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William Mew, Global Head of Specialised, Mærsk Tankers.

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gets you home under your own power





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LR funding technologies to reduce risk – better ways to manage data

OCIMF's February newsletter

Highlights of OCIMF's February 2022 newsletter include concerns about Ukrainian seafarers and Black Sea waters and a delay of SIRE 2.0 launch until Q4 2022

ost importantly, this week my thoughts and prayers are with the brave people of Ukraine, the Ukrainian seamen who are concerned for their family and friends at home, and the ships and their crews that are impacted by the related events," wrote Karen Davis, director of OCIMF, in her introduction to OCIMF's Feb 2022 newsletter.

"OCIMF's Maritime Security Committee is closely monitoring the situation in the Northern Black Sea waters and particularly the reports of attacks on merchant vessels and maritime infrastructure."

SIRE 2.0 launch deferred

OCIMF is deferring the launch of the second edition of its inspection program, "SIRE 2.0", until the fourth quarter of 2022, so that the program can be "further tested and enhanced before roll-out," it said.

"More resources will also be given to supporting companies and users in adapting to the new regime, its tools, processes and procedures as well as embedding the supporting IT infrastructure."

"A programme of engagements including webinars, familiarisation and engagement sessions, including one-to-one sessions with companies integrating with SIRE webservices, is planned for the coming months."

"SIRE 2.0 is not just an upgrade to the existing programme. It is a complete overhaul, and its success requires vessel owners, operators, managers, charterers, inspectors, and third-party vetting companies to embrace the transformational journey," said Karen Davis, director of OCIMF.

"The programme's effectiveness relies upon changing the mindset of all involved in how they prepare for and utilise the results of SIRE 2.0 inspections."

IMX 2022

OCIMF supported the Middle East region's largest maritime "exercise", called "International Maritime Exercise 2022" (IMX 2022).

This event ran over 2 weeks, led by the US Naval Forces Central Command, involving over 9,000 people, nearly 50 ships, and over 80 unmanned systems from 10 countries. It covered the Arabian Gulf, Arabian Sea, Gulf of Oman, Red Sea, and North Indian Ocean. It is the 7th time IMX has been run, since 2012.

As part of the exercise, autonomous systems were used to survey and maintain safe water for merchant vessels to pass.

Members of OCIMF's Maritime Security Committee acted as an interface between the navies and the industry, "to ensure commercial shipping and vital supply chains were appreciated."

New counter piracy guide

OCIMF has published the second edition of its "Regional Guide to Counter Piracy and Armed Robbery Against Ships in Asia." It is 62 pages and available for free download from the OCIMF website.

Expert group meetings

Summaries of some of the OCIMF expert group meetings held in Jan-Feb 2022:

Nautical Expert Group - decided to review the publication Anchoring Systems and Procedures, 2010 edition; plan to enhance quality of master-pilot information exchange by sharing pre-arrival information between masters and pilots; Discussion on Maritime Autonomous Surface Ships (MASS) related discussions at IMO, inputs sought from members to develop OCIMF's MASS strategy; proposal to expand remit to include management of nautical risks related to decarbonisation of maritime sector;



Karen Davis, managing director of OCIMF

developing industry video about mooring safety in coordination with Port of Rotterdam, IACS, NI, Harbour Masters' Association.

Programme Governance Expert Group discussed SIRE 2.0 launch schedule; delivery of new Programmes Document Library; the group reviewed a recent incident related to third party vetting contractors.

Inspection Processes Expert Group - discussed facilitating engagement with inspectors and operators; review of Harmonised Vessel Particulars Questionnaire (HVPQ), expected to be launched in June 2022

Ship-to-Ship Expert Group - decision to review Ship-to-Ship Transfer Guide for Petroleum, Chemicals and Liquefied Gases, 2013 edition; information paper Mooring Load Analysis during Ship to Ship (STS) Operations with Varying Environmental Conditions is due to be published in April 2022.

Ship to Shore Interfaces Expert Group decision to review Manning at Conventional Marine Terminals, 2008 edition; plan to review Marine Terminal Management Self-Assessment (MTMSA), 2012 edition.

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More submissions sought for OCIMF's accident database

OCIMF and Intertanko are keen to see more submissions their new Tanker Accident Database, because it needs a certain number to be able to calculate trends. An online webinar discussed further

CIMF and Intertanko set up an online Tanker Accident Database in 2019, with the aim that tanker companies could anonymously report any incidents. The aim was that the data could be analysed to identify trends or indicate where tanker companies and OCIMF should put most of their attention.

But so far, it has not been able to do any meaningful analysis of the data, because it does not have enough reports submitted, we heard in a webinar about the database on Feb 23rd, organised by OCIMF and Intertanko.

The database is carefully designed in two independent sections. In one section, tanker companies can enter and review their reports, which are connected to their company name and the vessel name. This data cannot be accessed by anyone apart from company staff and database administrators.

The completed reports are manually transferred to the second section of the database, which is hosted in a different country, on separate servers. In this process, all information which can identify a company or vessel is removed from the reports.

To provide assurance that the systems cannot be hacked, they are built to the "international cyber standard" ISO 27001. They are audited by external auditors to confirm that they achieve this standard. OCIMF and Intertanko have a database audit committee which can bring in external auditors at any time for further verification.

If companies believe there is a risk that

their accident reports could end up being used against them that would be a big disincentive to filing.

For example, from charterers accessing data they are not supposed to see and deciding not to charter a vessel because it has filed more accident reports.

Tanker companies still have certain obligations to report accidents to the charterer of the vessel at the time the accident happened. But this is something separate.

The system is currently for seagoing tankers only, although there is a possibility it may be extended to inland waterway tankers in future.

Database background

The idea for developing the database arose in 2019 following a joint meeting of Intertanko and OCIMF's executive committees, seeking ways for the tanker industry and oil companies to better work together.

It was seen as a way of avoiding the problem of too much attention and even regulation going onto mitigating the wrong risks, after one-off events which are well reported.

For example, "IMO spent a lot of time debating electrical fixtures due to a single accident on an Icelandic fishing boat," said Phil Belcher, marine director, Intertanko.

Saurabh Sachdeva, publications and advocacy director, OCIMF, noted that in a former role at BP, he was involved in work to try to analyse accidents and make trends, so it could put its focus and training resources on the right issues. "It isn't easy I'm telling you; we struggled to figure out how to do it," he said.

But if it was possible to gather accident data from multiple companies, then it might be easier to identify trends, he said. "Collectively we can come together and make things better for the industry. It's not, 'one company can solve it all.""

