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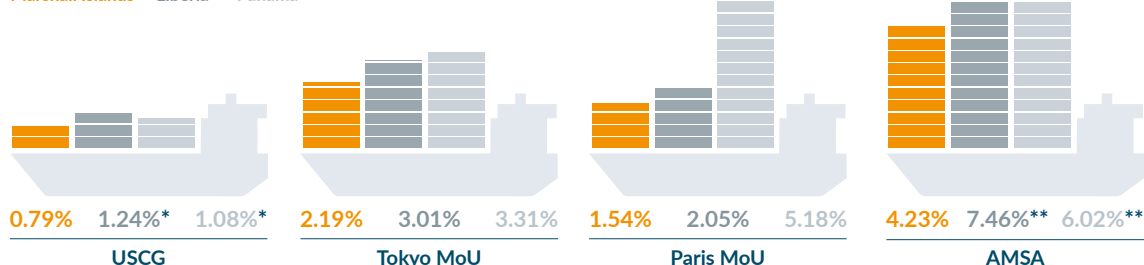
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THE MARSHALL ISLANDS REGISTRY

Port State Control Detention Trends (%)

Marshall Islands Liberia Panama



* Liberia and Panama are targeted for additional PSC examinations by the USCG for having a detention ratio up to two times the overall detention average.

Sources: 2019 Port State Control Annual Reports.

** Liberia and Panama have exceeded the overall AMSA average detention rate over the three years from 2017-2019 and Liberia is listed among the top five worst detention rates by flag State.



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Contents

LEADERS

- 02 ■ Could the Sea Cargo Charter change tanker shipping?
- 03 ■ Dimitris Fafalios (Fafalios Shipping) and Karin Orsel (MF Shipping) on shipping's future
- 05 ■ Ship registry update
- 06 ■ Gibraltar Maritime's 2020

ECO

- 08 ■ Stena, Latsco and UECC on practicality of decarbonisation
- 10 ■ DNV GL – how maritime will make energy transition
- 12 ■ “All tanker owners considering LNG for newbuilding” – DNV GL
- 14 ■ How Hafnia manages vessel performance



- 15 ■ Yara – scrubbers can mean lower CO2

OPERATIONS

- 16 ■ Developments with ballast water
- 17 ■ Ecochlor – new US “VIDA” regulation for discharges
- 20 ■ EOS Risk – piracy strategies for Gulf of Guinea
- 21 ■ Enclosed space fatalities continue - Standard Club
- 23 ■ Making maritime blended learning work



- 24 ■ Update on tanker employment market



Could the Sea Cargo Charter change tanker shipping?

A number of tanker and dry bulk charterers, including Trafigura, Equinor, Total, Gunvor, Shell, Occidental, and Dow Chemical, have attached their names to an initiative called the Sea Cargo Charter, which aims to provide a framework “for aligning chartering activities with responsible environmental behaviour to promote international shipping’s decarbonisation”.

The signatories agree to calculate and report the emissions from their chartering activities, and assess if they are aligned with the IMO’s ambition of reducing greenhouse gas (GHG) by 50 per cent by 2050 compared to 2008. This is something all large companies would probably be planning to do anyway.

Transparent reporting of emissions is a first step to reducing them. Nobody wants to release data showing that their emissions are very poor compared to their peers.

Catrine Vetereng, vice president, global segment director tankers, DNV GL, said during a DNV GL webinar that she believes Sea Cargo Charter will “to a great extent influence the tanker owners and the development of the ship.”

It is “setting goals for the tanker owners and bulkers, and promoting and incentivising international shipping decarbonisations, and connecting that with the charterer,” she said.

The framework

Sea Cargo Charter aims to develop a “framework for assessing and disclosing the climate alignment of chartering activities,” with an aim to “assess and disclose whether chartering activities are in line with adopted climate goals.”

This means that signatories will, on an annual basis, calculate the GHG emission intensity and total GHG emissions of their chartering activities, and will assess their climate alignment (carbon intensity relative to established decarbonization trajectories).

“Climate alignment” is defined as the degree to which voyage carbon intensity of a vessel category is in line with a decarbonization trajectory that meets the IMO ambition of reducing total annual GHG emissions by at least 50% by 2050 based on 2008 levels.

In order to take the volume and distance of cargo movements into account, the calculation is based on “emissions intensity”, which IMO calculates as “grams of CO₂ per tonne-nautical mile”.

The Sea Cargo Charter relies specifically on the Energy Efficiency Operational Indicator (EEOI) as the carbon intensity metric, which produces the closest measure of the vessel’s true carbon intensity in operation, to a high level of granularity.

The EEOI uses the parameters of fuel consumption, the GHG emission factor for each fuel type, distance travelled while laden with transported cargo, and amount of cargo transported over given voyage.

A decarbonization trajectory is a representation of the planned rate of change of CO₂ emissions per unit weight of goods over time.

The plan is that standard decarbonization trajectories will be produced by the Secretariat of the Sea Cargo Charter for each ship type and size class.

To assess climate alignment of a specific voyage, the carbon intensity is compared with where it should be, according to the decarbonization trajectory for its respective ship type and size class.

Shipowners will need to provide the data to their customers, if they are signatories, and signatories will provide the data to Sea Cargo Charter.

It says, “to ensure that information provided under the Sea Cargo Charter is practical, fair and accurate, Signatories will only use data types, sources and service providers identified in the Technical Guidance.”

About Sea Cargo Charter

Sea Cargo Charter has a website at seacargocharter.org. It shares an office in Copenhagen with the Poseidon Principles and an organisation called Global Maritime Forum, which has 19 employees, describing itself as “an international not-for-profit organization committed to shaping the future of global seaborne trade”.

A first Steering Committee will be elected at the first Annual Meeting of the Sea Cargo Charter Association, which will be held in 2021. In the interim, the Steering Committee is constituted of the first fifteen Signatories.

Members commit to “ensure ongoing compliance with the Sea Cargo Charter for new chartering activities through contractual means by using the Sea Cargo Charter Clause in charter parties.”

They also commit to “contribute to the update and addition of the Sea Cargo Charter Clause through the annual review process.”

Poseidon Principles

The Poseidon Principles, which might be considered a sister project to the Sea Cargo Charter, describes itself as a “framework for integrating climate considerations into lending decisions to promote international shipping’s decarbonization”.

It has 18 financial institutions as signatories, together representing a bank loan portfolio to global shipping of approximately \$150 billion, more than a third of the global ship finance portfolio.

The signatories are ABN-AMRO, Amsterdam Trade Bank, BNP Paribas, Bpifrance, CIC, Citi, Crédit Agricole, Credit Suisse, Danish Ship Finance, Danske Bank, DNB, DVB Bank, Export Credit Norway, ING, Nordea, Société Générale, Sparebanken Vest and Sumitomo Mitsui Trust Bank.

TANKEROperator

Vol 18 No 15

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1 year (7 issues) - £195
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Dimitris Fafalios and Karin Orsel on shipping's future

Dimitris Fafalios, president of Fafalios Shipping, and Karin Orsel, CEO of MF Shipping Group, shared thoughts on where the maritime industry is going, in an ICS webinar "The recovery in the aftermath of COVID"

Dimitris Fafalios, president of Fafalios Shipping, said that although the industry could be considered low tech, "we're actually very efficient."

The dry bulk business is probably up there amongst the most efficient in the world. We transport the basic products needed for everyday life."

Mr Fafalios was elected as chairman of Intercargo in Jan 2019 and chaired its

technical committee since 2009.

As of June 1, 2018, the latest information available on its website, Fafalios Shipping SA fleet consists of 5 dry bulk vessels with an aggregate capacity of more than 320,000 dwt, mainly consisting of Supramax and Panamax vessels.

There is actually quite a lot which other industries could learn from shipping, including how it manages to stay agile and resilient in the face of enormous change, he

said.

"Shipping and shipping operations is management of change. We manage change every single time. That's what distinguishes us from a highly automated supply chain."

"We go through Panama Canal five times - every single time it's different for A or B reason."

"We developed risk management structures to counter that."

"If you ask us - what is our revenue going



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to be in October we simply don't know."

"The shipping business has been relatively resilient to COVID."

"Therefore our economic model and management model is robust. It should actually be taken onboard more in land based industries. We could give some economic professors and finance professors some very good tips from the shipping industry about resilience."

The system for working with a port is very simple. "You load cargo, you are sent to a port, told to go at a particular speed, to arrive at a particular time, then stay in a queue until the terminal selects you, and then discharge the cargo. It is very very simple."

"Shipyards of the world can produce new vessels and relatively latest technology vessels within 18 months of placing an order."

When it comes to digitalisation, Mr Fafalios believes that it must "keep the people onboard fully in the loop."

"It is no use developing a fantastic vessel where everything can be monitored from the shore, and people onboard feel as if they are simply there to tick boxes. We must discourage this."

"The people onboard must retain their skills as navigators and engineers

They must know what it means to go around the engine room, feel, see and hear problems."

The dry sector is seeing demand for steam coal reducing, as companies find "more environmental methods of power generation."

Covid has brought big problems with crew changes, particularly in the Far East. "They want the ship but don't care about the crew," he said. "This is extremely challenging for us. We've had to change trade routes, divert the vessel to the most convenient port in order to make crew changes." Then there are problems with the lack of flights.

EU ETS

For shipping to be included in the European Union Emission Trading Scheme (EU ETS) is an example of "politicians not understanding fully what shipping is," he said.

"To many politicians, shipping is a container ship, ferry or ro-ro, which has got a far higher profile."

"The regulations we're going to have to face with ETS will be very negative to the industry, very negative to Europe, and will increase emissions."

Consider how large bulk carriers are transhipped into smaller vessels in Rotterdam. This task does not need to be done in Rotterdam, and having to pay for emission credits would push the task outside the EU, which could also lengthen voyages.

The shipping industry has proposed a tax on every tonne of fuel burned or consumed globally, he said.

Corona

In terms of establishing virus testing requirements onboard, Mr Fafalios said that the Maritime Labour Convention could be the right place for requirements, making it a generic procedure.

"On our vessels we

take everybody's temperature several times a day every single day," he said. "We have adapted."

A weakness has emerged where IMO is good at influencing maritime authorities, but we are facing rules coming from health and immigration authorities, and national leaders, who don't understand shipping, he said.

Karin Orsel, MF Shipping

Karin Orsel, CEO of MF Shipping Group, said that the industry suffers from a poor public image. "The general public thinks a seafarer is a tough gentleman smoking a cigarette having a beer. That's not how our industry is working today."

"The industry has picked up several initiatives, they are unknown to the general public. We raised the standards quite high in the tanker segment and cruise industry. There's a high level of governance we want to fulfil."

MF Shipping, based in the Netherlands, manages 52 vessels, including product tankers, chemical tankers, multipurpose ships and cement carriers. It employs 1000 seafarers.

Ms Orsel is co-president of the Royal Association of Netherlands Shipowners and member of the executive committee of Intertanko.

"I think our industry is very fragmented, especially if I look at a part of Europe where you see a lot of vessel owners who have one or maybe a dozen [vessels], in comparison to big shipowners."

"Maersk is a name familiar with the general public. But we as an industry have been invisible for a long time."

"The other challenge is decarbonisation. The big question mark is - will a vessel [find cargo]? Say a dry cargo vessel, in 25 years, tankers shorter?"

