nitrous oxide (N₂O) will be included in the MRV. We will have to wait until 2026 for the inclusion of these two additional greenhouse gases to the ETS.

What impact on the market?

Several factors affect the EU ETS fundamental balance beyond the extension to the shipping sector. The shipping sector is estimated to contribute 3% to 4% of the EU's carbon emissions. We expect a total of around 90 million tonnes of ETS-covered emissions in 2024. As the phase-in scenario allows for smoother compliance obligations, it will result in around 36 million tonnes of CO₂ (or 40%) facing surrendering obligations in 2025 and increasing gradually up to 2027. On the other hand, maritime emissions are expected to remain stable at around 107 million tons by 2030.

To accommodate the additional emissions, an extra supply of 78.4 million tonnes EU allowances (EUAs) will be introduced in 2024, gradually decreasing over time. However, due to phased-in obligations, there will initially be a structural imbalance between supply and demand. To best reduce this imbalance, the excess supply

will be offset by cancellations from the supply side. The net supply of allowances earmarked for shipping will decrease between 2024 and 2026. From 2025 onwards, the market is expected to turn short, with a significant squeeze of around 68 million EUAs in 2026, hence a bullish factor in the overall EU ETS market.

How to acquire EUAs?

Buying, selling and lodging emissions allowances in a cost-effective way is key to a successful trading strategy. Acquiring EUAs can be a headache for shipping entities, with multiple entry points into the market and complex administrative procedures. Bunker suppliers, who are not required to open a GHG Maritime Operator Holding Account (MOHA), can now open a GHG Trading account. Although this account will not allow you to surrender EUAs for compliance purposes and will be restricted to certain Union Registry requirements, bunkers will be able to boost their competitiveness and provide EUA covering services to their clients.

Because of the added cost of direct access to EUA market exchanges - EEX and ICE - and limitations due to license procurement and eligibility criteria, shipping entities turn to trading counterparts, such as Vertis Environmental Finance, to assist them in developing an EU ETS strategy. By combining the EUA trader's advising and purchasing strategies with the bunker suppliers' service offering, both contribute to facilitating the compliance obligations of shipping entities.

For more information, contact shipping@vertis.com.



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Office 2001, Saba Tower 1, JLT
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Fax: 00971 4 4350505
E-mail: bunkers@oil-marketing.com

12 Kithiron Street, Alimos 17455
ATHENS, GREECE
Tel: +30 2109609860
Fax: +30 2109609861
E-mail: bunkers@oil-marketing.com

15-213, 533 Upper Cross Street,
SINGAPORE 050533
Tel: 0065 6222 4028
Fax: 0065 6222 4027
E-mail: singapore@oil-marketing.com

WEB: WWW.OIL-MARKETING.COM



THE BIMCO & IBIA SHIPMASTER'S BUNKERING MANUAL 2022

The Shipmaster's Bunkering Manual 2022 is the first practical industry guide for both owners and suppliers, seeking to create a common understanding of best practices when bunkering to facilitate a smoother process and safe bunkering globally

The manual is a unique result of cooperation between IBIA and BIMCO to create insight and practical understanding of bunkering across the shipping sectors.

Bunkering operations are routine, critical and high-risk operations which require accurate planning from both the owner and supplier to ensure a safe and successful operation. The publication consists of background information as well as checklists and key notes for the entire process for shipowners, masters and crew on how to prepare, execute and follow up on bunkering, including what to do when it goes wrong.

Totalling 4 chapters and phases of the bunkering process, the manual covers the following topics:



Chapter 1: Background insight on fuel types and key regulation

Everything you need know from fuel oil types, safety, and environmental regulations to ISO standards and contractual issues related to bunkering.



Chapter 3: Bunkering procedures

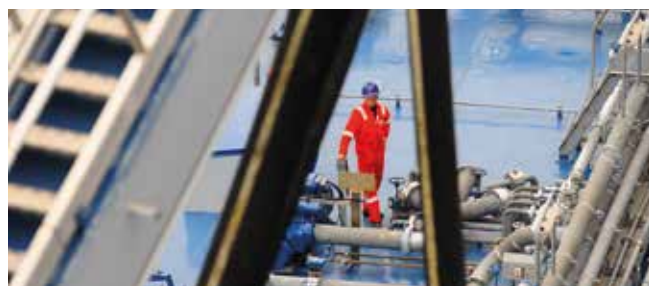
Bunker sampling is one of the most important aspects of bunkering. This chapter covers preparations, practical issues and what to do if something goes wrong. Details of the role each stakeholder ashore and on board undertakes during the process including actions required before, during and after the bunkering.

The book is available to buy from Witherbys on this link:

<https://shop.witherbys.com/shipmaster-s-bunkering-manual-2022/>

IBIA members receive a 20% discount on all publications.

Please enter "IBIA" in the "Coupon/Gift Certificate" box to receive your 20% IBIA member discount.



Chapter 2: Origin and supply chain of marine bunkers

An overview of bunker blends before the ship arrives for bunkering followed by a detailed description of the ship's preparation and planning prior to bunkering. Advice is also given on how to handle a situation if compliant fuel is unavailable in a specific port. Paperwork including the bunker delivery note and certificates of quality are described and recommendations are given that aim to help to use them correctly.



Chapter 4: Calculation of bunker quantity and after completion procedures

Details on how to create a solid background for calculating the bunker quantity and determine if the ordered bunker stem has been delivered. For ships carrying equipment to undertake onboard testing of marine fuels, testing procedures are referred to and detailed description of how to interpret test results provided. Keeping an accurate and up to date oil record book is, together with the bunker delivery note, important as records for internal and external use for example during port state control.



Cosco sees methanol as the fuel of choice for its future vessels. ©Cosco

TWO SYSTEMS

Ship operators and bunkerers in China and Hong Kong are taking somewhat different routes towards a greener future from each other, as John Rickards writes

With the Chinese government joining the drive to decarbonise, and having already placed an order for a dozen 24,000 TEU box ships able to run on it, China's state-run giant Cosco has put its weight firmly behind green methanol as a near-future fuel.

In late September, the company accounts showed a cooperation agreement with State Power Investment Corporation Limited, Shanghai International Port Group, and China Certification & Inspection Group (CCIC) to construct a "green methanol industrial chain", which encompasses the production, transportation, refuelling, and certification of green methanol for ships. In a statement, Cosco said: "[This] represents a significant step towards the application of new energy and the green transformation of the shipping industry."

It added: "The adoption of green methanol fuel is a crucial step for the shipping industry to achieve environmental sustainability... The global order for methanol-powered ships has exceeded 200. Establishing a green methanol industrial chain is not only necessary for shipping companies to align with the new trend of green, low-carbon, and intelligent shipping, but also to offer customers sustainable and eco-friendly global supply chain logistics services. Moreover, it serves as a significant initiative to develop green and low-carbon industries and drive the transformation and advancement of the industry towards high-quality development."

The four companies aim to use their relative advantages in their respective fields to make this industrial supply chain a success, in a way "that meets both domestic and foreign green certification standards", driving the implementation of the first batch of green methanol production projects in China.

Cosco didn't close the door on alternatives however, suggesting the plan could also act as a launching point to explore other green fuels for shipping - though reading between the lines, it seems most likely those would be other hydrogen-based options rather than anything deviating too far from the same production process.

SIPG, for its part, said: "In recent years, Shanghai Port Group has continuously promoted the construction of green ports to help the decarbonisation process of the Hong Kong [transportation] industry. It not only realises the synchronous filling function of bonded liquefied natural gas, but also actively invests in the promotion of new fuels such as green methanol. It is committed to building Shanghai Port into a clean energy fuelling centre and promoting the high-quality development of Shanghai International Shipping Center."

Shortly after this announcement was made, Cosco's bunkering and services arm Chimbusco launched what it said are the first green methanol bunkering standards for China, the launch of which "completes China's first green methanol refuelling technology chain".

The standards will apply to the company's 7,800-tonne dual-fuel green methanol bunkering vessel design which had just been awarded Approval In Principle certification by Bureau Veritas and China Classification Society - "setting a solid technical foundation for massive production in the future", the company said.

According to BV's senior VP Alex Gregg-Smith, this vessel is the first of its kind designed in China and "represents a significant milestone" in the shipping industry's decarbonisation efforts as well as promising progress in the construction of the methanol supply chain.

At the same time, Cosco has also linked up with another class society with the aim of making its LNG fleet carbon-neutral by 2040. Lloyd's Register will work with Cosco Shipping LNG to formulate and assess the decarbonisation pathway for Cosco's existing LNG carrier fleet. As part of the project, LR will support analysis of COSCO's fleet operations characteristics and carbon emissions, looking at future carbon reduction energy transition practices alongside future fuels, energy efficiency technology and retrofit plans.

LR's commercial manager for greater China, Sau Weng Tang, said: "The decarbonisation of our industry is going to require open collaboration between the entire maritime value chain. This is why projects and partnerships like this are so important, they



provide an opportunity for fleet operators to thoroughly analyse the options available to them to enable them to reach their own and industry mandated requirements for maritime decarbonisation."

"LR is proud to work alongside one of the key players in the LNG sector in Cosco and we look forward to providing our technical expertise as a trusted adviser on this project to ensure Cosco can successfully navigate their journey towards a carbon neutral fleet by 2040."

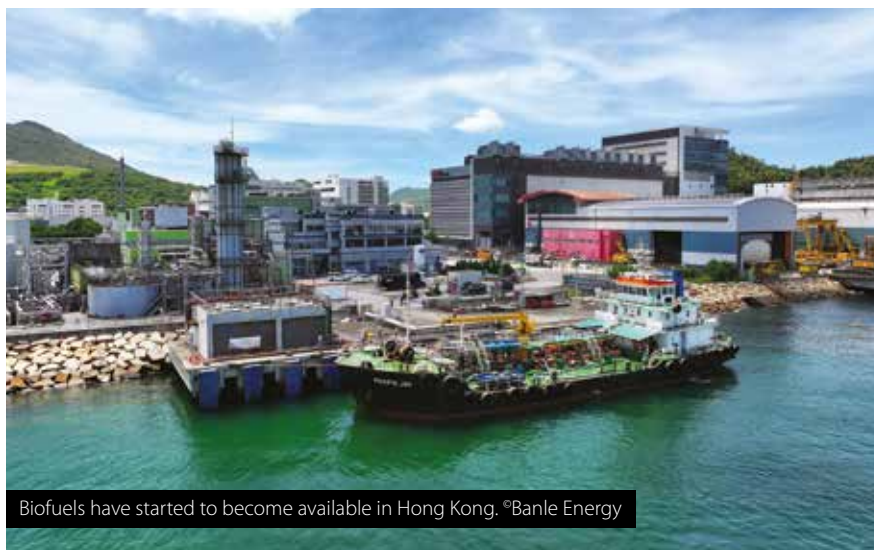
The intended project would see the further development of COSCO's fleet capacity, future energy adoption and efficiency transformation, "based on the shifting landscapes of world trade and the development planning of shipping companies".

CSLNG general manager Lin Nan added: "In the context of IMO maritime decarbonisation strategy, CSLNG, as an international LNG shipping company, Cosco will endeavour to fulfil the responsibility and accountability to achieve our LNGC fleets' carbon reduction and provide low-carbon and efficient LNG transportation services for the industry. In this effort, we appreciate valuable cooperation between the industrial chain, including the open support from the expertise of LR."

Hong Kong has lagged somewhat behind when it comes to moves away from traditional marine fuels (and even on that front, overall bunker sales volumes continue to drift downwards as Zhoushan in particular eats into its slice of the market through government measures and competitive pricing), but the SAR has at least seen its first deep-sea sales of first-gen biofuel produced in the city.

HK bunker supplier Banle Energy made its first biofuel sale this summer, again with a B24 blend produced by local firm ASB Biofuels.

Banle Energy's CEO and chairman Chia Teck Lim said: "B24 biofuel bunkering operation in Hong Kong is a significant step forward for our contribution of environmental sustainability and for the shipping industry's



Biofuels have started to become available in Hong Kong. ©Banle Energy

efforts to reduce carbon emissions. This sets the stage for the Hong Kong bunkering industry to use biofuels as a means to play its part for decarbonisation."

Chimbusco's HK-based arm Chimbusco Pan Nation also supplied an ASB-made B24 blend, this time to a K-Line bulk carrier in mid-August with Peninsula's Japanese office acting as intermediary. CPN said that since 2021, it has established a "dedicated taskforce to conduct research on alternative fuels, including marine biofuel, which aimed at contributing to a more sustainable shipping industry" and that it was "committed to lead the marine fuel industry to eco-friendly port energy supply and achieving the global decarbonisation goals."

There are the usual caveats about the transitional nature of blended biofuels - CPN took time to proclaim that the pure B100 biodiesel offers up to 84% carbon savings without offering figures for the much lower blended mix (though back-of-an-envelope maths would suggest about 20% carbon savings; better than nothing, but still rather less impressive), while ASB Biodiesel, though commendably given it works purely with the city's waste cooking oil, produces only 6,000 tonnes of B100 per month, not enough to make too much of a dent in maritime demand even if all its products were diverted that way. But the availability of locally made drop-in biofuel is still a step in the right direction and to be welcomed overall.

Wah Kwong, one of the city's largest shipowners, has been making serious efforts to find long-term and larger-scale decarbonisation solutions in recent times. Last year it embarked on a feasibility study with BV and Shanghai Qiyao Environmental Technology looking at carbon capture and storage onboard ships, as well investing an undisclosed amount in an Irish offshore wind company - the company's chairman Hing Chao explained in a side-line interview with Forbes in September that he believed that hydrogen-based fuels were the undisputed future, and offshore power generation would be the way to provide them.

This year it opened a sustainability investment office in London citing the need to be closer to cutting edge technological development in Europe, and in August the company joined forces with a Shenzhen-based AI start-up looking at ways to use machine learning to make ships more efficient. By October, company director Hare Ram Sah was telling the *South China Morning Post* that shipboard CCS was both technically and economically feasible on existing ships, but that a lack of reception facilities at ports and incentives to invest in the technology were holding it back.

Hong Kong might have some catching up to do, but sections of its maritime sector are certainly still looking for solutions.

GETTING WHAT YOU PAY FOR

Singapore has led the world in licensing the bunker sector and mandating the use of mass flow meters (MFM). Now digital and green are its watch words

A recent report into bunkering worldwide included a survey of short deliveries world wide.

The Integr8 Bunker Quality Trends Q3 2023 report (see also Industry News) looked at how much short deliveries are costing ship operators at ports around the world and by how much nominal bunker prices need to be adjusted.

The entries for Singapore are straightforward, no shortages while nominal prices and actual prices are the same. For good measure Singapore prices are generally lower when short measures elsewhere are taken into account.

Gradually ports around the world are following suit, with strong encouragement from IBIA.

While the obvious benefit of mandating MFM has been that buyers of bunkers get what they pay for, it is also becoming clear that metering feeds seamlessly into the use of electronic bunker delivery notes (e-BDN).

So, on 1 November this year, the Maritime and Port Authority of Singapore (MPA) launched e-BDN. Singapore has become the first port in the world to do so, as part of MPA's digital bunkering initiative to implement electronic bunkering processes and documentation.

According to MPA, over 100 trials have been conducted since January 2023, involving more than 20 companies in the Singapore bunkering ecosystem. MPA says that feedback from users will continue to be gathered to improve these solutions with plans to make digital bunkering a mandatory requirement by the end of 2024.

In the meantime, MPA says it will continue to explore and work with the industry on other enhancements, including automating the data flow from Mass Flow Meters.

As part of the MPA initiative, licensed bunker suppliers, ship owners, operators

and crew are encouraged to utilise the mobile and cloud solutions approved by port authority to complete and issue digital bunkering documents.

It expected that digitalisation could save close to 40,000 man-days per year for the bunker industry.