"If we can understand trends, where the weaknesses are, I think this database [would be] a great success."

How it works

The database is built and managed by MIS Marine, a company based in Birmingham, UK, which specialises in marine assurance technology.

The system is not an 'open repository', it is a structured system for collecting certain information so that it can be anonymised and then used to identify trends, said Dominic McKnight, managing director of MIS Marine.

The 'data collection' part of the system, operated by MIS, is designed so that the only people with access to the submitted reports are tanker operator staff entering and reading their own company reports, and database administrators.

During the registration process, MIS staff validate that people signing up have authority to report on behalf of the vessels, including from looking at their company e-mail address, company position, and address details. "These reports cannot be spuriously provided by those who have no right to report," he said.

Tanker operator staff first register all their vessels in the system, and then add information



about accidents and other incidents, and what the root cause was.

The database takes a broad definition of 'accidents' – although it does not include near misses, due to concerns they might clutter the system.

Each report includes a field for the company name, ship name and IMO number, flag, class, and deadweight.

The data is asset identifiable at this stage, so the tanker operator can see which vessel the report is about. This also means they can check that they haven't entered the same accident more than once, and double check the report is connected to the right vessel.

They may also wish to use the data for internal purposes, such as tracking how many accidents each of their vessels have or comparing their own performance with global industry averages.

People only have access to data about their own vessels, they cannot see any data about any others.

There have been several requests to see the reported data, including from charterers, universities, banks and others, "which we politely decline."

Then for analysis, the data is manually moved to a second system, but with any identifying details stripped out, Mr McKnight said. Data such as deadweight can be converted to a band, so the analysis may be able to show, for example, that certain accidents are more prevalent in vessels with this range of deadweight.

There are three levels of data protection.

The first level is that the two parts of the system are physically separated. They are in separate countries, and the networks are not connected.

A second data protection level is that no-one from OCIMF or Intertanko has access to the data collection side of the system, and they have no role in the running of the database. Only MIS administrators can access the data collection zone.

A third data protection level is that a governance committee can verify the data privacy and security, by enlisting an independent third-party IT company if they choose to, to do security auditing.

To make it as quick and easy as possible to use, the system is also designed to never ask for more information than it needs to operate, companies do not need to waste time filling in online forms, he said.

Data is added using drop down forms as far as possible rather than free text, so it is easier to analyse.

If companies already have their own in-house accident reporting system, it may be possible to connect it to the Tanker Accident Database via API, so that data is transferred automatically. The system is not just for new accidents, companies can enter historic data if they wish to.

"We are looking to get the largest amount of data possible," Mr McKnight said. "Past data is just as important as future data. This is about trending and pattern matching."

OCIMF perspective

The database can offer operations and technical managers an opportunity "to learn what's going on," said Saurabh Sachdeva, publications and advocacy director, OCIMF. "This is about trying to work out how our industry turns up from an incident standpoint."

But while individual OCIMF members are known to have 6,000 incident reports in their records, the number of accident records submitted is much fewer.

Mr Sachdeva did not share specific numbers but a graph in his slide pack indicated that there have been between 10 and 20 accident reports submitted monthly between April 2021 and Dec 2021, rising to about 25 in Jan 2022, following some promotion of the service.

The graph also showed around 150 "vessels created" in the system every month from June to Dec 2021, rising to around 270 in Jan 2022. Vessel operator accounts created were 80-100 a month over Mar 21 to Jan 22.

Since OCIMF does not have insights into which companies are providing reports and which are not, it is hard to know the reasons why more companies are not submitting reports, he said.

"We need to be having 100-200 entries on a weekly basis to make it worthwhile, so we can get data to start benchmarking and getting some trends out of it."

Tanker operator perspective

A tanker operator's perspective on the system was provided by Stefanos Stylianos, safety, quality and marine manager with Minerva Marine, and chair of Intertanko's vetting committee. Minerva operates around 70 tankers.

Tanker operators and their crew can go through a lot of pain and costs after accidents and learn a great deal from them. It would make sense to share this learning as widely as possible, he said.

The database should support advances in best practise, and use of standardised terminology in describing incidents.

It is not just for major accidents like collisions and explosions. Tanker operators have many more minor incidents.

One recent example at Minerva Marine was an incident with a rotating disk which snapped, and part of it hit a crewmember's neck. "I learned quite a few things from it," he said.

Minerva Marine uploads every incident to

the database. It takes a person 5 to 10 minutes to upload each one, he said.

Mr Stylianos only has experience from 70 vessels in doing his company data analysis. "What if it was from hundreds or thousands of vessels? Everything would be much more accurate," he said.

Accident reports all provide a root cause, with a choice of human, vessel or management. "It standardises the categories of the root causes," he said.

Submitting in the database allows companies to demonstrate compliance with one of the stage 4 elements in TMSA3, 'incident analysis data is shared with industry groups,' he said.

Not OCIMF's incident repository

The tool should not be confused with OCIMF's incident repository, which is used for vetting inspection – this is connected to a tanker operator's obligations to report incidents to its charterers, Mr Stylianos said.

There were questions about whether it might be possible to submit data to the accident database, and OCIMF's Vessel Incident Reporting (VIR) at the same time. But the information is a little different, said MIS' Dominic McKnight.

The Tanker Accident Database is largely for quantifiable information, such as the ship's condition and the accident location.

But the Vessel Incident Repository is more qualitative information, including the immediate cause of the incident, and uploading any documentation. "The types of data didn't mesh," he said.

No reports yet

One webinar attendee noted that he had uploaded a few incidents from the company but has not yet seen any output or analytics as a result. "Unless I can see some tangible outputs, it doesn't really encourage me to upload incidents," he said.

"The big problem we've got is we don't have enough data in there," Mr McKnight replied. At the moment it is 'file and forget'. But you absolutely are going to get something back from it, as soon as the quantity of data is statistically meaningful. You will also see trends for the industry, and you'll be able to trend your own reports against that."

This article is based on a webinar about the Tanker Accident Database, which can be viewed online here

https://www.ocimf.org/publications/video/ videos/tanker-accident-database-webinar

The Tanker Accident Database can be accessed here

www.tankeraccidentdatabase.org

IUMI focus on environment

Themes discussed in the IUMI Winter Meeting press conference on Jan 19 of relevance to tanker operators included climate, cybersecurity and supply chain congestion

he International Union of Marine Insurance (IUMI) held 3 days of face to face meeting in January 2022, its first physical meeting of members since the pandemic. It reviewed some of the outcomes in a press conference on January 19.

