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E-MAIL : info@mef.ae
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TEL : +971 4 3474444
FAX : +971 4 3472771

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News from OCIMF

OCIMF's news over May, June and July include a rise in Gulf of Guinea and Singapore straits piracy; recommendations on shore power systems; and many discussions relating to ship to ship transfers

OCIMF noted in its July newsletter that the International Chamber of Commerce's International Maritime Bureau (IMB) has raised concerns about the resurgence of reported incidents in the Gulf of Guinea waters and the increase in incidents in the Singapore Straits. This was reported in IMB's mid-year report for 2023, released on 11 July.

Sixty-five incidents of piracy and armed robbery against ships were recorded in the first half of 2023, an increase from 58 incidents for the same period in 2022. Of the 65 incidents reported, 57 vessels were boarded, four had attempted attacks, two were hijacked and two were fired upon.

Perpetrators successfully boarded 90 per cent of targeted vessels. Violence towards crew continues with 36 taken hostage, 14 kidnapped, three threatened, two injured and one assaulted.

In separate development, OCIMF's Maritime Security committee finalised an information paper on Loitering Munitions and discussed mass casualty rescue plans.

In Nigeria, OCIMF members reported difficulties ensuring that vessel and cargo movements have been approved by the appropriate authority. OCIMF, as co-chair of the Nigeria/Industry Joint Working Group, is actively looking into this to ensure clarity and transparency for all owners and operators.

OCIMF participated in a Senior Leadership Programme about maritime security organised by Information Fusion Centre (IFC) Singapore. This was part of a package of events including a maritime security conference and the biennial Maritime Information Sharing Exercise (MARISX). These events provided access to many Chiefs of Navies. The MARISX involved more than 160 personnel from 37 countries.

In July OCIMF hosted the Malaysian Deputy Minister of Transport, Datuk Haji Hasbi Bin Haji Habibollah, and his delegation. Collaboration opportunities were found to further support safe ship-to-ship operations in Malaysian waters and

outside its Exclusive Economic Zone.

The discussion also touched upon various aspects of security, piracy and safety risks for tankers and personnel transiting the Malacca Straits and surrounding waters. The delegation shared that Malaysian authorities are now providing full pilotage services for the Malacca Straits to strengthen the navigational safety of transiting vessels.

David Bousfield



David Bousfield

OCIMF paid tribute to David Bousfield, a seafarer and SIRE inspector who passed away earlier this year. David worked on Stolt chemical tankers and was later integral to setting the standards for independent inspector groups as the head of Isomar, latterly Isovet, and

most recently Capital Marine. He became an accredited SIRE inspector in 2000 and continued in that role until 2015.

Fellow SIRE inspector William Austin said, "David has left a lasting legacy in what he and his associates achieved through their work and influence, improving the standards of marine risk management on a global basis. This influence during the early days of SIRE and Terminal Safety cannot be underestimated; his family should be rightfully proud of the lives that will have been saved, and the accidents that will have been avoided over these many years and going forward."

SIRE 2.0

In May, OCIMF decided to switch its plan to introduce SIRE 2.0 from a single 'go-live' date to having a phased in approach. This would enable it to "embed testing of the new regime with different parties," before going live with it.

OCIMF has been producing various familiarisation materials to prepare different participant groups for SIRE 2.0. These include documentation, factsheets, and videos covering the technical and human factors aspects of SIRE 2.0. They can be used onboard ships or integrated into in-house training programmes.

OCIMF's Vessel Inspection Project (VIP) team has published the following documents. SIRE 2.0 – Conditions of Participation, Policies and Procedures; SIRE 2.0 Document Guidance Table; and Tablet Comfort Guide.

The Tablet Comfort Guide is for inspectors using tablets. It is based on an ergonomist's assessment of the tablet. The Guide has recommendations to maximise comfort and avoid injury.

The materials and documents can be downloaded from www.ocimf.org/programmes/sire-2-0

INTERTANKO

A joint meeting was held in Dubai in May between the executive committees of OCIMF and INTERTANKO, to "discuss common concerns, seek synergies and develop potential marine safety initiatives."

OCIMF and INTERTANKO decided to discontinue the Tanker Accident Database. "As the industry landscape evolves, we feel that there is an opportunity to evaluate more comprehensive and dynamic systems that can effectively address the industry's changing risk profile," OCIMF said.

Engineering

OCIMF's Onshore Power Supply (OPS) Working Group met in May. The group developed a questionnaire to gather power requirements onboard tankers while in port.

With the support of INTERTANKO, more than 500 tankers completed the questionnaire. Subsequently, members agreed on a recommendation regarding the voltage, the number of cables and electrical connections.

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39-41 North Road
London N7 9DP
www.tankeroperator.com

PUBLISHER / EDITOR / EVENTS

Karl Jeffery
Tel: +44 (0)20 8150 5292
jeffery@tankeroperator.com

ADVERTISING SALES

David Jeffries
Only Media Ltd
Tel: +44 (0)208 150 5293
djeffries@tankeroperator.com

PRODUCTION

Very Vermilion Ltd.
Tel: +44 (0)1253 812297
info@veryvermilion.co.uk

SUBSCRIPTION

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OCIMFs Onshore Power Supply (OPS) Working Group

In terms of the positioning of the connection, the group completed a detailed risk and feasibility assessment of electrical connection at two positions onboard: close to the stern or midship. After an in-depth assessment, the group decided to develop and provide technical guidance on both position options.

Separately, OCIMF’s Engineering Expert Group (EEG) is developing guides on risks associated with shaft/engine power limitations and using onshore power supply for tankers. Other work includes the review of the Guide for Implementation of Sulphur Oxide Exhaust Gas Cleaning Systems and a publication on best practices to prevent fires in the engine room.

The EEG is also participating in an IMO correspondence group on safety of alternative fuels, working to develop interim guidelines for ships using hydrogen, ammonia, or oil fuels with a flashpoint between 52 and 60 degrees C.

In May, OCIMF presented at a marine technical seminar organised by Dunlop Oil and Marine in Hull, UK, a manufacturer of high-performance flexible hoses for oil and gas production fluid transfer. The event included a tour of the Dunlop factory at Grimsby to see the hose manufacturing process.

Joint projects

OCIMF and the International Association of Oil and Gas Producers (IOGP) met in July to discuss common areas of activity. This included lifesaving apparatus on fixed/floating installations, geophysical marine operations, management of attending vessels and human factors. Further discussion was held on standardisation of industry best practices.

OCIMF participated in the World Maritime University (WMU) 40th anniversary event and conference in Malmö, Sweden in June. OCIMF and the WMU have a Memorandum of Understanding to strengthen their collaborative work in the field of human factors in safety and incident investigation and to support the IMO’s drive for maritime decarbonisation.

OCIMF participated in the International Maritime Statistics Forum (IMSF) 50th

anniversary meeting in London in May.

The IMSF promotes harmonisation and improvement in quality of statistics in the maritime sector, which helps in the development of industry standards.

Ship to ship

INTERTANKO held a Ship-to-Ship regional forum for Europe, Middle East and Africa at its office in June, and OCIMF was invited to attend. Also attending were the Maritime and Coastguard Agency, the Nautical Institute and UK-based STS service providers.

Discussions took place on STS operational matters, notably on the transfer of personnel by basket versus pilot ladder.

OCIMF and its co-authors ICS, CDI and SIGTTO have embarked on a project to update the Ship-to-Ship Transfer Guide for Petroleum, Chemicals and Liquefied Gases (first edition, 2013). OCIMF and its co-authors invite industry stakeholders to support the development of this second edition.

OCIMF attended the Ship-to-Ship Regional Forum for North America organised by the Industry Taskforce on Offshore Lightering (ITOL) in May. There were discussions about windfarms in STS locations and the best way to do personnel transfer, baskets vs pilot ladders.

Book withdrawal

OCIMF’s Publications and Advocacy Committee for Tankers, Barges and Terminal Interfaces has approved the withdrawal of the book “Clean Seas Guide for Oil Tankers, 4th edition (1994). Tanker operators are asked to remove copies from their libraries.

Up to date guidance on the same topic is contained in the International Safety Guide for Oil Tankers and Terminals (ISGOTT 6), and other publications about crude oil cargo operations, and environmental best practise, and engine room procedures, from ICS and Witherby’s.

TO

This article is a summary of OCIMF newsletters for May, June and July 2023. The full text is online at <https://www.ocimf.org/news-and-events/news/newsletter>

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IMO's MEPC – toughening targets

IMO's MEPC June 2023 meeting agreed that greenhouse gas emissions will be net zero “by or around 2050,” a toughening of the 2018 target of “as soon as possible in this century”. DNV experts reviewed the developments

The IMO Marine Environment Protection Committee (MEPC) 80 meeting on 3-7 July 2023 “might have been one of the most anticipated dates in this year’s shipping calendar,” said Simon Adams, senior communications manager with DNV.

It was when the IMO was due to decide whether its decarbonisation targets should be toughened. And it did decide to toughen them, with a unanimous agreement that greenhouse gas emissions from shipping will be net zero “by or around 2050”.

“That wording may sound fuzzy, but it is diplomatic language intended to bring us together by 2050,” said Eirik Nyhus, director, environment with DNV. “What we have now is a much more stringent strategy.”

There was also agreement that total reduction in shipping greenhouse gas emissions of 20 per cent will be achieved by 2030, in terms of well to wake, not tank to wake.

There is an additional target of 5 per cent of ship energy to be a “zero or near zero greenhouse gas” source by 2030, “striving for 10 per cent”. Another checkpoint is the target of 70 per cent reduction in greenhouse gas emissions by 2040, “striving for 80 per cent”.

It follows the initial targets, agreed in 2018, for greenhouse gas emissions from shipping to be reduced by at least half by 2050 compared to 2008, and then reduced to zero ‘as soon as possible in this century,’ a phrase which could theoretically mean by 2099. In 2018 it was agreed that the targets would be reviewed in 5 years.

The 2018 targets also sought to reduce carbon intensity (CO₂ emissions per transport work) by at least 40 per cent by 2030, and to “pursue efforts towards” 70 per cent by 2050. This 40 per cent target is unchanged in the 2023 agreement.

There had been one thousand people attending the MEPC meeting physically in London. Because the plenary hall has maximum capacity of 750 people, other people could only watch the sessions on screen from overflow rooms in the building, Mr Nyhus said. A further five hundred attended virtually from around the world. “It

was quite hectic and fairly intense, lots of things happening,” he said.

“Everybody comes into these negotiations with strong opinions about what they want to see happen. There will be, as per normal, people walking away dissatisfied. Some people with slight disappointments, some people with more deep ones.”

“The hallmark of a consensus is that nobody gets everything they want. That is how we see the result from this strategy discussion.”

The meeting provides much needed clarity on the future, which should help shipowners and fuel providers make investment decisions, Mr Nyhus said.



Eirik Nyhus, director, environment with DNV

Although some nation states expressed scepticism about the decision made, there was universal agreement with it. Ultimately, “everybody piled onboard, there were no holdbacks. Even though negotiations were extremely hard up to the very last minute.”

“We have a clear direction, clear ambition level. It gives me high hope that this will be the course IMO will abide by.”

“We can say that the fuel supply industry has received a very clear signal that there is demand coming from maritime. This should give them certainty to invest in fuel production and bunkering facilities.”

For shipping companies, it means that “knowing and understanding your own emissions data is business critical and will become increasingly so,” he said.

Intensity vs absolute

The distinction between absolute emissions and carbon intensity is important because of the growth in cargoes carried by ship, noted Tore Longva, director of decarbonisation regulatory affairs with DNV.

DNV estimates that shipping overall has reduced greenhouse gas emissions by 10-13 per cent since 2008, while activity has increased 42 per cent. “That is an enormous achievement on energy efficiency.”

But maritime cargoes are estimated to grow a further 12 per cent between now and 2030, So if individual ships do nothing further to improve performance, that would ‘wipe out’ the 12 per cent improvement since 2008, in terms of overall industry emissions.

The expected continued growth of shipping activity leads to estimates that achieving a 20 per cent reduction in absolute emissions by 2030, compared to 2008, will require 5 to 10 per cent use of zero carbon fuel by 2030, and 15 per cent further improvement in energy efficiency.

Regulatory measures

MEPC also discussed the regulatory measures to be taken to achieve the target. IMO has decided that there will be both technical and commercial measures.

The technical regulatory measure will be a standard for the greenhouse gas intensity of fuel used. There were proposals for this both from EU and China, which Mr Nyhus describes as “conceptually similar,” and the EU measure had “close resemblance to FuelEU Maritime.”

“IMO will need to work really hard on trying to consolidate all the proposals and views, so when we get to MEPC81 in April next year we can agree on a base document, for further development of technical aspects of regulations, legal language,” he said.

The commercial measure will be some kind of tax based on emissions. There have been a number of proposals. IMO has not decided which one it will follow.

Discussions about this “did not get as far as the technical development,” he said.

“There is agreement that there should be

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a pricing on GHG emissions [but] there's strong divergence on views of what kind of mechanism. Some people say, 'certain options are off the table,' others insist they are on the table," he said.