In parallel with the MPA initiative, the industry-led Singapore Standards Council is developing a new specification for digital bunkering supply chain documentation and revising the existing SS648:2019 Code of Practice of Bunker Mass Flow Metering to support electronic bunkering documentation. MPA says it is also working with Enterprise Singapore and Workforce Singapore to support maritime companies in the early adoption of digital bunkering and manpower upskilling.

As well as improving efficiency, digitalisation is also seen as contributing to Singapore's marine emission reduction programme. In August MPA, the Port of Rotterdam (PoR) and 20 partners in the Green & Digital Shipping Corridor agreed to work emissions from international shipping by 20% to 30% by 2030.

Emphasising the digital aspect of the project, Rotterdam and Singapore are the first ports adopting and sharing port and vessel information such as arrival and departure timings in accordance with global standards, namely the IMO & International Hydrographic Organization

(IHO) standards to enable systems interoperability.

Both ports are also promoting the use of electronic bills of lading and digital solutions such as just-in-time planning and coordination to enhance efficiencies and reduce GHG emissions.

The partners in the Rotterdam-Singapore Green & Digital Shipping Corridor are: MPA, the Port of Rotterdam, A.P. Moller Maersk, the Centre for Maritime Studies of the National University of Singapore, Citi, Clifford Capital, CMA CGM, Digital Container Shipping Association, the Global Centre for Maritime Decarbonisation, the Global Maritime Forum, the Mærsk Mc-Kinney Møller Center for ZeroCarbon Shipping, Methanol Institute, MSC, Nanyang Technological University Maritime Energy and Sustainable Development Centre of Excellence, Ocean Network Express, PSA International, RMI, SEA-LNG, Shell, University of Oxford and Yara Clean Ammonia.

Keeping options open

Singapore is backing the development of a range of alternatives as moves it towards decarbonisation

ClassNK, Consort Bunkers, Daihatsu Diesel Mfg Co, Daikai Engineering and SeaTech Solutions International (S) recently concluded a memorandum of understanding (MoU) concerning a joint study on an ammonia fuelled ammonia





From left: Capt. M Segar, Assistant Chief Executive, MPA
 Mikio Kaneda, Managing Director, Daikai Engineering Pte. Ltd.
 Govinder Singh Chopra, Managing Director, SeaTech Solutions International (S)
 Yeo Siok Keak, Director/General Manager, Consort Bunkers
 Justin Yeo Tse Tian, Director, Consort Bunkers
 Masayuki Nosohara, Managing Director, Daihatsu Diesel (Asia Pacific)
 Hayato Suga, Executive Vice President, ClassNK
 Yasushi Seto, Managing Director, ClassNK Singapore

bunkering tanker. The MoU was signed by representatives of all five parties with the presence of an MPA official at the Gastech2023 event held in Singapore.

An MPA statement says: "Amid expectation for using ammonia fuel in pursuit of shipping decarbonisation, bunkering ships for ammonia fuelled ships will play an essential role in the supply chain. As such ships are also anticipated to use ammonia as their fuel, the development of ships that can not only transport and supply ammonia to other ships but also use it as fuel in a safe and efficient manner addressing ammonia-related risks, including its toxicity to humans and corrosiveness to materials."

Consort Bunkers operating bunkering ships in Singapore, the world's largest bunkering port, Daihatsu Diesel developing alternative fuel engines including ammonia, Daikai Engineering providing sales of machinery and marine equipment and after-sales service in the Southeast Asian region; ClassNK, a class society involved in the safety assessment of

ships; and SeaTech Solutions International designing ships equipped with alternative fuel engines, have all agreed to jointly study the concept design of the ammonia fuelled ammonia tanker and the issuance of relevant Approval in Principle.

Capt. M Segar, Assistant Chief Executive (Operations), Maritime and Port Authority of Singapore, said: "MPA welcomes studies, pilots, and collaborations that contribute to the maritime sector's decarbonisation efforts. Joint studies such as the one under this MoU, are useful in bringing together the collective expertise and experience of various leading stakeholders to deepen the industry's knowledge and confidence in handling the new future fuels, and to accelerate the development of future fuel solutions to meet the revised IMO GHG emission ambitions for international shipping"

Meanwhile global energy and commodities company Vitol says it is strengthening its position in Asia's expanding biofuel market, with the delivery of specialised bunker barges to Singapore in 2024.

From early next year, Vitol through its wholly owned subsidiaries V-Bunkers and Vitol Bunkers expects to be able to offer a range of biofuel blends, from B24, B30 and up to B100 if customers request it.

Currently, all vessels delivering bunker fuel in Singapore are oil tankers. These are permitted to only supply a fuel blended with biofuel up to 25% concentration. Any greater and IMO regulations stipulate a 'IMO Type 2 chemical tanker' ship is required.

The first IMO-Type 2 barge ordered by V-Bunkers will be delivered in January, to be followed by several more throughout 2024. Depending on demand, these vessels could also be upgraded to supply methanol. Bio and e-methanol are also significant pathways for the industry to achieve decarbonisation and there have been several specialist dual-fuel methanol powered vessels on order for delivery starting from next year.

Meanwhile the world's first bulk liquefied hydrogen carrier, the Suiso Frontier called at Singapore on 31 August 2023. The vessel berthed at the Shell Energy and Chemicals Park Singapore on Pulau Bukom.

Teo Eng. Dih, Chief Executive of MPA, said at the time: "Singapore announced our National Hydrogen Strategy in late 2022. The properties of hydrogen, and its potential to be produced at scale using renewable sources, makes hydrogen a potential fuel to support the energy transition to a low and zero carbon future. MPA is actively studying the use of hydrogen and its carriers as a marine fuel and welcomes the collaboration with industry players such as Kawasaki Heavy Industries and Shell, as well as our work with our research community such as the A*STAR Institute of High-Performance Computing, to bring the Suiso Frontier to Singapore. This vessel visit has helped to inform the development of safety and operational procedures, and support further feasibility studies and preparations for the deep-sea transportation and receipt of liquefied alternative fuels."



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Rotterdam wants to incentivise hydrogen uptake. ©Maurits Verbiest/CC-BY

ROTTERDAM GOES ALL-IN

Recent moves by the Port of Rotterdam show a clear commitment to zero-carbon fuels, not transitional drop-ins, as John Rickards reports

The Port of Rotterdam Authority has long supported incentive-based initiatives for cleaner shipping. So, it's no surprise that in October it put its weight indirectly behind the Zero Emissions Maritime Buyers Alliance, itself an initiative of coZEV (Cargo Owners for Zero Emission Vessels), which has recently put out a call for proposals for 600,000 TEU of ocean-going cargo to be carried for its members on ships using zero-carbon fuel over three years from 2025.

On October 5, the port announced it will offer a "substantial port fee reduction" for ships that bunker sustainable fuels in Rotterdam, in support of ZEMBA and "recognising front runners in the road to maritime decarbonisation".

The port continued: As part of its ongoing efforts to enable and accelerate the transition to zero-emission shipping, the Port of Rotterdam offers a port fee reduction for these large container vessels when bunkering sustainable fuels in Rotterdam, which can run up to 500,000 euros in total."

Boudewijn Siemons, the Port Authority's COO and interim CEO, said: "It is vital that the shipping industry makes the switch to zero-emission fuels. The ZEMBA consortium has launched a fantastic initiative with a willingness to pay carriers a premium for the use of zero-emission fuels, which are still more expensive than traditional fuels. With the additional

support from our side, we want to give carriers maximum incentive to make this switch."

Rotterdam already extends discounts to more sustainable vessels that score high on the Environmental Ship Index (ESI) and in 2022 launched a "Green & Digital Corridor" project with the Maritime Port Authority of Singapore, which also offers discounts for carriers using sustainable fuels. This means ships using sustainable fuels on the Singapore-Rotterdam trade lane can benefit from financial incentives from both ports as well as ZEMBA.

The element which perhaps raised eyebrows the most, though, came in the qualifying criteria:

"To qualify for the fee reduction, a ship has to bunker alternative fuels in Rotterdam with at least 90% reduction in greenhouse gases, such as green methanol or ammonia. The Port of Rotterdam Authority has also determined that discount does not apply to bio-blended fuel oil, marine gas oil, or marine diesel oil, as that market is already mature in Rotterdam."

Bio-blended fuel has accounted for a slice of 8–10% or so of Rotterdam's sales since GoodFuels, for the most part, brought production of its blended fuels and consequent deliveries up to full commercial volume in 2021 (a year in which there was a huge jump in volumes not repeated since). Volumes did gently

increase last year, but perhaps in that respect, that market could be considered mature, the niche very quickly filled - assuming no other biofuel supplier joins the market, or demand doesn't spike once ETS and similar measures come into force.

But the scheme only applies to fuels with 90%+ carbon reduction anyway, and there are next to no bio-blended fuels, particularly fuel oil, to claim that even in the most optimistic citation-needed products announcement (even Altens' B100 biodiesel, a first-gen fuel produced in France and only just now seeing its first test deliveries to yachts, only claims 90% reduction and that's a pure biofuel, not blended). A claimed reduction of 50% is about the highest for blended fuels, and even that's maybe one to check the maths on. Whether they're 10%, 20% or 30% biofuel blends are still based fundamentally on oil. Better than nothing as a transitional fuel, absolutely, and requiring little to no changes in engines or shipboard operations, but not ultimately a long-term zero-carbon solution.

So, was including this particular point done to avoid any confusion on the part of operators, or was the port employing a degree of hedging against unexpected future developments in the field so the rule will never have to be re-examined? Or to ensure the overall push in terms of energy transition is towards genuinely sustainable fuels such as green methanol, syngas or other renewable hydrogen-derived fuels



Danish shipowners have been keen to help develop hydrogen fuel bunkering guidelines. ©Steve Knight/CC-BY

rather than middle-ground fuels still ultimately based on oil? (Which would seem entirely sensible given the current future outlooks for methanol in particular, of course.)

Asked these questions, a Port of Rotterdam spokesperson remained a little coy on the thinking behind the decision to single out that segment of fuels in this way but did expand on its position somewhat.

"As one of the largest bunker hubs globally, Port of Rotterdam acknowledges that the fuel switch to alternative fuels knows different timelines and challenges for each fuel, that all varieties are needed to decarbonise as quickly as possible and therefore prepares for a multi-fuel future," they told *World Bunkering*.

"The ZEMBA tender is seen as a frontrunner initiative and the port therefore chooses to actively show its support for this development. Since the complete bunker volume in Rotterdam already constitutes of an 8% volume of bio-blended fuel oil, diesel oil and marine gas oil (2022), the port decided to focus this initiative towards fuels that are less mature to promote further maturation of these markets as well and further grow into the multi-fuel bunker hub that can best accelerate and support maritime decarbonisation."

With reports that green fuel supply in the coming few years could well outstrip the fleet able to make use of it, offering

financial incentives for an expensive switch can only be applauded. Still, it'd also be a somewhat poor reflection on the outlook for blended fuels, given their relative ease of use, if 8–10% of the market can be considered peaking.

That said, Rotterdam is very much all set to become a lynchpin in green methanol bunkering for early adopters. Maersk began taking on the fuel in the port over the summer, which will be followed by X-Press Feeders; a supply deal was signed at roughly the same time between the Singaporean operator and green methanol producer OCI Global to provide the company's new dual-fuel container vessels with green methanol ex-barge in Rotterdam when they enter service next year. Nearby Antwerp-Bruges has also seen its first green methanol supply, as the ARA range looks set to be a cornerstone for the fuel's adoption.

At the time of the deal, OCI Global's Ahmed El-Hoshy was described as holding "great expectations for the new fuel type" and expected demand to grow to over six million tonnes annually in the coming years. The company operates currently the only ammonia import terminal in Rotterdam, whose capacity will be upgraded from 400,000 tonnes to 1.2 million tonnes annually. However, once the use of ammonia as a hydrogen carrier and the use of hydrogen-based fuels formed from it take off, OCI Global already has plans in place that would see the terminal capacity increase still further to 3 million tonnes annually.

Given the commitment Danish giant Maersk has put into green methanol and carbon emissions reduction in general, it's no surprise that Denmark's maritime industry has been heavily involved in recent efforts at the IMO to put the regulatory and safety frameworks in place to make wide-scale adoption of the new fuels easier for operators and suppliers alike. The country's shipowners' body Danish Shipping has been assisting the country's representatives with technical advice during IMO discussions about developing guidelines for the fuels, a process which it described at the end of September as "lengthy, but progress is being made". Guidelines for hydrogen itself are more advanced, but Danish Shipping said that good progress has been made so far on ammonia as well.

The group's director of climate, environment and safety Nina Porst said: "The green transformation of the shipping industry requires vast amounts of green fuels. Fuels that in many cases are not yet available on the scale we need, but the ships also need to be prepared to use these fuels, as they must be handled in new ways on board. Therefore, there is a need for international guidelines for the use of these fuels, so that shipping in the future not only becomes green but also remains safe. It is an important priority for Danish Shipping to actively contribute to this process."



ROTTERDAM AND ANTWERP-BRUGES

MANDATE BUNKER MEASUREMENT

From 1 January 2026, the use of a bunker measurement system for bunker vessels in Antwerp-Bruges and Rotterdam will be mandatory, the ports have announced. While not specifying the method, a statement says that bunker vessels in the two ports must have a certified system that indicates the exact amount of fuel they are delivering to seagoing vessels.

The ports say that the measure is aimed at making the bunker market of Antwerp, Zeebrugge and Rotterdam more transparent, efficient and reliable.

At the end of last year, the two ports announced that they would make it a requirement for bunker vessels to have a certified bunker measurement system on board. This followed independent research in Antwerp and Zeebrugge, and Rotterdam, which revealed recurring quantity issues in the bunker market.

Since then, the ports have consulted with various stakeholders to understand the needs and wishes. Together, the parties say that they have outlined a realistic roadmap to implement the bunker measurement system.

In addition, the practicalities of introducing the system had to be thoroughly checked regarding the differing legislative frameworks in Belgium and the Netherlands.

Currently, 40 out of 170 bunker vessels in Rotterdam, Antwerp and Zeebrugge are equipped with a bunker measurement system. The port authorities say that they are therefore aware that this measure will have a major impact on the bunker market. They assert: "By selecting 1 January 2026 as the start date, the various companies in the bunker chain have sufficient time to adapt to the new measure."





Auramarine designs and delivers methanol fuel supply systems for Terntank's methanol ready tankers

EQUIPMENT & SERVICES

Supporting the transition to alternative fuels

Fuel supply systems manufacturer Auramarine is to supply methanol fuel supply systems for three 15,000 DWT hybrid tankers for Terntank. The Finnish company claims to be "the shipping industry's forerunner to invest in developing fuel supply systems for methanol as a viable new fuel to help drive industry decarbonisation targets".

The ships are to be built at China Merchants Jinling Shipyard (Yangzhou), with the first vessel of the series to be delivered in March 2025. The fuel supply system deliveries are scheduled between second half of 2024 and first half of 2025.

Each shipset comprises the methanol fuel system including the methanol supply unit (LFSS), bunker and transfer systems, control and monitoring system, and the important safety system.

The vessels are specifically designed to transport bio feedstocks to Terntank's customer's refineries. The new Hybrid Solution Plus series vessels are intended to significantly reduce the carbon footprint and environmental impacts with methanol-powered engines, wind-assisted propulsion, hybrid battery system, and on-shore power.

Auramarine CEO John Bergman said: "Methanol is one of the most viable future fuels currently on the market. We recognise that as well as price and availability, a key element of driving widespread uptake of these vital future fuels that will deliver industry decarbonisation, is ensuring that the

right bunkering and onboard operational infrastructure is in place to inspire ship owner and operator confidence. At Auramarine, we will continue to deliver this and innovate in order to bring to market new solutions that can effectively support the energy transition."

Meanwhile maritime data firm OceanScore has launched an integrated solution that's designed to enable ship operators to manage emissions liabilities and trade carbon allowances under the impending EU ETS regime for shipping.