IUMI is planning a big conference in September 2022 in Chicago, with a theme of 'adapting to a world in transition'.

Insurance and environment



Insurers have been asking themselves how they should best get involved in environmental issues, said Richard Turner, president of IUMI, and Global Head of Marine at insurer Victor International

"An early conclusion

Richard Turner, president of IUMI

[was that] it's not credible for us to be bystanders."

Its involvement is driven by company investors, wider society and also what member insurance companies are already doing.

The maritime insurance world's priorities with climate change was distilled into three areas – increased heavy weather due to climate change leading to bigger and more frequent insurance claims; changes in the ships, such as to operate on lower carbon fuels; and changes in the customer base, such as a decline in coal production and subsequent demand for vessels, he said.

IUMI has a policy forum which has put attention on environmental issues for many years, including Arctic issues, alternative fuels and ship recycling, and this will continue, he said.

Poseidon Principles

IUMI is a 'supporting partner' of the Poseidon Principles for Marine Insurance (PPMI), Mr Turner said. This is a framework for assessing and disclosing the "climate alignment" of the ships in insurers' hull and machinery portfolios.

PPMI was launched at the same time as the United Nations "COP26" in November 2021 meeting. It is a similar framework to the Poseidon Principles for Financial Institutions which was launched in 2020.

IUMI will leave the decision of whether to join to their members, although it notes that six of its members have already signed up. These six companies intend to make a public declaration around the fourth quarter of 2022 about "where their portfolio is".

"From there, it will become a process of doing an annual benchmarking activity to see how the climate alignment score is changing," he said.

As of January 2022, "we're at the gathering information stage. That will be a process that's undertaken through most of the balance of this year."

"Given time, we will find out whether other insurers join the initiative. The six signed up is a good start. There are probably 100-200 hull insurers globally, so there's still a long way to go in terms of getting full traction across the industry."

"From that point I think it's possible to foresee some insurers will take it into their preunderwriting stage to decide whether or not to include certain ships in their portfolio."

"I think we're some way away from that, I don't think we'll see any changes in the next year or two."

Measuring transition

Frank Streidl, chair of IUMI's offshore energy committee, noted that one of the big questions is "how do we measure transition."

"We're all in agreement the energy transition is not a choice, it's a reality. What is difficult at this stage is to find a globally accepted standard for measuring carbon footprint."

"There are not enough disclosure requirements, different parts of the world are at different stages."

The scope "depends on technological advances or political will to do that, and economic drivers."

Phil Graham, chair

of IUMI's "facts and

figures" committee,

company, specialty

Chaucer, announced a

partnership with risk

assessment company

Moody's to develop

an ESG "balanced

scorecard"

insurance group

said his own



Phil Graham, chair of IUMI's "facts and figures" committee

"The first stage of this process is trying to measure what we have, and have some kind of consistency about how we actually measure it," he said. "The second part is how you embed that into your decisions process."

Chaucer has set a timeline to do this, he said.

Fuels safety

Another concern of insurers is the safety of the

transition to new fuels, said Lars Lange, secretary general of IUMI.

"The transition of fuels will happen for sure. We have to ensure it is done in a proper manner."

"We were a bit concerned in the beginning, [the discussion] was all about transition of fuels - and very less about safety. [Now] we've seen MEPC (Marine Environmental Protection Committee) and MSC (Maritime Safety Committee) discussing that."

"We, as IUMI, are teaming up with classification societies and umbrella organisations. That is work in progress," he said. "[What we] say is, 'please keep safety in mind."

Cybersecurity

In terms of maritime cybersecurity coverage, there has been a "retraction of capacity" in the insurance offered to shipping, Mr Turner said.

"What we're up to now is defined policies, really understanding your client and producing defined policies covering their needs within very structured limits," he said.

This means that insurers are only providing coverage against specific events occurring, or specific risks.

Shipping companies may want insurance which covers them over any cyber-related eventuality, but "there isn't a market [supply of insurance] for that, for fairly obvious reasons," he says.

Freight

Insurers are also paying close attention to freight supply chains.

Weak links we have seen are port congestion, shortage of truckers, truckers who don't like waiting for their containers (sometimes they are not paid for waiting time). Also lack of warehouse personnel, due to staff quarantining or who have resigned, said Isobel Therrien, chair of IUMI's cargo committee

"At some point there was \$24bn of product waiting to be unloaded around US ports," she said.

Insurers are concerned about the unprecedented number of train burglaries in the Long Beach (Los Angeles) area, a 356 per cent increase from Oct 2020 to Oct 2021.

The freight costs on some shipping lanes have tripled.

Companies are rethinking their "just in time" supply chains, and considering going to a 'just in case' system, she said. They are also rethinking about what they should outsource or insource, so they are less dependent on supply chains.

Beware the in-transit cargo loss clause

It is becoming common for charterers to make claims based on 'in transit' cargo losses in crude oil. North P&I Club explains the problem and how to reduce the risk By David Patterson, Loss Prevention Executive, and Simon Clarke, Senior Claims Executive, North P&I Club

t is common for charterers to make claims or apply deductions based on 'in-transit loss clauses' in the crude oil trade.

It is in the shipowner's best interests to avoid this type of clause in their charter party contracts.

In-transit cargo loss clauses generally define an in-transit loss as the difference between the vessel's gross observed volume (GOV) on completion of loading, and before unloading, at the discharge port.

While this may seem a simple comparison, it is a fundamentally flawed measurement, reflecting a 'paper shortage' rather than any physical loss.

One of the main problems with these clauses is that owners may not have the defences that would otherwise be available for an alleged shortage if the claim had been assessed with reference to, for instance, the Hague/Hague-Visby Rules.

In addition to putting owners in a difficult position when trying to defend claims made by charterers referencing these clauses, this may adversely impact upon the scope of club cover available in respect of the claim.

The calculation

The gross observed volume (GOV) of oil is calculated by subtracting any free water and sediment from the total volume of fluids in the tank, providing the quantity of oil at the given temperature upon loading.

On the voyage to the discharge port, two factors can result in changes to the gross observed volume: a decrease in cargo temperature and an increase in free water.



David Patterson, Loss Prevention Executive, and Simon Clarke, Senior Claims Executive, North P&I Club

Cargo temperature decrease: cargo is likely to cool during the voyage, increasing in density and therefore reducing in volume while its mass remains the same. Even when cargo heating is employed, it is unlikely that tank temperatures at the discharge port will be same as they were at the load port during the tank survey. When the two gross volumes are compared, as required by in-transit loss clauses, this reduction in cargo volume will indicate a paper shortage.