"That's another challenge we all have to deal with, what is the lifecycle of vessels."

"Does it mean freight rates have to be completely different to make [low carbon ships] a valid investment?"

"We say we are quite proactive as an industry, also on digitalisation," she said.

"There is where our opportunity lies, to attract the next generation."

In terms of establishing virus testing requirements onboard, she said there should be "multiple testing to avoid a possible outbreak, no discussion whatsoever. I am not sure if we should make it a regulation."

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Ship registry update

Update on ship registry rankings, and news from Isle of Man, Marshall Islands, Cayman Islands, Liberia, UK

The Paris Memorandum of Understanding on Port State Control, covering 26 European countries and Canada, has the following for its top 25 ship registries for 2020, based on the total number of inspections and detentions over a 3-year rolling period.

They are:

1-10: UK, Norway, Bahamas, Netherlands, Denmark, Marshall Islands, Singapore, Hong Kong, Japan, Bermuda

11-20: Germany, Cayman Islands, Liberia, Sweden, France, Isle of Man, Malta, Belgium, Italy, Greece

21-25: Gibraltar, Cyprus, Ireland, Luxembourg, Turkey.

For the US, 25 flag administrations met the requirements for full participation in its QUALSHIP 21 program, covering starting 1 July 2020 to 30 Jun 2021.

They are: Bahamas, Bermuda, British Virgin Islands, Canada, Cayman Islands, Croatia, Cyprus, Denmark, France, Germany, Gibraltar, Hong Kong, Isle of Man, Italy, Japan, Jamaica, Marshall Islands, Netherlands, Norway, Republic of Korea, Singapore, Switzerland, Taiwan, Thailand, United Kingdom.

The Tokyo MOU, which covers port state control in the Asia Pacific region, said its highest performing flags by “excess factor” in its 2019 lists (covering July 2020 to June 2021) were

1-10: China, Republic of Korea, Hong Kong, Singapore, Bermuda, Germany, Bahamas, Norway, France, Malaysia



Cayman Islands Registry is presented with an award for achieving an unqualified audit by the Cayman Islands government. From left to right: Chris Saunders, Member of the Legislative Assembly (MLA), Cayman Islands government; Kenrick Ebanks, global director commercial services with the Maritime Authority of Cayman Islands (MACI); Philip Barnes, financial controller, MACI

11-20: Marshall Islands, Japan, Denmark, Belgium, Cayman Islands, Isle of Man, Liberia, Greece, Taiwan, Panama

21-25: Portugal, Russian Federation, Antigua and Barbuda, Malta, Thailand

The flags which made it on all 3 of the above lists were Bahamas, Bermuda. Cayman Islands, Denmark, France, Germany, Hong Kong, Isle of Man, Japan, Marshall Islands,

Norway, Singapore,

Flags on 2 lists were Belgium, Cyprus, Gibraltar, Greece, Italy, Liberia, Malta, Netherlands, Korea, Taiwan, Thailand, UK

Isle of Man

The Isle of Man Ship Registry launched a seafarer welfare app in July, available for free download for seafarers on Isle of Man flag

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vessels.

The app has been designed to support shipboard social activities and social interaction. It was developed together with local maritime training organisation Tapiit. There are live interactive support sessions for mental health and fitness.

The Registry also announced a MOU with the UK Maritime Accident Investigation Branch (MAIB), establishing that MAIB will have responsibility for the investigation of certain marine casualties that occur on Isle of Man registered vessels.

Marshall Islands

The Marshall Islands Registry said that it had had a “banner year”, with the best ever ranking from port state control authorities globally, including its best performance year with the Paris Memorandum of Understanding (MoU), 16th consecutive year with the United States Coast Guard’s Qualship 21 program, remaining as one of the top performing flags on the Tokyo MoU, and improving its standing with the Australian Maritime Safety Administration (AMSA).

The registry administrator, International Registries, has focused on strengthening and expanding technical resources this year, increasing the number of inspectors, providing enhanced onboard training where possible, and

deploying an in-house inspector to oversee operations in Australia.

In October 2020, it hired Alexander Schultz-Altmann, former chairman of the Tokyo MoU Committee on PSC, and former manager of ship inspection and registration with the Australian Maritime Safety Authority (AMSA).

Cayman Islands

In August, the Maritime Authority of the Cayman Islands (MACI) was presented with Unqualified Audit Opinion Awards for 2018 and 2019 financial years by the Public Accounts Committee (PAC) for achieving an unqualified audit (thorough audit) for these periods.

On hand to receive these awards were Global Director Commercial Services, Kenrick Ebanks and Financial Controller, Philip Barnes. They were presented by MLA Chris Saunders during a ceremony in the meeting chamber of the Legislative Assembly.

Liberia

In August 2020, the Liberian Registry said it was the fastest growing ship registry in the world, having grown “almost 12 per cent” in the past 12 months.

It appointed Thomas Klenum as Senior Vice President of Maritime Operations. He

previously served as technical director for the registry, representing Liberia at IMO, and before that was a general manager and principal surveyor at Lloyds Register.

Reynaldo Garibaldi is appointed Senior Vice President of Maritime Operations and South America. He was formerly chief of navigation and maritime safety with the Panamanian Maritime Authority.

In July, the registry hired Dallas Smith as the Director of LNG and Offshore Technology, and as General Manager of the Registry’s Houston Office. He is formerly head of US Coast guard Liquefied Gas National Center of Expertise.

UK Ship Register

In September 2020, the UK Ship Register launched a new online registration system, where customers can register a new vessel, renew registration and check a vessel’s name. They can upload documents and make payments.

In July, the Register announced plans to open an office in Piraeus, Greece. “There is a long history of Anglo-Greek collaboration in the maritime industry and that’s why we’ve chosen Greece as the location for our first overseas sales hub,” said Katy Ware, Director of UK Maritime Services at the MCA.

TO

Gibraltar Maritime’s 2020

This year the Gibraltar maritime sector made a great contribution to the crew changes challenge, offered face to face tuition in its university, had steady business in dry docks, and saw some expansion in services

The International Ship Managers’ Association (InterManager) credits Gibraltar for how well it supported crew changes during COVID.

“I have checked with our members and all are singing praises,” says Captain Kuba Szymanski, secretary general of InterManager.

“Gibraltar is well suited and geared up to do crew changes. Gibraltar should be thanked for their attitude and support extended to shipping and our seafarers. More leaders like Gibraltar please.”

“I wish Singapore was that pragmatic. Very much comparable situation and location and two very different approaches.”

Seafarers were allowed to enter Gibraltar throughout 2020, to board a ship from an aircraft, or leave a ship to board an aircraft. They needed to have a passport, a ILO 108 Seaman book and letter of employment from the shipping company, but no visas required provided they were flying from Gibraltar. A shipping agent was required to meet the crew at the port or airport and handle transportation.

A limitation was the number of flights available out of Gibraltar (for example in November there were only 2 flights a week to London with BA), although there was plenty of hotel space available.

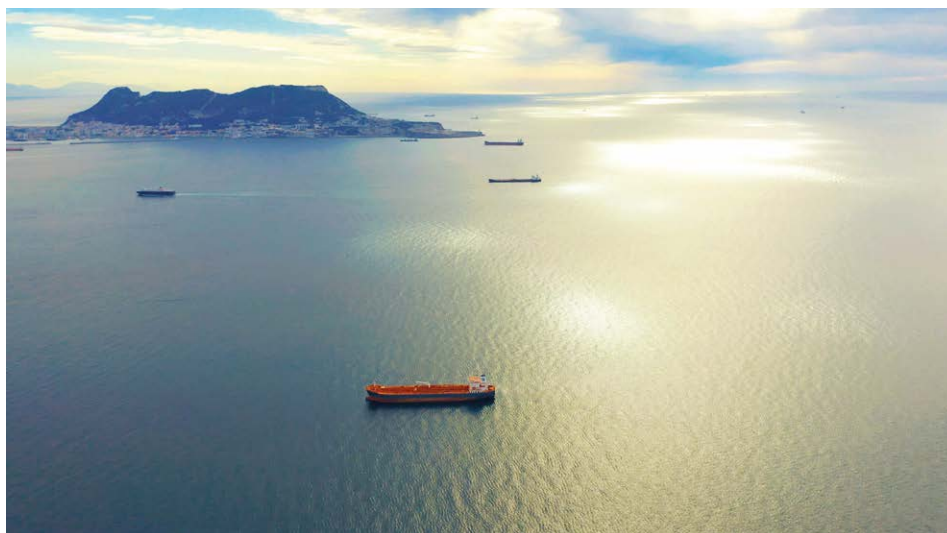
There are two nearby airports in Spain, Malaga, and Sevilla, but Schengen transit visas

were needed to fly through these.

University

The new The Gibraltar Maritime Academy, based at the University of Gibraltar, offers specialist academic programs and a range of technical training courses.

On the academic side, there are two undergraduate programmes, both of including cadetship experience. A BSc (Hons) in Maritime Science (Nautical) with deck cadetship and a BSc (Hons) in Maritime Science (Engineering) with engineer cadetship, which would lead to deck officer of the watch or engineer officer of the watch certification, allowing graduates to enter the industry



directly as officers. Both start in September 2021.

Both courses have obtained MCA approval. This means that the qualification BSc Maritime Science has been approved as meeting the requirements of the STCW Code (II/1&II/2 – Deck and III/1 and III/2 – Engineering).

As with all University of Gibraltar's academic programmes, both undergraduate maritime degrees have been reviewed and validated by an external panel of senior academics against rigorous UK quality standards.

Speaking during the validation process, the University's Academic Quality and Standards Committee Member Professor Jon Scott said, "The overall structure of the programmes is very well thought-through and the relevance to professional development is clearly laid out and underpins the overall frameworks. As such, the extensive focus on practical experience will significantly improve the students' professional development and employment prospects."

Programme Coordinator Aaron Lopez says the programmes get students ready for industry faster than many other courses.

"The accelerated programmes will allow our students to get a BSc (Hons) degree in Maritime Science with sea time leading to an Officer of the Watch (OOW) Certificate of Competency in approximately three years," he says.

A key feature of the programmes is their focus on employability, he believes, from combining academic and the technical requirements. "The broad skill set developed during the programmes offers opportunities for graduates to work shore side (BSc) or at sea (OOW Certification)," he says.

The CEO and Captain of the Port with Gibraltar Port Authority (GPA), Manuel Tirado, said, "we are very pleased about the Maritime Academy. Gibraltar is a maritime centre of excellence and it was one of the key

elements we were missing. The prospect of having an academy run by the University of Gibraltar makes a lot of sense."

International interest in the programmes has been growing with many enquiries coming from students in India, Pakistan, Spain and Portugal following the university's presence at in-country educational fairs

On the technical (non-academic) side, early 2021 brings the launch of basic STCW and STCW refresher courses.

In the medium term, the Gibraltar Maritime Academy hopes to offer a full range of maritime training courses as the Maritime Industry recovers from the current crisis and training demands start to increase.

These courses would include specialist Yacht-related training and Offshore Petroleum Industry Training Organization (OPITO) courses.

The University of Gibraltar has also been approved as an Examination Centre for MCA Safety (Deck) and Professional Exams Engineering,

which are currently administered by the SQA and IAMI.