"The industry faces a major challenge to navigate the complexity of the new regulation and mitigate financial risk due to the requirement to purchase carbon credits to cover the cost of emissions, which will reach €8 billion or more annually," OceanScore's co-Managing Director Albrecht Grell said.

The Hamburg-based firm has therefore developed the web-based ETS Manager to manage and monitor the entire process from automatically ingesting vessel operational data, assessing the need for EU Allowances (EUAs), allocating them to owners or stakeholders, requesting and accounting for them, and tracking open positions. It incorporates the advanced trading tool EUA Trader, powered by RWE Supply & Trading, to buy and sell EUAs.

Grell added that the comprehensive solution, with a high level of automation to reduce administrative workload and possible issues with wrong data entries, is geared to "simplifying complexity" for shipping companies.

Shipping companies, as the designated Document of Compliance holder (DoC holder) under the EU ETS regime, will be required to surrender to the authorities EUAs based on their annual emissions, starting at 40% of emissions in 2024 and rising to 70% and 100% of emissions in 2025 and 2026, respectively, under the three-year phase-in of the scheme.

This will necessitate having administrative systems in place to track emissions and determine the volume of EUAs required, as well as to assign the cost of these to the owner or charterer based on the 'polluter pays' principle to avoid unnecessary financial exposure for the DoC holder, typically a ship manager.

OceanScore's co-Managing Director Ralf Garrn explained the regulation poses issues such as how to accurately monitor emissions, how to acquire and trade EUAs, which trading platform to use, how to achieve the best price, how many EUAs should be purchased, and who should pay for carbon credits.

"With the clock ticking to implementation of the EU ETS, shipping companies need to understand the practical implications and initiate efficient systems to address these issues and ensure compliance. A solid monitoring solution, properly covering the many different options to deal with the ETS regime, is a necessity given the complexities of shipping and the ETS regulation," he said.

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Alfa Laval's OceanGlide fluidic air lubrication

AIR LUBRICATION IN OPERATION

Pressure to cut emissions is pushing development of systems to reduce the drag of ships' hull through the water

Two retrofit projects using different air lubrication systems have been announced recently.

Singapore-based Kumiai Navigation is to install an Alfa Laval OceanGlide fluidic air lubrication system on an 54,000 DWT LPG tanker.

The patented system uses fluidic technology to generate an even, controllable air layer across a vessel's entire flat bottom, reducing friction and drag. The system comprises layer sections on the vessel's flat bottom, each with its own fluidic band. The independent steering of each band allows a more controlled airflow to reduce friction between the hull and water. These sections are intended to minimise drag and ensure maximum coverage, eliminating passive cavities along the vessel's underside.

According to the manufacturer, energy expenditure is minimised because there are few compressors and the bands add almost no drag when switched off. Air distribution bands are installed easily with minimal hull penetrations, which reduces shipyard time and costs, even as a retrofit.

"In these challenging times, we recognize that reliable partners such as Alfa Laval, are needed to achieve our sustainability goals," says Tomo Kuroyanagi, Managing Director, Kumiai Navigation. "We want to invest in green shipping practices to help us lower our power consumption and comply with upcoming environmental regulations. In this effort, OceanGlide fluidic air lubrication is currently one of the best available

solutions that offer remarkable gains in improving vessel performance and meeting our environmental targets."

Alfa Laval says that OceanGlide has been proven to reduce specific drag by 50–75% and can provide reliable fuel savings of up to 12% under real-life conditions. It adds that actual amount of fuel savings achieved can vary depending on vessel operations operator priorities.

Meanwhile Damen Shipyards Group has announced the first sale of its Damen Air Cavity System (DACS), to Amisco. Damen will retrofit the system to Amisco's cargo vessel *Danita* in Tallinn, Estonia.

DACS is an air lubrication system, borne out of a collaboration between Damen and the Delft University of Technology (TU Delft). It maintains a thin layer of air over the flat

bottom of a vessel's hull, reducing resistance in the water, thereby lowering drag and friction. Damen says fuel consumption is reduced by up to 15%.

Damen claims DACS "offers vessel operators a straightforward solution, for both newbuild and existing vessels, to comply with regulations such as the Energy Efficiency Existing Ship Index (EEXI) and the Carbon Intensity Indicator (CII) as well as the EU Emission Trading System (ETS)." It adds that with DACS installed to *Danita*, the *Amisco* will achieve the CII rating necessary to continue operating in the Baltic Sea while "the considerable reduction in fuel consumption allows for a rapid return on investment".

Class society, RINA verified the fuel-saving results achieved by DACS technology and thoroughly examined the working principle of the air lubrication system.

Damen will retrofit the DACS system to Amisco's cargo vessel *Danita* in Tallinn. ©Damen



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ADDING VALUE

Additives can reduce fuel problems and improve efficiency

As the marine fuel scene becomes increasingly complex, more ship operators are looking to additives as means of reducing problems such as sludge and increasing engine efficiency.

One sign of this trend is a recent strategic agreement between speciality chemicals company, Infineum and global energy management company, World Fuel Services which has become global distributor for Infineum's Marine Fuel Additives product line.

Andrea Ghione, Marine Venture Manager at Infineum commented: "At Infineum our purpose is to create a sustainable future through innovative chemistry. Our Marine Fuel Additives portfolio is designed to deliver fuel efficiency, GHG emissions reduction and onboard operability solutions to the shipping industry. This collaboration with World Fuel Services will support the industry's decarbonisation efforts, and we are confident that the partnership will deliver outstanding quality and exceptional customer service. Customers will also benefit from a strong logistics footprint starting in Singapore and expanding to ports around the world."

"This is an important agreement that will be beneficial to maritime customers by expanding the availability of Infineum's Marine Fuel Additives product range. Both companies share the same commitment to sustainability and to decarbonised shipping operations. We are, therefore,

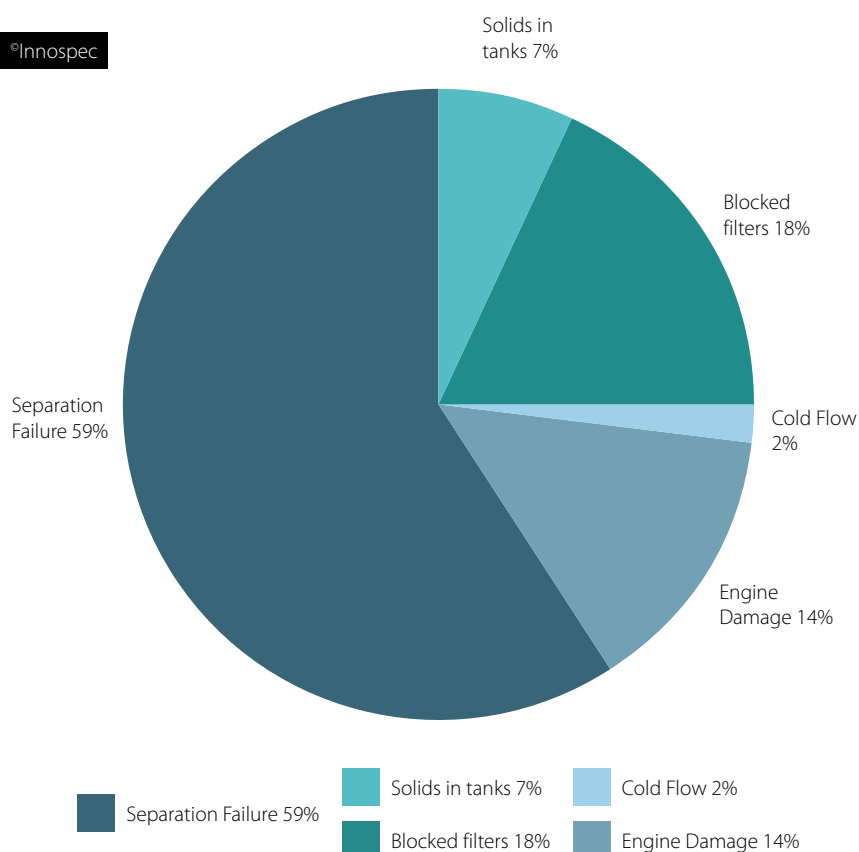
extremely pleased to enter into this agreement and look forward to a close working relationship," said Mark Tamsitt, Senior Vice President, Marine at World Fuel Services.

One reason the marine fuel scene has become more complex is the increased use of biofuels. Major additives manufacturer

Innopsec notes: "Biofuels are being considered as possible replacements for today's marine fuels, particularly in older fleets. FAME (Fatty Acid Methyl Esters) Biodiesel, derived from renewable sources, is seen as a potential 'drop in' solution. However, like VLSFO, these fuels present their own set of challenges in a marine environment."

VLSFO Problem Distribution

©Innospec





The company says, "Thanks to our in-depth knowledge of biofuel treatment, gained over many years, we ensured our Octamar products were developed from the outset to be 'biofuel ready'."

Meanwhile UK-based SulNOx says that its drop-in fuel conditioner SulNOxEco has been verified to have reduced fuel consumption by over 5% in a recent ocean trial, cutting emissions and vessel operating costs by improving combustion efficiency and fuel lubricity.

During a five month-long trial in cooperation with a Hamburg-based shipping company and a renowned Northern German university for maritime shipping, fuel conditioner SulNOxEco is reported to have reduced marine diesel consumption in a two-stroke marine diesel engine by more than 5% in real world conditions.

The company describes itself as a "green tech company which specialises in

providing responsible solutions towards decarbonisation of liquid hydrocarbon fuels".

It says that a recent evaluation project opens the door to significant fuel savings and emissions reductions across the maritime industry using SulNOx's 'no-capex', drop-in fuel conditioners for a range of common marine fuels.

Ben Richardson, CEO of SulNOx commented: "Meeting the maritime industry's emissions reductions target is an ecological and moral imperative and also makes perfect business sense. Shipowners face tough decisions on future fuel choices, but we must take action on decarbonisation today. Our fuel conditioners are an immediate, easy win to make the most of current fuels, save money and cut harmful emissions."

SulNOxEco Diesel Conditioner was applied to the vessel's fuel under real operating conditions during commercial

voyages in the North Atlantic Ocean and Mediterranean Sea. Baseline measurements of fuel consumption on the two stroke MAN B&W 6S35MC engine were taken at 60% and 70% engine load, and then repeated using SulNOxEco treated fuel.

The project measured a consistent 5-6% reduction in specific fuel consumption using a 1:2000 ratio of SulNOxEco™ Diesel Conditioner in MDO fuel (DIN ISO 8217).

The project partners plan a further trial application of SulNOxEco on an engine running VLSFO where experts from the shipping company and the university expect an even greater fuel-saving effect.

Previous studies of SulNOxEco have shown a reduction in harmful PM 2.5 particulate matter emissions of over 60% and reduction in engine maintenance costs of around 2% thanks to the product's impact by improved combustion, detergency and lubricity.

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ETS: WHO PAYS?

Law firm Watson Farley & Williams' Hamburg Partner Dr Clemens Hillmer addresses a hotly debated topic

In a new article issued by Watson Farley & Williams (WFW), Dr Hillmer considers the extension of the EU Emission Trading Scheme (ETS) to include maritime emissions. In particular, he looks at who should be responsible for submitting emissions allowances on the relevant submission date (the 'submission date') to the relevant administering authority ("ETS obligations"). This is especially important in instances where a shipowner has delegated the responsibility to comply with the ISM Code to a manager.

In such cases, should a shipowner and its manager decide in their bilateral management agreement which of them is responsible for ETS obligations (Option 1)? Or should the manager always be responsible for those obligations provided the shipowner has delegated responsibility to comply with the ISM Code to them (Option 2)?

This question is of particular importance for ship managers who manage ships which are not owned by the manager's group, as the assumption of ETS obligations vis-à-vis the administering authority is associated with high risks. Depending on the trade and emissions of a ship, the costs will likely amount to an average of €500,000 pa – and could be even higher.

If a manager's responsibility falls under Option 2, it is responsible for submitting the allowances to the administering authority on the submission date. A manager will want to arrange in the management agreement with the shipowner that the latter must provide the manager with sufficient allowances so that it can fulfil its ETS obligations. In the case, for example, of a time charter, the shipowner will try to agree with the time charterer that it must either procure the allowances for the ship it has chartered or reimburse the shipowner for the procurement costs.

However, if the shipowner does not transfer the allowances to the manager, or if it becomes insolvent and the allowances fall into insolvency estate, the manager

is left empty-handed while remaining responsible for compliance with ETS obligations.

At the time of writing, it is not clear which option will be chosen by the European Commission, which must adopt a final regulation in the fourth quarter of 2023, before the EU ETS for shipping enters into force on 1 January 2024.

Hillmer notes: "One would have thought that the EU legislator would favour Option 2, which 'is aligned with the existing application of the shipping company definition used in IMO and EU legislation in the last 20 years' (page 4 of an undated Concept Note – implementing act on the rules relating to the administration of shipping companies by administering authorities in respect of a shipping company, pursuant to Article 3gf of Directive 2003/87/EC). However, it would seem that the EU legislator is now keen to implement Option 1."

He notes: "The EU Commission published a draft on 1 September 2023 entitled 'Commission Implementing Regulation (EU) laying down rules for the application of Directive 2003/87/EC of the European Parliament and Council as regards the administration of shipping companies by administering authorities in respect of a shipping company'. In simple terms, the draft says that, in principle, the shipowner is responsible for complying with ETS obligations concerning the administering authority. However, if a manager has assumed the responsibility to comply with the ETS obligations on the basis of a management agreement with the shipowner, it is obliged to submit the allowances vis-à-vis the administering authority. The parties are therefore able to choose who is responsible for complying with the obligations. If the manager is responsible, it must provide the administering authority with a document clearly indicating that it has been duly mandated by the shipowner to comply with ETS obligations (Article 1 paragraph 2) together with the usual contact details (Article 1 paragraph 3). Where

no document has been provided to the administering authority, the shipowner will be considered the entity responsible for ETS obligations (Article 1 paragraph 4)."

The WFW partner raises the question: "How should the regulations proposed in the draft be assessed?" he notes that some regulations are vague, but the core statement is that a manager is not always automatically obliged to comply with ETS obligations. Due to the high risk involved, managers would welcome the implementation of Option 1. In fact, Option 1 also gives the parties more leeway to determine how they want to distribute obligations and risks. If a manager is not responsible for ETS obligations, this should be explicitly stated in the management agreement. If a shipowner wishes to entrust a manager with responsibility for ETS obligations this must also be regulated in detail in the management agreement. The manager will want to ensure that it receives the allowances regularly from the shipowner (who should in turn receive them, in case of a time charter, from the time charterer) so that he can submit the allowances to the administering authority on the submission date. If the shipowner does not want to provide the manager with the allowances before the submission date (i.e., because the shipowner does not want to bear the insolvency risk of the manager), the parties will have to consider appointing a trustee to hold the allowances in trust for them both.

The opportunity to comment on the draft regulation, through the Commission's website has passed. The Commission must adopt a final regulation before the ETS for shipping enters into force on 1 January 2024.

Hillmer urges: "Even though many issues remain undecided, shipowners and managers in particular must now begin to work on adapting charter parties, management agreements and other documentation to conform with what the final regulations will likely entail."



©PPG

NON-STICK SHIPS

New technology creates “super-smooth, non-stick hull surface”

Coatings manufacturer PPG has launched its Sigmaglide 2390 marine coating. The New York-listed, Amsterdam based, company claims the new product to be “a breakthrough approach to help shipowners lower power consumption and carbon emissions and meet demands for higher performance with no adverse impact on the marine environment”.

The biocide-free fouling release coating is based on PPG HydroReset technology, which modifies the coating when it is immersed in water to create a super-smooth, almost friction-free surface that marine organisms do not recognize and cannot adhere to.