The technical and commercial measures could be linked, such that companies not achieving the GHG intensity standard in fuel they consume have a financial consequence.

The plan is for the regulations to be adopted in 2025 and entered into force in 2027. Although that seems a long way away, Mr Nyhus believes it is "quite an aggressive timeline," on the basis that regulations are typically approved at the meeting before they are 'adopted', which means it needs to be approved in 2024.

Aspects of fuels

MEPC adopted fuel lifecycle assessment guidelines, describing how emissions made in fuel production should be taken into account in future regulations, Mr Longva said.

Fuel production emissions are known as 'well to tank', although not all fuels come from a well. Emissions at the vessel itself are known as 'tank to wake'. The full lifecycle emissions are known as 'well to wake'.

Emissions are involved in making all fuels; biofuels also have 'negative emissions' in that carbon is taken out of the atmosphere when they are grown. Biofuels have positive emissions in their manufacture, such as in making fertiliser, operating equipment, transport and processing.

Emissions of fuels will be calculated in terms of grams CO2 equivalent per megajoule of energy. This will be called the 'emissions factor'.

The phrase 'CO2 equivalent' takes into account the varying greenhouse gas potential of different greenhouse gases, looking at CO2, methane and nitrous oxide, with methane being much worse than CO2 per tonne.

Fuel will need to be provided with a "fuel



Tore Longva, director of decarbonisation regulatory affairs with DNV

lifecycle label" showing emissions made in producing them. There will need to be some auditing and certification process.

The agreement is on the methodology for how calculations will be done, not the actual calculation. But IMO has developed "default" emissions factors for methanol, diesel, and LNG. These can be used if no specific information is provided, he said.

The figures for the well to tank emissions are not yet available "in great scientific rigour," Mr Nyhus said. It is an important calculation, to ensure that companies are eliminating emissions, not merely shifting them upstream.

For example, if a ship moves to hydrogen fuel, there will be zero CO2 emitted at the ship exhaust, which is great for CII. But if there is plenty of CO2 emitted upstream, such as for hydrogen made from natural gas, there's no net benefit to the environment.

The EU's FuelEU Maritime standard already looks at well to wake emissions.

Biofuels Circular

For biofuels, IMO has released a Circular stating that biofuels can use a CO2 conversion factor accounting for the whole well to wake emissions in CII.

The Circular states that biofuels should be certified by an international certification scheme and must meet that scheme's sustainability criteria. This will generally mean they are not made from any feedstock which could be used to make food. Waste products from food production are allowed.

IMO also states that biofuels must achieve a well to wake greenhouse gas emission reduction of at least 65 per cent compared to fossil marine gas oil. Many biofuels on the market do not achieve this, Mr Longva said.

The biofuels Circular is a "temporary fix to an immediate problem," Mr Nyhus said. Companies are keen to use biofuels today, but under current regulations do not see any benefit from doing so under CII. Eventually it will be replaced by life cycle assessment guidelines brought into regulation.

Review to CII

CII is scheduled to be reviewed at the end of 2025. We are now in a data gathering phase for that review, with potential amendments to be created by summer 2025, Mr Longva said.

So far, the CII calculation is based only on 'tank to wake' emissions, but it may be extended to include well to tank emissions.

There have been a number of submissions to IMO about how the CII formula should be adjusted. For example, for vessels with short waiting times, long voyages, LNG boiled off. "There will be no immediate changes to the

framework, everything will be gathered by summer 2025," he said.

The CII reduction requirements from 2026 to 2030 will be aligned with the revised greenhouse gas strategy ambitions.

There are, yet no penalties for a ship which does not meet the required grades, except for a requirement to make a 'corrective action plan.' This will be reviewed in 2025.

Mr Nyhus believes that to detain ships which do not comply would be draconian. But some states will be willing to enforce CII compliance.

There could be a financial mechanism, whereby noncompliant ships are obliged to make additional payments to the financial scheme IMO develops.

Onboard carbon capture

There was a brief discussion at MEPC 80 about onboard carbon capture, but "no substantial discussion, due to time constraints," Mr Nyhus said.

The issue is scheduled to be discussed at the next meeting of the Intersessional Working Group on Reduction of GHG Emissions from Ships to be held in April 2024 (ISWG-GHG 16). It will be linked to further work on the life cycle assessment guidelines. "It is not discarded, but going a bit slower," he said.

Other discussions

There were approved amendments to the Data Collection System (DCS) regulations taking effect from 2026, stating that shipping companies should provide additional data 'elements'. This includes fuel consumption per fuel type, fuel consumption per energy consumer (main engine, boiler, auxiliary) and fuel consumption per transport work, by tonne mile or another metric.

There was discussion about whether the use of ShaPoLI/EPL can be included under EEDI framework, so that new ships could be built with power capacity they are expected to only use in emergency situations, but no conclusion.

The Ballast Water Management Convention is "undergoing a review." One issue being considered is what happens for ships operating in challenging water quality. For example, water thick with sediment from a river, so that ultraviolet light of a ballast treatment system cannot penetrate it.

IMO did not reach any conclusion here, Mr Longva said.

Ship recycling was not part of the MEPC meeting, but the rules have changed now the Hong Kong Convention has been ratified, and it will enter into force in June 2025. Each ship above 500 GT will need to carry a certified

inventory of hazardous materials. While many ships already have this, DNV estimates there are 23,000 vessels which do not.

Also under the Convention, ship recycling facilities need to be authorised by competent authorities and will only be able to accept ships which are themselves in compliance.

Predictions

The webinar audience was asked what they believed was the most important solution to achieve the twenty per cent emissions reduction in 2030. 53 per cent said use of carbon neutral fuels such as biofuels; twenty per cent said technical energy efficiency improvements; 18 per cent said operational improvement, such as with speed and trading patterns; 6 per cent said onboard carbon capture, and 2 per cent said commercial improvements, such as changes to charter parties.

Mr Nyhus said that the poll results showed that people had faith in carbon neutral fuels. “Biofuels are likely to be available in reasonable volumes; e-fuels will lag a bit,” he said.

There are no obstacles to making technical

and operational efficiency improvements. Mr Nyhus thought the audience might have more confidence in commercial measures. “It could have a significant difference,” he said.

For onboard carbon capture, Mr Nyhus said he thought the audience was correct to not put too much faith into it. “We think it will take a while before CCS takes significant volumes. So, in context of 2030 this seems reasonable.”

The DNV experts were asked for their predictions on what will happen.

Mr Nyhus said he did not expect shipboard nuclear power to ever play a significant role in shipping. Apart from societal concerns and need for further technical development, it could take until 2050 for regulations to be sorted out and technology to be widely deployed. “It might make more sense to put nukes onshore and use the electricity to make liquid fuels,” he said.

Mr Longva added that he thought biofuels would “take the brunt of reduction” to 2030.

Blue fuels (with shore carbon capture) and e-fuels will take longer, he believes. Large scale carbon capture on shore “is recognised as a vital solution globally to reach the 1.5-degree target,” he said. “We see a lot of

technology development. It is not mature. Challenges include “having access to storage sites, resolving the regulatory issues, ensuring there is true storage of CO2,” he said.

“I think carbon capture will have a promising place. Maybe not in the long term to 2050, but certainly in the short to mid-term.”

IMO, EU and US

Will the EU and the US allow their maritime decarbonisation regulations to be replaced by IMO regulations once they are in place? “We’d all love to see a grand unified theory of regulations. We might get there. [But] at the moment I suggest the status quo will abide,” Mr Nyhus said.

The EU has “review provisions” stating that regulations will be removed if an international regulation demands the same thing, and this will happen towards the end of the 2020s.

“Taking away something, which is seen as working and established, that is a tall order. Do not expect miracles tomorrow, will be my advice. We will have overlapping regulations for the next decade or so at least,” he said.

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DNV – how shipping is evolving

DNV shared perspective on how the maritime industry is evolving, including predictions for supply of alternative fuels, ESG data, growth in alternative fuel ships, rise in incidents, and fear of cyber attacks

According to DNV's forecasts, by 2050, biofuels will provide a quarter of all aviation fuels, and 20 per cent of maritime fuels, said Remi Eriksen, Group President & CEO, DNV, speaking at an event at Nor-Shipping in Oslo.

DNV forecasts a rapid growth in biofuel for ships over the next 10 years.

Supply of ammonia and e-fuels for ships is expected to reach a bigger scale later, from mid-2030s, he said.

We are unlikely to see e-fuels at scale earlier than the mid-2030s because they are made from renewable electricity. While we still have some fossil generated electricity, it makes sense to use the renewable electricity to displace it. So, we may only see e-fuels on a big scale when we have so much renewable electricity generation, we have some left over after giving our grids what they need.

While this renewable energy infrastructure is being built, 'blue' hydrogen can be made using carbon capture and storage and supplied to shipping, he said. "We need CCS to be matured. Let's start with blue."

If all the wind power we had installed today globally was used to make maritime e-fuels, it would only provide 50 per cent of maritime industry needs in 2050, he said. This illustrates how much renewable energy we will need.

Another question is how many oil tankers we will need in the future. According to DNV's forecasts, oil demand from the transport sector (road vehicles, trains and ships) will halve to 29m barrels of oil per day by 2050, he said.

Emissions data for customers

Shipping companies are increasingly being asked by their customers to provide data about emissions made in providing transport services, said Knut Ørbeck-Nilssen, CEO maritime with DNV. These form part of the "Scope 3" (value chain) emissions of its customers.

If lower emitting ships get more business as a result, we can say that decarbonisation can be 'commercially driven', he said.

DNV plans to play a role as an "independent trusted player," verifying emissions data provided by shipping companies, he said.

Changes to fuelling

At the time of the event in June 2023, only 40 per cent of newbuild vessels are being built to only run on conventional fuels, Mr Ørbeck-Nilssen said.

DNV counts that there are currently 911 LNG fuelled vessels in operation or in order, and 127 methanol fuelled vessels in operation or in order. LPG is so far only used as a fuel by LPG carriers.

There is a lot of interest in biofuels now, and DNV sees that e-fuels and blue fuels are "a little further out in time".

As of 2023, "we can easily say the [future] fuels will be late, in short supply and infrastructure will take a long time to develop," he said.

There is not yet a competition between fuels, because the industry will need everything which can be made available.

Rise in incidents

DNV's annual analysis of maritime safety made the sad observation that incidents rose in 2022, after a decade of improvements. 2022 saw the highest number of incidents for 11 years.

The main causes were machinery damage and machinery failure.

It is difficult to pinpoint the cause, but one theory is that it is related to Covid, in two ways – vessels missed out on maintenance (due to difficulty making visits to ships), and seafarers had more fatigue, he said.

There are concerns that the new technologies being brought onto ships to handle new types of fuels could lead to more



Knut Ørbeck-Nilssen, CEO maritime, DNV (photo courtesy Capital Link)

incidents, if seafarers are not properly trained to use them. DNV calculates that for the industry to reach its decarbonisation by 2050 target, there will need to be new training for 750,000 seafarers.

Cyber-attacks

Another big area of concern is the "tremendous increase in cyber-attacks," he said.

In a survey of seafarers, 81 per cent said they needed more training on digital technologies, and 52 per cent said they preferred in-person training.

A separate survey of 800 maritime professionals asked how big they thought the cyber threat was. 80 per cent said they thought a cyber-attack would lead to closure of a major port or waterway; 68 per cent believe there will be a grounding due to a cyberattack; 60 per cent believe there will be a collision, and 56 per cent believe there will be physical injury or loss of life.

DNV recommends that cybersecurity should be treated as part of operational safety, he said. Specific crewmembers should be given responsibility for cybersecurity onboard.

Improving CII with biofuel blending

Shipowners can use biofuels to improve their CII scores, following ‘Interim Guidance’ which was agreed at the IMO MEPC meeting in July, reports ABS. A 30 per cent biofuel blend could take your vessel’s score from D to A in 2023 *By Panos Koutsourakis, VP Sustainability, ABS*

With reporting of data in compliance with the IMO’s Carbon Intensity Indicator (CII) regulation well underway, shipowners and operators are focussed on how to optimise their operations and gain improvement in CII ratings.

The options include optimisation of vessel efficiency using energy efficiency technologies and the use of alternative and low carbon fuels.

Full adoption of cleaner fuels is some years away but options exist for the transition period.

Analysis by ABS has concluded that drop-in biofuels have the potential to make a substantial improvement to a vessel’s Carbon Intensity Indicator (CII) rating.

The research concludes that blending with biofuels could improve a vessel’s CII performance regardless of whether the vessel is powered by diesel, methanol or LNG.

The CII establishes a downward trajectory measurement of a ship’s carbon intensity, which is the amount of carbon emissions generated by a unit of transport work, equivalent to one nominal tonne of cargo carried over a nautical mile.

The CII assigns an ‘energy efficiency’ rating to all ships (from A to E), based on the calculated carbon intensity.

Vessels in the D and E categories will have to demonstrate continuous improvement, moving progressively towards category C.

Ships that spend three consecutive years in category D, or one year in category E will be subject to a mandatory review of the Ship Energy Efficiency Management Plan (SEEMP) and a plan of corrective actions must be made to achieve the Required Annual Operational CII.