Sandvik Electronics

Sandvik Marine Electronics of Gibraltar reports that it has 150 vessels signed up for its shore based maintenance (SBM) service to receive complete technical management of all of the equipment on the bridge, including 24 hour support and worldwide service.

Its engineers can complete any tasks onboard whether about navigation, communication or connectivity, the company says. New clients include Synergy of Mumbai and Thomas Schulte Shipmanagement of Hamburg.

As an example of the services, at the time of writing in early November it had one technician flying out to Malaysia to assist with LNG Enugu and LNG Oyo in a shipyard, with the trip requiring a 2 week quarantine stay in a hotel before being allowed to attend.

It has added the Korean Register to the list of class societies for which it performs "long approvals" for radio and voyage data records.

"Business has been steady in 2020 but now getting back to normal," says John M King, World Service Manager with Sandvik.



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Stena, Latsco and UECC on practicality of decarbonisation

Senior representatives of Latsco, Stena Teknik and UECC shared perspectives on the practicality of decarbonising shipping, at a webinar organised by DNV GL

Harry Robertsson, technical director of Stena Teknik, Stena's internal technical advisory company, said he was optimistic about the shipping industry reaching IMO's 2050 greenhouse gas target.

This is on the basis that with each newbuilding, the company generally achieves a 30 per cent improvement, in comparison with the ships being replaced.

Stena's fleet totals 149, owned, chartered and managed vessels and drilling rigs, including new buildings. This includes 81 tankers, 3 shuttle tankers, 3 LNG tankers, 2 drilling rigs, 4 drill ships, 34 ropax vessels and 10 roro vessels.

"Some of the ships we are ordering today will be around in 2050, possibly running on bio or [other] fossil free fuel," he said.

"There's a lot of technology needed for 2050 reduction targets that is already in place."

"We will see other types of arrangements. Propulsion will be most probable by electric motors, powered by batteries, fuel cells or ordinary gensets running on some kind of fossil free fuel."

Although he noted "the most efficient decarbonisation is fuel which is not consumed."

"There will be developments in ship design and trading patterns which show that speed will be reduced. That will reduce consumption from ships even more."

Improving ships

"We are working continuously to make sure ships are running as efficient as possible," he said.

Stena has already tried methanol fuel and biofuels, and batteries. "We are evaluating almost everything you can imagine, trying to turn every stone," he said.

Its vessel Stena Jutlandica has a 1MWh battery on board, enough to run bow thrusters and to manoeuvre in port. "The battery pack has worked excellent since day 1," he said.

The ultimate goal is for the Stena Jutlandica

to operate fully on battery power, requiring an estimated 50 MWh of stored energy for the 3 hours and 25-minute crossing from Gothenburg (Sweden) to Frederikshavn (Denmark).

"We're looked at fully electric ropax for routes up to 50 nautical miles. [But] we haven't found an economically feasible solution to run the ship on electricity through the Archipelago."

For longer routes, if the company decides to go for zero carbon propulsion, "we think we'll go for fuel cells," he said.

"We have been running the world's biggest ROPAX on methanol without any problems. We think methanol is an excellent fuel, with the same characteristics as LNG, except a higher energy consumption when we produce it. It is easier to store and handle."

"Methanol can be produced in many ways. So definitely a pathway to non-fossil shipping."

"We're running LNG carriers on LNG with good experience. But we haven't been able to find any suitable Stena routes to run on LNG. The investment in existing ships is too high and logistics [LNG supplies] is not fully developed in our areas."

Biofuels "have been successful, no problem at all," he said. The company reported a successful trial with biofuel replacing ordinary fuels on 50,000 dwt tanker Stena Immortal, running for 10 days in Spring 2020.

"We think biofuel might be the lowest hanging fruit to decarbonise our existing fleet," he said. "The main challenge is availability, standardisation and price."

In terms of IMO's 2050 rules, the overall ambitions are well known. "Now we need to know how it will be measured - by ship, country, by company or some other way," he said.

"This is not only a technical issue. [Commercially] we are not able to cover this huge transition by ourselves."

"We are operating in a world that is changing dramatically. But we have always been operating in such a world. In the 1980s, shipping looked very different to today."

"I have a personal example - in the beginning of the 1980s my father was master of a newbuild

chemical tanker 35,000 dwt. There were difficulties to find a terminal that could handle that size of vessel. Today 35,000 dwt is quite common."

Latsco Marine Management

Kostas Vlachos, COO, Latsco Marine Management, said that decarbonising shipping is "a very big challenge", when currently only a tiny number of ships have dual fuel engines.

Latsco Marine Management operates 29 vessels - 18 product tankers and 11 gas carriers.

"The expectations are that only 20-40 per cent of the world shipping will be fitted with a dual fuel engine by 2050."

With the switch from diesel to LNG power meaning a 20 per cent drop in CO2 emissions, this would mean a 4 to 8 per cent reduction, not a 50 per cent reduction.

"This, along with all the other measures that already have to be taken - operation and technological measures - make me not to be optimistic that by 2050 the aspirations of IMO will be fulfilled," he said.

"The owners need to invest and therefore they are looking to the customers (charterers), the regulators, the financial people, to see if they will support this common action," he said. "Otherwise these aspirations will not be fulfilled."

In conclusion, what is needed, other than regulations, is "financiers to get the risk appetite to fund, we need clarity on which fuels will be used in future, we need regulations on targets and a timeline as soon as possible."

Technology

"For all our new buildings built after 2012, we have applied all the technological improvements that exist in the market. Main engine improvements, auxiliary system improvements, waste heat recovery, air lubrication [of hulls], hull coating, shaft generators. With all of them we have succeeded to reduce 18-20 per cent CO2."

The company's project to use air lubrication under the hulls is working together with a shipyard, class society and oil major.

"We are in the process and really we have



Screenshot from the webinar. From top to bottom: Tomas Llewelyn Barrett, Global Head of Corporate Communications, DNV GL - Maritime; Kostas Vlachos, COO, Latsco Marine Management; Daniel Gent, energy and sustainability manager, United European Car Carriers; Harry Robertsson, technical director, Stena Teknik

made good progress to reduce the capital cost," he said. "The cost is \$12m more than a conventional vessel. We are trying to reduce this barrier."

The company has a project to explore the use of LPG as fuel, for the LPG vessels.

"We have found a lot of obstacles in that decision," he said. "Classification societies are not ready [with a rules system for LPG fuel]."

"What's disappointing to me, the flag state or class society is not proactive in welcoming the new fuel and seeing through its implementation," he said. "That's a barrier we've encountered."

"We need the support of charterers. Not from a financial point of view, but from understanding we have to change something in commercial operations, to use part of the cargo as the fuel. These are matters we believe will be resolved."

Mr Vlachos said that he does not believe that we will see a replacement for the combustion engine before 2050 for ships. "Technologies are not yet proven. As everybody knows, for a new technology, we need 10 years for the breakthrough, another 20 years for testing."

"I am not pessimistic but looking at the data we have currently on the table, we need a faster growth in order to see this replacement in 2050."

There could also be fire concerns related to batteries, he said.

ETS

Mr Vlachos is not an enthusiast of the European Union planning to bring shipping into its Emission Trading Scheme.

"We have seen in this major matter, unilateral decisions by the EU. This unilateral solution is a big obstacle to the pathway for decarbonisation, this is my opinion."

"I don't go to the discussion why the decisions are taken, but I go to the result. It is not only the different timelines, the most important is the different standards."

UECC

Daniel Gent, energy and sustainability manager, with United European Car Carriers, based in Oslo, said that the IMO's targets "are ambitious but not impossible".

UECC has 16 medium sized pure car and truck carriers (PCTC) with loading capacity ranging from 1,060 to 4,750 car equivalent units, including two dual fuel LNG vessels. It is building 2 more LNG "battery hybrid" LNG vessels.

"We're starting to see gains in carbon intensity, heading towards the 2030 target with some of our vessels," he said.

Having targets can be helpful. "Shipping is a very traditional kind of market, it has something that has worked well for a long time - and hasn't wanted to move without a push."

Shipping has made some big steps already. "What we put on our vessels now would be unthinkable a few years ago, in particular biofuels. We found we could do it without great

changes to CAPEX."

"The way we need to look at it - the vessels which we're building today are likely to be operating in 2050. So the ships we build today need to be ideally [capable of] operating carbon neutrally."

"We also need to invest in fuels".

When asked what he thought the biggest barriers to low carbon shipping were, Mr Gent said cost. "Decarbonisation won't be cheap. It certainly hasn't been so far for us."

It would help if customers could get involved, as well as port authorities, who would be needed to get supplies of new fuels encouraged in their ports.

It would be helpful to see a shift in end user attitudes towards decarbonisation, so they are willing to spend money on it. "It is one of the things consumers are willing to talk about. But they don't want to support it in a meaningful way," he said.

Mr Gent thinks it is unlikely we'll see an end to use of internal combustion engines by 2050. "The ICE has worked well. On a much smaller scale - below 2000 or 3000 dwt, maybe a bit of a different question."

Also, "we need to be careful not to close doors too early for alternative fuels," he said. "We've proven the engines can handle all kinds of fuel and do so in a carbon neutral way."

On the introduction of shipping to the EU's Emission Trading Scheme, Mr Gent said "localism isn't a new thing in our industry. We've had emission control areas for over a decade. We've seen other [non global] regulations come in, discharge of water from vessels operating in scrubbers, Ballast discharge.

"But of course, it can make a shipowner nervous, to invest in complying with one regulation when another regulation can come into force."

TO

You can watch the video of the talk and download slides at

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Session 8



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DNV GL – how maritime will make energy transition

DNV GL has done sophisticated modelling about how the maritime industry may go through the energy transition, including evaluating 30 different scenarios

DNV GL has been putting together forecasts / pathways which reach IMO's emissions of 50 per cent GHG reduction by 2050.

Regulations and other incentives are already starting to impact shipping, said Knut Ørbeck-Nilssen, CEO of DNV GL's maritime division.

It is increasing company's costs, and also impacting the asset values and earning capacity of vessels, if less green vessels become less attractive.

Over the long term, DNV GL sees that ammonia and methanol are very promising fuels, both being zero or low carbon (NH₄ / CH₃OH).

Over the medium term, LNG and Marine Gas Oil (MGO) made using biofuel or electrolysis from renewable electricity can be used as transitional fuels, as low carbon fuels which can work with our current vessels and infrastructure.

"Installing a dual fuel (LNG / liquids) engine is a robust choice for today enabling future flexibility," he said.

The industry is currently going through a period of big innovation and introduction of digitalisation, at the same time as the push to decarbonise.

"We are seeing the maritime community at large really challenging the old ways of working," he said. "We have to grasp this grand challenge."

Don't hate gas

One of the biggest risks to maritime decarbonisation are people who think we should only change once we have the perfect solution, rather than adopt solutions which are better but not perfect, like gas power, Mr Ørbeck-Nilssen said. "Perfect is the enemy of the good."

"Decarbonisation in shipping is a voyage," he said. "Navigating to a carbon neutral future really starts with gas. Gas is the best fuel choice for the next 1 or 2 vessel generations."

"We must also relentlessly explore other solutions, but waiting for the perfect choice will

not really help to deal with global warming."