According to the company, “based on third-party evidence following ISO 19030 and International Towing Tank Conference (ITTC) standards”, its coating enables vessels to maintain a clean hull and reduce drag, achieving power savings of up to 20%, a speed loss performance of less than 1%, and up to 35% reduction in CO₂ emissions in comparison to traditional antifouling coatings. It adds that actual performance will depend on ship model and operating conditions.

PPG says that the new coating can help owners and operators to meet targets for reduction of greenhouse gas emissions under the IMO’s energy efficiency (EEXI and EEDI) and carbon intensity (CII) requirements, which went into effect this year.

Jan Willem Tegelaar, PPG global platform director, Marine Coatings, said: “The speed loss performance of less than 1% helps ships operate at an average one knot higher speed while remaining CII compliant.”

PPG says that Sigmaglide 2390 is also suitable for electrostatic application, “which provides high transfer efficiency, leading to lower paint consumption”. In service, the coating is designed to deliver up to 150 days of idle performance and an extended lifetime of more than 10 years with minimal maintenance requirements. These benefits, combined with the power savings, provide an industry-leading return on investment for shipowners.



WHAT IS CARBON INSETTING?

Carbon inseting enables fuel suppliers and vessel operators to transfer the environmental benefits of clean, lower carbon intensity fuels to freight forwarders and shippers says Caspar Gooren, Director Zero-Carbon at Titan

Carbon inseting refers to the financing of climate protection projects within a company's own value chain. It reduces or sequesters emissions, thereby achieving a positive impact on communities, landscapes, and ecosystems associated with this value chain. The money from inseting tokens then flows back into the shipping sector to finance decarbonisation projects.

Most of the of the big retailers (such as IKEA or Amazon) would like to sell their products as low carbon or carbon neutral. They would like to state that their products are also zero carbon shipped, which means they need to tackle emissions reductions in the supply chains of the products they sell – scope three emissions.

In shipping, purchased carbon insets prove that low or zero carbon fuel was used by the carrier, and then emissions reduction benefits can be attached to the products. Insets are immutable and transferable tokens, which companies can manage using a blockchain wallet and transfer to customers.

An inset also allows the transfer of environmental benefits, decoupling carbon reduction from specific transport activity, and enabling the greening of overall transport activity.

The money is then used to ensure continuing promotion and uptake of this clean fuel, building supply and reducing costs so that the industry can transition sooner. As a result, inseting is an effective means of expediting the energy transition in shipping, which is currently blocked by price levels; fossil fuels remain cheaper than renewable fuels. Insetting helps to close this price gap.

Carbon inseting is different to carbon offsetting, which has come under question due to a lack of transparency. With offsetting, there's no mechanism to ensure the premium paid stays within the sector to deliver improvements, and some argue it is just an excuse to continue emitting as usual as the impact of offsets are often hard to quantify and measure.

With insets on the other hand, there are strict requirements on the generation and allocation. These requirements have been defined on a global level by the Smart Freight Centre (SFC), a Netherlands based NGO. Last June, the SFC published their multi-modal Book & Claim methodology, which deals with topics like calculation rules, additionality, allocation and reporting of inseting.

Independent clean fuel supplier, Titan and the first independent blockchain-based carbon inseting platform for the transport sector, 123Carbon recently announced that they have issued the first LNG-based carbon insets readily available to the market. Sustainability consultancy AllChiefs and emissions verification service provider, Verifavia have collaborated to ensure inset transparency and integrity.



Cargo Vessel Eems

A FAIR WIND

Two recent developments reflect increasing interest in harnessing the wind to reduce fuel consumption

Money and corporate interest in the use of wind power appears to be increasing with a number of projects underway.

Paris-based GTT Strategic Ventures, the GTT group venture capital arm, announced that it had led a fund-raising round of €15.9 million to support the development of bound4blue, a technology developer of automated wind-assisted propulsion systems for maritime transport.

In particular, the funding round includes the participation of the European Innovation Council, Louis Dreyfus Company Ventures and Shift4Good. Following this transaction, GTT now holds around 9% of the voting rights in the company.

The new investors join existing shareholders of bound4blue, including the Ocean Born Foundation and the Centre for the Development of Technology and Innovation, through the co-investment initiative of the Innvierte program.

Founded in 2014, bound4blue develops wind-assisted propulsion systems (WAPS), known as suction sails, allowing ship-owners and ship operators to reduce their fuel consumption.

The technology developed by bound4blue, derived from the suction sail designed by Commandant Cousteau in the 1980s, is described by GTT as “an easy-to-install solution, requiring minimum maintenance and offering a payback of below five years, on many segments (LNG carriers, bulk carriers, tankers, Ro-Ro1, general cargo, ferries and cruise ships).

The wings are expected to significantly reduce ship fuel costs and CO₂ emissions by up to 30% on favourable trade routes. They also enable vessels to strengthen compliance with the measures of the International Maritime Organization aimed at reducing the carbon intensity of international maritime transport.

The bound4blue technology is currently installed on three vessels, the most recent of which is the *EEMS Traveller*, a cargo vessel operated by the Dutch ship-owner Amasus Shipping and equipped with two 17-metre-high suction sails. bound4blue has also recently announced a partnership to install its system on a chemical tanker, making it the first installation on this class of vessel.

Meanwhile Dutch company Econowind is producing its VentoFoil wings at its factories in Zeewolde and Warten. These sails are expected to reduce fuel consumption by up to 30%. Econowind says the Investment and Development Agency for the Northern Netherlands (NOM) and Horizon Flevoland are “investing

heavily in the scale-up to enable rapid growth.”

Econowind’s describes VentoFoil as a “vertical aircraft wing that converts wind into forward thrust of the ship. Internal fans reinforce the effect thus making a significant difference to the consumption of increasingly expensive fuels”.

“We have been developing [VentoFoil] for five years and are now facing major growth,” says managing director Frank Nieuwenhuis.

The company says: “The 16-metre aluminium VentoFoil, which is ideally suited for the shortsea market, is produced at the Zeewolde factory. But we are now also collaborating with Bijlsma shipyard in Warten, where we are building the thirty-metre-high steel VentoFoil which are perfect for large ocean-going vessels. We expect a lot of growth to come from this sector as well. With this full range of wind sails, we can serve various market segments and further expand our international leading position.”



Van Dam-Ankie VentoFoil



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ENVIRONMENTAL NEWS

Our regular round-up of shipping's 'green scene'

LR: "Shipping industry faces two alternative decarbonisation paths"

Lloyd's Register Maritime Decarbonisation Hub (LR Hub) says that its analysis shows that e-ammonia could emerge as the most highly adopted maritime fuel among hydrogen-based fuels, whilst liquefied bio-methane dominates amongst biofuels.

LR Hub says its *Future of Maritime Fuels* report presents a review of a wide range of fuel mix projections and has identified two alternative paths that will steer shipping's course – hydrogen-based fuels scenarios and biofuels scenarios. The report analyses the dynamics of the energy supply system within these scenarios, accounting for the expected supply as well as demands from other sectors for these fuels.

In the hydrogen-based fuels scenarios, e-ammonia is projected to emerge as the most highly adopted maritime fuel in the long-term, with an average share of 35% of the shipping fuels market by 2050. Such adoption yields significant energy demands, which will potentially drive the shipping industry to be the largest user of ammonia worldwide. It is projected that blue and e-ammonia will capture between 20% to 60% of total shipping fuels by 2050, with total consumption by shipping increasing on average from 0.79 exajoules (EJ) in 2030 to 6.06 EJ in 2050.

In the biofuels scenarios, liquefied bio-methane is projected to capture on average 34% of total shipping fuels by 2050, with total consumption by shipping increasing from 0.5 EJ in 2030 to 4.58 EJ in 2050. However, the expected supply of bio-methane needed for shipping is projected to vary between 0.3 EJ to 2 EJ during the period under review, which will fall short of demand. This demonstrates that production will be insufficient to supply the total shipping demand for bio-methane.

The report also finds that methanol is projected to have a lower market share of the shipping fuels market than ammonia and bio-methane, which runs counter to current trend of ordering dual-fuel methanol vessels in today's shipping market. Combined bio- and e-methanol fuels are projected to capture on average a market share of 13.4% of total shipping fuels by 2050.

Meanwhile LR's new Engine Retrofit Report says a shortage of repair yards with experience in conversions may hinder the take up of alternative fuel technology by the existing fleet. The report, has identified that retrofitting a significant number of the 9,000 and 12,900 large merchant vessels estimated to be part of the global fleet in 2030, could rapidly

accelerate the maritime energy transition. However, it warns that these ambitions could be jeopardised by the limited number of repair yards currently capable of performing such conversions.

California's green regulations extended

The US Environmental Protection Agency has authorised the California Air Resources Board (CARB) to expand the scope of its 2020 At-Berth Regulation in a move aimed to further reduce pollution from ocean-going vessels while docked at California's busiest ports.

The regulation requires that vessels coming into a regulated California port either use shore power or a CARB-approved control technology to reduce harmful emissions like a capture-and-control technology (such as a duct that connects to a vessel's exhaust and 'captures' emissions).

The new regulation was passed by the CARB Board in 2020 and adds new vessel categories – car carriers and tankers – as well as additional ports and marine terminals. Under the new regulation, vessels are required to control pollution when they run auxiliary engines or auxiliary boilers (for most tanker vessels) while docked. The two vessel categories added to the new regulation are said to produce



56% of all fine particulate pollution from ocean-going vessels at berth in California ports.

Vessels covered under the original regulation include container ships, refrigerated cargo ships and cruise ships. Once the new regulation is fully implemented it is claimed that it will deliver a 90% reduction in pollution from vessels at berth. This includes an expected additional 2,300 vessel visits per year and will result in a 55% reduction in potential cancer risk for communities near the Ports of Los Angeles, Long Beach, and Richmond.

Bunker Holding's new ESG report

Global marine fuel supplier Bunker Holding has published second ESG report showcasing targets and progress on ESG action points. The new report says that industry partnerships, know-how build-up, and strong systems are at the top of the agenda when moving towards a transparent and compliant future industry.

Bunker Holding, "the world's largest supplier of marine fuel and lubricants", focuses on the long-term target of transitioning towards low- and zero-carbon fuels, which is in alignment with the recently revised 2023 IMO GHG strategy to reach net zero GHG emissions

from international shipping by or around 2050.

Bunker Holding had already committed to a decarbonisation strategy and has invested heavily in new fuels. It says it is confident that the new IMO target will secure broad participation and an enhanced ambition from the industry to work together in reducing the carbon emissions of global shipping.

"The need for a sustainable transition towards a net zero industry plays well into Bunker Holding's industry position. We continue to invest heavily in acquiring knowledge and specialist expertise and educating our employees on low- and zero-carbon fuels. And just as importantly, we are sharing our learnings with partners and clients to provide a better understanding of the way forward in our industry," says Keld R. Demant, CEO of Bunker Holding, adding:

Nudging crews to go green

Behavioural change start-up Signol says it has launched a first-of-its kind project with Stolt Tankers to further reduce shipping emissions by using Internet of Things (IoT) data to help seafarers understand the impact of their actions on overall fuel consumption and CO₂ emissions and motivate them to adopt new behaviours.

By combining sensor data with behavioural change techniques, Stolt Tankers is pioneering a human-centred, tech-enabled approach to improving fuel efficiency and reduce shipping's environmental impact.

The six-month pilot project will run on seven vessels, using Signol's data-led service to engage seafarers and motivate them to reduce fuel consumption.

Five of the vessels use continuous monitoring (IoT) data through sensors connected directly into the ship's power management and automation systems, providing a comprehensive and real-time view of what the crew experiences onboard.

Signol says that monitoring data will be used to create fair, achievable behavioural goals linked to three actions carried out on the ships: main and auxiliary engine performance and trim optimisation.

By using real-time IoT data as opposed to static snapshots of a ship's status Stolt Tankers and Signol hope to enable crew and shoreside teams to make more proactive and immediate decisions, leading to improved operational efficiency, reduced fuel consumption, and enhanced safety.



Bunker Holding Group headquarters in Middelfart, Denmark



Bunker One has started bunkering operations at Port of Itaquí, Brazil. ©Bunker One

INDUSTRY NEWS

Latest developments from around the global marine fuel sector

Bunker One's Brazilian partnership

Bunker One and Acelen have formed a strategic partnership to launch an operation outside the Port of Itaquí, Brazil.

Global bunker supplier Bunker One says that its partnership with producer Acelen in adding an anchorage bunkering operation off the Port of Itaquí is its first step in developing increased activity in the region.

Bunker One, one of the world's leaders in physical bunker supply, and Acelen, the largest bunker producer in the country, have joined forces in a strategic partnership to offer the only outer anchorage bunkering operation in Brazil.

Since September 2023, vessels have been supplied in the anchorage area of the Port of Itaquí in São Marcos Bay by the chartered 17,567 dwt tanker China Spirit, operated by Bunker One subsidiary Nova Offshore. The location is a strategic hub for international trade, especially for exports of raw commodities such as iron and soybeans and oil-related product distribution inside Brazil.

The option to bunker at inner anchorage is said to reduce waiting times and calling costs, as the anchorage allows for bunkering without interfering with loading and unloading operations at the terminals. Up to two ships can be supplied daily, considering the time required for each operation and the specifics of each bunkering operation.

IGF Code trainer launched

What is said to be the world's first International Code of Safety for Ships using

Gases or other Low-flashpoint Fuels (IGF Code) training and competency provider, Stream Marine Technical, held an official launch at London International Shipping Week.

Stream Marine Technical, part of Stream Marine Group, says it has already started to train the seafarers in the use of alternative fuels, and has worked with major shipping brands to prepare them for the transition to greener fuels for their vessels.

CEO of Stream Marine Group Martin White: "As we evolve through this journey of decarbonisation, the shipping industry - almost like no other - will be forced to decarbonise as one of the first movers and decarbonise in multiple ways. The shipping industry really is at the heart of global decarbonisation, whether that is refuelling our own fleet or carrying what the rest of the world needs for that transition themselves. If you are in a boardroom and you own ships fundamentally that

fleet is extinct in the future, unless you can work out a plan today with limited information, limited ability to guess the fuel or technology of the future, and limited understanding of how to build a business case around the real unknown. That is the challenge our industry faces."

Rotterdam volumes dip

Bunker fuel sales data for the third quarter (Q3) of 2023 by the the Port of Rotterdam Authority show a reduction in sales of all types of marine fuel.

Deliveries of ultra low sulphur fuel oil were 186,803 tonnes (down 9.08% from Q3 2022), very low sulphur fuel oil 810,553 tonnes (down 17.8%), high sulphur fuel oil 790,195 tonnes (down 5.46%), marine gas oil 234,690 (down 21.3%) and marine diesel oil 144,452 tonnes (down 10.4%).

Sales of bio-blended fuel were also down except for very low sulphur fuel oil, which was up 152% but only to 14,385 tonnes.



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Meanwhile LNG sales increased 53.3% to 204,418 tonnes in Q3 but no methanol deliveries had been recorded in Rotterdam by the end of September this.

Algoa Bay bunkering halted

An investigation into alleged customs irregularities has stopped bunkering operations at South Africa's Algoa Bay since September, when the South African Revenue Service (SARS) detained bunker barges working at the anchorage.

An informed source told *World Bunkering* that talks were underway but progress was slow.

Online news service MFAME reports that since Algoa Bay has closed bunker demand has increased in Mozambique's Nacala and Maputo ports. It noted in late October: "HSFO and LSMGO availability is normal in Mozambique's Nacala port, a source says. VLSFO supply is very tight in the port."

ZeroNorth consolidates brands

Technology company ZeroNorth says it is consolidating its existing bunkering business under the ZeroNorth brand, "unlocking faster value delivery for customers, and driving enhanced data-driven insights, additional fuel savings, improved profit margins and emissions reduction".