Free water increase: the crude oil production process consists of separating fluids from an oil well into crude oil, gas, and water/sediment. While this can be a highly efficient process, crude oil cargoes usually contain a small amount of water and some solids, known as the cargo's 'base sediment and water content' (BS&W).

To put this into context, if a vessel loads 1 million barrels of crude oil with a base sediment and water content of 0.3 per cent, 997,000 barrels of the cargo will be crude oil while 3,000 barrels will contain water and some sediment.

Free water is the term used to describe any water that has separated from the crude oil at the bottom of the cargo tank.

This can result in a difference in the reported amount of free water detected upon completion of loading and arrival at the discharge port.

Surveying GOV

Typically, the tank survey at the load port will commence as soon as is practicable after the completion of loading.

There is therefore minimal time for any water in the cargo to separate out, and the survey may detect only trace amounts of free water.

Consequently, the GOV will be calculated as the entire volume of the cargo tank contents, including any water and sediment.

During the voyage, water and sediment contained in the cargo will have time to separate out, meaning that free water can be detected more readily in the discharge survey.

This is done by establishing the interface between the water and oil. While the amount of sediment is not accounted for directly, it is included in the free water figure as the sediment will settle below the water.

When the GOV is re-calculated, free water and

sediment is subtracted from the total contents of the tank, with the difference between the volume of free water and sediment detected at the load and discharge ports indicating a paper shortage.

Performing correct calculations

To account for variations in cargo temperature at the load and discharge ports, the cargo must be compared at a standard temperature. This is achieved by applying a volume correction factor to calculate the quantity of cargo at 150 C or 600 F.

The term 'gross standard volume' (GSV) is used when the GOV is calculated at a standard temperature.

To ensure that any free water and sediment is accurately accounted for during the tank surveys, the total calculated volume of the cargo should be established. This is achieved by adding free water and sediment calculations to the GSV.

Checking cargo documents

The cargo documentation should provide details of the total volume of water and sediment for the cargo.

This can be established by subtracting the gross and net quantities listed on the bill of lading or by the BS&W (basic sediment and water) as stated on the Certificate of Quality.

Contracts

For owners, it is better to avoid any in-transit loss clauses that may override clauses incorporating the Hague/Hague-Visby Rules, such as a Clause Paramount.

The standard pre-printed charterparty clauses are preferable from an Owner's perspective.

For example, the widely used Asbatankvoy voyage charterparty has a Clause Paramount (clause 20(b)(i)) that incorporates the Hague/ Hague-Visby Rules, as does BIMCO.

The North of England P&I Club has recommended clauses on its website https://www.nepia.com/latest/allpublications/rule-books-and-recommendedclauses/

How Stödig Ship Management speeded up port calls

Stödig Ship Management managed to reduce overall time spent in port by 3.3 per cent in 2021 compared to 2019, by speeding up port calls. This also led to big reductions in CO2 emissions. Here's how it was done

hen ships spend more time in port than they need to, they are increasing costs for charterers, and emitting more CO2 than they need to, and maybe delaying the next ship to use the berth.

Stödig Ship Management, a joint venture between Seatrans and Columbia Ship Management in stainless steel chemical tankers and ro-ros, put a lot of focus into reducing port call delays. As a result, it managed to save overall port time by 3.3 per cent in 2021 compared to 2019, an annual saving of of 30.6 days for its 10 chemical tankers.

This also meant savings in gas oil consumption

of 160 metric tonnes, equivalent to 513 tonnes less CO2 emitted, and 4.8 per cent less CO2 emitted in port.

The savings were achieved through a combination of digital and organisational methods.

The digital part of it was providing the crew with tablet computers and software they could use to note exactly what they were doing at every point during the port call. This way the company could gather large amounts of data and analyse it to identify which particular ships and methods were proving most effective.

It was also able to plan port operations much more carefully and identify ways that operations

could be optimised. It could have much better awareness of what was going on.

The organisational part is perhaps more important. Through a special joint venture arrangement with Columbia Ship Management, it was able to have the commercial department of Seatrans (working directly with charterers), the vessel operations department, and the technical management and crewing working closely together in the same building in Bergen, Norway.

It was able to have the same crewmembers repeatedly working on the same vessels, carrying the same cargoes, trading between the same ports, so they could get more familiar with common problems and develop better ways to



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work together.

And in a time where crew stress is a muchdiscussed subject, it found that careful planning and monitoring of activities does not increase crew stress but can actually achieve the opposite.

Why they did it

"Chemical tankers spend a lot of time in port, so we saw that this is an area we need to make sure we do things correct," says Gisle Kårbø Rong, Managing Director, Stödig Ship Management.

"The vessel doesn't transport anything while they are in port. We need to look at all the operations we do in port and try to improve."

From a sustainability perspective, optimizing operations can be one of the most important things a shipping company can do right now, he says. "Always look for improvements and seek to find better solutions than we have done before."

The challenge is that chemical tanker operations can be a highly complex business, with many different elements to align. "Especially shortsea, regional, stainless steel chemical parcel tankers, carrying hard chemicals, it is complex. You need to control all the processes," he says.



Gisle Kårbø Rong, Managing Director, Stödig Ship Management

About Stödig

Stödig Ship Management is a joint venture company formed in May 2021 between Seatrans Group and Columbia Ship Management.

Seatrans Group, based in Bergen, is a ship owning company, with in-house chartering and operations, ship management and crewing.

Much of its business is transporting chemicals between the North Sea and Mediterranean. It also transports chemicals and gases worldwide. It has a fleet of 10 stainless steel chemical tankers, between 3400 and 19800 dwt. It also has 7 ro-ro vessels.

Columbia Shipmanagement (CSM), based in Cyprus, is one of the world's largest ship management companies.

The joint venture follows many years of the

two companies working together. It is designed to combine CSM's large scale and worldwide operations, with Seatrans' specialist expertise particularly in chemical tankers.

Stödig's ship management services are available to any owner, not just to Seatrans. It may have the strongest appeal to other chemical tanker owners.

Before setting up the joint venture, Seatrans had its own crewing offices in Romania, Bulgaria and Poland. These offices are now managed by the joint venture Stödig Ship Management.

Mr Kårbø Rong believes it is much more effective to have Seatrans involved in the ship management (in a joint venture arrangement with a ship management company), rather than just handing management to the ship management company.