The 2022 Guidelines on operational carbon intensity indicators and the calculation methods provided the possibility for the CO₂ Emission Conversion Factor (Cf) to be obtained from the fuel oil supplier, supported by documentary evidence, in case the type of the fuel oil is not covered by the relevant guidelines.

The current regime has been measuring

carbon emissions tank-to-wake but there are discussions underway to change this to well-to-wake, accounting for the full lifecycle of emissions.

In the July meeting of the Marine Environment Protection Committee (MEPC 80) the Marine Fuel life Cycle GHG Guidelines (LCA Guidelines) were officially adopted a work program for further enhancement of the guidelines was agreed upon.

To facilitate the uptake and establish a common approach among flag Administrations regarding the assignment of a carbon factor (Cf) for biofuels and thus ensuring a level playing field, pending the development of policy instruments for the use of LCA Guidelines, the Committee also adopted Interim Guidance on the Use of Biofuels.

This suggests that, under certain provisions, biofuels that have been certified as sustainable by an international certification scheme may be assigned a carbon factors (Cf) equal to the value of the well-to-wake GHG emission of the fuel, based on the certificate.

Blending the biofuel from biogenic sources with diesel and other fuels up to 30 per cent would thus improve the overall carbon intensity and thus a ship’s CII rating.

The commonly used biofuel products for shipping are the biodiesel blends, which contain 20 -30% of pure biodiesel and offer 15 - 20% carbon emission reduction on Well-to-Wake basis.

Potential improvement

ABS analysis concluded that a container vessel propelled by traditional low Sulphur fuel could see its rating improved from E to C in 2023 with the adoption of a 30% blend of biodiesel.

The advantage of biofuels to decarbonization extends to the supply chain and the bunkering infrastructure required for fuelling.

Since biofuels are simple fuels of the same molecular structure, their cost is confined to the fuel itself rather than in any additional treatment, meaning they represent a compelling option once supply and regulatory questions are addressed.

The next issue for owners – common to all

alternative fuels - is availability in sufficient quality to support CII compliance and ultimately a net zero carbon shipping industry.

ABS expects there to be sufficient biofuel supply to meet current demand since the majority of energy majors have invested in producing sustainable biofuels.

Availability is increasing at the world’s big bunkering hubs and is expected to increase further over time, especially after the decisions of MEPC 80, as demand signals from shipowners grow.

However, the shipping industry must be in no doubt that it will experience competition, principally from the aviation industry, which is also eyeing the use of sustainable biofuels to lower its carbon emissions.

Nevertheless, drop-in biofuels are a powerful tool for shipowners and operators to accelerate fleet decarbonization and improve their CII trajectory today.

ABS is involved in pilot projects on the application of biofuels that have shown us the significant potential of these fuels to contribute to reducing a vessel’s well-to-wake carbon intensity and transform its rating.

ABS has published a series of sustainability whitepapers focused on alternative fuels, breaking down the available options including their challenges and advantages, as well as other factors to take into consideration during the decision-making process.

The whitepaper ‘Biofuels as Marine Fuel’ focuses specifically on drop-in biofuels and can be downloaded from the ABS website.



Panos Koutsourakis, VP Sustainability, ABS

Simplifying tanker procedures

Introducing written procedures for how to do tasks was a good idea in the 1990s when maritime safety was poor compared to today. But it has probably gone too far. What can be done?

We discussed at Tanker Operator Athens

A shipping company had seen people injure their fingers in doors. The company had discussions about what to do about it. Can they create doors impossible to trap fingers in? Probably not. Should they create procedures that people should check if any fingers are in the way before they close a door? This sounded crazy to the fleet manager, who said that perhaps the crewmembers' parents were to blame, for not teaching their children to keep their fingers out of doors.

This anecdote, told by Martin Shaw, president of IMAREST, at the Tanker Operator Athens conference, illustrates the cause of the procedure overload we often see today. Shipping people see 'creating a new procedure' as the solution to every problem. We end up with thousands of pages of procedures, which are impossible to read, let alone follow.



Martin Shaw, IMAREST (left) at Tanker Operator Athens

Similarly, some companies have considered procedures to stop people falling over in showers, where there have also been accidents, Mr Shaw said.

He knew of one tanker company which had installed gyms for crew, after several accidents had occurred with weightlifting equipment improvised from items found in the engine room.

The company CEO asked a health manager how much the gyms were being used, and the health manager did not know the answer. So, a gym 'sign-in' book was created to keep track of usage. Then complaints about this 'gym logbook' reached the fleet manager, who had no idea this book existed, and what purpose it could serve.

Many tanker companies create procedures which do not reflect the way that work was done before the procedures were introduced, and people continue working in the old way.

A cause of this problem can be when procedures are put together without much input from people onboard the ship, perhaps written by outside consultants, said Captain Leonid Zalenski, chief operations officer of Columbia Ship Management.

Many tanker operators "have a fantastic management system which satisfies all requirements but implementation of it is so complex that it becomes a nightmare to follow," he said.

On the other hand, if the procedural system is maintained by the people who use it, it can continuously improve, he said. We shall make compliance easier if we want it to work.

SIRE 2.0 and procedures

SIRE 2.0, the new version of OCIMF's Ship Inspection Reporting Program currently being rolled out to tankers, could force a simplification of procedures, Captain Zalenski said.

As part of the inspection, seafarers will be asked to explain their role and tasks, and how this is described in the company procedures.

If the procedures are too long and complicated, they will not be able to do this easily, so this will encourage companies to simplify procedures.

"The bit I like about SIRE 2.0, it will force us to spend a bit more time training people and making sure they understand the requirements," he said.

"Procedures are not always easy to follow. SIRE 2.0 will force us to improve. [Seafarers] will have to explain basic things, what they do and what their responsibility is. This is sometimes quite complicated if procedures are quite complicated."

Background to procedures

The tanker industry started introducing many of its procedures in the 1990s, when incidents were much higher than they are now.

The ISM Code, introduced in the 1990s, forced shipowners to put processes in place for managing safety.

The Oil Companies International Marine Forum (OCIMF) introduced the Ship Inspection Report Programme (SIRE) in 1993, where a vetting inspector would come onboard, determine if the procedures were being followed. The inspection would inform the decision to accept the ship for charter.

The industry safety record is much improved, with a continuous decline in accidents over the next 10 years, while the amount of oil being transported roughly doubled. The SIRE program can be given some of the credit for this, said IMAREST's Martin Shaw.

But then the industry's safety record reached a point where no further improvement could be made. There turned out to be a limit to how much procedures were beneficial, he said.

Today, the industry has just about mastered how to avoid accidents from predictable causes. So, when the industry has accidents, they are typically a result of a combination of factors which have never happened before, and could barely be predicted, Mr Shaw said. Writing procedures to stop that specific accident re-occurring has a limited value, because those causal factors are unlikely to re-occur at the same time.

Problems we see today are typically for reasons which are not entirely new, but slightly different to problems we have seen before. For example, ships still sometimes see novel, complex problems with tail shafts, although ships have carried tail shafts for nearly 200 years, he said.

We also see problems today connected with automation systems. Programmers try to build systems to automatically correct problems. But when an unusual fault happens which the automation system cannot resolve, the system goes into 'fault mode' and stops operating, and a person has to fix the problem. This can be very difficult to do. Manuals are rarely helpful, he said.

The complexity of procedures is compounded by the fact that different

procedures can be demanded by flag, class and charterers, he said. Sometimes multiple procedures describe how to do the same task, in slightly different ways, and it is unclear to seafarers which takes priority. They may conflict with other company priorities, such as to reduce spending.

And the more tasks which are covered by procedures, the effort crew are making to think for themselves, which means they lose the ability to work out the solution to a problem, Mr Shaw said.

Blaming the crew

The procedures may be designed to serve the nefarious goal, of making it easier to blame seafarers for any accidents, Mr Shaw said. It is common that investigations determine that there was some procedure which was never followed, without considering whether it was possible for seafarers to understand and follow everything. The problem gets worse with the more procedures we have.

So, while we commonly hear that “80 per cent of accidents on ships are caused by human error”, we don’t consider that many of those were really caused by whoever wrote the procedures, rather than the person who was supposed to follow them.

It would be better for the industry to acknowledge that 100 per cent of incidents are caused by some ‘human error’, but to include in this all of the ‘humans’ involved in design, construction, and management of the procedures, regulations, technology and software which seafarers use, he said.

Then try to eliminate the possibility for a seafarer to make a decision which increases the risk.

As a side note, if we had autonomous ships, they would still be following code written by people, based on procedures written by people, and any incident could still be attributed to human error, he said.

Time pressure

Meanwhile, crew are often under time pressure, both to do tasks in a certain time, and to ensure the ship gets to its destination at a certain time. This can conflict directly with their ability to follow all the procedures they are expected to follow.

Time pressure emerged as a factor in the Titanic sinking of 1912. The official enquiry concluded, “the loss of the said ship was due to collision with an iceberg brought about by the excess speed at which the ship was being navigated.. which other skilled men would have done in the same position. However, the practice itself was faulty and it is to be hoped that the last has been heard of this practice.”

Today, Mr Shaw is involved in the Human

Element Industry Group (HEIG), which involves representatives of multiple industry associations, trying to ensure that maritime regulations properly take people into account. The group was set up at the request of IMO’s secretary general in 2018. Mr Shaw likes to tell people that one of its goals is to “sort out one of the incomplete actions from the Titanic report.”

Time pressure is not necessarily explicit (someone being told to do something at a certain speed). There is ‘indirect’ time pressure, when you feel that you should do something at a certain speed, and ‘self-induced time pressure’ where people just want to do something quickly, Mr Shaw said.

To remove time pressure, there would need to be a more sophisticated way of determining whether people had sufficient time to do all their expected tasks, while following all the expected procedures.

Good procedures

Good maritime procedures would describe measures that should be taken to avoid certain risks from occurring.

Then they should describe what should be done, if something bad does happen, to minimise the consequences.



Leonid Zalenski, Columbia

If the incident is caused by an error, such a system can be defined as ‘error tolerant,’ because it ensures the error does not lead to something catastrophic.

Captain Zalenski from Columbia Ship Management said that in his company, careful thought has gone into every line of the procedures.

“If you can agree all safety elements in two pages, it will be perfectly acceptable,” he said. “Nobody is pushing us to have 500 pages. It is entirely up to us to say things in 2-3 bullet points or write a textbook. It is not easy; it needs a lot of effort.”

Captain Zalenski has implemented a ban on new checklists in the company, on the basis that it has reached a sensible limit of how many checklists there should be. “If you create a checklist for ‘each and every,’ you

miss the point,” he said.

How navies do it

One audience member, a former naval captain who had worked developing procedures for naval operations, observed that navies typically have very strict processes, but not too many of them.

They keep their processes concise by putting them through multiple reviews by teams of experts. They ensure they only cover incidents which threaten human life or threaten serious damage to the ship.

For example, there is a 15-page manual on how to do counter piracy operations in the Gulf of Aden. “After the captain has read these 15 pages, he was ready to go inside Somalia.”

It was easy for a captain to find something quickly, such as what to do in a certain situation, he said.

“These 15 pages are focussed on the task. They are not talking about general things.”

“[For example] you want to join a narrow passage, sometimes that’s a difficult operation. You need timely and critical information just 1 hour before you start the action.

“This [manual] takes the stress out; you have it in front of you.”

The procedures are written by a panel of subject matter experts such as former naval captains, working together with academics.

As well as the procedures, there is an online ‘lessons learned’ system, where you can learn from whoever has already done what you are about to do, such as enter a certain port.

In comparison, the maritime industry often gives crews very thick manuals. “It’s very difficult for seafarers to follow or remember all these things. When people want information in the time of need, they don’t have it.”

Maritime companies often gather thousands of pages of safety reports which no-one can ever find later.

The maritime industry could reduce its procedures, but it would require enormous focus, and recognition of the difficulty of the task.

“There’s nothing elementary about this,” said Dimitris Lyras of Lyras Shipping, conference chairman. “This is hugely important and very elusive.”

You can download presentations and videos from the Tanker Operator Athens conference at <https://tankeroperator.com/PdfFiles/TOAthens2023.html>

How SIRE 2.0 will work

Captain Leonid Zalenski, COO of Columbia Ship Management, gave a tanker operator's perspective on how SIRE 2.0 will work

Tanker operators, working for oil and gas companies who are members of the Oil Companies International Marine Forum (OCIMF), are going through a big change in the vetting regime, as OCIMF rolls out a new version of the Ship Inspection Report Program (SIRE), known as SIRE 2.0.

Under SIRE 2.0, Compiled Vessel Inspection Questionnaire (CVIQ) generated by the system based on submitted Pre-Inspection Questionnaire (PIQ) will be used by a vetting inspector and the process of the inspection will include interview of crew members of different ranks, including officers and ratings, said Captain Zalenski, chief operations officer of Columbia, one of the world's largest ship management companies.

Captain Zalenski sits on the Intertanko vetting committee and is a member of the Intertanko group focussing on SIRE 2.0.