Over the past 18 months ZeroNorth has acquired Clearlynx, Prosmar Bunkering and BTS. It says it must consolidate the company's 13 existing product offerings into six core products spanning Bunker Planning, Bunker Procurement, Bunker Supply and Trading, Bunker Pricing and e-BDN solutions. These solutions will facilitate data-driven decisions for customers, with this integrated approach

bringing transparency and continuity to customers' bunkering processes and delivering an enhanced user experience.

Speaking on the announcement, Kenneth Juhls, Managing Director for ZeroNorth Bunker at ZeroNorth, said: "Leveraging real-time market insights and with 50 million tonnes of bunkers already traded annually on the platform, we take pride at ZeroNorth in our ability to drive positive change in the bunkering industry. This includes accelerating digitalisation and transparency in the sector, which ultimately contributes towards our customers' decarbonisation and commercial goals."

By optimising the bunkering process, ZeroNorth Bunker turns millions of live data points into actionable recommendations. More robust insights will be generated for customers through this integrated approach, as more data is being interpreted which will in time enable the data flywheel effect, delivering a positive feedback loop.

The platform will be able to deliver deeper, more granular insights into bunker optimisation, reducing fuel consumption and associated costs and emissions for customers, driving benefit for both profit and planet.

CII data collection system

The International Chamber of Shipping (ICS) has launched its Carbon Intensity Indicator (CII) Data Collection System.

Following the IMO's invitation during the Marine Environment Protection Meeting (MEPC80) in July, for interested Member States and international organisations to collect data and submit information and proposals, ICS has developed a system

that enables shipowners and managers to submit data, including fuel consumption, transport work, and the trial metrics. Such information will enable a clearer understanding of how fairly and effectively the CII system is functioning and provide the necessary input to the IMO for system improvement.

ICS Technical Director says: "At the International Chamber of Shipping we wish to engage constructively to the current experience building phase of the CII review, to ensure that the system is fit-for-purpose and effective. The ICS Data Collection System offers shipowners and managers the opportunity to contribute data that will improve the rating system in the future."

Monjasa buys 2 tankers

Danish bunker supplier, Monjasa has bought two secondhand tankers. The 2008-built 68,589 dwt Monjasa Leader, ex-Cabo San Antonio and the 2009-built 13,051 dwt Monjasa Refiner, ex-Saturn will provide floating storage capacity for its West African bunker operations.

Monjasa's group shipping director Torben Maigaard Nielsen is reported as saying: "The Monjasa Leader becomes our largest fleet member and represents our single most important tanker acquisition ever. Given the limited opportunities of storing fuel products ashore, our floating storage solution is the backbone of our West Africa marine fuels operations and allows for our supply tankers to frequently go alongside the vessel to load cargo. Providing maritime end-to-end logistics in West Africa is a challenging task, but we are confident that our two new vessels bring the efficiency and flexibility needed."





CLASS ACTS

Classification societies are becoming increasingly involved in the approval of onboard carbon capture systems

Two very different technologies have recently gained classification society approval.

Korean classification society KR has announced the granting of an Approval in Principle (AiP) for an Onboard CO₂ Capture System (OCCS) developed by Hanwha Ocean.

According to KR, the onboard carbon capture and storage technology developed by Hanwha Ocean absorbs CO₂ generated on board using absorbents and converts it into mineral form. It says that this technology consumes very little energy compared to other CO₂ capture technologies, and the amount of additional CO₂ generated during its operation is relatively small. Furthermore, KR notes, "its compact design ensures efficiency in implementation."

KR verified the stability and suitability of the OCCS by reviewing classification rules and domestic and international regulations in collaboration with the Marshall Islands Registry.

Yeon Kyujin, head of KR's plan approval centre, says: "Currently, the carbon capture and storage technology is expected to contribute a sizeable portion of the total global CO₂ reduction, so market demand for this technology is growing.

It is meaningful for us to pre-emptively respond to the demand and play a major role in commercialising OCCS technology with this successful AiP."

Kang Sang-Don, VP and Head of Hanwha Ocean's Basic Design Department, comments, "The OCCS developed this time will be applied to 174,000 DWT LNG carrier in the future. We will work to strengthen our competitiveness by developing eco-friendly technology that meets the ever-strengthening environmental regulations and the requirements of ship owners."

Meanwhile Lloyd's Register (LR) has awarded an AiP to ERMA FIRST for its amine absorption based OCCS system. It uses absorption technology to mix CO₂ flue gases with a proprietary amine solvent which is then heated to produce a chemical reaction which reverses the absorption and separates the CO₂ from the solvent. The CO₂ from this process is then liquified and stored under cryogenic conditions onboard with the solvent ready to use in the same process again, creating a regenerative loop for CCS.

LR says that with the ability to capture a significant amount of CO₂ from exhaust emissions, ship owners and operators will be able to meet and exceed the IMO's strengthened emission reduction targets, whilst increasing their vessels' lifecycle.

The AiP, as part of the Risk-Based Certification process, allows ERMA FIRST to proceed with onboard pilot testing of the application.

OCCS feasibility studies

Wärtsilä is offering carbon capture and storage (CCS) feasibility studies to shipowners and operators. The Finland-based technology group says that such studies have already been conducted on a range of vessel types including ro-ro and ro-pax vessels, a drill ship, a container vessel and a gas carrier.

The process takes four to six months of study and design work. Wärtsilä Exhaust Treatment's experts are involved in ship design at an early stage to conduct engineering work to understand how CCS can be smoothly integrated once the technology is launched to market.

Wärtsilä is conducting the feasibility studies across both new build and existing vessels. It says that retrofit CCS installations will be significantly smoothed by the presence of a scrubber onboard. Wärtsilä Exhaust Treatment is already offering CCS-Ready scrubbers to the market which are integrated onboard in a way that enables a CCS system to be added easily once the technology is commercialised.



MAERSK GOES METHANOL

Giant container line names its first methanol-enabled container ship

Maersk Line has been the most prominent backer of methanol as fuel so far. In September, in Copenhagen EU Commission President Ursula von der Leyen named it, and the world's, first methanol-enabled container vessel the Laura Maersk.

Maersk CEO Vincent Clerc claims: "Laura Maersk is a historic milestone for shipping across the globe. It shows the entrepreneurial spirit that has characterised Maersk since the founding of the company. However, more importantly this vessel is a very real proof point that when we as an industry unite through determined efforts and partnerships, a tangible and optimistic path toward a sustainable future emerges. This new green vessel is the breakthrough we needed, but we still have a long way to go before we make it all the way to zero."

Maersk has an ambitious 2040 target of net zero greenhouse gas emissions and aims to transport a minimum of 25% of ocean cargo using green fuels by 2030. The company says that the 2,100 TEU feeder vessel is an important step toward the long-term objective of gradually renewing the entire Maersk fleet to operate solely on green fuels. Maersk has 24 additional methanol vessels on order for delivery between 2024 and 2027 and a policy to only order new, owned vessels that come with a green fuel option.

To supply the Laura Maersk with methanol Maersk and Equinor have signed an agreement securing supply of green1 methanol during its initial months of operation from September 2023 and into the first half of 2024.

Maersk says that the ship will operate on a loop from Northern Europe into the Baltic Sea and will be bunkered in Rotterdam.

The biomethanol is produced from biogas from manure. The biogas is upgraded to biomethane and injected into the existing gas grid and the methanol is produced from the biomethane in the grid on a mass-balance basis. The existing European biogas certificate system is used to trace the attributes of the biomethane to the biomethanol and safeguard against double-claims.

According to Maersk, this means that green methanol can be produced in existing facilities using existing infrastructure and plants enabling a quick route to market. It says: "The method can contribute to a greener gas grid while capturing harmful methane emissions that would arise from the manure feedstock if left untouched. The biomethanol is ISCC EU certified in accordance with the EU Renewable Energy Directive."

Long term, the feeder vessel will be fuelled by e-methanol from a plant in Southern Denmark, operated by European Energy, which is expected to come on-stream in the first half of 2024.

Methanol fuelled hybrid ro-ros

Technology group Wärtsilä is to supply an integrated hybrid propulsion system for two new hybrid ro-ro vessels. The ships are being built at the China Merchants Jinling shipyard (Weihai) for Stena RoRo.

The ships will be the world's first methanol fuelled hybrid RoRo vessels and will operate in the Sweden-based Stena Line's Irish Sea system.

Each vessel will be equipped with two Wärtsilä 32M multi-fuel engines capable now of operating on methanol fuel and with ammonia ready notation. Wärtsilä will also supply the MethanolPac fuel storage, supply and control system, the gearboxes, two controllable pitch propellers (CPP), three bow thrusters, the NACOS navigation system, three Wärtsilä 20 auxiliary engines, and the hybrid electric system consisting of shore power, batteries, shaft generators, converters, transformers as well as the Energy Management System making it all work together.

Each vessel will also be fitted with the Wärtsilä Hybrid Solution, optimising current fuel consumption and allowing for future full green operation. The vessels will also be equipped with Wärtsilä shore power solution enabling carbon-free operations when the vessels are in port.



PUSHING LNG IN NA

SEA-LNG adds major US company

Multi-sector industry coalition SEA-LNG, established to demonstrate the benefits of the LNG pathway for shipping's decarbonisation, has added Seaside LNG, the LNG production and maritime transportation logistics providers based in Houston, Texas, to its membership.

SEA-LNG says Seaside LNG is the only company with integrated shoreside liquefaction, LNG storage, and bunkering capabilities in North America. It adds: "The company maintains the largest fleet of Jones Act-compliant LNG barges in North America and has successfully performed more than 400 safe LNG transfers. Seaside LNG will further enhance the coalition's collective expertise with their valuable supply, infrastructure and safety experience."

Scaling up alternative fuel supply and developing the required infrastructure is key to the success of the shipping industry's decarbonisation transition, with collaboration highlighted as central to success, according to SEA-LNG.

Peter Keller, Chairman of SEA-LNG, commented: "Green fuel solutions will not arrive in a big-bang process, instead we will see the incremental decarbonisation of existing assets as fuel production,

transportation, storage and bunkering infrastructure and engine technologies develop. In Seaside LNG, we have another valuable member to help us continue to evolve and progress the LNG pathway to decarbonisation. We are very pleased to welcome the Seaside team onboard."

SEA-LNG stresses that existing LNG infrastructure can transport, store and deliver bio-LNG, as well as renewable synthetic e-LNG. Fuels can be blended with fossil LNG or used as a drop-in fuel for LNG-fuelled vessels to reduce emissions further without any additional investment in vessel or infrastructure modifications.

In a statement the group says: "While the recent industry discussions of infrastructure and the introduction of these green fuels are important, we must not overlook existing local emissions benefits. Local emissions are another major environmental concern around the world. LNG is the only scalable marine fuel available today that significantly reduces carbon emissions, and it also tackles local emissions."

Casey concluded: "We are proud to join SEA-LNG because LNG in place of traditional fuel delivers substantial environmental and public health benefits – dramatically lowering emissions of NOx, SOx, CO₂ and particulate matter."

Chinese LNG bunkering

Pavilion Energy and CNOOC Gas and Power Group say they have successfully concluded their inaugural Ship-to-Ship (STS) LNG bunkering operation to the *Maran Dione*, Maran Tankers Management (MTM)'s new-built dual-fuel (DF) very large crude carrier (VLCC), in China. MTM, the oil tanker shipping arm of the Angelicoussis Group, recently welcomed this vessel as the fourth and newest DF VLCC in its fleet.

The VLCC received approximately 2,800 tonnes of LNG from CNOOC's barge Hai Yang Shi You 301 at the Guangzhou Port.

This latest bunkering operation is said to mark a milestone for both Pavilion Energy and CNOOC, after both parties signed a Heads of Agreement in November last year together with another partner, Gasum, to strengthen the global LNG bunker supply network for customers.

The companies say that the success of this operation potentially opens doors for more bulk carriers and product tankers to conduct LNG bunkering operations at the anchorage in Chinese ports.



Illustration of a floating nuclear power plant design ©CORE POWER

NEW NUCLEAR SOLUTIONS SAIL INTO VIEW

Mikal Bøe, the founder and CEO of UK-based CORE POWER, explains why he believes the uptake of nuclear energy in the maritime sector is inevitable

With the climate crisis becoming ever more evident, and shipping under increasing pressure to switch to truly sustainable fuels, nuclear power is gaining traction in the maritime sector. Two years ago, nuclear energy hardly entered the conversations at London International Shipping Week, and when it did, few saw it as a viable option. Fast forward to LISW23, there has been a remarkable shift in attitudes, with nuclear now firmly on the agenda to decarbonise the maritime sector, both directly on nuclear-powered ships, and indirectly as a source of energy to produce synthetic fuels. The penny is beginning to drop about the scale of the challenge presented by the revised GHG Strategy adopted by the IMO earlier this year.

CORE POWER has been working on bringing advanced nuclear solutions to the maritime sector since 2018, using new nuclear reactor technologies that will be uniquely suited to ships and floating nuclear power plants (FNPPs). The aim is to bring a licensed, type-approved power package for ocean transportation and heavy industry to market, and to make it affordable to manufacture through a standardised modular design. It will be part of the family of small modular reactor solutions that more and more countries realise offer a pathway to meeting growing demand for affordable, reliable and safe

zero-emissions energy to meet their commitments under the Paris Agreement.

Shipping and the marine fuels sector have the same challenge, and it is no longer enough to use fuels that reduce or eliminate GHG emissions onboard. Fuels will be judged on a well-to-wake basis under the IMO's revised GHG strategy, meaning hydrogen, ammonia and methanol are not automatically 'green'. Today, the vast majority of hydrogen, ammonia and methanol are derived from natural gas using energy-intensive processes largely relying on power provided by fossil fuel. On a well-to-wake basis, that makes them no better or worse than using traditional oil-based marine fuels.

Competition for transport fuels produced from raw materials and energy sources that are renewable and sustainable is already intense from multiple end-users. As shipping requires a growing share of low- or zero-carbon fuels in the years ahead, producers of alternative fuels for the maritime sector will struggle to secure sufficient clean energy from intermittent sources like wind and solar. This is where CORE POWER sees the initial market for nuclear in the maritime sector, as FNPPs can provide stable energy 24/7 that weather-dependent power generation simply cannot provide. Deploying FNPPs

near ports could support Green Corridor development by providing the vast amounts of clean energy needed to produce green hydrogen, methanol and ammonia which many shipowners are betting on today for the initial stages of the global fleet's energy transition.

Longer term, a growing share of the fleet will need to be nuclear-powered to bring about net-zero shipping. CORE POWER has identified key success criteria for commercial deployment of nuclear power on ships to overcome safety and security issues associated with the type of reactor used on ships up to now, most of which are controlled by navies. These include high fuel efficiency resulting in much less waste, and passive safety features. The reactor should not need refuelling or replacing for the lifetime of the ship, and there will be no need to handle nuclear waste in ports. Moreover, nuclear-electric ships could provide power to ports through reverse cold-ironing, helping to decarbonise port operations.

Nuclear energy is the only solution that can take the ocean transport industry to actual zero. It's the end game of our energy transition and with solid progress being made in building a new nuclear technology that actually works for shipping, we see the momentum continuing to build.



GETTING READY FOR NH₃

Ammonia dual-fuelled design projects underway

Lloyd's Register (LR) has granted approval in principle (AiP) to Hyundai Mipo Dockyard (HMD) for its new 45,000 cubic metre LPG Carrier design, with availability to be ordered with ammonia dual-fuelled propulsion.

LR says that the dual fuel system equipped on HMD's LPG Carrier allows operators and owners to prioritise their ESG (Environmental, Societal and Governance) strategies for their fleets and align with the IMO's revised goal of net zero CO₂ emissions by 2050.

The design incorporates three prismatic type 'A' tanks, re-liquefaction plant, ammonia dual-fuelled engine with fitting, Liquid Fuel Supply System, Fire Fighting equipment and Water Spray System. The vessel design process is focused on addressing safety issues connected with handling ammonia.