We are at a stage where shipping must prepare for and start on a decarbonisation pathway," he said. "This decade is going to be instrumental in getting that kicked off. We need a massive scale up of new technologies and better fuel alternatives."

There are sceptics about LNG fuel, saying that since if it cuts emissions by 20 per cent, it does not reach anybody's target, whether 100 per cent or 50 per cent decarbonisation.

"I think it's important for every ship and yard and engine manufacturer to move along – it is important that we start," he said. "We start with something which is proven, familiar, gives 20 per cent reduction in CO₂ emissions."

Localism

Another obstacle is "localism," he said, such as the European Union bringing shipping into its Emission Trading Scheme.

"Shipping requires international regulations. We see local and regional law makers are increasingly demonstrating impatience and distrust with the IMO's progress."

"There is a danger that there will be an increasing patchwork of localised regulations - on CO₂, biofouling, scrubber water discharge."

"The European parliament is debating and supporting to bring shipping into the emission trading system."

Collaboration

Moving forward would need more collaboration. "This is at the very key of finding the solution - how can a very fragmented industry like maritime come together in bigger entities with more power to drive new solutions," said Mr Ørbeck-Nilssen

"There's a natural collaboration space between manufacturers, yards, owners. But also the owners of the goods to be transported (charterers), banks, financiers, and not least also some of the tech companies - that lie on the boundaries of the maritime industry."

"In academia there's a lot of interesting work

going on. Class societies are a natural bridging between industry and academia."

Two main pathways

Tore Longva, maritime principal consultant regulatory affairs at DNV GL, and the lead author of the study, sees two main pathway options for the energy transition.

The first pathway is the set out by IMO for a 50 per cent reduction by 2050. The second is a more ambitious pathway, to decarbonise shipping by 2040, which takes onboard shipping being included in the EU Emissions Trading Scheme from 2022, and having its CO₂ targets increased from 2030, along with pressure from other areas to decarbonise.

For example, if we follow the IMO's pathway, and see low renewable energy prices, this would make "electro fuels" favourable, and probably ammonia, which is easier to store than hydrogen.

Under this pathway, there would be a lot of conventional engines through the 2020s, "quite a lot" with scrubbers, and steady uptake of LNG. During 2030, the use of LNG would increase, and then more ammonia being used on newbuilds. Some LNG vessels would convert to electro methane. The biggest transition would take place in 2040, with quite a big move of engines to ammonia. Engines which can only use diesel might switch to electro diesel.

If we follow the EU's preferred pathway, to decarbonise shipping by 2040, and imagine we low prices for sustainable biomass. In this scenario the picture would look similar in the 2020a, but in the 2030s bio-methanol would be the fuel of choice.

"It is relatively easy to make – has a fairly good energy density," he says. Engines could be retrofitted to run on bio-methanol. Most shipping would be decarbonised by 2040."

These are just 2 out of 30 different scenarios DNV GL evaluated.

Uncertainty

But there is still a great deal of uncertainty.

Mr Longva groups the uncertainties into 3 “dimensions”. Regulatory measures such as carbon pricing, and operational / technical requirements, such as fuel / energy prices.

“Fuel and energy prices are very critical to understand in order to predict where we are going,” he said.

There are three possible zero carbon energy sources – sustainable biomass, renewable electricity, and fossil fuels with carbon capture and storage.

A further dimension is the demand for seaborne trade. The study had a high growth and a low growth scenario.

It wanted to understand which drivers are most important on what happens in the future, their sensitivity, and how they impact on the choice of technology and fuel.

To keep the analysis simpler, it just looked at the maritime specific aspect, or “tank to wake”. So emissions made in extracting or producing the fuels, such as to run pumps and compressors, refining equipment, or from methane leaked along the way, is not included. But “tank to wake” collects 90 per cent of the total, he said.

Current picture

According to data from DNV GL’s Alternative Fuel Insight Platform, only 0.39 per cent of the current shipping fleet is using alternative fuels – breaking down to batteries 0.22, LNG, 0.16, and methanol, 0.01%.

But 9.7 per cent of newbuilds are – including 3.99% battery powered, 4.52% LNG, 0.67% LPG, 0.47% methanol, 0.06% hydrogen, 0.02% ammonia.

Many of these are of course smaller vessels. “A lot of the innovation starts on smaller vessels first,” he says. Smaller vessels can stick to areas where there are reliable sources of whatever fuel they are testing.

Fuel systems

The study explored fuel flexibility further, the idea that the transition will go easier if ships can switch from one fuel to another without changing any equipment.

10 different fuel “systems” were studied, including:

- An internal combustion engine on low sulphur fuel oil or diesel; a
- A ICE running on conventional fuel with a scrubber,
- An ICE running on conventional fuel,
- A dual fuel LNG + fuel oil internal combustion engine
- A dual fuel ammonia + fuel oil internal combustion engine
- Fuel cells running on ammonia and hydrogen

16 different fuels were looked at, including various biofuels, various electro fuels (from renewable electricity), The fuels can be made with different production methods and different prices.

Some methods are very mature – and costs of equipment and fuels are well known.

Some are more expensive, like hydrogen and LNG, needing heavier and larger tanks.

“Ammonia is a little bit more uncertain – but we have a good idea how much that costs,” he said.

The study looked at the potential for going from a LNG engine to ammonia, and from a diesel engine to a methanol engine.

“Ammonia and methanol are the most promising fuels – depending on primary availability of energy sources,” Mr Longva said.

“If there’s enough sustainable and reasonably priced biomass, bio methanol is the fuel. If you have cheap electricity, renewable, electro ammonia is the best fuel.”

Another plausible zero carbon fuel could be “blue ammonia”, made from methane using carbon capture.

Ammonia is likely to be preferred to hydrogen onboard a ship, because it is easier to handle. It boils at -33 degrees C at a 1 atmosphere pressure, so the liquid must be stored under pressure or at low temperature.

Bio and electro methane, and electro-methane, may have some permanent applications in niches which cannot use ammonia or methanol, but “mostly they have very important roles as a transitional fuel,” he said.

Alternative fuels can impact the ships’ earning potential if the ship needs more cargo space to store the fuels, it impacts your range it will impact where you can go for fuel availability. “It is very important to manage these risks,” he says.

Fuel assumptions

The study assumed that biofuels, electro fuels and fossil fuels with CCS are completely carbon neutral. This may not be the case in reality, for example depending on what the biofuel replaces, or how much CO2 is captured in the CCS.

Although methanol contains carbon, it can be made using CO2 which would otherwise be emitted.

For a biofuel to be ‘sustainable’, it needs to take CO2 out of the atmosphere when it is growing – but you also need to consider what might otherwise have been happening with the land.

But renewable electricity is not completely zero carbon either, since some carbon is emitted making the wind turbines.

“So it is a gradual reduction to a fully carbon

neutral fuel.”

Carbon capture and storage also has a lot of uncertainty – of how much of the CO2 gets captured and stored.

But all of these uncertainties are unlikely to impact the final conclusion, that the best long term zero carbon fuels are ammonia or methanol, he said.

Options for a Panamax

DNV GL looked at the options for a Panamax new build, if it was built today, and “stress tested” them.

There are 3 engine / propulsion options available today – the conventional diesel engine, a scrubber with heavy fuel oil, and a dual fuel LNG engine.

“All these come with different possibilities for the future, for what fuel you can use as drop in, and cost of retrofitting,” he said.

Over the 20 year period, the researchers found that a dual fuel engine would be the most robust choice.

“In most of these scenarios LNG is cheaper than diesel – so it is cost effective,” he said.

LNG would have a 20-25 per cent bonus in reduced greenhouse gas emissions, if the regulations focus (as expected) on tank to wake CO2 emissions (so not including emissions from methane if its leaked during the production process).

If widespread LNG availability means you no longer need to carry liquid fuel, the liquid fuel tanks can be re-purposed to carry cargo.

The business case

The most important work for this decade is to “enable the business case for shipowners to use carbon neutral fuels,” he said.

A business case can’t be made just with research and piloting – because currently the zero carbon fuels are much more expensive – there needs to be some regulatory method to make them cheaper.

There could be schemes to make it easier for “green” ships to obtain financing, and ways for multiple companies to share the risks and costs of testing out new engines.

Public procurement could be very helpful in driving new technologies in very early phases, as we saw in Norway with the government supporting electric and hydrogen ferries.

For charterers to have green procurement policies would be very helpful, he said.

Regulations such as carbon pricing, performance requirements and technical / operational requirements, such as mandatory use of carbon neutral fuels, could incentivise uptake.

“For shipowners – managing all this risk is also critical,” he said.

T3

“All tanker owners considering LNG for newbuilding” – DNV GL

Catrine Vetereng, global director for tankers with DNV GL, said, “all tanker owners considering new building today are considering LNG fuel,” in a talk about how the tanker market is adapting to future expectations

All tanker owners considering new building today are considering LNG fuel,” said Catrine Vetereng, vice president and global segment director tankers, DNV GL, in a DNV GL webinar in October about how the tanker industry is adapting to future expectations.

“I believe the tanker segment has been through a tremendous change in 30 years, from having a bad reputation of rust buckets and oil spills. I can now say the tanker segment is one of the best operated segments,” she said.

The tanker sector has had a busy time in the past few years from an environmental perspective, thinking about ballast water and scrubbers, but the biggest decisions are yet to come, she said.

Ballast water installations are still underway. “It will take a couple of years before a majority will be installed,” she said.

DNV GL calculates that 20 per cent of tankers have scrubbers now installed, which rises to 32 per cent of VLCCs and 34 per cent of handy size ships.

Ms Vetereng was asked if she thinks more scrubbers will be ordered for ships.

She noted that the fuel costs (growing differential in price with high sulphur and low sulphur fuels) indicate that there may be a second wave of scrubber installations. But it also does not sound like the greenest option. A scrubber also means increased fuel consumption, she said.

“Personally I have a hard time seeing we will have a second wave of scrubbers for tankers, particularly when we consider the new requirements from charterers and other stakeholders. I feel all the actors will shift not necessarily towards scrubbers,” she said.

The decision for tanker operators coming up about how to meet IMO’s 2050 requirements, and other requirements related to greenhouse gas, is the “the most complicated and biggest decision,” she said.

DNV GL is curious to see what the more detailed requirements from IMO will look like.

IMO’s Intersessional Working Group on Reduction of GHG Emissions from Ships plans to submit a draft resolution to the Marine Environmental Protection Committee (MEPC) session 75, with further proposals. MEPC 75 was previously scheduled for 30 March to 3 April 2020, but now planned to happen remotely on Nov 16-20, 2020.

There have been proposals for an “Energy Efficiency Existing Ship Index” (EEXI), setting energy efficiency requirements for existing ships, which may be mandatory power limitation on ships.

Ms Vetereng showed data of where the EEXI level is proposed to sit from the beginning of 2023, and where the current VLCC fleet is.

“There are a lot of owners that [would] need to do something with their ship in order to comply with new regulations,” she said. “The most likely remedy is energy power limitation or shaft power limitation.”

Another possibility is tightening the requirements for SEEMPs (Ship Energy Efficiency Management Plans), which all ships are required to have, measuring the fuel efficiency of a ship in operation and gauging the effect of any changes, such as through improved voyage planning, more frequent propeller cleaning, waste heat recovery.