SIRE 2.0 will "significantly enhance the inspection regime," he said. "It will be a completely different ballgame. It will not be a 'snapshot of vessel's condition at the time of the inspection' anymore because it will take many more factors into consideration. The human element will be also taken into consideration."

A SIRE 2.0 inspection will look at how the vessel is being managed, he said. It becomes a genuine risk assessment exercise, not a fault-finding exercise.

A significant part of the inspection process will be completed before physical attendance, which includes review of the Pre-Inspection Questionnaire, vessel and crew certificates, officers' qualification matrix, and sets of photographs uploaded to the SIRE system. This will release some of the inspector's time for physical inspection and interview of the crew.

Preparing for a SIRE 2.0 inspection will "take huge amount of time and effort," he said. Filling in Pre-Inspection Questionnaire and uploading the documents required for one inspection can take up to three hours. It needs to be someone who knows what they are doing, because the answers to the questions will influence the questions that are asked onboard, he said.

The master should provide a list of any defects the ship has upon commencement of the inspection. This defect list can be extracted from the planned maintenance system.

The inspector can decide how many of those defects are serious enough to be shown as a 'negative finding' during the inspection. If an inspector identifies any defects not mentioned, it will generate an observation.

Onboard the vessel, the inspector will also verify that photographs uploaded in advance reflect the current vessel condition.

There are four different types of questions.

"Core questions" relate to areas of high risk, which will be part of each inspection.

"Rotational Questions 1" and "Rotational Questions 2" will be generated by the system on rotation basis every third or every sixth inspection.

"Conditional" questions are generated based on uploaded pre-inspection questionnaire.

"Campaign questions" are linked to specific campaigns run by an OCIMF member. So, a campaign question becomes a core question for a period of a campaign.

The questions are categorised into hardware, processes, and people.

The inspector will also review the history of previous SIRE and PSC inspections and incidents based on the information provided in SIRE system or the information supplied before the inspection, he said.

The answers are assessed to be either 'exceeding expectations,' 'as expected,' 'largely as expected,' 'not as expected.'

It had been originally mentioned that "largely as expected" would be considered a negative finding, because it indicates something is not fully in compliance. But now the only finding treated as negative will be 'not as expected,' he said.

Having said that, if you get a "largely as expected" assessment you are expected to address it in the response and indicate improvement / corrective actions, he said.

The observations will be labelled with the nature and subject of concern, and performance influencing factors, with the inspector will select from a drop-down menu on the tablet and provide comments which will generate an observation.

A big challenge to tanker operators with SIRE 2.0 will be ensuring crew are prepared for the interviews. "This is a good challenge," he said.

"The way crewmembers will be interviewed is very simple. 'Show me what is your responsibility,' 'explain to me where you can find it in the procedures.'"

"No one is expected to be an expert. The interviewed crew member should be able to explain what the company requires, where to find it [in the procedures] and what he does every day."

OCIMF members may make their own

decisions about how to treat the observations. A complexity is that the same deficiency could be noted three times under categories of hardware, process, and the human element. For this case, some oil companies have said they will treat it as one 'observation,' others say they would treat it as three.

OCIMF has published several useful videos about SIRE 2.0, available on its website, he said.

The launch of SIRE 2.0 has been delayed. OCIMF first said it was ready to start with SIRE 2.0 in early 2022. It did not announce the reason for the delay, although Captain Zalenski guesses it may be related to more time being needed to train inspectors and set up the software and hardware.

Limits of original SIRE

The first version of SIRE made a big contribution to improving safety, in Captain Zalenski's view. "I strongly believe that the first SIRE introduced in 1993 did the trick. We improved the safety standard onboard tankers, and it influenced the rest of the industry, all other types of vessels."

"It forced the companies to build up their systems to a certain standard, this is the undeniable fact."

An inspector would come onboard, and any negative observations would be noted. Charterers could review these 'observations,' and use them to assess, reasonably accurately, the risk of the vessel.

But over time, as standards improved, the number of observations much reduced. Today, many observations do not really relate to risk, he said. For example, an observation related to a hygiene standard in crew mess room is no doubt a negative factor. But it does not impose a risk to the charterers for safe carriage of the cargo, which is the main element of the risk assessment.

"Now we reach a stage where SIRE reports are not telling us much," he said. "It doesn't bring any improvements any further."

Some people may think that SIRE 2.0 is too complicated – although Captain Zalenski noted that many people said the same thing about the first SIRE in 1993. "But finally, we got used to it."

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Making tanker decarbonisation easier to manage

Decarbonisation adds a lot of extra complexity to tanker operations. Are there any ways to make it easier?

“There is no easy way to navigate through decarbonisation,” said George Dimopoulos, Associate Professor with the School of Naval Architecture & Marine Engineering at National Technical University of Athens (NTUA), and former principal research engineer with DNV Greece. “We have limited experience, and [limited] information on what is going to happen,” he said.

In terms of operations, there is one ‘simple’ possibility, if low emission fuels can be obtained which can be ‘dropped in’ to replace existing fuels, without any additional training or equipment. Liquid biofuels, and use of biogas to replace LNG, can be drop in fuels to a certain extent.

Other than this, decarbonisation is highly complex both for office staff and shipboard staff, and in different ways, he said.

In the office, people make decisions about the best way to meet regulatory and customer demands, and how to invest money, looking at the costs and availability of different options.

Onboard the ship, people have the challenges of safely managing new fuels, These can be much more difficult to handle, such as with ammonia, he said.

If the moves to decarbonise turn out to be very disruptive, then “the companies with a

better understanding and the better cash flow and financial situation will have the benefit,” he said.

There are many unanswered issues with decarbonisation. One is whether CO2 sequestration could develop on a big scale, and lead to a new industry sector for CO2 carriers, he said.

“We are getting more interconnected to [other] industry sectors,” he said.

Some engine manufacturers are responding to the uncertainty of future fuels by developing “fuel agnostic engines”, which can work on any low flashpoint fuel, he said.

Immature technologies

Konstantinos Kyrou, Deputy DPA/CSO, HSQEE Officer, Capital Ship Management Corp noted that industry has seen many problems with systems like scrubbers and ballast water management systems, because they were released to the industry without being mature technologies. “At the end of the day -it creates more problems [than it solves] because it was not mature enough,” he said.

LNG-fuel-ready-ships

Martin Shaw, president of IMAREST, noted that there could be learnings from the past



Konstantinos Kyrou Deputy DPA and CSO, HSQEE Officer at Capital Ship Management

challenges implementing LNG fuel, where there was a chicken-and-egg situation. Shipowners would not commit to building a ship to run on LNG fuel unless the fuel is available, and fuel suppliers will not commit to building a supply chain until there is a demand from LNG fuelled ships.

The problem was partly solved by having a mid-way step of “LNG fuel ready ships”.

We are seeing something similar in decarbonisation, with ships installing engines and other equipment ready to take certain fuels, although those fuels are not yet available, he said.

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How BSM is developing digital technology

Bernhard Schulte Shipmanagement's affiliated company Mariapps Marine Solutions is developing digital technology for the company, including custom dashboards of performance data and predictive maintenance

Bernhard Schulte Shipmanagement (BSM) has an affiliated company MariApps Marine Solutions, which continues to make substantial developments in digital technology for the company.

This includes "smartPAL," a web-based ship management software, providing BSM's staff with custom dashboards of performance data, developing systems for predictive maintenance, and online tools for seafarers and shipowners. BSM exclusively utilises smartPAL for its digital technology needs.

It has sophisticated predictive maintenance systems, online tools for seafarers, and online tools for shipowners, explained Theophanis Theophanous, Managing Director of BSM Hellas, speaking at the Tanker Operator Athens forum in May.

MariApps has over 1,500 employees. Headquartered in Singapore, it has large development centres in Mumbai and Kochi, India.

BSM is one of the world's largest third-party ship managers, with around 650 ships under management, through ten management offices, he said. The Greece office manages mainly tankers, including LNG carriers, LPG carriers and chemical tankers. Also, some bulk carriers and container vessels.

Through MariApps, BSM has developed its own ship management software with thirty modules, covering both the ship and the office.

This can be used to run day to day operations, including communications with clients. There are tools to optimise operations and reduce costs, including data analytics, automation, and AI.

There are tools to visualise company performance data, including comparing the performance of management offices, and comparing different time periods.

The software can generate dashboards designed for the needs of people in different roles and departments.

Some of the data analytics are used to answer TMSA questions, he said. This can be much easier than trying to find the answer with calculations on spreadsheets.

Predictive maintenance

Three years ago, BSM started a project to develop predictive maintenance digital tools for shipboard equipment. These aim to determine the best time to do maintenance for certain equipment, by predicting how fast it is deteriorating.

The aim is that equipment in operation never deteriorates to the point where it becomes a risk, but maintenance is not done earlier than necessary. It replaces 'planned maintenance,' where maintenance is done according to a fixed schedule, with periods which may turn out to be either too short or too long. It also aims to replace "reactive maintenance," where something fails so needs attention.

Predictive maintenance is an advance on 'condition-based maintenance,' where maintenance is done when the condition of an item deteriorates to a certain level, detected by sensors such as vibration. "Predictive" maintenance additionally uses analytics.

Through predictive maintenance, "we have a number of cases where we managed to save cost to our clients," he said.

Remote support

BSM is developing systems to enable remote experts to support crew when they are doing maintenance work.

So long as there is sufficient wi-fi throughout each vessel, which is a prerequisite for remote support, this can be used to send photos, see live activities being performed and talk to remote experts whilst they are doing works.

One example of where this is useful is the 'scavenge inspection,' where engine parts are inspected by looking through the 'scavenge port,' where air enters the engine chamber. A crewmember can take a film or live stream for a remote expert to examine.

Seafarers and owners

There are tools to support communication with seafarers and shipowners.

Seafarers are provided with an online interactive service where they can view travel plans, see their travel documents, and upload their certificates. They get notifications about documents which need renewing. They can do online chat with staff in the crewing department.

Shipowner customers are provided with an online service also, which informs them of the current vessel position, speed, performance, crew list and technical details.

Having good software in the office "reduces the cost of running the company, especially the admin time that you need," Mr Theophanous said.

The software is also available for other shipping companies to purchase.

Reducing Digital Paperwork

Software does not always reduce workload. It can increase it, if there is a need to enter data into multiple systems, said Panos Hatzikyriakos of Unitized Ocean Transport Limited

One common scenario where software can increase workload is when data needs to be entered into multiple systems.

It is too common for seafarers to have to spend "endless hours in front of PCs," said Panos

Hatzikyriakos, head of health, safety, quality, and environment (HSQE) with Unitized Ocean Transport Limited, speaking at the Tanker Operator Athens event in May.

Shore management relies on ship personnel to input data into a system and send that data

to the office. This type of data exchange between the ship and the shore is common in maritime operations and can involve various aspects of vessel management, reporting, and communication.

"The crew may have another one hundred

tasks to do, instead of sending emails and filling systems with data. It is kind of a new slavery.”

For some time, people have talked about ‘spreadsheet hell’ onboard, with crew required to enter data into multiple spreadsheets and send them to different places. But now they additionally have to enter data into multiple software systems.

For vessel performance monitoring, the same data sometimes needs to be entered multiple times into different systems, such as into the company ERP system, in different customized spreadsheets requested by the operations department and charterers, he said.

“I don’t know how much time [it takes] but obviously more than 5 minutes.”

Ideally a technology would be available which could automate the input of data into the various systems.

The ease of sending e-mail to ships means that people often add to the work burden.

“Shore personnel get frustrated when the captain doesn’t reply in five minutes,” he said.

Then, miscommunication or incomplete data provided by seafarers can lead to a cycle of endless requests from the office to the ship for clarification or additional information. This communication breakdown can result in inefficiencies, delays, and frustration for both ship personnel and shore management, he said.

Crew do get fed up with endless demands for data. “At our last crew conference in Manilla, a guy said, ‘we send you the data, we never get any answer back. We have not seen any analysis. what is the benefit for us?’”

“We have this massive data coming to the office, what are we doing with the data?”

“Instead of having increased effectiveness with digitisation, I think we have stalled it,” he said.

When purchasing new software, a shipping company should ideally first ensure that it can communicate with all the other systems it has, he said.

On the positive side, digital technology has revolutionized many aspects of maritime operations, including passage planning, he said.

People used to spend 5-6 hours on the process of manually plotting a route on paper charts and then transferring the information to forms that was time-consuming and labour-intensive.

With ECDIS, navigators can draw an approximate route directly on the digital chart, and software automatically generates a detailed route, including relevant navigational information.

Although it helps that this software does not need to integrate with any other, he said.

Mr Hatzikyriakos has been impressed by some technologies. “I saw a fantastic presentation of a collaboration between a shipping company and a software developer which demonstrates the



Captain Hatzikyriakos, Unity Shipmanagement (right)

innovative use of artificial intelligence (AI) and video analytics technology to enhance safety and operational efficiency in the maritime industry.” he said.

“The system’s immediate alerts enable shore-based personnel to respond quickly to emerging safety issues, potentially preventing accidents or incidents from escalating. For example, missing safety gear detection (such as a hard hat), inactivity detection (someone not moving for three minutes), smoke detection.”