As part of the project, HMD, Marshall Islands Flag and LR completed a feasibility study for the application of the ammonia (NH₃) fuelled system through a comprehensive certification process, to ensure that the NH₃ fuelled system complies with the existing for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk Code (IGC). LR issued AiP following a drawing appraisal using applicable *LR Class Rules & Guidance* and related international regulations and standards.

Meanwhile KR (Korean Register) has granted an AiP for a 200,000 cubic metre ultra-large ammonia carrier fuelled by ammonia.

In a separate development, Swiss marine engine company WinGD has signed a memorandum of understanding with KSS Line to explore the use of ammonia by its gas carriers.

The companies say they will focus on 52cm- and 62cm-bore versions of the X-DF-A dual-fuel ammonia engines, suitable for mid-size and very large gas carriers (VLGC).

WinGD says the agreement is the latest of several collaborations with experts from across key shipbuilding locations and vessel segments to develop its ammonia capabilities.

The scope of the cooperation is to extend beyond engine technology, also focusing on the performance and maintenance solutions necessary for using alternative fuel. The partners will also explore how deep insights into the engine performance can be provided through the deployment of WinGD's Integrated Digital Expert (WiDE), enabling fuel efficiency fine tuning and live 24/7 support from engine experts.

The agreement also includes a commitment from WinGD to deliver crew training for new engines. The company is building significant experience in equipping crew for safe and reliable ammonia-fuelled engine operations, having agreed in June to develop and support the implementation of a training syllabus for AET Tankers and maritime academy Akademi Laut Malaysia.

Volkmar Galke, Director Sales, WinGD said: "Ammonia as fuel is an interesting prospect for gas carrier vessels that already carry ammonia as cargo. The combination of our rigorously tested new engine design, training support and real-time optimisation via WiDE will mean that KSS Line can be confident that early experience with ammonia-fuelled vessels will be translated into safe and reliable operation in the long-term."

Chando Park, CEO, KSS Line said: "KSS Line aims to decarbonise its fleet rapidly and has already made significant investments in smart ships, LPG-fuelled and methanol-fuelled technology. Exploring ammonia as a fuel is the next step. The project with WinGD gives us the technical support we will need to successfully apply this new fuel type to our forthcoming newbuilds."

WinGD is due to begin validation of its ammonia-fuelled engine concept on single and multi-cylinder test engines, in Winterthur and Shanghai, later this year. The validation tests follow combustion concept testing that began in 2021, in concert with simulation and rig tests to understand the emissions characteristics and injection requirements of ammonia fuel.

The X-DF-A engine, like its methanol-fuelled counterpart X-DF-M, will operate on a high-pressure Diesel-cycle combustion process, with liquid ammonia fuel injection supported with a low portion of pilot fuel.



GETTING READY

Widespread use of hydrogen as a marine fuel may be some distance off but development projects are underway

ClassNK has issued an Approval in Principle (AiP) for a parcel layout concept for a hydrogen-fuelled multi-purpose vessel developed by Mitsui OSK Lines (MOL), MOL Drybulk, Onomichi Dockyard, Kawasaki Heavy Industries (Kawasaki) and Japan Engine Corporation (J-ENG).

This is said to be the world's first AiP certification for a ship equipped with a large low-speed two-stroke hydrogen-fuelled engine as the main propulsion engine.

According to the companies, demonstration operation of the vessel will be conducted for two years from around FY2027 as part of the Development of marine hydrogen engines and Marine Hydrogen Fuel System 1 programme which was adopted by Green Innovation Funding Program of the New Energy and Industrial Technology Development Organization (NEDO).

Prior to the demonstration operation, J-ENG's large low-speed two-stroke hydrogen-fuelled engine and Kawasaki's MHFS will be installed in the vessel by FY2026. MOL and MOL Drybulk will oversee ownership and operation management of the vessel and Onomichi Dockyard will be in charge of the development and building of the vessel, and they will cooperate toward the demonstration operation.

ClassNK carried out a review of a parcel layout concept for the MHFS based on its rules including part GF of its "Rules and Guidance for the Survey and Construction of Steel Ships" incorporating the IGF Code and risk assessment results through Pre-HAZID2.

ClassNK says it will contribute to the further consideration of the project for demonstration operation from the perspective of safety evaluation.

Meanwhile Korean Register (KR) has published Research Report of Material Compatibility for Liquid Hydrogen Storage on Marine Application. This report provides detailed technical information on materials suitable for on-board liquid hydrogen systems.

KR says: "Hydrogen stands out as one of the most promising alternative fuels. It is a carbon-free option that can also serve as a feedstock to produce alternative fuels, such as methanol. As international hydrogen transport and trade are becoming increasingly active, the demand for hydrogen carriers and hydrogen-fuelled ships is expected to rise."

The class society adds: "For safe and efficient storage and transport of hydrogen, it must be handled in its liquid state. This necessitates a cryogenic environment. However, until now, there has been a notable lack of research infrastructure and industry understanding of the materials used in marine liquid hydrogen storage systems."

KR has been conducting the Korean Ministry of Oceans and Fisheries' Hydrogen Ship Safety Standard Development Project since 2020. In collaboration with the team at the Korea Institute of Machinery & Materials, led by Dr Kim Yongjin's and a team at Pusan National University led

by Professor Kim Jeong-Hyeon's, KR has established a Cryogenic Evaluation Infrastructure (CEI).

The CEI is the only facility of its kind available in Korea. It is designed to test and analyse materials for alternative fuels that require cryogenic facilities, such as hydrogen. In this study, it was used to simulate the hydrogen environment by conducting mechanical evaluation test at -253°C, the storage temperature of liquid hydrogen.

This research report contains the results of these tests and establishes evaluation methods for applied materials such as hydrogen pipes and tanks, as well as standards for applied materials.

Hydrogen production pilot

GTT group company Elogen is to design and manufacture a Proton Exchange Membrane (PEM) electrolyser with a power of 2.5 MW for Valmax Technology Corporation (Valmax), a South Korean system integrator for energy solutions in the hydrogen sector.

The electrolyser, with a production capacity of up to one tonne of hydrogen per day, will be part of a demonstration project.

Valmax will assemble locally the balance-of-plant of Elogen's electrolyser which Elogen will install in Pyeongchang, Gangwon province, in 2025.



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CERTIFICATION, TRIALS AND AVAILABILITY

Increasing numbers of biofuel stems are being reported worldwide

Reports of biofuel bunkerings are coming in thick and fast. Japan's "K" Line carried out a test bunkering operation with supramax bulker *Albion Bay* using marine biofuels last year, with the cooperation of JFE Steel Corporation and Sumitomo Corporation.

"K" Line has recently announced it has established a system for certifying the amount of CO₂ reduction from marine biofuels and issuing certificates, in association with Nippon Kaiji Kyokai (ClassNK) and has now certified the amount of CO₂ reduction (heavy oil comparison) achieved during this test operation and issued a certificate.

Going forward, "K" Line says it will continue to enhance corporate non-financial information disclosure to respond to the needs from stakeholders, which is increasing year by year, as "an initiative to quantitatively indicate the degree of environmental contributions of our customers' supply chains (Scope 3 emissions)".

Availability of biofuel is also increasing rapidly. Major global supplier Bunker Holding says it has secured biofuel availability in more than 80 ports around the world, catering to last mile delivery. The company says in a statement: "During

the past months, biofuels have been bunkered by the Group to different segments, reaching from cruise and ferry lines and container ships to offshore clients and even smaller businesses."

Meanwhile Maersk and Amazon have finalised a 2023-2024 agreement for the transport of 20,000 FEU containers using green biofuel through Maersk's ECO Delivery ocean product offering.

Maersk estimates this purchase will contribute to a reduction in 44,600 metric tons of CO₂e vs standard bunker fuel, roughly equivalent to 50 million pounds of coal burned. This is the fourth consecutive year that Amazon and Maersk have arranged container shipping using low GHG fuel options.

Among recent biofuel bunkerings, tanker shipping company Uni-Tankers and KPI OceanConnect completed the "successful" supply and trial of a bespoke blend of B30 biofuel on Uni-Tankers' *Alsia Swan*. Uni-Tankers say: "The trials are an important step for understanding the emissions performance of biofuel and validating its potential to help cut carbon emissions."

The trial took place in Amsterdam on board Uni-Tankers' 5,700 DWT chemical tanker. KPI OceanConnect arranged for

the supply of 34,000 litres of bio grade fuel containing a 30% blend of FAME (fatty acid methyl esters). The fuel supply was part of a two-day trial which saw emissions for the biofuel measured and compared with emissions for LSMGO under the same conditions.

KPI OceanConnect's local team of traders worked with their Uni-Tankers partners to identify a biofuel to meet their bespoke needs.

In results from the trial, Uni-Tankers saw particulate matter (PM) emissions reduced by as much as 42% when fuel supply was switched from LSMGO fuel to B30. Carbon monoxide (CO) emissions were also reduced by 18%. By using a blend of 30% biofuel and 70% fossil MGO, the *Alsia Swan* can cut lifecycle emissions of CO₂ by an equivalent amount. In a future of tightening regulation of greenhouse gas emissions, this will be an important interim step ship owners can take to maintain compliance and support decarbonisation.

Another recent delivery was carried out by energy supplier Peninsula in Hong Kong to the "K" Line capesize bulk carrier *Cape Amal*, chartered by BHP. The vessel started using the biofuel from August 29, 2023.

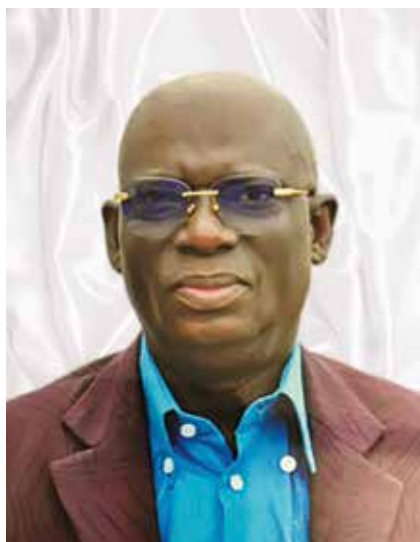


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Mr. Miezán Niamke (below) is currently the CEO of Bulk Inspection Services. He is a member of executive committee of the Group. He has 32 years experience in petroleum inspection, Ship to Ship (STS) operations, Laboratory, dry cargo and managerial position prior to joining Bulk Inspection Services. He understands the commercial implication of the services they provide.



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Our recruitment and training programmes are second to none. All managerial development is controlled centrally from Bulk inspection Services.

PRE-SHIPMENT SURVEY

Pre-shipment certification ensure a smooth transactional passage for documentation, insurance valuation and import licensing. The costs and penalties of cargoes lying off or held up in dock because of inaccurate, incomplete or unacceptable paperwork can be as high as the delays are long before they are finally secured for shipment, Bulk Inspection Services inspectors conduct exhaustive checks to ensure that the goods, their containment and the paperwork that is to direct their passage, all conform to contractual specifications.

Tel: 00228 9004 5813

Email: ops@bulkinspectionsservices.com
www.bulkinspectionsservices.com



DELIVERING UNPARALLELED SERVICE

For over two decades, OMTI has stood as a distinguished and privately-owned enterprise, demonstrating unwavering dedication to its customers

Operating Uninterrupted for 22 years within the esteemed bunker hub of Fujairah, ranked among the world's top three, OMTI has consistently delivered unparalleled service to discerning clients. The company's commitment to being a dependable and adaptable partner in the Gulf region has solidified its reputation as a premier choice for those seeking superior service. Over 2000 vessels put their trust in OMTI in 2022 for their legacy of reliability and flexibility in an important hub of the global maritime industry.

Boasting a collective experience exceeding 150 years, OMTI's operations team expertly manages a dynamic fleet of SIRE approved and Oil Majors recognized vessels as well as a barge with a mass flow metre capable for quantity determination. Charterers can take pride in selecting OMTI's services, confident in the team's seasoned proficiency. To complement the operations team, strategically positioned offices in Fujairah, Dubai, Singapore, and Greece provide a 360° perspective and seamless contact with the majority of the world's

ports and clients. Experience unparalleled connectivity without delays or disruptions, as OMTI brings a global reach to clients' fingertips. Trust OMTI for a comprehensive maritime solution that seamlessly integrates operational excellence and strategic trading acumen.

OMTI ensures each interaction is marked by punctuality, personalization, and seamless execution. The company adopts a ONE-STOP shop approach, providing tailored fuel procurement, risk management, and bunkering solutions that meet the specific needs of each partner, reflecting OMTI's commitment to elevating clients' businesses.

In addition to its supplying operations, OMTI maintains a floating storage of 75,000MTs with a mass flow metre fitted for accuracy in quantity and enabling uninterrupted loading – supplying – loading cycles independent of terminal congestions and shortages. This strategic approach offers flexibility and assurance to both OMTI and its clients, aligning with

the practical needs of shipping companies. The proximity of neighbouring ports, Kalba and Khorfakkan, further expands supply options, accommodating the schedules and routes of OMTI's clientele. The company delivers a comprehensive and adaptable approach to fuelling success in the maritime industry, grounded in operational efficiency and strategic foresight.





OMTI specializes in the supply of all distillate and residual grades of bunkers, deploying experienced barge crews and officers for seamless operations. The company pioneered the provision of high-quality Very Low Sulphur Fuel Oil (VLSFO) following the enforcement of the IMO 2020 regulation, maintaining this commitment across all bunker grades.

Integral to OMTI's operational success is a robust supply chain management system that ensures the quality of its products. With meticulous oversight from sourcing to delivery, OMTI adheres to stringent quality standards at every stage. This dedication to a meticulous supply chain empowers the company to consistently deliver bunkering solutions that meet or exceed industry regulations. OMTI stands as a reliable and quality-focused leader in the Fujairah fuel sector.

Since April 2022, OMTI has strategically aligned with Fujairah Engineering Company (FECO), the exclusive fuel supplier in Salalah, Oman. As the operator of the port's bunker terminal and the sole



bunker barge in the region, FECO has been providing fuel and Marine Gas Oil (MGO) at the anchorage and berths of the bustling port since April 2022.

Remaining forward-focused, OMTI and FECO are well-prepared to address and fulfill the biofuel requirements of their clients. With established facilities and enduring relationships cultivated over

two decades, the forthcoming milestone in bunkering comes with the assurance of OMTI's steadfast commitment and guarantees.

Oil Marketing & Trading International

Tel: +971 4 4350500

Fax: +971 4 4350505

E-mail: bunkers@oil-marketing.com

<https://www.oil-marketing.com/>



RESEAWORLD

RICH IN TRADITION AND PASSION



ReSeaWorld is an Italian trading company of marine fuel and lubricants, based in Naples, with a branch in Athens

Founded in 2016 by the experience of Valeria Sessa who has formed alongside world leading Shipowners.

Together with her children, Giovanni Battista, Luciana and Alberta Della Gatta, Reseaworld a family company rich in tradition and passion.

Over time Reseaworld has developed both the skills and professionalism required to be of service to its customers.