DNV GL also sees a number of other actors “entering the scene” and driving a tightening up of requirements, such as

financial institutions signing up to the “Poseidon Principles”.

Ms Vetereng showed where today’s ships sit in terms of the “Poseidon Principals” trajectory. This is consistent with the IMO’s ambition for GHG emissions from international shipping to peak as soon as possible and to reduce the total annual GHG emissions by at least 50% by 2050 compared to 2008, but set individually for different ship types.

She mentioned the Sea Cargo Charter, which is a group of charterers making a commitment to track carbon emissions from vessels they charter, and show how the emission reduction trajectory aligns with IMO’s ambitions.

Ms Vetereng was asked which might have the strongest force for decarbonisation, out of EU Emission Trading Scheme, IMO regulation, or the Sea Cargo Charter.

“I would like to say IMO, but what we see now - with Sea Cargo Charter - it seems they are tightening-in a bit quicker than IMO. EU is kind of pushing as well, I don’t know, I think it’s quite a totality,” she said.

Tanker designs

Ms Vetereng presented what has been seen so far in terms of new tanker designs.

We have seen shuttle tankers from AET and Altera, which use LNG as a primary fuel. They can use evaporates from the cargo (volatile organic compounds) and mix it with the LNG and use it for propulsion. The vessels have batteries to provide supplementary power.

Together with an energy efficient gas-electric propulsion system, these vessels have been described as “the most environmentally friendly shuttle tankers ever built.”

“They are already 2030 proof,” she said.

"The implementation of LNG fuelled tankers is increasing day by day," she said. "Last year, we have seen a lot of new orders."

There are currently 12 MR tankers operating on methanol fuel, and 10 more under order. Although whether they comply with the IMO trajectory depends on how the methanol is produced, she said. It is possible to make completely decarbonised methanol (if the carbon in the methanol is taken from a source which would otherwise emit it to the atmosphere).

"The fuels are going to be a lot more expensive in the future," she said.

Air lubrication, under a tanker's hull, "is starting to become a mature technology," she said.

Another area with growing interest is wind assisted propulsion.

Using batteries onboard for certain propulsion purposes, such as dynamic positioning, "is a pretty wise option if you have a small chemical tanker, or on shuttle tankers". This approach is named "hybridisation," because it uses batteries together with an engine, like on a "hybrid" car.

One further option tanker operators might consider is having a different hull shape, "kind of V-shaped", which reduces the amount of ballast required – the vessel is more stable when unladen.

"The tanker industry is too conservative to consider such a concept," she said. "But we see more V-shaped hulls for smaller vessels."

"Waste heat recovery is also a technology that's important."

Navigating the landscape

So how should tanker operators find their pathway through the choices?

In the past, designs have been considered purely from a safety and efficiency perspective - if the ship is able to carry the required cargo cost effectively and safely, with minimum OPEX and downtime.

This is changing. "What we see today, the future proof concept is even more important," she said.

Anyone looking at a newbuilding needs to analyse what kind of carbon trajectory they want to follow, taking into consideration the vessel, its trading profile and bunkering locations, so which fuels it could be dependent on, and whether they are available.

If you are going for LNG power (dual

fuel), you need to work out how big a store of LNG you will need onboard, and how you plan to refuel (by ship to ship transfer or in port).

Different fuel options and energy efficiency measures have different costs, so this all leads to a different result for CAPEX and OPEX.

You also need to consider what you will do if SEEMP turns stricter.

"In our calculation LNG fuel turns out to be a very good intermediate fuel," she said.

"You can draw your environmental performance and your trajectory. You can plot out your options, and consider how long you are going to keep your vessels and plan out how to move forward with the new fuel when that eventually arrives."

In summary, the move to more

environmentally friendly vessels has been going a bit slow, but "what we see now, the pace is increasing."

"So we are looking forward to having a lot of discussions with tanker owners on how to build and operate a future proof vessel."

You can watch the video of the talk and download slides at

<https://www.dnvgl.com/maritime/webinars-and-videos/on-demand-webinars/access/afoc2020-recordings-and-slide-decks.html>

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Session 7

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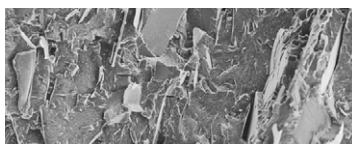
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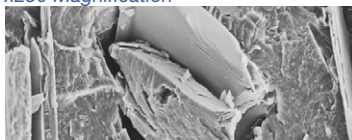
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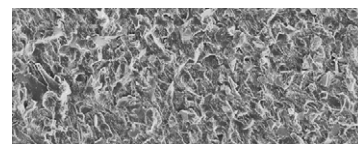


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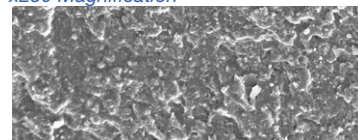


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How Hafnia manages vessel performance

Hafnia Tankers' vessel performance department manages the performance of around 200 vessels, with just 3 full time employees, 2 student assistants, and some great software. Head of performance Michael Rasmussen explained how they do it

Hafnia Tankers describes itself as the “world’s leading product tanker company”, with 63 MR vessels and 26 handy sized vessels. It also manages a pool of a further 110 vessels, including managing the performance.

Michael Rasmussen, head of performance with Hafnia, explained how the company manages performance of its vessels, in a webinar organised by Tanker Operator’s sister company Digital Ship.

The company has meat on its commitments to decarbonise, with loan agreements with a bank which are linked to sustainability, including KPIs on how much its emissions must reduce.

“If we are fulfilling these KPIs everything is good. If we are not reducing the CO2 emissions according to our KPIs we get a penalty in terms of a high interest rate. If we do better there’s a little bonus with a lower interest rate,” he said.

To access funding for vessels from nearly any fund or bank in Denmark today, you are likely to have to produce “green accounts” showing what the Co2 emissions would be, he said.

The company is only 10 years old – and wanted to run its business in a different way from the start. “We wanted to make a modern company,” he said. “We did not have the 130 year history which many of the classical Danish shipping companies have. We were blessed with the blank canvas.”

Weather routing

The foundation of the performance management system is “basically the weather routing,” he said. “We use that as the first step of planning the route.”

It used to take “a couple of hours” to get a routing taking weather into consideration, now it is available instantly, he said.

The most important function of the routing system is of course to avoid inclement weather. The next important factors are choosing the best speed and reducing fuel consumption.

There can be choices of whether a route goes into or outside an emission control area (ECA). Outside the ECA the ship consumes low sulphur

fuel, which has a “relatively low price”. But within the ECA it consumes gas oil (which has very low sulphur levels) and is more expensive.

If there are no different options about what route to take, then just having information about the weather is very helpful, he said, so you don’t send the ship into a storm.

The contractual agreement also needs to be taken into account. A charter party will say what speed the vessel is expected to take. “On a laden passage it is seldom lower than 12.5 knots. It could be 13, 13.5 knots.”

“It is no use if we think we can optimise here and there if the contract says you have to go 30 knots and you have to be at a certain place in a certain time,” he said.

Hafnia seeks to encourage charterers to agree to a certain speed range, rather requiring a specific speed, he said.

Once the route and speed is chosen, clear instructions need to be given to captains, and it is important that vessels also follow the instructions, he said.

Underway

Once vessels are underway, their performance and the changing weather can be monitored.

With automated weather routing, whenever the computer discovers a change in the weather forecast for the ship, there can be new weather routing advice generated and provided to the crew. This can happen any time around the clock.

Hafnia’s operators are monitoring the tracks of vessels, and the tracks of storms and other weather. “You can take proper action and make changes to the route as we go along,” he said.

Hafnia will typically set a maximum levels of CO2 which can be emitted during any voyage – and then ask the vessel to reduce the speed or take other action if the CO2 is likely to go above this.

The captain is ultimately responsible for the choice of route, so it is called ‘advice’ rather than ‘orders’.

Gathering data



Michael Rasmussen, head of performance with Hafnia

Hafnia takes data from the weather routing system into its performance monitoring software.

Currently, performance data is taken from a report sent manually from the ships at noon every day. But in future it will be automated and sent continuously. “There’s many systems out there who can do it for you,” he said.

There is plenty of data which is possible to collect, but also it is not necessarily valuable to have more. But often, data is not of as good quality as the company would like.

One issue is having separate “speed over ground” and “speed through water” data. The difference is that “speed through water” takes into account any current. So if a ship is going 10 knots “speed over ground” moving directly against a current going 10 knots, the “speed through water” is 20 knots.

The “speed over ground” is important to the charterers, who can use it to calculate how long it would take to get from one point to another. But if you are analysing the performance of the ship, “It is nice to know what the current is,” he said.

Calculating the vessel’s speed can involve “fumbling about in the dark,” since speed logs are “inaccurate to quite a large degree”. It can be done by taking the fuel consumption and working out what speed would have caused it.

Performance monitoring

All of this data is analysed to understand performance. The company is doing more and more data analytics. “We started a journey a couple of years ago, and we are still learning,” he said.

Managing the data is enormously complex. “We get a lot of a data which we can download and analyse. We need systems to manage the

data for us.”

Hafnia uses software from Coach Solutions. “We had a great co-operation with Coach,” he says. “Whenever we say we would like to see x y z, we talk to Coach, and we get it done.”

All the owners, and their ship management companies if they have them, can access the data on Coach Solutions, so it is transparent. They can do their own analysis if they want.

It is important that companies with vessels in the pool feel that they are treated equally, and they can use the software to check this if they want to.

The performance monitoring work involves the technical department, commercial department, even the accounts department and

investor relations department. It is where the company calculates its overall CO2 emissions, and builds up a business case for its customers and lenders.

“Performance is not something done in a dark room, it is coming up in the sunshine,” he said.

Customers

When the oil price is changing, it may suit oil traders if a vessel arrives earlier, so they issue a ‘speed up’ order to the shipping company. Under the terms of the contract, that requires the vessel’s speed to be increased to 16 knots.

More fuel will be used, which the trader will pay for. But this means that the CO2 emissions the vessels emit might be tripled, and so use up a

bigger chunk of Hafnia’s CO2 emissions quota. It may mean that at the end of the year, vessels are sailing at just 8 knots to keep CO2 emissions down.

“Mother nature cannot send a bill to us [for the CO2 emissions],” he said.

So it is important that Hafnia’s customers recognise the need to keep CO2 emissions down, not just look at the cost of fuel.

You can see the talk on YouTube at <https://youtu.be/ct9v-mQgYqE>

T3

Yara – scrubbers can mean lower CO2

Scrubbers + heavy fuel oil can mean a shipping company makes lower CO2 emissions than using low sulphur fuel oil, says Kai Låtun from Yara

Operating with scrubbers + heavy fuel oil can mean a shipping company makes lower CO2 emissions than using low sulphur fuel oil, says Kai Låtun, Director Sales and Public Affairs, Yara Marine Technologies.

The reason is a large amount of fuel is used by the refinery which distils the oil to make a lower sulphur product.

The company has installed over 400 scrubbers on ships so far, over the past 10 years, of which 80 per cent are retrofits, the rest on newbuilds.

The retrofits are “mostly being done in China” – the company makes much use of the Yiu Lian shipyard near Hong Kong.

The company makes scrubbers in China for these installations. It uses material from Europe and US, because it needs special corrosion resistant nickel alloy materials, which are hard to source in China.