Columbia "has a third-party mindset of how to be efficient on operating costs," he says. But by creating the joint venture, it means "there is a really close connection with management and chartering part. This co-operation between Columbia and Seatrans put together these two worlds that each have their own advantages."

"It's really important to have a close dialogue with the commercial management of the ship, to be able to improve. If you don't have that close co-operation, each will fight their own wars. You will run everywhere."

"This knowledge and being that close to the commercial operator, that is a huge advantage to the ship manager. To have that ability to understand the business," he says.

The commercial perspective

Vessels can typically spend 45-55 per cent of their time in ports, says Tom Skare, managing director at Seatrans Chemical Tankers, who manages the commercial operations.

We have seen that ports are happy to invest in shore side infrastructure, such as storage tanks, but not investing in berths themselves, he says.

But meanwhile congestion and delays waiting for berths are increasing. And there are increasing numbers of procedures and tasks which need to be done at port which create more delays. "You get a domino effect."

So, Seatrans has been trying to find ways to improve operations over the years, from both the vessel and shore side.

"It is not sufficient just to be a service provider transporting product from A to B for our charterers, you need to provide something extra."

"You cannot just generalize and say, 'this is what we should improve'. You have to go into each and every operation and see where things are not working optimally."

"There is a huge amount of money, time and CO2 to be saved on these things."

Seatrans has focussed its efforts on optimising port calls which are done regularly, same vessel, same cargo, same crew, same port personnel in some cases. "Then it's easier to identify best practice," he said.

"You need to co-operate with the shore [port] side. You need to get everyone aligned. It is not sufficient if the officers and crew is aligned and not the shore side," he says.

If you make a plan for when (for example) the manifold on the ship (tanker deck piping) is connected to the shore, you need the shore people to have the same plan.

You can identify 'weak points' during the operation.

"We have seen examples alongside berths, where there could be minor things on the shore side which have not been properly communicated," he said. "The experienced masters and chief officers knew about these things, but they are not necessarily communicated in advance."

For example, there had been a problem last time at that port with the manifold connection, which could be fixed by changing some of the procedures.

"After every operation, we give feedback to the terminal, to the charterers, so both they and us can improve," he says. "It is a very timeconsuming thing, but it is a huge improvement."

"Data itself does not do the work, you need qualified individuals involved in the process.."

A further benefit is that better planned operations are normally safer, he says. "This goes hand in hand. if you have a well-planned berth operation, that operation will be much safer."

From the perspective of commercial operations, "If our time charter results are dropping because we are making the wrong investment in Stödig or not aligning ourselves with the technical and crewing side, then we have failed."

"We're getting feedback, when Stödig ships are coming alongside, things are well planned."

Also, "the fact that we are acting as a traditional shipowner, I think that's an advantage. To have the ability to talk every day, have a close contact between ship management and the commercial side."

"When you have these watertight walls between a ship management company and the commercial side, I think the investors will be the ones losing out in the end. The commercial operator will not be willing to pay as much time charter for the vessel, the ship managers may lose out because they are providing a suboptimal service for a ship operator."

Seatrans has also started sharing share port operations data with its charterers, they may also want to analyse it and understand the causes of delays in port calls, he says.

"We think in a partnership you are transparent; you are sharing everything. That is building trust."

Seatrans Chemical Tankers develops long term

MANNING AND TRAINING



Tom Skare, managing director at Seatrans Chemical Tankers

relationships with customers, some of which have surpassed 20 years, he says.

Operations perspective

Operationally, achieving savings starts with collecting data about what is actually happening during the operations, says Gunnar Solberg, Operations Manager, Seatrans Chemical Tankers.

"We realized we need a software where we can collect the data we want in an easy way."

Seatrans works with a Bergen software company, simply named "TheShip AS", which makes tools which

enable vessel crew to enter updates on operations on a tablet computer.

"We get the data directly to our office when the operation is going on. When they connect the hose, they push a button; we know it ashore."

"In the past we needed someone in the office to punch all these time stamps from port times into a spreadsheet."

The next step is to try to get insights from this data. "When we got the data and started to analyse it, we realized that some vessels loaded or discharged faster than others. We went into, 'why is that'."

"We found the best practise from the ship side and implemented that on the other vessels."

"In the past, it needed a lot of manpower to follow this on the shore side [office]," he says. "We have one officer who is working with this for us and doing the optimization."

Now, "we make a plan when the vessel comes in and suggest a loading or discharging operation. We make sure everyone follows the plan."

"If you are loading more than one parcel you can load them in a sequence which is the most optimum," he says.

"Good communication with personnel at the terminal is important, how can we improve together."

"Everyone works with the same goal in mind, to do this as fast and safe as possible."

A further benefit of working with Stödig is that the same crew returns to work on the vessel, so they get to know the specific vessel, cargoes and tasks and their own roles. "For us, that's a huge benefit," says Mr Solberg.

A further benefit of this software is that the data can be directly fed into the demurrage calculation tool. This saves work and the calculation is done "automatically".

"Before this, we had to retype all the data. Now it is done with one click," he says.

The careful monitoring and planning also means that crew are actually under less time pressure in their work, adds Gisle Kårbø Rong, Managing Director, Stödig Ship Management.

"They are not stressed because it is planned. They know what their task is when they come alongside."

Some crew may feel that entering into a tablet computer what they are doing all the time is a bit like being monitored.

But Mr Kårbo Rong stresses, "we are not doing it to monitor the crew, we are doing it to learn how we operate. We are not standing there with a stopwatch and stressing them.

The quest to find better ways to do something can "create some enthusiasm from the crew," he says.



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Enclosed space problems – procedures and equipment

Two of the biggest causes of enclosed space accidents on ships are excessive reliance on procedures and lack of specialist equipment, according to the initial findings of the Human Element Industry Group

he Human Element Industry Group (HEIG) has published some of the findings from its 18-month research into enclosed space safety, called the Enclosed Space Project.

It identified two big causes of problems. Firstly, excessive reliance is being placed on procedures for managing enclosed space entries – and following enclosed space procedures is complex, labour and time intensive, needing active management.

Secondly, any problems encountered onboard may require specialist equipment and trained rescue teams, which are unlikely to be available on a ship.

The Human Element Industry Group (HEIG) is a group of NGOs (Non-Governmental Organisations) with an interest in the human element (personnel or seafarers). It includes the Nautical Institute, IMarEST, InterManager, INTERCARGO, ITF, the International Chamber of Shipping, IFSMA, BIMCO, IMPA, Nautilus and IACS.