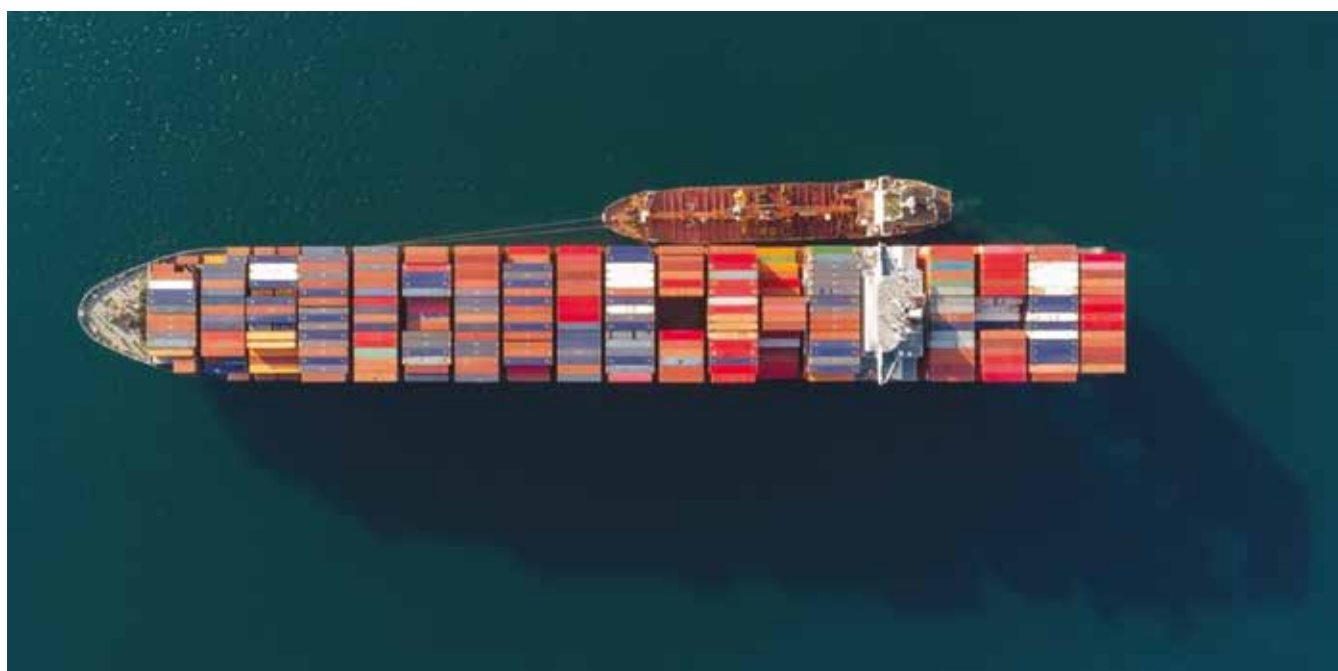
The main strength of ReSeaWorld is the direct and loyal relationship, consolidated over the years, with international stakeholders in the Shipping and oil industry worldwide.

ReSeaWorld also takes pride in the relationships established with clients and suppliers that have been the result of mutual respect and trust.

Its principal goal is to satisfy clients with the best service through experience and professionalism.

RSW looks to the future by actively participating in Green initiatives to protect the environment and contribute to the development of a sustainable ecosystem.

www.reseaworld.com





ATH TRADING

FROM ANGOLA TO THE WORLD

Based and focused in Angola, ATH is a physical bunker trader delivering tailored solutions to maritime clients across the globe

ATH Trading is an independent, privately owned commodity trading company that commercializes crude distillates of marine use: MGO and VLSFO.

With extensive experience providing reliable bunkering services, ATH is owner of the vessel ATH Lembra (6000 DWT), available for freights in the WAF region and for the local bunkering activity in all ports of Angola.

ATH has a diversified portfolio of clients ranging from international fishing fleets, general cargo companies or international oil companies.

Angola is set to become one of the next bunkering hubs in the WAF region due to four key points:

1. Angola produces an excellent quality of light sweet crude oil containing low volumes of Sulphur (<0.5%);
2. Angola is in a privileged position to attract the maritime traffic of both South Africa – Lomé and Continent – Middle East routes;
3. Low port call costs and availability to receive bunkers at berth;
4. Increase in volumes in the near future with the incorporation of up to 3 more refineries.

ATH is driven by the objective of providing the best tailored bunkering solutions to clients at the highest standards.

We guarantee product quality and quantity – from sourcing to delivery and offer the best competitive prices

Email: bunker@ath-trading.net





PROVIDING THE BEST SERVICES



Big enough to be powerful, small enough to be agile

Our aim, at Bunkeroil, is to offer our clients a truly competitive advantage by providing the best services in terms of maritime transport, delivery & sale of oil products and the relationship between shipowners and port operations.

We offer bespoke solutions with a high added value when it comes to operational flexibility and financial conditions.

Since the company was founded in Livorno in 1980, our history has always been marked by constant growth and focus on the quality of our products and services, as well as on client satisfaction. This has made us one of the key players in bunker and marine lubricants sale, both nationally and in the Mediterranean.

From the port of Livorno, our marine fuel and lubricant distribution operation began to expand into all Italian ports, in order to meet the diverse needs of our clients in an increasingly comprehensive way.

From the outset, our shipping activity in the transportation of petroleum products in the Mediterranean has run alongside the Bunker service, and in the early 2000s we upgraded our fleet.

During the same period, we launched the Clearing and Shipping Agency service in the port of Livorno,

whilst our international expansion in the lubricant sector began in the second half of the 2000s. Today, we cover all of the world's main ports as bunker and lubricant traders, of course with a greater focus on the Mediterranean Sea.

In 2018 we launched a constantly stocked lubricants storage service as leading ExxonMobil Distributors for local market in the territories of Italy and Malta.

The cornerstones of our work.

Being a supplier is not enough, and that is why we strive to form partnerships with our clients, through:

- the best products in terms of quality;
- maximum operational flexibility;
- problem solving;
- bespoke financial solutions.

With years of experience in the industry, we have developed a well-established network that enables us to respond to client requests promptly. We offer our clients:

- availability of the product or equivalent alternatives;
- 24/7 service;
- the most competitive price on the market, thanks to our greater purchasing power.

BUNKEROIL CONTACTS:

Address: Via Pietro Paleocapa 11, 57123, Livorno, ITALY.

Phone: + 39 0586 219214

Bunker enquiries: bunker@bunkeroil.it

Lubricant enquires: lubricant@bunkeroil.it

Please visit: www.bunkeroil.it

Follow us on LinkedIn: Bunkeroil



ENACOL, CONNECTING CONTINENTS

Based in Cape Verde, strategically located on the main maritime routes between Europe, West Africa and the Americas

ENACOL, offers high quality fuels and lubricants and ensures efficient delivery service to all types of vessels:

Guaranteed Marine fuels quality according with ISO 8217: 2017 standards:

- LS MGO Max 0,1%S (constant availability)
- IMO 2020 Compliant Fuel Oil with max 0.5% Sulphur Content
- Competitive prices in the region
- Safe and efficient supply service
- Fleet compliant with international standards: MARPOL, SOLAS, ISPS and ISM
- High quality lubricants in partnership with GALP-LUBMARINE

Enacol can deliver bunker fuels to international fleets in Cape Verdian main ports of **Mindelo** (alongside berth and anchorage) and **Praia** (service alongside berth only) by barge, truck or pipeline.

Mindelo have been reinforcing its position as a recognized and specialized "bunker-only" port due to its perfect anchorage conditions for a safe and efficient quick turnaround bunker operation without congestion, bad weather or security risks.

The port, supported by an international airport nearby and quality hotels for accommodations, offers a wide range of

maritime services, such as crew changes, spare parts supply, ship chandling, sludge disposal, fresh water, among others.

We look forward for your enquiries!

Phone: (+238) 5346065;

Mobile: (+238) 9968405; (+238) 991 5964

E-mail:

bunker@enacol.cv | energia@enacol.cv

www.enacol.cv



**GOIL PLC
PROFILE**

GOIL PLC (GOIL) is a Public Listed Oil Marketing Company. The company is ISO 9001:2015 as well as ISO 14001:2015 Certified. GOIL has as its subsidiaries, GOEnergy Limited, a Bulk Distribution Company, GOIL Upstream Limited to cater for its offshore business and GOBITUMEN Limited, a joint venture bitumen production and distribution company.

GOIL is currently the market leader in additivated premium quality fuel (Super XP RON 95 and Diesel XP) and has the largest and growing retail network in Ghana with over 440 stations. The marketing arm is represented in eight zones country-wide. GOIL also supplies Mining Diesel and lubricants to mining firms and the leading LPG marketer in Ghana.

GOIL supplies Marine Gas Oil, (MGO) at offshore and Anchorage through ship-to-ship (STS) via ex-pipe, and Road Tank Wagon (RTW) from three main ports, Tema and Takoradi as well as the Sekondi Naval Base and markets premium Lubricants some of which are blended locally. GOIL also supplies aviation fuel to major Airlines.

In line with GOIL's commitment to contribute towards building a resilient national economy with free-flow of goods and services, the company has taken steps to diversify its product range by constructing a 35-million-dollar Bitumen plant in Tema. The plant is expected to supply higher- grade Polymer Modified Bitumen (PMB) for the expansion of the nation's road network.



LISBON AND SINES FOR BUNKERS ONLY CALL

Lisbon and Sines are able to offer special conditions for bunkers only call

Calling Lisbon represents a short deviation, it is a sheltered port with protected anchorage (inside port limits) during the whole year for safe bunkering by barge. Draft restrictions – 14 m wp. Calling Lisbon for bunkers only gives our clients the opportunity to do other activities without extra costs, namely changing crews, loading spare parts, food and water, lubricants or making small repairs, with all the resources of an European Capital.

A few miles south of Lisbon the deep waters Port of Sines can receive for bunkers only call almost all type of vessels.

Clients can find in this port the particular advantage of being able to berth the ship with no extra costs if weather and /or sea conditions are not the safest for anchorage supply.

Contact the Galp bunkers team for further details.

+351 963 407 650
bunkers@galp.com





SEA CROWN MARINE SERVICES

Serving the marine community since 2019

SEA CROWN MARINE SERVICES DMCC is registered legal entity in Dubai, UAE and is the EXCLUSIVE PHYSICAL BUNKER SUPPLIER in Iraq Ports i.e. Basra, Khor-Al-Zubair and Umm Qasr and have started consistent Bunkering Operation from July 2019.

Sea Crown Marine Services has been serving the maritime community since 2019 and is one of the biggest marine agents in Iraq handling most of the tanker movements for Khor-Al-Zubair and Umm Qasr Ports and STS operations at KAZ OPL.

Sea Crown has contract with State Company for Maritime Transport (SCMT) since 2016. We are the only company to handle activities in Iraq related to Bunkering vessels and any floating units, Fresh Water, Provisions, Lubricants,

Husbandry Services, Spare Parts, Health Services for Marine Crews and performing Repair and Maintenance to all ships and floating maritime units.

Sea Crown Marine Services is trusted by world's leading shipping majors for their bunkering requirements for its competitive pricing and services on par with major bunkering ports in the world and currently doing Volume of 25,000 to 30,000 MT's per month with Major VLCC and Tanker Operators and Refiners. Sea Crown Marine Services has supplied more than 500 Vessels smoothly in last 6 months Majorly to VLCC, Suez-max and Aframax arriving at Basra Oil Terminal for Crude oil operations.

Basra OPL is an ideal location for bunkering of VLCCs as there is no draft restrictions and NO CALLING CHARGES levied and NO

AGENT required for vessels coming to Iraq for BUNKER ONLY CALL. We are currently operating with two barges with a total barging capacity of 27kT and supplying all grades of marine fuels – VLSFO S MAX 0.5%, IFO 380cSt, IFO 180cSt, MGO S max 0.5% and LSMGO 0.1% at berth and anchorage of all Iraq ports.

Telephone: +971 4589 6355

Mobile: +971 5868 81605

**Email: marketing@seacrowndmcc.com
seacrowndmcc.com**

**Office 204, Indigo Icon Tower,
Cluster F, Jumeirah Lake Towers,
Dubai, United Arab Emirates,
PO Box : 213204**





CHARTING A SUSTAINABLE COURSE

Chinese Enterprise's Sail for Green Shipping

The Forum of Alternative Fuel and Propulsion Technology was organized by Headway Technology Group (Qingdao) Co., Ltd. on 27th October, in Yantai, China. With the China Association of the National Shipbuilding Industry (CANSI) and the China Shipowners' Association (CSA) as hosts, many Distinguished representatives from government agencies, industrial associations, ship owners, shipyards and naval design institutes gathered at this event to engage in in-depth discussions on the latest advancements and prospects of alternative fuels and propulsion technologies.

During the forum, Headway Technology Group showcased their groundbreaking Methanol Fuel Supply System, which was in live operation. The event garnered support from notable organizations, including the Shandong Provincial Association of the Shipbuilding Industry (SPASI), Shanghai Merchant Ship Design & Research Institute (SDARI) and leading universities.

Headway Technology Group took center stage at the forum by unveiling two cutting-edge decarbonization solutions: the Methanol Fuel Supply System (LFSS) and the Carbon Capture, Storage and

Utilization System (CCSU). Additionally, they formalized a Cooperation Agreement on Alternative Fuel Conversion with PaxOcean Engineering Zhoushan Co., Ltd and SDARI. Under this agreement, the three companies will collaborate to provide comprehensive turnkey solutions, encompassing retrofitting, installation, commissioning and technical/after-sales support for alternative fuel sources like methanol and ammonia. This partnership is anticipated to yield mutual benefits for the entire supply chain and, most importantly, for the customer.





Naifen Tan, Deputy Secretary General of CANSI, emphasized that the global economic slowdown has introduced increased uncertainties and challenges. Furthermore, with the finalization of the *"2023 IMO Strategy on Reduction of GHG Emissions from Ships"*, the shipping industry has embarked on a faster journey toward decarbonization. In this context, the shipbuilding industry finds itself at a crossroads, brimming with both opportunities and challenges. There is an urgent need for a stronger commitment to digitalization and green technologies, fostering the growth of intelligent manufacturing and integrated solutions. These steps are essential in empowering a bottom-up approach to conversion. Ms. Tan commended the forum for providing a valuable platform for the industry to explore possibilities for steering the shipping sector toward a greener future.

During the forum, Kechao Lu, the Director of the Strategy & Development Department at Headway, delivered a speech titled *"Headway's Low Carbon Solutions based on the Strategy for Reduction of GHG Emissions"*. This presentation fully unveiled Headway's comprehensive solutions for low-carbon shipping, along with sharing data analytics from bench tests of the OceanGuard® LFSS.

In the afternoon, the speakers and audience had the opportunity to visit Headway's alternative fuel test center and observed the OceanGuard® Methanol Fuel Supply System in action. The test center was purposefully designed to serve as an intelligent platform, facilitating technical research, commercialization, product testing and talent development. This field visit provided an in-depth understanding of the components and operational aspects of the OceanGuard® LFSS, including the Methanol Supply Unit, Bunkering Unit, Service Tank and Control Unit.

The forum, as a whole, serves as a pivotal platform for the alternative fuel value chain to foster communication and collaboration. It is poised to drive the industry toward a greener future, characterized by mutual benefits. This collective effort will propel the industry along a steady and sustainable path toward a more environmentally conscious course.





JOINT MARITIME SCRUBBER PRODUCTION IN CHINA

Puretec A/S and China Shipbuilding Power Engineering Institute Co., Ltd. (CSPI) have joined forces to produce cost competitive, high-quality, and state-of-the-art maritime exhaust gas cleaning systems (EGCS or scrubbers) in China.

The collaboration between the two leading EGCS specialists Puretec and CSPI raises the bar for the production of scrubbers on the Chinese market.

THE BEST OF TWO WORLDS

CSPI is the contracting partner that delivers the complete scrubber system to the end client. It manufactures the scrubber tower in China and sources all components according to Puretec's specifications. CSPI is responsible for installation and commissioning in China, while Puretec is responsible for the basic design, engineering, class documents, sea trials, supervision, as well as provision of the main scrubber panel, control software, and the water monitoring system.

CSPI is an experienced scrubber maker with a strong equipment supplier base in China ensuring efficient yard installation and faster commissioning. Puretec designs simple and robust built-to-fit scrubber systems of all types based on in-house EGCS process software and EGCS specialized components to ensure remote access and troubleshooting, compliance monitoring and power optimization.

With this setup you get a high-quality product with first-rate EGCS design and performance, and low operational expenditure for a reasonable price.