There are 3 stages to the work. Engineering and delivering kit to yards; installation and commissioning; and crew training and certification testing.

A typical installation takes 2 weeks of dry dock, he said, with the whole project taking 24-25 weeks (reduced to 22 weeks for an open loop system).

There are three service companies involved – the designer, installer and system supplier (who also does commissioning and certification).

Installation and commissioning can take 2 weeks, and the certification test against the MARPOL requirements takes a day.

“Shipyards are becoming quite adept in producing installations of scrubber systems,” he said. “They are clever, they tend to try to do things based on what they learned and make it simpler.”

Shipping companies will often have a number of projects happening at the same time in dry dock, such as also installing at ballast water system. There can be complex discussions about priorities.

“The plan you establish at the start is crucial,” he said.

One source of problems is when there is a crew change, and the new crew are not taught how to operate the equipment. People think there is a problem with the scrubber system, but it is actually more to do with training.

You need to make sure all discharge from the ship has an acidity level higher than pH 6. Yara can model this mathematically, so it can be proved to class.

Mr Låtun discounts the idea that discharge from scrubbers can be harmful to the environment. “There is no scientific evidence to this statement - it is more a ‘better safe than sorry approach’,” he said.

“There’s comprehensive studies from CE Delft. Also Japanese industry that did a very big

study modelling a big basin outside the Japanese coast. They both showed discharge of wash water from scrubbers is not detrimental to the marine environment.”

“It is facts and science which will save the environment.”

CE Delft also did a study comparing vessels using heavy fuel oil + scrubber with low sulphur fuels, to calculate the minimum CO2 emissions “well to wake”.

“This study proves HFO with scrubbers beats compliant fuels in the race to reduce CO2 emissions all the time,” he said.

The key figure for shipowners is the difference in price between low sulphur fuel oil and heavy fuel oil, and whether this justifies the investment.

This differential was “crazy around January” – just after implementation of the 2020 rules – at \$350 / tonne.

But then it oscillated around \$80 a tonne. But this could be partly due to a drop in demand for low sulphur fuels for other transport uses due to COVID. “I’m pretty certain that this price gap will increase,” he said.

During the Covid period, very low sulphur fuel oil became cheaper than crude oil in some places.

“The demand for HFO is picking up along major shipping lanes,” he said.

“We will see a very profitable business case for scrubbers.”

T4

Developments with ballast water

Leasing option from Optimarin, computer training from DESMI, new fish species in Estonia, CTI's Singapore test facility, Techcross order on heavy lift vessels

Optimarin of offering a leasing option for ballast water systems, enabling owners to meet their requirements without big CAPEX outlays.

The company has partnered with a UK based finance company, to develop an offering where payments are made monthly, no deposit is required, and all servicing and spare parts are included. The interest rates are “in line with competitive bank financing”, the company says.

The firm, which currently has around 600 units installed, 40% of which are retrofits, has partnered with a UK-based finance company to offer customers the chance to improve their cash flow by splitting payments into small, manageable monthly amounts. No payment or deposit is required up front and all servicing and spare parts can be included in a simple, comprehensive package. Interest rates, Andersen says, are in line with competitive bank financing, without the complex requirements and demands.

“There are many, many excellent shipping firms that may struggle to satisfy banking covenants in an investment atmosphere that is increasingly risk averse,” says Tore Andersen, EVP sales and marketing with Optimarin.

“We have the partners and belief to help owners get the market proven equipment they require. As a company we’re focused on simplifying BWT for our customers.”

Optimarin has also produced an attractive 5 min video explaining the importance of ballast water systems to the public. <https://optimarin.com/optimarin-global-thought-leaders/>

DESMI

DESMI has developed a computer based training program, and associated mobile app, to help marine engineers and crew members train and learn about its “Ocean Guard CompactClean” ballast water system.

Mark Kalhøj Andersen, Technical Manager and Head of Projects and Engineering with DESMI Ocean Guard says that the tools can take someone who has to operate or maintain a system from 0% knowledge to 80%, with the rest being the hands on part.

There is an training course, starting with a general description and getting more detailed

with sections on process and instrumentation, hardware and software, troubleshooting and maintenance, with detailed diagrams and pictures, “what is this and why is it relevant for you”. It includes process and instrumentation diagrams. A hardware section takes users to the smallest components. A software section explains how the human-machine interface is used to operate the system.

There is also a simulator section, giving a 3D visualisation, which people can click on to learn how to operate the system, for example turning valves. There are chapters on troubleshooting and maintenance. There is a test at the end.

There is also a mobile App available on Android, including a manual, and a 3D simulation / visualisation. “If you don’t have an actual physical system yet, but you know you’re going to, you can do the initial training in a digital 3D version with your smartphone,” he says.

Estonia

Estonia has one new fish species probably brought in by ballast water, according to a local TV program *Aktuaalne kaamera*, reporting in October 2020.

This is the Western tubenose goby, which was caught by fishermen during a fish monitoring process. It has an average length of 10 cm.

The fish is similar to local “round gobies” except that it has a longer nostril tube, which is where the name came from, according to the report.

The fish is native to Black Sea and Aegean Sea, but is thought to be have been brought to the Baltic Sea in ship ballast water.

Redik Eschbaum, a fishery scientist at the University of Tartu, said: “I think it will not bring any major jolts in our ecosystem. But like all live organisms, it will compete with our native species for food and habitat.”

CTI-Maritec

CTI-Maritec’s testing facility is DNV GL approved.

Maritime testing and inspection company CTI-Maritec, based in Singapore, has received DNV GL approval for its ballast water test facility.

It can undertake commissioning tests in line

with the D2 standard.

The certification is “Approval of Service Supplier (AoSS)” certification from DNV GL.

It is approved to test all organism size classes specified in the standard along with bacteria.

The certification process involved DNV GL reviewing CTI-Maritec’s standard operating procedures, including its sampling methodology, analysis, and quality control.

Onboard indicative tests are a minimum requirement, but if any discharge sample exceeds the regulatory levels, samples must be analysed by accredited laboratories.

The organisation has several test labs in China, where many ballast water systems are being installed, and is planning to open further facilities across Asia and the Middle East.

“There are already about 12,000 systems installed, with the majority not having been compliance tested,” said John Ren Di, VP Business Development, CTI-Maritec.

The company advises ballast testing at least twice a year for vessels that may be trading in US waters.

Techcross

Techcross of Busan, South Korea, reported in September 2020 that it had a contract to deliver a ballast water system to Europe’s largest heavy lift vessel, providing two sets of its ECS 600B electrochemical system.

This vessel is able to carry 110,000 tons of cargo. It is designed to move oil and gas facilities, but has also been used as an offshore dry dock facility for other ships.

The Techcross system uses a standard “T-strainer” to remove large fish or organisms from the ballast water - this is a much simpler piece of equipment than a filter, with lower cost to both buy and operate, and taking a smaller footprint of space.

The system does not need a filter because it can achieve a high enough disinfection performance just with its electrochemical methods, says Ah-Mi Moon, manager of the marketing team, with Techcross.

About 30 per cent of Techcross’s order book is with tankers, accounting for about 710 tankers in total, including LNG and LPG.

Ecochlor – new US “VIDA” regulation for discharges

The US is planning a new set of regulations for discharges from tankers (and other vessels), including from ballast water and scrubber wash water, the “Vessel Incidental Discharge Act”.

Steve Candito, CEO of Ecochlor, explained the implications

The US Environmental Protection Agency (EPA) is proposing a new set of regulations covering discharge of ballast water and scrubber wash water (among a list of 20 different types of discharge), under the new Vessel Incidental Discharge Act (VIDA). Online comments are accepted up to November 25.

One interesting change relevant to tankers is that currently, companies operating US flagged crude oil tankers going from one US port to another, such as Alaska to a West Coast refinery, are exempted from the need to have ballast water systems. This

exemption will be removed, so systems will need to be installed.

The regulations will also describe more specifically what can go overboard – how clean the water needs to be before it can be discharged, and operational requirements such as how often different systems should be inspected.

Tanker operators will probably pay most attention to the rules about discharge from ballast tanks, but the rules also cover discharge from bilges, boilers, cathodic protection, chain lockers, decks, desalination and purification systems, elevator pits, exhaust gas cleaning (scrubbers),

fire protection equipment, gas turbines, grey water systems, hulls and ‘niche’ areas, inert gas systems, motor gasoline and compensation systems, non-oily machinery, pools and spas, refrigeration and air conditioning, seawater piping, and sonar domes.

Dead or non-viable

VIDA resolves a longstanding issue with a differentiation between US ballast water regulations, which currently say organisms have to be dead, and IMO regulations, which say they need to be “non-viable”, or unable to reproduce.

With VIDA, the US will align with the IMO D2



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Discharge regulations, but the non-viable standard is still an open issue.

There is some controversy, with the US Coast Guard saying that there is no acceptable testing procedure for 'non-viable', while there is an approved testing procedure for 'dead'. For example, a system where organisms which are alive will drink a dye which will then show up in their bodies. "The Coast Guard has said they are not going to use the non-viable standard unless they see a testing protocol they are comfortable with," Mr Candito says.

But, "there's all kinds of test standards out there, a lot of information that various parties have provided to the USCG to [demonstrate] how these non-viable testing protocols can work."

Water exchange

Another requirement in the new rules (but not the old ones), is that for vessels going to the North American Great Lakes, ballast water must be both exchanged mid ocean, and treated before it is discharged. This is confusing, with people reasonably asking why they need to exchange water if they are also going to treat it.

Ballast water exchange regulations were developed as an interim measure before type approved ballast water management systems (BWMS) were available. The idea was that by exchanging ballast water from the port it was

loaded, with ballast water mid ocean, you would be less likely to transport invasive species to the discharge port.

There have been safety concerns, with the ship's stability being affected during the time ballast water is being exchanged. "Exchange was viewed as a temporary measure until we had systems onboard," he says.

Mr Candito believes that the regulation could be the result of a compromise between EPA and environmental groups, who had been pushing for more stringent standards than the international (IMO) standard. The shipping industry will welcome the fact that VIDA and IMO standards are aligned.

The Great Lakes are a very sensitive environmental area, with fresh water. "When you introduce organisms from outside it is really a problem," Mr. Candito says.

But tanker operators may wish to consider sharing their views on this regulation with EPA, to say that there would be no additional benefit to ballast water exchange if ballast water is treated properly. And they can say there could be safety implications from doing the exchange. (Note, this needs to be done before Nov 25).

Another special regulation applies to vessels discharging ballast in the US West Coast – California, Oregon and Washington. If the ballast

water has been loaded in a freshwater lake, or sea with low salt content (the cut off is 0.018 salt concentration), the water must be exchanged mid ocean.

Another clause says that this ballast water exchange is not required if vessels have a system which can treat water to 100 times the current standard. But there are no systems available today approved to achieve this standard.

Complexity

Mr. Candito is fairly unique in having a background both at sea (serving as a marine engineer onboard Exxon USA's tanker fleet) and in law (working as a maritime attorney with Haight Garner Poor & Havens), before spending 20 years at an environmental services firm.

He recognizes that the legal burden on tanker operators is becoming very cumbersome. "How is a shipowner supposed to understand all these ballast water details? They [also] have to worry about scrubber discharge, grey water discharges, black water discharges, they really need to be experts on everything, it is really difficult.