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The complexity of recruitment and manning process for tankers

Seafarers need to go through 25 different steps as they apply to join a ship, join, return home, and prepare to rejoin, said Captain Alexandros Serpanos with Euronav. Can the process be made simpler?

Captain Alexandros Serpanos, fleet personnel manager with tanker operator Euronav, has counted 25 steps which a seafarer needs to go through from their time of application to joining the ship, returning home, and then preparing to re-join.

Most of these stages are mandatory and fewer are company-specific, he said, speaking at the Tanker Operator Athens conference in May.

There are different documentary requirements from shipowners, manning agents and travel agents. There can be port travel restrictions, immigration/custom authorities' restrictions, and restrictions from charterers.

"We have observed that nine out of ten booked tickets will eventually have to be rebooked," he said.

The complexity is increased by restrictions on where and when crew changes can be made. Some terminals do not allow crew changes. Some charterers specify they do not allow any crew changes a few weeks before the vessel is loaded with their cargo, or any crew changes



Theophanis Theophanous, BSM, with Alexandros Serpanos, Euronav

while the vessel is carrying their cargo.

As an optimisation practice, if the travel agent has direct access to the company's crewing system, they can arrange air tickets without any additional e-mails or phone calls exchanged with the crewing department.

Euronav manages vessels under four flags and with more than 30 nationalities of crew members, which adds to the complexity, he said.

Euronav suggests that the crew members should get in touch with the manning office as soon as possible after they get home from a ship,

so they can start the process of arranging for their next voyage. This includes checking if any documents need to be renewed.

Euronav has a mobile/pc app which crew members can use to upload documents and communicate with the crewing office, declaring their next availability.

Euronav has 53 tankers, with two more to be delivered by the end of 2023, and employs more than 3000 seafarers. The average crew complement on a vessel is 21-22 people.

Ship Management is based in Athens, and there are also crewing offices in Belgium and France, and additional staff in Singapore and Panama.

Captain Serpanos started sailing in 1997 as an Able Seaman and progressed to Master Mariner. He joined Euronav in February 2023 because he was interested to explore the 'corporate' side of ship management in comparison to the "traditional" ship owner/manager approach, and how costs are balanced without sacrificing safety and quality.

TO

The 3Ms of seafarer recruitment / retention

The key to seafarer recruitment and retention comes down to the 3Ms of 'money', (electronic) 'mail', and 'meals'. But today's crew members' priorities within this may surprise you

Captain Serpanos said that according to the forecast of BIMCO Seafarer Workforce Report 2021, the worldwide fleet will increase from 74,500 to 80,000 between 2021 and 2026. This means that a million officers will be needed in 2026, compared to around 900,000 in 2021.

To cover the demand, an increase of around 2 per cent per year is required. "This is a great challenge for the shipping industry," he said.

However, Captain Serpanos believes that it is possible for the industry to recruit and develop the required numbers of officers, "provided that we continue the efforts and not downgrade the process."

"All of us, as stakeholders, have to promote careers at sea, to ensure we will meet this demand," he said.

What seafarers want most of all are to be paid on time, to be able to communicate with their family, and to have good food, he said.

"If there are delays in monthly wage remittance, if food quantity or quality onboard is not sufficient, if communication with the family is poor, then eventually we will have a problem."

Some seafarers see being paid on time as more important than how much they are paid, he said. "They will not push for any raise, as long as the payments are on time."

People "can be the weak link, or the strong link, in an organisation," he said. "People are operating equipment and implementing procedures. Regardless of what systems we have onboard, how robust our procedures [are], if we do not focus on the human factor, we will not

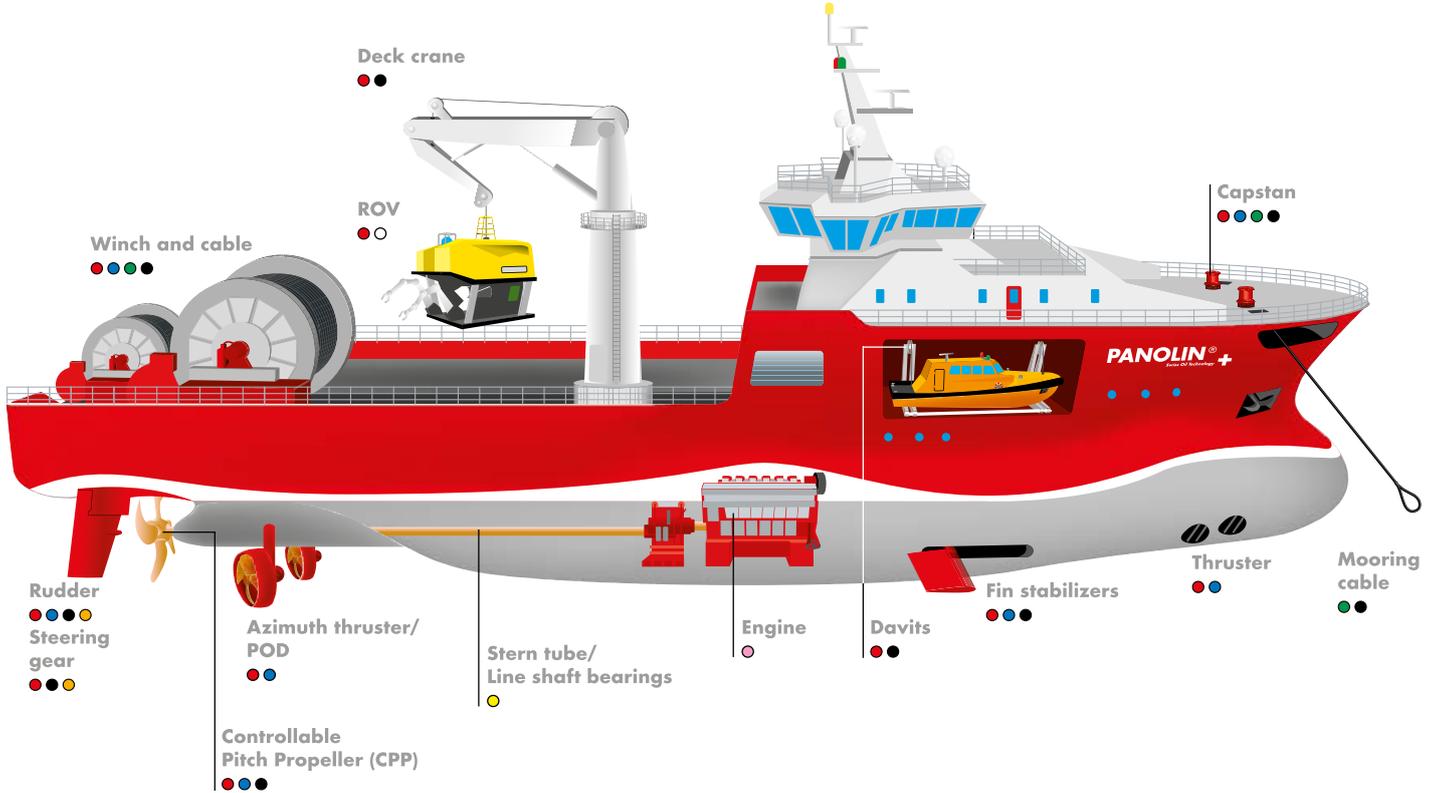
reach the desired outcome."

Euronav bases its crewing strategy on three pillars. Recruitment: learning and development (it prefers not to use the word 'training'), and retention.

Today's younger seafarers, from 'generation Z', will generally raise questions whether there is free internet access onboard, Captain Serpanos said.

Young seafarers today are typically less interested in financial benefits than their predecessors, he said. Of course, they are interested to a certain point, but beyond that they put more value in the working conditions onboard, professional development opportunities and credentials of their employer with regards to environmental sustainability. They want to find out what the company offers for physical /

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mental wellbeing and professional development he said.

Consequently, in recruiting/manning, “we don’t focus primarily on the wages,” he said.

It is common for seafarers to start asking tougher questions of their employers as they build a stronger footing in their career, Captain Serpanos said.

Euronav does participate in a wages benchmarking program with Spinnaker Consulting, to make sure its wages are in the upper quartile of the industry. This is how it is ensured that crew salaries remain competitive.

Captain Serpanos said that seafarers on tankers have accepted that shore leave is unlikely. Port stays can be just 30-40 hours, with cargo/ballast operations, many additional tasks, services and inspections occurring simultaneously. Even when the cargo terminals allow shore leave, the workload and limited time makes it hard to go ashore, he said.

Euronav offers 4-month contracts for the officers and 6-months for the ratings as part of its retention strategy, and part of a crew physical and mental wellbeing benefits. This comes with an additional cost for air tickets and other crew changes related costs, which should be carefully planned and budgeted accordingly, he said.

Captain Serpanos was asked how senior seafarers feel, at having to work with superintendents who can be as young as their mid-twenties, with very little seafaring background, or with oil major staff who have very little maritime experience.

This is seen increasingly in shipping companies based in parts of the world which

do not have a strong seafaring tradition, one audience member said.

Captain Serpanos replied that some ship management companies might employ younger staff in an effort “to reduce the cost,” but this should not be the common practice. In Euronav, an officer can only be promoted to superintendent’s position if he/she has served as a Master or Chief Engineer. With such credentials, people can easily earn the respect of other senior officers onboard.

To ensure it recruits and promotes the right people, Euronav has an enhanced recruiting / promotion process and a clear predetermined matrix with requirements.

A rank-specific Competency Assessment Test and a rank-specific Personality and Psychometric Test is carried out for all newcomers, both ratings and officers, in collaboration with a third-party consultant. The successful tests are followed by personal interviews for the final assessment. A similar process is repeated when people are being considered for promotion to the next rank.

Theophanis Theophanous, Managing Director of Bernhard Schulte Shipmanagement (Hellas) mentioned about three ‘Ms’ as key to recruitment and seafarer satisfaction. Money, Mail (i.e onboard crew communication capabilities/internet), and Meals.

Some crewmembers say, they would be happy to accept reduced wages, if they could have better internet connectivity, he said.

“With the new generation [of crew], digitalisation is number one for them,” he said. “We started implementing [the satcom service]

Starlink on some of our ships. I think this is the way to go in the future.”

Mental health

In case of a mental health issue onboard, Euronav’s third party consultant can offer advice and support. The Master can receive consultation from a psychologist to follow-up a specific case onboard, or if required, he connects the crew member directly for a private consultancy session with the psychologist.

In addition, Euronav is a signatory to the Sailor’s Society. The Sailors’ Society’s Crisis Response Network provides free 24/7 trauma care and support for seafarers and their families following incidents such as ambush, accident and abandonment.

From relationship problems to health or money worries, this confidential helpline is made up of a telephone hotline and an instant chat facility, staffed 24/7 by a multi-national team of trained responders.

BSM’s Mr Theophanous said that BSM also offers crew a 24/7 emergency line for psychological assistance.

BSM emphasises the importance of social interaction as a means of determining if someone is struggling. “We encourage them to have a movie night every Friday or Saturday, to have parties onboard the ship. We do TikTok competitions, we do table tennis tournaments,” he said.

Time to end separation by rank?

Some Korean yards are proposing tanker designs with a common recreational or ‘mess’ area, we heard at the Tanker Operator Athens conference. Is it time to end separation by rank?

Separate recreational areas onboard for officers and junior ranks (‘crew’) have been a feature of shipping probably since shipping began.

But now, we are hearing that major yards in South Korea are selling tanker designs with a



Theophanis Theophanous, BSM

common recreational area for both officers and ratings, according to an audience member at the Tanker Operator Athens event.

This can make sense from a design perspective, in that less space is needed, and perhaps something useful can be done with the freed-up space, he said. But is this something seafarers want?

Captain Alexandros Serpanos, fleet personnel manager with tanker operator Euronav, said that there have always been separate dining/recreational areas on ships for officers and crew. He believes that having such common areas would not be popular.

Euronav promotes equal treatment and justice with regards to the value of the human life and the quality of the living conditions, but a certain level of hierarchy is necessary onboard ocean-going ships,” he said.

In case of a serious emergency, with shore

assistance thousands of miles away, if there is a survival chance, it will be possible only through discipline, expecting from each crew member to perform his role accordingly. Discipline is a virtue which can be cultivated, he said.

The current hierarchy regime onboard merchant ships has existed for centuries, providing certain “power distance” between officers and ratings. The ‘door is always open’ management style is the way to go for Senior Officers, but having an organisational structure onboard is also necessary.

Theophanis Theophanous, BSM

Theophanis Theophanous, Managing Director of Bernhard Schulte Shipmanagement (Hellas) noted that the way his company operates has changed a lot over the last 20 years.

“This generation don’t want to work in a



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company that acts like an army,” he said.

BSM advises its Captains to spend time meeting crew as a priority when they join a ship. “[We say] have meetings in the office, 10-15 minutes, to know who the guy sitting in front of you is,” Mr Theophanous said. “[Find out] does he have any family problems, does he want a career onboard, does he want to make money only.”