The group works closely with the International Maritime Organization. It was set up mid-2020.

Around 50-100 maritime sector individuals have been involved in the work, with a view to influencing changes in regulations, industry practice, and training, as well as improving awareness of the problems faced by seafarers.

It was set up following a survey on the reasons for enclosed space deaths conducted by InterManager, which 5000 seafarers responded to.

Some of the reasons cited in responses to this survey were that procedures, from a seafarers' perspective, could be difficult to understand. Also they often do not take account of the resources, equipment and time available aboard the vessel.

They said that investigations of fatalities often pinpoint a failure to follow these complex procedures, and consequently say that the accident was a fault of the victims.

Commercial/time pressure was also cited as

a significant factor. They said that design and equipment added to the problems by creating hazards. Also only the tanker sector of the maritime industry was providing seafarers with enclosed space training.

"For too long we have blamed the deceased seafarer for making a mistake for which they paid the ultimate price," said Capt Kuba Szymanski, InterManager Secretary General and a member of the HEIG committee.

"HEIG is delving deeper into this issue to examine the more complex reasons for fatal incidents and we welcome these initial findings."

"Hopefully the committee's continuing work will enable the shipping industry to devise better procedures and create solutions to prevent these largely avoidable deaths."

Hierarchy of control

A technical solutions workstream at HEIG has developed what it calls a 'hierarchy of hazard control' model.

It is based on the idea that eliminating a hazard is better than accepting it and relying on procedural controls to manage it. So the levels in the hierarchy, from most effective to least effective, are elimination, substitution, engineering controls, administrative controls, personal protective equipment.

Elimination - physically removing the hazard is the most effective control. An example in the shipping industry might be to have all critical components at deck level, thus eliminating the need to do any maintenance work at height.

Substitution - replacing something that produces a hazard with something that does not produce a hazard. An example in the shipping industry might be the substitution of non-TBT (Tributyltin) anti-fouling.

Engineering controls - these do not remove hazards, but rather isolate people from hazards. Examples in the shipping industry might be equipment with inherently high noise levels

isolated by locating in an acoustic enclosure or the rotating part of equipment fitted with a guard to prevent contact with the operator.

Administrative controls - changes in the way people work. Examples may be signage, procedures or training. These are generally seen as less effective controls.

Personal protective equipment (PPE) - This control is seen as the least effective due to the problems with ensuring that PPE is properly used and maintained. In addition, some PPEs increase physiological effort to complete a task.

Other proposals

The workstream has identified a number of generic changes to the design of ships and equipment that can be made to address some specific hazards.

The group will propose a means by which enclosed spaces can be classified for design and operational purposes.

The group is also considering the design of equipment used for entering enclosed spaces aboard ship.

The group looked how onboard management of enclosed space entry can be improved as well as encouraging the use of STOP-WORK processes.

Time pressure

The 'time pressure workstream' looked at how time pressure on seafarers could be reduced. It created a model for how excessive time pressure affects safety. It identified the various sources of time pressure, such as the charterer, ports and terminals, owners, and onboard ship.

The time pressure issue also relates to navigation, collision, grounding, capsizes, container stack collapses and other occupational hazards such as injuries during container lashing.

The group will put forward some proposals to change regulation and industry practice to reduce excessive time pressure.

CHIRP's tanker incident reports

The February 2022 issue of the maritime industry's Confidential Reporting Programme (CHIRP) included a number of tanker accidents - a fatal injury from a mooring operation, a grounding while

seafarer died after falling overboard, pulled by mooring ropes which were 'paying out' faster than expected, after a tug was separated from a tanker's bow.

This was one of the incidents reported in the Feb 2022 report from the maritime industry's Confidential Reporting Programme (CHIRP). The vessel, date, location and company names are not disclosed in CHIRP reports.

The plan was for the bow tug to be released before the vessel turned to starboard into a berth.

The tug's line was slackened to facilitate its release. An ordinary seaman (OS) eased the tug's mooring rope out through the closed chock (Panama lead) and had taken a turn of the messenger rope around the bitts (metal post).

As the tanker turned to starboard to align itself with the berth the tug's line was in the water.

As the separation between the tanker's bow and the tug increased, the messenger line paid out at an increased speed which was not anticipated by the line handlers.

"The officer in charge of the mooring operation warned the OS to step clear from the messenger rope. The OS attempted to do so but slipped and became entangled with the rope which dragged him overboard through the Panama chock.

The OS was recovered from the water by the tug, and resuscitation and first aid was immediately administered, until the ambulance took them to hospital. Tragically the OS died the next day," the report stated.

CHRIP comments, "this tragedy highlights the risks associated with all types of mooring operations."

"Although SMS manuals detail how mooring should be conducted, they may not highlight that handling of mooring lines including messenger lines can quickly get out of control if they are not properly secured against the effects of gravity or the dynamic interaction between the tug and the vessel."

"The officer in charge must always try to anticipate changes in the loading on the lines and have the crew stand in a safe position away from any potential danger."

"A tug's line and attached messenger should

berthing, and a small fire

always be recovered on board the tug before it starts moving away."

"The forward and aft mooring decks on any ship are classified as high-risk zones and have associated risks during mooring operations."

"Mooring operations must never be rushed as this can lead to actions being taken which are not thought out clearly."

"Anticipation is key: lines can unexpectedly become taut or even break, creating a lethal snap-back hazard; winch brakes can fail, or ropes be pulled overboard due to the relative motion of the vessel and the tug or bollard ashore."

Rudder damage in berthing

A second report was of a 14m draft loaded tanker which touched the sea bottom while berthing, damaging the rudder.

The vessel had two tugs, one at the bow and one at the stern

The vessel passed the mooring 'dolphin' (fixed structure in the water), and turned to port, assisted by the tugs.

Five minutes later, the officer at the stern of the ship alerted the bridge that the vessel was drifting towards a breakwater. The current, running in an easterly direction, was causing the drift. The pilot believed the current was running in a westerly direction.

The pilot gave several engine orders from dead slow to full ahead to increase the distance from the breakwater. But a noise was heard on the port quarter as it touched sea bottom.

CHIRP's comment was, "the current which was thought by the pilot to be flowing in a westerly direction, and would assist the vessel during the turn, was flowing in the opposite direction."

"Given that the pilot had intimate knowledge of this port and berth, and had been briefed on the tide and current conditions, this was a skillbased error."

"However, it was not challenged by anyone else on the bridge, including the master, nor the masters of the attached tugs. A group-think scenario had developed because everyone placed too much implicit trust in the pilot."