"I'm an expert on ballast water, but not necessarily all of the requirements under VIDA. Being a lawyer helps me decipher some of these things."



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EOS Risk – piracy strategies for Gulf of Guinea

The piracy risk in the Gulf of Guinea (West Africa) is getting more complex, with pirates moving outside Nigerian waters – but shipping companies are not allowed to deploy privately contracted armed guards. David Johnson of EOS Risk updated us

Tankers are the most vulnerable and targeted vessels in the Gulf of Guinea,” says David Johnson, CEO of maritime risk consultants EOS Risk.

“In the last 18 months or so, the frequency of successful hijacking has increased, not hugely, this is forecast to change with the onset of the dry season, an expansion of the threat area, and the possible splintering of piracy gangs,” he said.

“The number of people kidnapped has gone up a lot over that time. The pirates have been able to charge more money for the release of these people.”

Tanker operators need to consider if they “have the appetite to trade in an area which is subject to such risk.”

The Gulf of Guinea region is normally taken to be the region from Liberia to Gabon, covering the coastlines of Côte d’Ivoire, Ghana, Togo, Benin, Nigeria, and Cameroon.

“We’ve gone through the whole Somali piracy, which people are still protecting against, to the more aggressive Nigerian piracy, which has proliferated over 5-6 years,” he says.

The pirate gangs have something of a logistics operation behind them in the lead-up to an attack, including choosing which vessels to attack, finding people to physically conduct the attack, finding people to look after hostages in camps, and negotiators. “It is not just guys in a speedboat,” he said.

“The key is to assess the risk before you go,” he said. “If you understand the risk – you’ll understand the measures that can be taken to mitigate against it.”

The Joint War Committee of insurance underwriters Lloyds recently expanded the area of Gulf of Guinea waters which they consider high risk. The expanded area covers the eastern side of the Gulf of Guinea across to Gabon.

Further to this the International Bargaining Forum (IBF) and International Maritime Employers’ Contract (IMEC) on 21 October expanded their High Risk Area to include the waters between the Ivory Coast and the Congo/Angola border, to reflect the concerns they have regarding the threat to their members working in the region.

Authorities

Ships are offered direct public sector protection by Benin, and Togo, with a degree of protection in Nigerian waters provided by a higher level of naval activity.

The Nigerian authorities have stepped up their policing of Nigerian waters, but this has had the effect of displacing pirates into other waters, as far away as Abidjan (Côte d’Ivoire) to the West and Gabon to the South.

There is some increase in co-operation between governments, so they can pursue pirates across different national waters, and also share intelligence between agencies.

But the gangs are not exclusively Nigerian. Crewmembers who have been kidnapped and released have said that not all the pirates in the gang spoke the same language.

In the recent attack of general cargo ship Rio Mitong (May 2020), “the pirate gangs involved in that – were hunted mercilessly and publicly through several countries. It resulted in them losing people in military operations against them, several pirate camps being raided and destroyed, and the seizure of a ransom [by authorities] on the way to a ransom drop, and seizure of weapons and paraphernalia that the pirates use,” Mr Johnson says.

The Nigerian government brought in a number of laws to try to suppress piracy. One shipping company was charged with paying a ransom, under charges of funding terrorism, although subsequently the charges were dropped, with the company prosecuted for

other infringements.

Now, we have companies and their crisis response advisors very reluctant to enter ransom negotiations, and pirates wary of being intercepted by Nigerian authorities. This “creates an interesting backdrop in terms of how things will go,” he said.

EOS Risk believes that there will be some splintering of pirate groups, with groups operating in different ways. It is possible that pirates will ask to be paid ransom in bitcoin, so it cannot be traced, and the need for traditional ransom drops removed.

Shipping companies may really want to use armed guards. When these were introduced in Somalia, there was a big impact in reduction of attacks, and the risk-reward calculation pirates were making. “There hasn’t been a successful hijacking of a ship with armed guards onboard in Somalia.”

Today, it may be sensible advice to have an armed guard in a location which allows it, Mr Johnson said.

But most states in the Gulf of Guinea take the view that security is a role of the state, and only state appointed people can carry weapons.

So for a vessel sailing from Douala (Cameroon) to Abidjan (Côte d’Ivoire), going through territorial waters of Nigeria, Benin, Togo and Ghana on the way, even if it gets a navy escort, the navies from each country cannot cross the water boundary. “It doesn’t make a huge amount of sense,” he said.

It is possible for a private security provider (such as EOS) to contract with host nation naval forces to provide private/public security services for clients, and regularly do so. Escort vessels or embarked naval detachments are a common feature of the services offered, and provide deterrent and protection.

Maximising defences

Ships can however do a great deal without

resorting to armed guards – if they put defences up, and make sure the vessel is in regular contact with an intelligence service.

This may be “the best mitigation you can get under the circumstances,” he said.

Your risk increases if you have a low freeboard (distance from the waterline to the deck), or if the vessel is slow moving. “You have to put a lot of hardening on to prevent boarding, keep people off deck, have good citadel procedures,” he said.

If pirates come to attack the vessel, and you’ve all gone in the citadel, the chances of having someone kidnapped is minimised.”

Even as this report is written, it has been reported that the tanker Errina was attacked in the region, with a successful retreat to the citadel resulting in no crew kidnapped, although the pirates ransacked the vessel and destroyed bridge equipment.

Both vessel operators and pirates have been learning from each other. At one time, ships felt safe from pirate boarding by putting razor wire around the vessel. Pirates learned to pull the wire down with a grappling hook tied to a rope. Shipping companies then learned to

make periodic cuts in the wire, so only a small piece of wire could be removed at a time.

In another example, pirates tried to board a container ship by ladder, but found their ladders were not long enough – so they came back next time with a longer ladder.

It is a sort of cat and mouse game, with pirates, agencies and shipping companies steadily increasing their methods.

“You need to make sure the vessel has done everything possible to not make it a target,” he said.

In another example, a vessel was attacked a mile from shore, with crew not on guard because they didn’t think it could happen.

Sometimes ships have had armed guard protection, but the guards have disembarked 60 miles offshore, but then found pirates operating 150 miles offshore.

There are other examples of vessels being attacked in areas far away from normal attack areas, and so they were under a “normal watch routine”.

“The watchkeeping element is absolutely crucial. The quicker you pick these guys up the more chance you’ve got to muster the

crew,” he said.

About EOS Risk

EOS Risk offers intelligence service, led by former high-ranking naval officers, where it tries to see the world through the pirates’ eyes.

Operating in the Gulf of Guinea for several years EOS provides a wide range of protective services in cooperation with host nations.

The company has developed expertise in how pirates operate, what measures are effective. It provides services to help with mitigation, intelligence about what pirates are doing, crisis response and evacuation, “the whole package around it”.

The company’s director of intelligence, Ian Millen, is a former Royal Naval Commander and law enforcement senior officer. The head of operations and private client services, Ben Tams, is a former member of the UK elite advanced forces.

David Johnson, CEO of EOS Risk, is a former business development manager of Drum Cussac. The

company’s largest client base is tanker operators, and has been for the last 15 years.

TO

Enclosed space fatalities continue - Standard Club

Maritime insurer The Standard Club says that enclosed space fatalities are continuing to occur on ships, although much more on dry cargo vessels than tankers. A webinar on October 12 reviewed how the issue is evolving

“We continue seeing enclosed space fatalities onboard ships,” said Capt Yves Vandenberg, director of loss prevention with the Standard Club. “It just keeps happening at a very frequent rate.”

He was speaking at a webinar on October 12 organised by the Standard Club and the International Ship Manager’s Association.

The most recent public data available is from April 2019, when the International Transport Workers Federation announced that since January 2018, 16 dock workers and 12 seafarers had died from asphyxiation or explosions in confined spaces – or from

falls after passing out due to bad air. This meant something of a spike, after seeing 145 casualties over the past 20 years (average 7 per year).

ITF did not break out the numbers between different types of ships, but Captain Akshat Arora, senior surveyor with The Standard Club, said that it is much more a problem with dry cargo vessels than tankers. We are including this article in Tanker Operator because it remains one of the biggest risks for tanker crew.

“We know that maritime workers are generally aware of the risks associated with entry into confined spaces, but they may

not be aware of the details and extent of the varied dangers posed by forest products, coal, iron ore, grains, gases and other cargo,” ITF said.

One of the worst cases was from November 2018, when two dockworkers died while unloading logs from the hold of a bunker, which ITF says was “likely following exposure to an unexpected fumigant they were not told about.”

“A crew member saw them in distress and entered the hold wearing a face mask, determined to rescue them. During his efforts to assist, his mask was reportedly removed, and he passed out, eventually landing in

hospital in an induced coma. A third docker required medical help before the tragic incident was over.”

The Standard Club launched a Masters’ guide to Enclosed Space in 2012, and is now on the 3rd edition, available for free download.

IMO made regulations for mandatory drills in 2015, and for gas detection equipment to be onboard from 2016. The ISM code, implemented in 1998, required companies to have proper risk assessments in place.

Conflicting procedures

Captain Kuba Szymanski, secretary general, InterManager, said that the number one reason for enclosed space death was conflicting procedures, according to a survey InterManager sent to seafarers in 2018 which got 5,000 responses.

“Chief engineers and masters say, ‘we are reading one circular, then we read another one, then we have a safety management system which conflicts with another,’” he said.

“We need to stop confusing people. After every accident there are more circulars. We’ve got enough.”

Design

A second factor seafarers mentioned in the survey was the poor design of enclosed spaces.

For example, ballast tanks have “sampling points”, for taking a ballast water sample through a tap, but it does not take a sample from the bottom of the tank, so an inspection is required.

If a crack forms in the steel between the cargo tank and neighbouring ballast tank, gas can enter the ballast tank, so it has a non-breathable atmosphere.

To make them even harder to inspect, these ballast tanks are sometimes designed in an “L” shape, going around the cargo tank.

Another design issue is the size of manholes. If someone collapses, they will need to be taken out of the tank somehow, with both the collapsed person and the rescuer needing breathing apparatus. Or you may need to resuscitate someone using bottled air.

“The manholes are too small to handle human being in breathing apparatus carrying another person,” Captain Szymanski said.

Accident investigations always end up blaming crew – they never conclude that the ship was not designed for enclosed space entry.

If the casualties are continuing, then that shows that the issue is not something just linked to shipboard staff, he said.

Naval architects could also make ship designs where the enclosed spaces do not require as much inspection, he said.

Captain Szymanski served until recently as chair of an enclosed spaces sub-committee of the IMO’s Human Element Industry Group (HEIG). The group has involvement from many engineers and designers.

It is calling for more human centric design, and accident investigation with people in mind, and a stop to blaming people.

In the airline sector, where just one safety problem on one or two planes (Boeing 737 MAX) led to the fleet of 737 Maxes being grounded. “I’m not necessarily advocating for that, but why do we need hundreds of accidents

before we start thinking, ‘is there something wrong with these spaces,’” he said.

Personnel issues

A contributing issue is that very often, people working onboard do not know each other well.

This means that other crew members may not feel comfortable telling someone they don’t know to stop doing a task because it may be dangerous.

Someone new may also try to impress colleagues by being willing to take on tasks which other people think are too dangerous.