As Managing Director of BSM Greece, Mr Theophanous does this too, regularly inviting employees into his office. He typically asks them three questions. ‘What do you like the most in our office? What do you hate the most? If you were the Managing Director, tell me something that you would change.’

“I encourage Captains onboard the ship to do the same,” he said.

“If you’re sitting there on high, you don’t see things. You have to listen to your people to move forward.”

Martin Shaw, IMAREST

Martin Shaw from IMAREST said he had experience with ‘common messing’ on a small supply vessel in the North Sea with 10-12 people, and on a larger semi-submersible vessel with 30-40 people. “I’ve seen it work and I’ve seen it not work,” he said.

On the larger vessel, officers and ratings tended to sit on separate tables in the mess room. So, it did not make much difference that they were both in the same physical room.

He knew of an experiment conducted on a tanker by an oil major, to encourage officers and crew to integrate socially by having a common mess area. “It turned out the crew didn’t particularly want to meet the officers. It wasn’t popular,” he said.

In any case, crewmembers often prefer talking to their families over the internet, over socialising with other crewmembers onboard, he said.

Tanker companies sometimes have concerns



Tanker Operator Athens attendees

about this because they believe that crew socialising is important. But it would be unreasonable to prevent people from talking to their families in their free time, he said.

On one tanker, all the crew were once found playing a competitive computer game with each other – but from their own cabins, with a team of engineers competing against deck staff. This company found that teamwork (during work time) was better than on any other ship. “They were teamworking in a virtual environment,” he said.

Captain Zalenski, Columbia

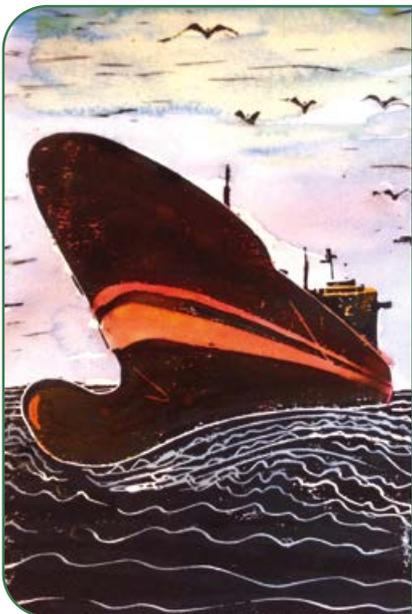
Captain Leonid Zalenski of Columbia Ship Management said he thought crewmembers might be able to relax better if they are separated by rank. “My first reflection is that

it is a bit premature to start changing the traditional way,” he said.

However, the managerial skills of leaders may be a bigger factor than physical separation, he said.

On the question of crew internet use in cabins, Captain Zalenski told of a ship management company he knew, who offered free internet in the public space of a ship, while seafarers had to pay to use it in their cabins, to try to encourage them into the public areas. They found that crew would rather pay to use the internet in privacy. **TO**

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The opportunities of FuelEU Maritime

FuelEU Maritime is a requirement to reduce carbon intensity of fuel for EU vessels. It is complicated but also creates some interesting commercial opportunities. Risto-Juhani Kariranta from Neste explained

FuelEU Maritime, a regulation coming into force for EU vessels from the beginning of 2025, requires a gradual reduction in the carbon intensity of fuel.

The modelling shipping companies will need to do, to minimise their costs, is very complex. But on the plus side, the regulation could make it commercially viable to have a small number of zero carbon vessels as early as 2025, even though their costs may be substantially more than conventional fuels.

Risto-Juhani Kariranta, shipping performance manager with Finnish biofuels producer Neste, and founder of Ahti Consulting, explained more, with a talk presented at Digital Ship's Vessel Performance Info forum held during Nor-Shipping in Oslo on June 8.

Neste is the world's leading producer of sustainable aviation fuel, renewable diesel, and renewable feedstocks.

In 2025, the carbon in fuel needs to be reduced by 2 per cent compared to using conventional fuel; in 2030 it needs to be reduced 6 per cent; and the required reduction steadily increases to 80 per cent by 2050.

Reducing carbon intensity of fuel will initially mean blending conventional fuel with a lower carbon fuel. But towards 2050, it will mean vessels are relying completely on low carbon fuels.

The rule applies to voyages within the European Union (EU), or voyages where one of the ports is in the EU.

The requirement is specifically about the fuel you use, so cannot be met solely by improving energy efficiency. However it will require use of more expensive fuels, so the benefits of energy efficiency measures will be higher.

"After 2025 we can't use solely traditional fossil fuels, we need some other solution," he said.

So far, the only available lower carbon fuels are LNG, LPG, methanol and biofuel.

None of these fuels are zero carbon. Towards 2050, it will only be possible to meet the target by using near zero or zero carbon fuels such as green methanol, blue or green ammonia, blue or green hydrogen.

"Green" fuels are made with renewable



Risto-Juhani Kariranta, shipping performance manager with Neste

electricity combined with captured carbon. These are expected to cost 3-6 times more than conventional fuels per energy unit, he said.

If companies do not achieve the target, they are required to pay a penalty based on how many tonnes of conventional fuel they are using beyond the target, then charged at 2400 Euro per tonne.

"In practise it means that it is quite expensive to select this path," he said.

For a fleet using 100,000 tonnes a year of fossil fuel, Mr Kariranta calculates that the penalties from doing nothing would be Euro 7m per year in 2025, with substantial further increases every 5 years as the target goes up.

The intensity of a fuel

The intensity of a fuel is calculated on a well to wake basis, so emissions made in producing and transporting the fuels is included. By comparison, EU ETS and CII only apply to tank to wake values, so only address emissions at the vessel funnel, he said.

Each fuel has a carbon intensity figure calculated for it, probably by the fuel supplier. This is based on how much carbon is emitted in the whole chain, compared to how much is emitted when producing and using conventional fossil fuel.

With a biofuel, carbon is absorbed from the atmosphere when the plant grows. But then carbon is emitted by agriculture processes such as fertiliser and tractors, also fuel transport and fuel processing. Carbon is also

emitted when the fuel is burned in an engine. The carbon emitted in the engine is balanced by carbon absorbed from the atmosphere, but the agriculture, transport and processing emissions are not. So, biofuels can end up with a carbon intensity of around 50 per cent, rather than zero.

With fossil LNG, carbon is emitted through the engine as the fuel is burned, but at a lesser rate per unit of fuel than with conventional fuels. So, the carbon intensity is lower than conventional fuels, but not as good as biofuel.

Note that a "2 per cent carbon intensity reduction" does not mean "2 per cent use of biofuels". If a biofuel is deemed to reduce emissions by 50 per cent compared to a conventional fuel, then you'll need 4 per cent of it in your fuel blend to get a 2 per cent reduction in emissions.

Another complexity is that carbon intensity is calculated in terms of greenhouse gas emitted per joule of fuel, not per tonne. So, if you work in tonnes, you need to convert joules to tonnes. As an example, methanol has about half the energy per tonne as heavy fuel oil.

Mr Kariranta's modelling shows that to meet the 2 per cent reduction target for a vessel consuming 1000 tonnes of fossil fuel a year, you could blend in 128 tonnes of LNG a year, or 29 tonnes of e-methanol a year.

Borrow, bank, pool

There are options to bank, borrow or pool your FuelEU Maritime compliances, he said.

"Banking" means that if you have overcompliance this year, you can save the overcompliance margin to use in a subsequent year.

Borrowing means you work on the basis that you will over-comply at some point in the future and use that margin against your present emissions.

Pooling means that you can transfer overcompliance between vessels. Your whole fleet needs to comply, but individual vessels need not necessarily comply, so long as any shortfall is made up by overcompliance in another vessel.

You are allowed to 'move' the overcompliance from the good vessels to the

bad vessels, so long as the fleet is compliant. The pool can include different ship types.

“That’s a very useful tool. We are taking a little bit of a deeper look into that,” he said.

For example, a shipowner could comply through having one vessel in their fleet which runs on more expensive zero carbon fuels, and then sharing its large over-compliance margin with other vessels. One completely zero emission vessel has enough over-compliance to allow 49 more vessels to all have 2 per cent reduced carbon intensity.

The pool can include vessels with multiple owners, if you define at the outset which vessels are in the pool and make agreements with the other owners about the how the decarbonisation costs will be shared between higher and lower performing vessels.

So over compliant vessels are effectively

‘selling’ their overcompliance to shipowners who don’t yet wish to invest in new technologies.

This may help make the investment for complete decarbonisation “more reasonable in the beginning,” he said. For example, although zero carbon, green methanol fuel will be much more expensive than LNG, there would be much bigger returns available from selling its bigger overcompliance.

Consider that one LNG fuelled vessel could sell its overcompliance to only 5 vessels which are conventionally fuelled, for them all to reach the 2025 target, he said.

“From my perspective, this is fascinating. It is opening a lot of different strategies. It will open possibilities to gain some competitive advantage if you are planning your pathways correctly.

Companies may make complex plans for how to get the best outcome, similarly to how they make complex plans for their taxes with specialist advisors. “We have an almost unlimited number of different selections you can have,” he said.

Value of thinking

“If you play this smartly, I am quite convinced you are able to gain a competitive advantage against those who are not considering this thoroughly,” he said.

“We have still 1.5 years before this regulation comes into force, so a lot of time to think about it. [But] 1.5 years is not a long time in shipping.”

“We are trying to be well prepared before this starts so we have everything in place.”

TO

The flaws in CII

Risto-Juhani Kariranta of Neste / Ahti Consulting explained why the CII calculation method has flaws

“**P**ersonally, I’m not super happy about the CII calculation method. I think there’s a couple of major flaws,” said Risto-Juhani Kariranta, shipping performance manager with Finnish biofuels producer Neste, and founder of Ahti Consulting, speaking at the Digital Ship Vessel Performance Info forum in Oslo on June 8.

The CII calculation is based on emissions per cargo carrying capacity of the vessel (deadweight) per mile, not how much cargo it is carrying. This can give shipowners a perverse incentive to sail empty, because they can count

more ‘miles’ but with lower emissions, because less fuel is needed to move an empty ship. “In my engineer brain, this doesn’t make sense,” he said.

Another flaw is that the calculation is based on distance travelled, rather than the distance between the ports in the voyage. If the vessel is on a ballast leg, so with lower emissions per mile, it has a perverse incentive to take the longest possible route, even involving sailing in circles.

“I would rather use reference distances between ports, to avoid this issue,” he said.

Consumption made in port will count towards total emissions in CII, without adding any miles. This incentivises companies to minimise port emissions, which may be desirable. But it may also penalise companies which have no choice but to spend lots of time in port. “Whether that’s right or wrong, it is a challenging question,” he said.

However, CII has encouraged much more discussion between charterers and owners about emissions. “That, I think, is the most positive outcome from the CII at the moment,” he said.

TO

Green Shipping Programme

Norway’s Green Shipping Programme is thoroughly exploring the commercial viability of shipping with low carbon fuels, with the participation of Equinor, TotalEnergies and others.

Conclusion so far – costs too high

Norway’s Green Shipping Programme is thoroughly exploring realistic options for low carbon fuels, with the involvement of tanker operators and charterers, such as Equinor, TotalEnergies, Færder Tankers, Thome and V.Ships.

Also involved are DNV, open hatch dry bulk shipping company Grieg, container shipping operator SinOceanic, Norway’s largest grocery wholesaler Askø, Norwegian agricultural cooperative

Felleskjøpet, Norwegian pension fund KLP and many more. See the full list at <https://greenshippingprogramme.com/partners/>

The program started in 2015 and has initiated 45 pilot projects, of which 17 are realised or under realisation. A review of progress with some of the projects was presented at an event held in Oslo in June during Nor-Shipping (see link to full agenda and presentations below).

Narve Mjøs, vice president of DNV maritime, and director of the Green Shipping



Narve Mjøs, vice president of DNV maritime, and director of the Green Shipping Programme



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Programme, says that the programme is seen as a “tool for green competitiveness for Norwegian maritime industry,” as well as for the environment. Climate change creates a “significant opportunity,” he said.

In nearly all of the projects, the main obstacle was seen to be the business case, in that there is not enough commercial justification for building more expensive low emission ships and using more expensive low carbon fuels, he said. Most projects are considering ammonia or compressed hydrogen as fuel.

So, some kind of government involvement is seen as essential to get projects moving. It could be government covering the difference in price and costs between green fuels and conventional fuels in a ‘contract for difference.’ This could consider both the higher purchase price of green fuels, and any carbon emissions costs of conventional fuels, he said.

It turns out that cargo owners can play a much bigger role than shipowners in driving low carbon shipping. For example, in one project, two cargo owners joined together and said they are willing to issue a 15-year contract for a zero emissions ship, carrying grain from East to West Norway, and carrying gravel in the other direction.

Thirty-one shipowners showed interest, he said. “So, where there is a market, shipowners are more than ready.”

Mr Mjøs was asked if he thought the shipping industry was ready to declare that ammonia is the best answer for long distance, non-passenger shipping.

“I think it is still too early to say,” he replied.

Gjermund Grimsby, Chief advisor climate change with KLP, a Norwegian pension fund with over NOK 500bn of assets, noted that KLP plans to invest NOK 6bn each year on assets deemed “climate friendly”.