Smoke inside bosun's store

A third report concerned a fire in the bosun's store on a laden LPG tanker, as it prepared to leave a berth. Motors for hydraulic winches were housed in this store.

The motors were immediately stopped using the remote shut-off controls. The master suspended the unberthing operation to allow the alarm to be investigated.

It was discovered that loose screws were allowing lubricating oil to leak onto the hot motor, which started to combust.

To enable the vessel to sail, the master allowed the winches to be restarted for a very short time to allow mooring ropes to be slacked off before the motors were once again stopped. The ropes were recovered by hand.

After the vessel had departed the port, full cleaning was carried out to thoroughly investigate the source of the leakage. The engineers replaced the gaskets to prevent further leakage.

The reporter's opinion was that maintenance was not being done properly on the vessel because crew believed that the new ship was poorly built.

CHIRP commented, "the crew had known about the loose screws prior to the incident but had not tightened them. If they had, the fire would not have occurred."

"The potential consequences of an explosion on a laden LPG tanker in a port are obvious."

"A crew's belief that their vessel is poorly built can erode morale result in a culture of not caring about the material condition of the vessel "

"The speed with which the loose screws were fixed shows that this repair was easily within the crew's capability. The fact that they had not been fixed suggests that the inspection and maintenance routines on board were not being properly carried out and supervision was lacking."

To read the full text of these reports, and others from CHIRP,

see www.chirpmaritime.org. These reports were from the Feb 2022 issue, No 66

Developments with ship-to-ship transfers

Our review of developments with ship-to-ship transfers around the world – including Malaysia, Brazil, ammonia, STS data, training, South Africa, Denmark, Bangladesh, Japan, Singapore, and sanctions

hip to ship transfers are getting more popular for legitimate and illegitimate reasons.

On the legitimate side, it is a way to load and unload without a jetty, a way to load from a bunker vessel, and load from floating storage. It can be less expensive than using a berth, and avoids port congestion and delays.

But there are concerns about oil spills, for example if the two vessels are suddenly moved apart due to waves. Although technologies are available which ensure that any cargo is contained if a detachment happens.

On the illegitimate side, it is a way to bust sanctions, hiding the source of Venezuelan or Iranian oil. But data monitoring companies are getting better at spotting it.

OCIMF' STS Expert Group meeting

OCIMF (the Oil Companies International Marine Forum) reported that its Ship-to-Ship Expert Group had a virtual meeting on 10 Feb 2022. The group leader is Patricia Clarke of Aramco, and co-leads are Capt. Hemant Berry of Singapore oil trader Ampol and Bill Kappelman of Chevron.

The meeting's purpose was to set the 'direction of travel' for 2022.

It made a decision to proactively do a highlevel review of the "Ship-to-Ship Transfer Guide for Petroleum, Chemicals and Liquefied Gases," 2013 edition, with an intention to make further recommendations. This is a joint publication with OCIMF, CDI, ICS and SIGTTO who are being consulted to participate in a joint review.

The information paper, "Mooring Load Analysis during Ship to Ship (STS) Operations with Varying Environmental Conditions" is due to be published in April 2022.

Plans to engage regional STS forums were discussed and will be progressed from Q2 2022 onwards.

STS in Victoria Bay, Malaysia

Straits Energy Resources Berhad of Malaysia announced on Dec 2021 that its "Victoria STS" unit has signed a heads of agreement with Fendercare Marine to provide ship to ship transfer services at the port limit of Victoria Bay, Labuan, Malaysia.

busting STS

Six STS "berths" are planned in the Victoria Bay deep water area, which is 3309 hectares in size (33km2). It will support LNG STS transfers.

Fendercare is one of the world's largest STS specialist companies, owned by James Fisher of the UK.

As part of the agreement, Fendercare will describe Victoria Bay as an "official STS hub" on its website and promote the location to clients as "the preferred STS location in Asia".

SafeSTS in Rio

STS service provider SafeSTS of the UK reported in March 2022 that it had set up an operational base in Rio de Janeiro.

It is fully licensed for STS operations in Brazil, operating firstly in the Santos STS area.

The company says it has made big investments in research and development for ways to improve safety of oil transfer and mooring systems.

Its Protected Transfer System (PTX) has an emergency release coupling for oil ship to ship transport.

It also has a technology for transferring via a buoy ("TVB"). This enables transfers of higher volumes and sustaining operations in harsher weather.

Signal - world STS operations

Signal Ocean, a company which provides software and data about global ship operations, announced in June 2021 that it had developed an online tool which charterers and others can use to monitor ship to ship operations happening around the world, currently and in the past.

To identify ship to ship transfers, Signal searches AIS data for two vessels in proximity in the same period of time which are not at a berth. It also uses commercial market data where available.

It categorises STS operations into three types, 'lightering' (when one vessel is much bigger than the other one), 'cargo transfer' (when vessels are the same size), and 'FPSO/storage', where a storage or FPSO vessel is involved.

The data available includes vessel name and IMO number, commercial operator, and operation type.

Key hubs for STS operations are the US Gulf

and Singapore, Signal says, mainly due to port restrictions on larger vessels accessing a berth.

Online training

Maritime Trainer of Istanbul/ Izmir, Turkey, has developed an online tool for teaching ship to ship operations, including practices, guidelines, and safety recommendations.

The software has realistic scenarios and triggers questions that allow discussion between the crew members and eases facilitation.

https://www.maritimetrainer.com/productcategory/reflective-learning-resiliencepackage/learning-engagement-tool/

South Africa environmental campaigns

The South African Maritime Safety Authority is facing opposition from environmental groups for its plans to lift a moratorium on ship-to-ship bunkering in Algoa Bay, in the Eastern Cape, South Africa from April 1, 2022.

The moratorium was placed on 22 August 2019 after the second oil spill since 2016. It was planned to be removed after the finalisation of an anchorage holding capacity study and a risk assessment study. However, the environmental risk assessment, commissioned by the Transnet National Port Authority, is yet to start, environmental groups say.

Environmental groups say that 3 oil spills occurred over the past 6 years in ship-to-ship bunkering. Nearby St Croix Island held the world's largest African penguin breeding colony, and nearby Bird Island holds the world's largest Cape gannet breeding colony, with two-thirds of the global population breeding at this site.

Alistair McInnes, seabird conservation programme manager at BirdLife South Africa, was quoted saying, "until recently St Croix Island was the largest global colony of African Penguins. It no longer retains this status as numbers here have plummeted by approximately 80% since 2015 — the largest short-term decline of any African Penguin colony on record. We suspect that this is associated with several factors that have influenced the quality of their marine habitat."