The tanker sector does ensure that someone new coming onboard is surrounded by well experienced people, through OCIMF’s “time in rank” requirements, but other types of ships do not have the same requirements, Captain Szymanski said.

There should be instead be a culture of people helping each other to do better work and support them, he said.

Gas detection equipment

IMO regulations (SOLAS Regulation XI-1/7) came into force in July 2016, stating that every ship needs to carry portable atmosphere testing equipment, which can as a minimum measure concentrations of oxygen, flammable gases, hydrogen sulphide and carbon monoxide, prior to enter into enclosed spaces, and while the work is being done.

It stated that if the spaces have additional atmospheric hazards, appropriate instruments should be carried. Personal gas detectors, carried by an individual, are not considered suitable. It must have 10 hours battery life,

and be waterproof and dustproof.

The regulation does not state how many devices must be onboard, but says there should be an appropriate number of instruments.

Captain Szymanski said that he often goes onboard ships and asks about the gas detection equipment, and sees that while all companies buy the gas detection equipment, sometimes they expect crew to never use it, keeping it available for inspection only. “It is in a special suitcase. There is also a blanket to cover the equipment, it says ‘do not touch’. People don’t feel it is for them.”

“When you go to social media, people would tell you, there is a lot of poor managers around the world - and they are basically doing the bare minimum IMO requirements.

“A good auditor can easily detect whether equipment has been used or not,” he said. “If you see it has no mud, no scratch on it, it looks brand new, you can say, ‘you have 28 ballast tanks, when did you use last time?’”

Then a good auditor should be careful not to blame crew if they find out it hasn’t been used, he said.

Captain Akshat Arora, senior surveyor with The Standard Club, said that there have been situations where a ship has had risks of dangerous atmospheres which their equipment could not detect, such as one case when a dry cargo was fumigated with phosphene. In this situation, crew have resorted to extreme approaches, including using live rats and chickens as gas detectors, he said.

Responsibility

Captain Szymanski said that while the ship manager is responsible for safe operations of the ship under the ISM code, some responsibility should be taken by the charterer, if they are loading cargoes on a vessel without determining if the vessel is capable of safely accepting it.

Seafarers are expected to say if they feel they are being asked to do something unsafe, but they are unlikely to feel comfortable doing this. They may fear they will never get a contract with this company again.

When investigating accidents, this should be taken into consideration, rather than just blaming the crewmember, he said.

Shipping companies should consider carefully when they make an order for crew to go in a tank, what can go wrong, and how they might be responsible.

Making maritime blended learning work

Two maritime training companies, Marine Learning Systems of Vancouver and Stream Marine Training of Glasgow, are collaborating to provide an “end to end maritime training solution” – combining e-learning and in-person learning to make a company wide learning management system

Shipping companies have responsibility for ensuring their crews are competent at any time. There is a large gap between achieving that, and deciding which training courses they should be sent on. The collaboration between Marine Learning Systems of Vancouver and Marine Training of Glasgow aims to fill that gap.

Marine Learning Systems provides a platform which shipping companies can use to manage their entire training needs at a fleet, vessel or individual crew member level.

Stream Marine Training provides mandatory safety critical courses and technical training programs.

With the courses and the platform together, shipping companies can manage all stages of their training, including understanding training needs and knowledge / skill gaps, pre-learning online, knowledge assessment, on-site training and assessment, continuous knowledge assessment, continuous skill assessment, and refresher training.

This enables shipping companies to manage the competency of the staff holistically, so able to ensure the crew of their vessels are competent and have not lost their skills over time.

They can also get the best of both e-learning and in-person learning. Using both together is sometimes referred to as “blended learning”. Blended learning can be more effective than just using e-learning or just using in-person learning, but it does need to be structured.

Today, while most shipping companies use external providers for their training courses, whether e-learning or in-person learning, they often build their own learning management platforms.

Marine Learning Systems

Murray Goldberg, founder and CEO of Marine Learning Systems, previously founded one of the world’s largest learning system companies.

After graduating in computer science at the University of British Columbia, Vancouver, in 1989, he stayed on as a faculty member, with an interest in online learning and its effectiveness.

This led him to found a company WebCT



**Murray Goldberg,
founder and CEO
of Marine Learning
Systems**

in 1996, which provided a learning management system for universities and colleges. It grew to 350 employees, supporting 14m students, and was sold in 2006 for CAD\$200m.

He started his next project, developing a maritime specific learning management system, after a Vancouver ferry sank the following year, and the company invited him to try to improve their training,

A Wikipedia page on the vessel, MV Queen of the North, cites reports saying the accident was due to not making a planned course change, but a contributing factor may have been confusion among crew members about how the autopilot worked and how to disengage it.

Following the accident, “BC Ferries decided they wanted to become a world class training operator,” Mr Goldberg says.

At the time, there was much research showing that blended learning produced better outcomes than in-person learning, so long as the program was well designed, and BC Ferries wanted to explore this further.

At the time, BC Ferries was training people “basically through job shadowing” - someone following someone else and watching what they do, Mr Goldberg says. This was “very hard to standardise and measure.”

Mr Goldberg ran a blended learning pilot, which the company was happy with, which led to requests for a learning management system which could be used across the company.

Following the implementation of the program, they calculated that accidents were reduced by 70 per cent, both minor and serious. Days lost due to injury reduced 66 per cent, and insurance claims reduced from CAD\$3.5m a year to \$800k a year.

Stream Marine

Stream Marine, based in Glasgow, was founded by Martin White. His background is working in

merchant marine as a deck officer, and working for a while in the oil and gas sector.

In January 2014 he set up a maritime educational business, training people in personal survival techniques. Within 2 years it had rolled out 30 different courses, including 20 STCW courses, later adding courses on Arctic specific survival training for the Polar Code and the IGF Code (low flashpoint fuels), including training cruise company staff to use LNG fuel.

Making blended learning work

Blended learning works best when the in-person learning and e-learning are co-ordinated to make a seamless whole. “Too often they are very separate,” Mr Goldberg says.

There are many different types of e-learning, ranging from just text on a screen, to rich graphical simulations, and much in between, all with different costs and benefits.

“All these things are happening right now,” he says. “It brings to every domain expert’s hands the ability to create online learning tool which is very effective.”

An advantage of online learning over in-person learning is that everybody can work at a different pace, he said. Everybody has different pre-existing knowledge.

It makes it much easier to deliver consistent outcome, because everyone can take whatever time they need to reach the required level.

Being able to do spot assessments of knowledge and skill is very important, he said. You can find out what the “knowledge fade” looks like, and where the re-training is needed.

Technology can be very helpful in showing what is not working – for example, if people choose one answer then change it to another one, you can see that they are not so confident about their knowledge.

It can also show particular areas where someone’s knowledge is weaker, for example that they tend to do worse on questions in a certain area, or many people in the company have the same misconception, getting the same question wrong. “It is very actionable data,” he said.

The two companies have a joint website at www.mls-smt.partners

Update on tanker commercial employment

We spoke to Eleven Recruitment's Peter Morgan about the changes happening to the employment market in tanker shipping.

As you might expect, salaries are under pressure in commercial tanker roles in most companies. There is less of a differential in earnings between companies, so those in the industry have a reduced incentive to change position, says Peter Morgan, oil trading and commercial shipping desk lead, at Eleven Recruitment.

The company specialises in recruiting for the downstream commercial oil market, including trading and shipping. Within the shipping sector it is more involved in the commercial side rather than technical appointments.

Mr Morgan runs the company's commercial shipping side and physical oil trading hires.

Eleven Recruitment, formerly known as Oil Recruitment, is based in London and Cheshire, UK. Its parent company, Ashley and Dumville, was involved in oil trading and shipping since the 1950s.

Its clients include oil trading houses, oil majors, refiners, banks which are still involved in shipping and physical oil trading, and ship owners. It covers crude and products shipping, and LNG. There is a focus on London, Switzerland, Singapore, the Middle East and US.

2020: changes in demand

Due to market pressures, there is not a great deal of growth in demand for tanker chartering professionals however Peter has seen increasing and continued growth in demand for people with LNG expertise over the past few years.

London has seen a few departures of commercial offices of tanker operators in the past few years which has reduced the career options for the candidates in the market. As a result many tanker professionals are finding themselves in different environments such as competitive broking.

Oil company marine departments have an increased focus on "optimisation", ensuring logistics are streamlined and efficient which has led to further emphasis on commercial operations, he says.

There have also been banks making an exit from physical oil trading. Previously, some banks had their own chartered fleets, he said. Banks had a big impact on the employment market for oil shipping professionals, because

they "were able to offer very strong packages" – this had encouraged movement, and had a chain reaction effect through other sectors of the employment market.

As a general point, the number of people which shipping companies hire has a direct correlation with the size of their fleet, taking on more people as the fleet grows, and vice versa, he says.

Desired skills

In terms of the skills employers are looking for, shipping companies still place a lot of value on candidates with a sailing background.

They like "people who have been to sea, know the bow from the stern, and can't have wool pulled over their eyes. This is invaluable experience to have, particularly in operations departments," he says.

"There is less of a need for people like that in oil/trading companies who don't have their own owned time charter fleets."

For chartering roles, generally speaking, companies look for people who have already worked in specific sectors within the tanker market. The trading companies do like candidates coming from other similar businesses whereas tanker owners seem generally more open to candidates coming from both sides of the fence.

"Shipping is a people business. You have to have those commercial skills, get on with people, build robust relationships and maintain those relationships," he says.

"The markets are moving daily so you need strong mathematical acumen to take a view on the market and decide what's a good voyage and a bad voyage."

Graduates

A first port of call for many graduates is still working in demurrage (charges payable after a failure to load the ship at the time agreed, the equivalent of a taxi driver's waiting charges).

"Demurrage is a good starting point for many grads to get a foothold and understand the general mechanics behind commercial shipping."

"From there, the traditional path was always to commercial operations: if you show promise and commercial potential, you may get the



Peter Morgan, oil trading & commercial shipping desk lead, at Eleven Recruitment

opportunity to progress to a chartering role."

"Generally graduates who have a clear drive to be involved in the market, through shipping related degrees, or internships, will be looked on more favourably than those who don't."

Where are the opportunities?

As we know, the main commercial shipping hubs are still Houston, London, Geneva, Athens, Dubai, Singapore, he says.

"London is still seen, I feel, as the epicentre for shipping in Europe. A lot of the brokers are here, charterers are here, and a good few ship owners are here. London is still very much crucial to the market."

"Singapore however, has shown consistent growth over the last 5-10 years. If you want to be in shipping, Singapore isn't a bad place to be for sure."

The green future

Looking to the post Covid world, the green energy transition continues to build momentum and importance. Indeed we have seen the oil majors announce their restructuring plans and set out significant changes for a new direction.

This year we have also had IMO2020 and we can see our clients beginning to future proof their businesses, developing decarbonisation plans and being alert for any new environmental legislative changes that may affect them. But, there are no clear signs yet about how great the impact will be on the hiring market, Mr Morgan says.

"Over the medium term at least, ships are still going to exist; oil is still needed; and while that is the case our clients need operators to operate them and charterers to fix them," he says.

Eleven Recruitment's salary survey report, covering commercial roles in tanker shipping and oil trading, is online at <https://bit.ly/3n9B9sK>



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