But it has not been investing in any maritime projects, because they are still seen as high risk from an investment perspective. This includes credit risk, political risk, and risk of availability of fuels.

Grieg

Grieg is considering building a 50,000-dwt ammonia powered bulk carrier, trading across the Atlantic. The project aims to answer the questions, “is it doable, is it commercially sound, what are the key opportunities and risks,” said Atle Sommer, managing director of Grieg Star, the ship

management unit of Grieg Maritime Group.

For fuel supply, it researched if there would be availability of green ammonia in different ports, and “identified huge shortfalls,” he said.

A more positive picture was found on the safety side, where the company determined that operational risks “could be managed.”

It found a means of retrofitting the bulk carrier to ammonia power, but found it was “more complicated than we anticipated and the cost was surprisingly high – 50 per cent of the asset value, or \$20m,” he said.

It is hard to get funding, when the picture about regulatory drivers is still unclear, he said. For example, it is hard to get a clear map from the CII regulation to the returns on investment in a low carbon ship.

The conclusion is that while the company believes in ammonia, “as of now, it is not feasible,” he said. With an EU ETS price of Euro 200 a tonne, it would “start making sense.”

Equinor

Equinor has a research project to see if it would be viable to have an ammonia powered newbuild Aframax shuttle tanker. Participants in the project include Altera Infrastructure, Brevik Engineering, Wärtsilä, OSM, Alfa Laval, Grieg, and more.

The ammonia would be stored in Type C (horizontal cylinder, pressure bearing) tanks onboard with capacity 6000m³.

By comparison, the two CO₂ carriers being built for Norway’s Northern Lights projects are each about as big as these ammonia tanks, with capacity of 7,500m³.

There is enough deck space available on an Aframax tanker, said Tomas Ryberg, specialist in green ship technology Equinor. The typical length of an Aframax is 245m.

The company calculates that a Euro 350 a tonne CO₂ price would be necessary for the project to break even with blue ammonia, so the carbon price is nowhere near high enough for now.

But if governments would agree a ‘contract for difference,’ such as to cover the gap between today’s CO₂ price and Euro 350, then it could move forward.

SinOceanic Shipping

SinOceanic Shipping, a company which operates five container ships of between 2,500 and 4,444 TEU, is looking at the options for converting one of its ships to

methanol fuel, explained Magne Aunebakk from the company’s technical department.

There are 800 similar sized, small container ships in the world, he said. The vessels have a 30-year design life.

The work program looked at engine conversion, installing fuel tanks, fuel availability, technical solutions, return on investment and finance opportunities, and possible benefits under CII.

Methanol fuel would enable the vessel to be operated to the end of its expected life and remain compliant with CII, he said.

The main obstacle for doing the conversion today is the high price of green methanol, he said. The methanol industry says the price will go down but cannot say when.

Zero emission bulk carrier

Heidelberg Materials wants to build the world’s first zero emission bulk carrier, in a joint project with Norwegian agricultural cooperative Felleskjøpet, explained Per-Kenneth Øye, Logistics director in Felleskjøpet.

It issued a 15-year tender for a shipping company to provide and operate a zero-emission ship, and a company to supply a zero emission fuel.

The shipowner selected is Egil Ulvan Rederi of Trondheim. GreenH was selected to provide hydrogen fuel. Umoe was selected to provide containers to store it, with ten containers onboard. Refuelling will be done by switching empty containers with full ones.

The plan is that hydrogen will be produced from renewable electricity in one of the ports the vessel uses, so it does not need to be transported.

The ship has rotor sails so can use wind power to reduce fuel needed.

However, the project is not able to go ahead under current financial conditions, he said. “For realisation we need the finance and contracts for difference for green hydrogen”

TO
More about the Green Shipping Programme is online here <https://greenshippingprogramme.com/>

Presentations from the event can be downloaded from the Norwegian language version of the web page

<https://grontskipsfartsprogram.no/nyhet/seminar-piloting-for-a-green-future/>

How Wilhelmsen approaches performance management

Wilhelmsen Ship Management takes a holistic approach to performance management, including commercial factors, maintenance planning, data reporting, crew, and managing EU ETS.

Kristine Prøsch explained

Vessel performance management could be defined as monitoring and optimising the performance of a vessel, to improve operational efficiency, reduce costs and minimise environmental impact.

The challenge is that this is dependent on so many factors, said Kristine Prøsch, lead performance manager with Wilhelmsen Ship Management, one of the world's largest third party ship managers.

She was speaking at the Digital Ship / Vessel Performance Info forum in Oslo during Nor-Shipping in June.

Wilhelmsen Ship Management has 250 vessels in its fleet, with seven ship segments. The ships are all different but also have similarities, she said.

The company has a dedicated vessel performance team which works on all of the vessels. This structure enables the company to be very adaptable, she said. "We can more easily follow up on new rules and ideas, and be innovative and efficient in the way we work."

Performance factors

The performance of a vessel is dependent on a number of different factors, including vessel characteristics, environmental factors, commercial factors, and regulations, she said.

Relevant vessel characteristics include the type of ship, cargo and engines.

Relevant environmental factors include wind, currents, and humidity.



Kristine Prøsch, lead performance manager with Wilhelmsen Ship Management

Relevant commercial factors include the need to deliver goods on time and in good condition. Also, the need to get good loan terms from a bank.

Regulations drive companies to find more ways to improve performance and evolve, she said.

Some types of vessels have even

more performance factors. For example, with cruise ships, which Wilhelmsen also manages, the water consumption of the passengers affects the energy enough to be a factor to consider in vessel performance, she said.

Performance managers also need to determine when to do hull cleaning, which is getting more and more important.

A further problem is managing conflicts between the goals of improving environmental efficiency, meeting commercial obligations, and reducing costs, she said.

For example, if a charterer wants the cargo delivered at a certain time, which would require speeding up the vessel, which may affect the CII rating.

Reporting and data

There are complex data and digital technology requirements. The company needs to keep track of many different types of data related to emissions, she said.

Carbon reports are generated for each vessel, sometimes on a monthly basis, sometimes on a per voyage basis. Some vessels need reports in more detail than others.

Wilhelmsen works with its shipowner clients to develop 'baselines' for consumption by the largest energy consumers onboard, which can be used as a basis to reduce from. It is also using the most frequent voyages as benchmarks.

Wilhelmsen provides all its vessel managers with a monthly report including performance KPIs for each of their vessels. This can also help identify reporting errors.

"We need people able to put data into context. People who know the vessels, the regulatory framework, the operation, and are also good at communication," she said.

Crew

"The crew are the enabler for the ship to operate optimally. Effective communication [between] vessel managers and crew is vital," she said. "The crew possess invaluable knowledge and experience about the vessel and its operation. By establishing open channels of communication, we can tap into this experience

and gain insights into potential areas of improvement."

"Engaging in regular discussion with the crew allows us to understand their perspective, challenges, and suggestions. It enables us to develop tailored solutions to optimise performance," she said.

The discussion can look at any challenges encountered and evaluate if everything went as planned. It can assess alternative approaches which could have been more effective.

"By involving crew in the decision-making process, we [maintain] a sense of ownership and commitment to our sustainability goals, which ensures that the crew remains motivated."

"We provide crew with tools and insight that empower them to take prompt action in optimising performance and reducing emissions," she said.

As managers, you must think about what training they need, and what information they need on a daily basis," she said.

EU ETS

With shipping being brought into the EU Emission Trading Scheme, so having to pay for credits for the CO₂ it emits, it will become even more important to have effective emission management strategies and tools, she said.

For a typical supramax dry bulk carrier, Ms Prøsch calculates that average earnings are \$10,000 a day, and the EU ETS cost could be \$7,000 a day, based on a \$100 per tonne EU ETS price assuming 100% phase in like in 2026. So, it will make a huge impact to overall finances.

Wilhelmsen has a joint venture with shipbroker Affinity Shipping to set up a company assisting shipowners and charterers meeting the compliance obligations related to the EU ETS.

The service includes registry management, carbon credit accounting, procurement of allowances, and data management.

It is called Hecla Emissions Management. Wilhelmsen will also integrate its offering into its own service, so it can assist charterers and shipowners to meet their obligations.

Maritime leaders discuss decarbonisation

The Capital Link ‘Maritime Leaders’ Summit’ at Oslo before Nor-Shipping reviewed how fast decarbonisation should happen, how it should be paid for, how it affects markets, and a view from the top of IMO

“I believe the decarbonisation [discussion] was a very unique experience [for IMO],” said Kitack Lim, secretary general of the International Maritime Organization.

He was speaking at the Maritime Leaders’ Summit organised by Capital Link and DNV, held in Oslo just before Nor-Shipping.

There was “more confrontation, divergence of views among member states, environmental civic groups and industry,” he said.

While some criticise IMO for being slow, they should recognise that the decision-making process at IMO takes longer than at for example the EU, he said.

The main obstacles to decarbonising shipping, in Mr Lim’s view, are the diverging views, and the practical challenges, such as production of alternative fuels and building the infrastructure.

Mr Lim said he believes that market-based measures are “essential” for driving decarbonisation.

Mr Lim hopes that IMO’s new targets (agreed in July 2023, after the Oslo event) will motivate companies to invest in building the infrastructure to produce and supply the fuels.



Knut Ørbeck-Nilssen, CEO of DNV Maritime (left), Kitack Lim, secretary general of IMO (centre), Nicolas Bornozi, President & CEO, Capital Link (right)

Human factors

On the human factors side, IMO is planning a joint event on human factors issues with the International Labour Organization (ILO) in Autumn 2023.

The question of how to encourage young people to join the industry as seafarers is “really hard,” he said.

“Young people around the world are disappointed to see how the world responded with Covid, the treatment of seafarers [with] crew changes and vaccination.”

IMO started a campaign in 2019 to encourage more women to work in shipping, which Mr Lim believes has been “extremely successful.”

His term at IMO ends in December 2023. Mr Lim was asked what he thinks his legacy will be.

“We have been enhancing more friendships and social connections between member states and industry,” he replied. “It has been working positively. I have been contributing, with friendship building.”

Altera Infrastructure

Decarbonisation in shipping “is going far too slow,” said Ingvild Sæther, President & CEO of Altera Infrastructure (formerly Teekay Offshore). “We don’t have the sense of urgency we need.”



Ingvild Sæther, President & CEO, Altera Infrastructure

The company operates nineteen shuttle tankers according to its website.

Altera was thinking about decarbonisation as early as 2018, ordering dual fuel shuttle tankers which could also run on LNG, she said. It could see it would need something other

than scrubbers to be “future proof.”

In tanker operations, the challenge is that fuel is paid from a “different pocket” to the one which pays the capital costs of a new vessel. This “slows down development,” she said. “We need new business models.”

With companies making capital investments today which will last for over 20 years, we can already see what infrastructure we will have in 2043, she said.

Mrs Sæther believes that carbon capture and storage (CCS) done on shore is an important part of the bigger decarbonisation picture. “The [CCS] industry is not that far away,” she said. “It can be done by 2027.”

After 2027, when the world as “used our combined budget” for CO2 emissions, or emitted as much as we think the atmosphere will allow, every further tonne emitted will “be a debt to our children,” she said. They will need to pay to remove it.

Bahri

An alternative perspective was provided by Khalid Yousef Alhammad, President of Bahri Ship Management, which operates ninety-two

vessels, the majority of which are tankers, including 40 VLCCs and 28-29 chemical tankers.



Khalid Yousef Alhammad, President of Bahri Ship Management

It is a “European perspective” to say that decarbonisation is essential, he said. Or to put it another way, it is much harder outside Europe to get funding for decarbonisation projects.

Unless the cargo owner is willing to spend “extra bucks” there is not much that can be done, he said.

“We convinced owners to invest in high quality coatings, Mewis ducts, boss cap fins,” he said.

It helps that one of Bahri’s clients is chemicals company SABIC, a major methanol producer, he said. It may benefit from increased take-up of methanol as a ship fuel.

MSC and emissions



Bud Darr, EVP, Maritime Policy, and Government Affairs with MSC Group

“I feel comfortable that when the fuels we need are available at scale, we’ll have the technology in place [to decarbonise],” said Bud Darr, EVP, Maritime Policy and Government Affairs with MSC Group, a company with 760 vessels, including container ships, ro-ros, cruise ships, ferries and tugboats.

He sees much uncertainty in how the industry will decarbonise, and the possibility that the leading technology in 2035 could be different to 2030, for example.

The company continually spends money on new shipbuilding and aims for as much flexibility as possible so its ships will be viable whatever future fuel ends up dominant. “You build as much flexibility in capex as you can tolerate,” he said.

The shipping industry should be working closely with energy providers, he said. “They have to be part of the mix. Without them being part of the solution, it will not work.”

Mr Darr believes that the need to decarbonise

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by 2050 is perhaps “the biggest issue [IMO] will probably ever face”. Also “a bit of a threat to IMO,” if sufficient regulatory force is not in place in time.

“My opinion [is that] industry will decarbonise, but the pace is largely framed by regulation,” he said. “We will get there; it will not be easy.”