GLOBAL SERVICE AND SUPPORT

In addition, Puretec's offices in Europe and Asia provide prompt worldwide support and after-sales service. Our expert team of marine engineers assist shipowners and operators in safeguarding continuous operation, reliability, and MARPOL compliance of all brands of scrubbers, either onsite or via the secure Puretec remote system.

We offer tailor-made service agreements designed to meet shipowners' specific needs based on the ship's operational pattern and crew proficiency level. Our service agreements include (but are not limited to):

- Operational advice and environmental performance reporting incl. access to our web-based Scrubber Performance Optimization Tool (Pure-SPOT)
- Certified calibration and sensor replacement program
- Spare part management and access to our safety stock (shipped within 24 hours)
- Training of crew on-site or remotely via our Internet for Remote Assistance Services (IRAS) installation for ship-wide Wi-Fi access and real-time support
- 24/7/365 hotline service





ONBOARD CARBON-CAPTURE-READY

To help combat climate change we are committed to continuously optimizing our systems and investing in research and development of new technologies within the fields of carbon capture and power-to-x. PureteQ Maritime Scrubbers therefore now come as fully onboard carbon-capture-ready.

JOINING FORCES

PureteQ A/S is an international engineering company that specializes in service, design, production, and installation of high-tech maritime exhaust gas cleaning systems (EGCS) - scrubber systems for ships that further the green transition by reducing emissions of sulphur oxides (SOx) and nitrogen oxides (NOx) in exhaust gas from heavy fuel oil.

China Shipbuilding Power Engineering Institute Co., Ltd. (CSPI) is the R&D unit for marine power systems under China State Shipbuilding Corporation (CSSC).

CONTACT

Anders Skibdal, CEO
PureteQ Group
Tel: + 45 4017 1400
Email: anders@pureteq.com
www.pureteq.com



WORLD ADVERTISE IN BUNKERING

Increase your visibility to the global bunker industry with an advert in World Bunkering. The ONLY official magazine to IBIA.

For more information about our media packages or to make a booking please contact our Projects Manager Alex Corboudé.



Alex Corboudé Project Manager, IBIA's World Bunkering

Tel: + 44 203 935 1474 **Mob:** +44 7957 472 317

Email: alex@worldbunkering.net

www.worldbunkering.net



STRATEGIC SHIPPING

As a part of the strategic shipping industry and port logistics in India, Axiom Global has been making tremendous progress in terms of both volume as well as having a presence in every major and minor ports in India and Sri Lanka.

There has been phenomenal growth over the last five years, and as a market leader, 2022 saw the company handle over 1000 safe and smooth ship to ship transfers and tackled a total volume of over 1.00 MMTs. This is the direct result of the company's robust logistics capabilities, having a strong bunkering infrastructure, a satisfied customer base and managing price volatility.

SPR Global, which operates under the Axiom Global umbrella, with its base in Khorfakkan Port in the United Arab Emirates provides a solid business opportunity in the Middle East. Having begun operations in September 2022, the organization is poised to strengthen its hold in the region with plans to operate in all ports across the UAE.

A team of specialist offshore and onshore professionals brings over two decades of combined experience in Oil & Gas, Shipping, Trading, Bunkering and Risk Management. It caters services to tankers (Oil, LNG LPG), bulk carriers, naval ships, containers, chemical tankers, cruises, and all types of bulk and general cargo ships. It offers all grades of marine fuels which meets the latest IMO and MARPOL regulations.

To cater to various pricing needs of customers especially in high volatile bunker price market, Axiom Global and

SPR offers its customers various pricing and hedging options viz. term contracts, prices based on Platt's quotes, prices basis Bunker Wire quotes, spot prices, fixed price, and prices basis periodic average of Platt's and/or Bunker Wire quotes.

As the merchant shipping sector is one of the major players in world trade; more than 80% of all goods are transported via international shipping routes. The sector also consumes over 330 MMTs of fuel a year and accounts for 2-3% of the global CO₂, 4-9% of SOx and 10-15% of NOx emissions. Axiom Global are energised to offer its customers Ultra Low Sulphur Fuel and Biofuel blended VLSFO. Emerging fuels like Methanol, LNG, Ammonia is being studied and watched closely on its techno-commercial feasibility to contribute for greener shipping.

As Axiom Global and SPR operate in multiple geographies and countries, as good corporate citizens they abide by all the local and international regulations, rules, and laws for safer, greener and sustainable shipping.

The pace of change in the bunker industry is accelerating rapidly. Where in the past, residual fuel oil remained the dominant bunker grade for decades, with only relatively minor adjustments to its viscosity and sulphur content, a wide range of new fuels is now emerging.

With the IMO now having announced that shipping's GHG emissions will be reduced to net zero by about 2050, little doubt remains over whether these new fuels will come to overtake fossil bunkers in time. Axiom Global is working closely with refiners and oil trading houses to meet the changing marine fuel requirements of the shipping industry.

The emergence of a biofuel bunker market will be, and to some extent has already been an easier prospect than for other alternatives. Gas-powered ships have been in operation for several decades now, but it has only been over the past decade or so that LNG has emerged as a prominent alternative bunker fuel. Methanol along with ammonia is also being considered as an alternative bunker fuel. As it remains liquid at ambient temperature and pressure, existing storage facilities and delivery vessels require much lower retrofit costs and time to be prepared to carry methanol. Once again, Axiom Global takes cognisance of the future trends and will lay a path to be able to service customer needs.

Axiom Global has a strong vision for the future and is in the process of exploring opportunities in aviation offering aircraft refuelling to airlines in India, Middle East, and Africa.



Axiom Aviation



Axiom Marine



Axiom Renewables

23 – 25 JANUARY 2024

**MARITIME WEEK AFRICA
CAPE TOWN, SOUTH AFRICA**

Maritime Week Africa, managed by Petrosport, returns to Cape Town, South Africa. This event unites essential bunker buyers and suppliers, along with ports, refiners, regulators, and other paramount maritime professionals. Together, they spotlight the distinctive challenges and opportunities inherent to the African bunkering industry.
For more information: <https://www.petrosport.com/events/mwaf24>

26 FEBRUARY 2024

**IBIA ANNUAL DINNER 2024
LONDON, UNITED KINGDOM**

Join us for the much-anticipated IBIA Annual Dinner 2024, set to take place on Monday, 26 February 2024 at the luxurious Grosvenor House Hotel, Mayfair, London. A pivotal event in the bunker industry's calendar, this evening serves as a tribute to our valued members and their esteemed guests, offering an exceptional opportunity to network with industry leaders and decision-makers. As we return to the iconic Grosvenor House, prepare for an unforgettable evening of celebration, shared successes, and promising connections. Join us to honour the spirit of the bunker industry and shape promising futures at the IBIA Annual Dinner 2024.
For more information: <https://ibia.net/event/ibia-annual-dinner-2024/>

5 – 7 FEBRUARY 2024

**MIDDLE EAST BUNKERING CONVENTION
DUBAI, UNITED ARAB EMIRATES**

The Middle East Bunkering Convention (MEBC), hosted by Petrosport, returns to Dubai in February to offer expert comment and informed debate about the issues and challenges impacting the global marine fuel sector and, as always, to provide a sharp focus on the evolving Middle East bunker market.
For more information: <https://www.petrosport.com/events/mebc24-dubai>

6 – 7 MARCH 2024

**GREEN PORTS & SHIPPING CONGRESS
SINGAPORE, ASIA**

Green Ports and Shipping Congress identifies and prioritises the areas that ports-based organisations and shipping companies need to work together on for their mutual advantage to reduce emissions.
For more information:
<https://www.portstrategy.com/green-ports-and-shipping>

12 – 14 MARCH 2024

**CMA SHIPPING
STEMFORD, UNITED STATES OF AMERICA**

Across a packed three days, CMA Shipping offers opportunities for professionals to learn from industry leaders, source products and supplies from established and emerging brands, and take advantage of enviable networking opportunities. For many, CMA Shipping is a staple in the diary.
For more information:
<https://www.cmashippingevent.com/en/about/about.html>

15 – 19 APRIL 2024

**SINGAPORE MARITIME WEEK
SINGAPORE, ASIA**

The Singapore Maritime Week (SMW) is an annual gathering of the international maritime community to advance key industry issues and exchange ideas to bring the sector forward. Driven by the Maritime and Port Authority (MPA), in collaboration with industry stakeholders and research and educational institutions, SMW brings together key opinion leaders and industry leaders through conferences, dialogues and forums.
For more information: <https://www.smw.sg/about-smw/about>

DIARY 2024

17 APRIL 2024

**IBIA ASIA GALA DINNER 2024
SINGAPORE, ASIA**

The IBIA Asia Gala Dinner 2024 stands as the most prestigious networking event in Asia, marking a highlight of the year. Following the success of the 2023 dinner, IBIA in Asia will host the 2024 event in Singapore on Wednesday, 17 April 2024, at the elegant Parkroyal Collection, Marina Bay, Singapore. A staple of the Singapore Maritime Week's social calendar, this gala dinner is renowned for attracting approximately 200 key players from the bunker and maritime industries.
For more information: contact siti@ibia.net

23 – 25 APRIL 2024

**THE INTERNATIONAL BUNKER CONFERENCE
OSLO, NORWAY**

The International Bunker Conference (IBC) is renowned for addressing the bunker industry's intricate issues, having previously explored topics like fuel quality and MARPOL Annex VI emissions. While 2020's focus was on Sulphur reduction, IBC 2023 delved into the industry's future, emphasizing the balance between current fossil fuel reliance and the urgency of greenhouse gas emission reductions. As IBC 42 looks ahead to the challenges of 2024 and beyond up to 2050, it urges participants to consider their future fuel choices. For more information:
<https://www.bunkerconference.com/>

6 – 9 MAY 2024

**PORTUGAL MARITIME WEEK
LISBON, PORTUGAL**

Portugal Shipping Week 2024, hosted by Petrosport, will showcase Portugal as a global shipping and maritime logistics centre and offer foreign shipowners and representatives from every maritime discipline a unique and exciting opportunity to meet, network and develop important new commercial relationships with the leaders of the Portuguese maritime sector.
For more information: <https://www.petrosport.com/events/>

21 – 23 MAY 2023

**MARITIME WEEK AMERICAS
PANAMA**

Maritime Week Americas 2024 returns to Panama. The week-long series of key maritime events, includes the MWA Conference – the largest and most popular bunkering conference in the Americas – plus bunker training courses, a maritime services exhibition, and some exhilarating Latin American-themed networking.
For more information: <https://www.petrosport.com/events/>

3 – 7 JUNE 2024

**POSIDONIA
ATHEN, GREECE**

“Powering ahead” is the theme for Posidonia 2024, exemplified by the impressive statistics of the Greek fleet and the growth of Posidonia itself. The 2022 event welcomed over 28,000 visitors from 103 countries, eager to do business with 1,964 exhibitors in the bustling exhibition halls.
For more information: <https://posidonia-events.com/>

WORLD BUNKERING

Q1 2024... NOW OPEN FOR BOOKINGS

Q1 2024

SPECIAL FEATURES:

Sanctions & Compliance

The world is becoming increasingly politically divided with several major oil importing and exporting states subject to sanctions by the US and other countries. We look at what this means for the bunkering business.

.....

I.T.

The digitalisation of bunkering is proceeding apace. Paper bunker delivery notes are likely to soon be a thing of past. Meanwhile the need to monitor all aspects of ship operation continues to bring profound changes to the shipping and bunkering industries.

.....

Lubricants

The increasingly wide range of fuels being used as shipping moves towards net zero presents a major challenge to lubricant manufacturers. We look at the latest developments.

GEOGRAPHICAL FOCUS:

Western Mediterranean

Our annual survey of the bunkering ports in the Western Mediterranean region. This important region located on the main East-West sea route boasts major competing bunker hubs. How are they preparing for the Mediterranean ECA and the increasingly diverse range of alternative fuels?

.....

Americas and Caribbean

The covid pandemic is, almost, a distant memory with cruise ships again playing their important role in the regional bunkering scene. However dock disputes in North America and draft restrictions in the Panama Canal have caused headaches for shipowners. Meanwhile throughout the Americas suppliers are adjusting to the diversity of fuels emerging as the industry moves towards net zero.

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Regular Features

IBIA News, IBIA Africa Report, IBIA Asia Report, Views & Analysis.

Plus: Interview – Industry News – Environment – Testing – LNG – Lubricants – Innovation – Legal – Equipment and Services – Diary – Event Previews & Reviews

GOIL PLC OCEAN BUNKERING



GOIL BUNKERING

GOIL PLC has attained the enviable Integrated Management System (Quality, Health, Safety and Environment) and has successfully been certified ISO 9001:2015, ISO 14001:2015. This endorsement attainment makes GOIL PLC stand out among the majority of the Oil Marketing Companies (OMCs), with such international excellence in providing bunkering services in Ghana and towards West Africa Coast.

Our Marine Gas Oil (MGO) meets the requirements of our esteemed clients in accordance with the ISO 8217-2017 fuel standard. GOIL is IMO 2020 - Low Sulphur Fuel (VLSFO 0.5%) compliant. We have built an ultra-modern state of the art bunkering facilities at the Sekondi and Takoradi Ports in Ghana to serve our numerous customers and also deliver by barges through ship-to-ship (STS).

Our barges serve as mobile fuel or filling stations, where our bunkering team supplies MGO and Marine Lubricants offshore across the coast of Ghana to a diversified portfolio of customers.

We leverage on GOIL's brands and sales strategies ensuring a seamless service from product sourcing to delivery by focusing on quality and reliability, thereby guaranteeing product quality, quantity, and availability.

GOIL Bunkering thrives on our customers trust in our management principles which are focused on EHS, quality products, exact quantity or equitable distribution and reliability as well as timely deliveries.

GOIL, GOOD ENERGY.
GOIL, YOUR RELIABLE AND EFFICIENT PARTNER.
GOIL, WE DO IT RIGHT THE FIRST TIME.

KEY ACTIVITIES

Our key activities include, cargo sourcing, marketing, and credit management. We deliver at offshore, anchorage and at ports through Ship-to-Ship (STS) and ports via ex-pipe and Road Tank Wagon (RTW).

KEY RESOURCES

Our key resources include, Cargo Sourcing Network, Sales Network, and Operational knowhow.

SERVICE & PRODUCT

Marine Gas Oil (MGO) and Marine Lubricants.

GOIL OCEAN BUNKERING STRENGTH

MARKETING ABILITY

We provide high quality product and Service. Our product is on-Spec, on-time, accurate quantity ensuring value-for-money and nationwide sales network.

OPERATIONAL EXCELLENCE

We have an excellent team of highly trained professionals equipped with a wealth of knowledge in marine industry practices.

COMPETITIVE EDGE

We operate in a very competitive environment and therefore employ best in class competitive strategies. We have been able to weather the storm with our experience onshore, and expertise in the field of bunkering to maintain the number one spot in the industry.

OPERATIONAL AREA

We cover offshore, anchorage, and ports in Tema and Takoradi.



email: bunkers@goil.com.gh
website: www.goil.com.gh



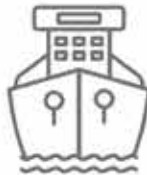
Think smart – Supply fast



HAWKS **BUNKERING** SERVICE



14 BARGES
WITH 12.2KT
CAPACITY



6 FOREIGN
GOING
VESSELS



TIMELY, RELIABLE
& HASSLE-FREE
DELIVERIES

OUR OFFICES

THE HAWKS PVT LTD

 info@thehawks.biz
 +960 3344049

THE HAWKS SINGAPORE PVT LTD

 sgoffice@thehawks.biz
 +65 9180 7830

THE HAWKS MIDDLE EAST L.L.C

 uaeoffice@thehawks.biz
 +971 438 278 25

THE HAWKS COLOMBO PVT LTD

 colombo@thehawks.biz
 +94 112 553 599