Mr Darr questioned whether the CII is “helpful as a metric,” since it does not measure how much carbon is emitted “per unit carried.”

It may be better for regulators to focus on developing a fuel standard, he said.

The current charter party agreements, between shipowners and charterers, make it hard to include CII requirements, he said. “We need new charter parties.”

Making customers pay

Wallenius Wilhelmsen, a specialist in roll-on/roll-off (RoRo) shipping and vehicle logistics, has told its customers that they will need to pay for the costs of decarbonisation, said Lasse Kristoffersen, company CEO.

This means paying for biofuels now, paying for bio and green methanol in 3-5 years, and paying for ammonia in 5-10 years.

Wallenius Wilhelmsen is itself ready to commit today to buying low carbon fuel from 2027, he said. The company plans the first end to end zero emission voyage in 2027.

Rather than wait for the market to be available, a shipping company should state how much fuel it is willing to commit to buying, he said. This is something fuel providers should be motivated to respond to.

“Someone has to show the way,” he said. “Owners like us have responsibility to orchestrate that.”

With decarbonisation, the structure of the industry does not help, with “so many layers,” not all with the same incentives, he said.

Shipping’s work with carbon will change from something companies report on to something they transact on, he said. The barrier is that data is not yet trusted enough.

We need “new technology” and partners who can provide “trustable, transactable data,” he said. This can enable liability to pay for decarbonisation to be moved “all the way to the consumer.”

However, since “this industry is expert at managing uncertainty,” he has confidence the change will be managed.

Business is moving faster than regulation in decarbonising for now, he believes. “We need regulators, but we can’t sit back and wait for regulators.”

The July 2023 IMO discussions are “exceptionally important” because they will determine whether the maritime industry ultimately really needs zero carbon fuels, he said. The 2018 targets could be met without them.

Columbia

If a company can get its organisation staff to buy-in to the need to improve environmental performance, “there’s no limit to what we can do,” said Mark O’Neil, President & CEO of Columbia Shipmanagement and President of ship management association InterManager.

The company’s ESG efforts are proving useful in recruiting. Mr O’Neil recently visited Oxford University and gave a talk to students about the company, in the hope of recruiting some of them. “It was blank faces until we talked about ESG, the Ukraine war,” he said. “We had five sign ups. All they wanted to talk about was sustainability.”

Dorian LPG

Installing carbon capture equipment on board “is going to be a way for our fleet to live until its due date,” said John Lycouris, CEO of Dorian LPG USA, which operates 21 VLGCs, according to its website.

The US Inflation Reduction Act (IRA) will give ports tax credits if they provide CO2 reception facilities, he said.

Mr Lycouris is putting his faith in onboard carbon capture partly because he believes ammonia “has problems in delivering a workable engine for safety of our crews.”

DNB

Maritime banking “basically used to be easy, you lend money and get it back,” said Christos Tsakonas, Global Head of Shipping with Norwegian bank DNB.

Now with decarbonisation it is different. The bank is only backing projects which meet certain criteria.

The Poseidon Principles provided a system for the bank to measure carbon intensity on its books. “It enables us to be ambitious and also to be realistic,” he said.

Shipping companies would like to have a better margin on their loan terms from investing in an emission friendly engine, something DNB does not offer. However, “you can get investment and capital easier,” he said.

Trafigura

Rasmus Bach Nielsen, Global Head of Fuel Decarbonization with metals and oil products trading company Trafigura said he would like to see countries in the “Global South” (Africa, Latin America, and Southern Asia) to produce green shipping fuels.

It may be possible to produce green hydrogen in these countries for 2-3 Euro a kilogram, about half the price of producing in Europe. This price differential is big enough to justify transporting the hydrogen or making green hydrogen based liquid fuels for shipping.

In Europe, industry is making plans to switch to hydrogen fuels. Germany and Danish energy investors have agreed to build a hydrogen pipeline, and German industry have said they

will buy all the green hydrogen that Denmark is able to produce, he said.

Meanwhile US incentives can mean it makes more sense to build electrolysers (converting water into hydrogen and oxygen) in the US, he said. The US “has seen financial benefits of being a first mover in the green transition,” he said. Within 5-10 years, “we see 25m tonnes [a year] of blue ammonia coming out of the US.”

Speed and vessel returns

According to Vessels Value’s modelling of the tanker market, for every 0.1 knot all VLCCs reduce their speed by, utilisation would improve by 1 per cent. This is because tankers would take longer to complete their voyages, said Martin Kjendlie, managing director of ship valuation data service ViaMar (formerly known as VesselsValue). The relationship between speed and utilisation would be linear.

But the relationship of improvement to earnings to speed will not be linear, with much greater increase in earnings at times of high utilisation, he said. For example, it estimates that improving utilisation from 80 to 84 per cent would increase earnings by \$10,000 a day, but improving utilisation when rates are already above 90 per cent could mean increased earnings of \$40,000 a day.

All the current order book for VLGCs is dual fuel, he noted.

CII has implications on what he calls the ‘multi-tier trade,’ tankers which carry multiple cargoes, or have multiple discharges. They could be less carbon efficient per dwt than large vessels with single loading and discharge points, he said, and so get penalised more under CII.

Other carbon comments



Fotini Ioannidou, Head of Unit, Directorate-General for Mobility and Transport with the European Commission

“The EU has committed to be carbon neutral by 2050. Each sector has to contribute their part, including shipping,” said Fotini Ioannidou, Head of Unit, Directorate-General for Mobility and Transport with the European Commission.

The EU’s two regulations, ETS and FuelEU Maritime, combine a technical and economic measure. They should “give a clear signal to incentivise investment,” she said.

EU is committed to global regulation. However, EU’s pushing ahead with regulation “did help IMO,” he said.

Out of Norway’s 200 ferries, eighty are already battery driven, so zero carbon from the vessel itself. Norway plans for its whole ferry fleet to be battery operated. It just has to wait “until contracts expire” with the existing vessels, he said.

How the gas market is changing

Senior leaders from gas shipping operators Navigator Gas, Høegh, BW LPG and Avance Gas / Flex LNG shared perspectives on how the landscape for shipping gas is changing, at a Maritime Leaders' Summit in Oslo

Senior leaders from gas shipping operators Navigator Gas, Høegh, BW LPG and Avance Gas / Flex LNG shared perspectives on how the landscape for shipping gas is changing, including the impact of Ukraine war, changes in the Panama Canal, and how the LNG market is evolving.

They were speaking in the opening session of the Capital Link and DNV "Maritime Leaders' Summit," held in Oslo on June 5, just before Nor-Shipping.



Oeyvind Lindeman, chief commercial officer of Navigator Gas

The ammonia shipping market was impacted in a big way by the Ukraine war, because 25 per cent of ammonia exports to Europe previously came from Russia, said Oeyvind Lindeman, chief commercial officer of Navigator Gas.

The company operates fifty-six 'handysize' gas carriers carrying LPG, petrochemical gases, and ammonia.

Europeans had to import from other countries – and as a result the shipping ton miles increased, he said.

The LPG shipping market was not impacted so much. While there are no sanction restrictions on LPG exports from Russia, European buyers have chosen not to buy it, he said. But there are customers in Turkey and Russia happy to buy, so exports have stayed the same.

For oil shipping from Russia, where there is a huge 'grey' trade, "a lot of people are making a lot of money," he said. "The people who can do it are making a killing."

Anders Onarheim, CEO of BW LPG said that after the war started, his company had hoped that Europeans would increase their imports of LPG, to replace Russian pipeline gas, but there was not much change. There

was not much LPG shipped from Russia before the war, he said.

Høegh and FSRUs

Høegh LNG happened to have a number of FSRUs (floating storage and regasification units) available to charter when the Ukraine war broke out, said Morten W. Høegh, Chairman of Høegh LNG and chair of Gard P+I Club.

This is because the market for them was slow to 2020, he said.

The company now has three units in operation in Germany. "All available FSRUs in the global market were scooped up in a few weeks and put on contracts in Europe," he said.

Mr Høegh anticipates that Europeans will continue importing gas after the Ukraine war is over. "Russian pipeline gas exports to Europe may resume, but they will never reach the same volumes as before the war. FSRUs offer security. People are thinking about redundancy."

Before the war, some people believed that trade with Russia might help relations. "Germany will not make that mistake again," he said. "The notion that relations will improve with trade has failed spectacularly."

Speaking as a chair of insurer Gard P+I Club, Mr Høegh noted that there are many 'grey market' ships trading without proper insurance. This

"Should be a major concern for all of us," he said.

"It is not fully understood in industry and among regulators and governments. It can only be solved at the level of national governments."

LNG and VLGCs

Oystein M. Kalleklev, CEO of both LNG shipping company Flex LNG and CEO of VLGC owner Avance Gas noted that the volatility in waiting days for the Panama Canal is going up.

And transit costs have risen to the point

there the available slots can only be used by container ships and LNG carriers. "VLGCs avoid it," he said.



Oystein M. Kalleklev, CEO of both LNG shipping company Flex LNG and CEO of VLGC owner Avance Gas

About all LNG vessels in the world have now been chartered by big companies, he said. Growth is driven in Europe by companies switching from coal to gas.

Prices of LNG carriers hit rock bottom in the late 2010s. At this time Mr

Kalleklev's companies acquired a number of ships which it planned to charter in the 2020s. This was a bit delayed due to Covid. So, it had some vessels available for the needs which emerged after war broke out.

This latest generation of ships have 40 per cent less fuel consumption than the 2015 ships, he said.



John McDonald, EVP & COO with class society ABS

John McDonald, EVP & COO with class society ABS, said that over the past year (June 2022 to June 2023) 70 per cent of LNG from the US went to Europe. For tanker operators, that's "pretty significant," he said. US is now producing similar amounts of LNG to

Australia and Qatar, he said.

Photographs in this report courtesy Capital Link.

Videos from the event can be viewed at <https://forums.capitallink.com/>

The latest tank sensors and connectivity

The latest tank sensors have updates to make them easier to install and configure, and easier to connect to networking systems, including allowing remote monitoring. Mark Jones from Scanjet explains how. *By Mark Jones, sales director, Scanjet PSM*

Tank sensors provide a vital function aboard ship, monitoring level, temperature and pressure throughout vessels. They cover a range of shipboard fluid types from fuel oil and lubricants to ballast water.

They maintain ship stability through measurement of the ship's draught and trim, water ingress detection and anti-roll tanks.

They provide highly accurate data to deliver improved control and enable proactive action should a problem occur.

Configuration and installation

The latest generation intelligent sensors like PSM's APT1000 have extended the configuration flexibility and functionality of previous ship sensors.

Sensors can be delivered pre-calibrated, or have their settings fine tuned on the spot, by connecting to a laptop.

The in-built programmability of the new breed of transmitters allows for simple and rapid in-service replacement by ship's crew in transit, avoiding lengthy repairs involving downtime in shipyards.

By connecting all sensors on a single cable multi-drop network, the need for a separate cable to each transmitter is eliminated. This can mean savings of up to 50% in installation time and costs.

Connectivity

The new type of sensor is able to generate data from onboard tanks and relay it directly to other shipboard systems such as ship management or loading systems, via integral serial communication, to achieve shipboard integration.

It can partner with systems such as PSM's Versatile Process Monitor (VPM). This provides a centralised touch screen display and serial links to other onboard systems. This allows users perform added tasks such as alarm-setting. They can have a complete tank management solution.

More recently, the networking hardware and software available to link sensors to provide shipboard integration has undergone a step-change.

Tank monitoring system

PSM's Connect Tank Monitoring System has a new processing unit capable of receiving input from multiple sources. It can be connected directly via RS485 communication to the new generation of level and pressure transmitters. It can accept signals from all other sensor types via interface cards.

This opens up ship networks for remote shore-based access, both for configuration purposes and for further analysis of the data provided by the sensors for remote ship management through further analysis and reporting.

With the new style system, all signal

processing and data calculations are undertaken within the central processing unit which is linked in a server/client relationship with the local displays.

This avoids the need for multiple computer hubs, saving money on equipment purchase and cabling.

Previously a closed network limiting integration within individual ships, the new open network ensures continuous desk to vessel connectivity through the shipping company's own hardware and software.

Maintenance

The ability to connect out promises huge operational and maintenance benefits.

Shipping owners and managers will be able to deal more proactively with maintenance, pinpointing potential faults through sensor monitoring while eliminating the need for expensive engineer location visits or diminishing fleet capacities due to downtime.

Remote connection will facilitate the introduction of predictive maintenance regimes, to include condition monitoring and reporting, with the potential to extend the operating life of vessels and the lifecycle reduction in capital expenditure.

Remote access to real-time data has the potential to further improve the efficiency and safety of ships providing a powerful tool to assist strategic management with regular remote reporting.

Sensor structure

The sensors are capable of withstanding harsh environments, and fully encapsulated with no reliance on sealing rings.

Electronics are integrated within the body of the sensor. This allows micro controlled monitoring.

This leakproof construction combined with a smaller footprint permits a range of mounting options including full immersion in tanks or side mounting to the tank exterior.

The design allows easier, faster installation and commissioning.



Scanjet's new range of sensors



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