"Since bunkering activity commenced in

SHIP TO SHIP TRANSFERS

2016, vessel traffic, especially large bulk carrier vessels, have more than doubled with the location of these vessels in anchorage areas and shipping lanes occupying a significant portion of penguin foraging habitat."

"Penguins are known to be extremely sensitive to marine noise pollution and we suspect that the increased number of ships in the bay has displaced them from important foraging areas. Thus reducing the number of birds that are able to breed at St Croix Island."

LNG STS for Singapore crude tanker

FueLNG announced in May 2021 that it had completed Singapore's first ship-to-ship bunkering of an LNG fuelled oil tanker, Shell's Aframax Pacific Emerald.

FueLNG is a joint venture between Keppel Offshore & Marine Ltd (Keppel O&M) and Shell Eastern Petroleum.

The task included 'gas-up' and 'cool down' of the receiving tanks. 3,000m3 of LNG were transferred.

Pacific Emerald is the first of 10 newbuild Aframax tankers chartered by Shell Tankers Singapore from Sinokor Petrochemical.

STS offshore Dominica

Maritime intelligence company Windward carried out a detailed investigation into STS operations by tanker Berlina, which has a Cyprus flag, offshore Dominica, in the Caribbean. It was reported by news agency Associated Press in May 2021.

The vessel transmitted AIS data showing the vessel suddenly stopping and turning 180 degrees in 2 minutes, an operation which would normally take 20 minutes. The vessel is 274m long.

At the same time, the vessel was physically spotted loading crude oil in Venezuela.

The Berlina's AIS did report that its draft had increased from 9m to 17m, showing that it had been loaded with oil.

9 other tankers, connected to the same shipowner, transmitted AIS data showing they were all in the Caribbean, moving at an identical speed and direction.

Up to now, the usual way of ships to avoid AIS detection is to just turn the transponders off. But in this example, the shipping company was actually transmitting false locations on its AIS, generated by a remote computer system, Windward said.

Russ Dallen, of Caracas Capital Markets brokerage, Miami, was quoted as saying, "it's pretty clear the bad guys will learn from these mistakes and next time will leave a digital trail that more closely resembles the real thing."

Another tanker tracking company, Vortexa, was quoted as saying they spotted Berlina discharging its oil in a STS transfer to a floating storage vessel CS Innovation off the coast of Malaysia. A number of other STS operations took place in the interim.

Iranian STS in South China Sea

A campaign organisation "United Against Nuclear Iran" was able to find a satellite photo of two tankers doing a ship-to-ship transfer of Iranian crude in the South China Sea in January 2022.

The image is on Twitter here

https://twitter.com/claire_jungman/sta tus/1484887716496130049?t=Dcf6pKI-RgTBSzgh0XIIXg&s=08

The vessels were named as TIFANI and VORAS. They were feeding vessels which were transmitting false data in their AIS.

TIFANI was sailing under the flag of Tanzania and VORAS is Guyana-flagged and owned by Malaysia International Shipping Corporation Berhad, said Claire Jungman of UANI.

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Resolving ballast water system problems

Some shipping companies are reporting problems with ballast water systems, such as trouble getting systems started, clogged filters, or high energy consumption. Filtersafe and De Nora shared advice

Some shipping companies are encountering problems with ballast water treatment systems (BWTS), including trouble getting systems started, filters getting clogged, or operational performance being different to that seen in commissioning tests. Some companies are seeking ways to reduce the energy consumption.

Ballast water system supplier De Nora, and ballast filter supplier Filtersafe, ran a webinar on March 1 to explore the issues

Filtersafe perspective

To understand ballast water treatment system (BWTS) problems, you often need to start by understanding how fluids flow through the whole system, said Mark Riggio, head of marine, Filtersafe.

Problems with BWTS are generally caused by the "stuff around" the core treatment system, he said. There can be conditions which "create barriers for the system to work or creates challenges for the systems."

Understanding system performance is often about "piecing together a mystery of different components," he said. For example, data logs are available from sensors, and crew share observations about what they are seeing.

"Often, we see damaged and failed components, but they are not the reason for the problem, they are [something that] happens after the problem has occurred."

Systems that won't start

The most common problem is when a system won't start, he said.

In one real example, a crew said they couldn't get a new system to run. The system had been through its commissioning testing with the manufacturer and appeared to be operating fine. Now the vessel had gone to a part of the world which the manufacturer was unable to visit due to Covid restrictions.

The vessel had separate BWTS on the port and starboard side of the ship.

The port system was running fine, but the starboard system was shutting down due to an alarm due to a high difference between inlet and outlet pressures (differential pressure), he said.

The data logs showed that in the starboard system, the inlet pressure was very high (5.5

bar), the outlet pressure was zero.

But after a certain time, the differential pressure went back to normal.

Investigation showed that the port (side of vessel) filter was handling 1500 m3/hour, while the starboard filter was handling 300 m3/hour in normal operations. Downstream of the ballast water treatment, the two flows were being combined.

The cause of the problem was that the much higher flowrate from the port filter was 'sucking' water out of the starboard filter, Mr Riggio said.

This suction could also be defined as a negative pressure downstream of the starboard filter. This is the reason for the large pressure differential across the filter, and the triggering of the alarm.

Although when the flow through the port filter went to zero, the suction stopped, so the differential pressure reading in the starboard filter went to a normal level for water flowing through a filter seeing a small pressure drop.

The problem had not been identified during the vessel commissioning, because they had been running the systems separately in the test.

Filtersafe's suggestion to the crew was that the problem might be resolved if they try to find a balance in flows between the two systems, or maybe establish a flow through the starboard filter before the port filter is started.

And manufacturers should be advised that if they are doing a commissioning test where there are two separate filter systems using common manifolds, they need to test both systems running at the same time.

Clogged filter

Another common problem is a filter getting clogged. In one real example, a shipowner said their filter was always getting clogged. This was a vessel continually trading between the same 2 or 3 ports.

The filter needed to be manually cleaned, which was taking a lot of time. There was also increased wear in the filter.

The company was requesting upgraded components, or a better filter cleaning system.

The Filtersafe engineers found, from looking at photographs, that the filter wasn't being properly re-assembled after cleaning. The internal pieces were not being properly aligned. This was creating an imbalance inside the filter, and more sediment being caught in different places.

The crew also said that the filter is always backflushing (where fluid is flowed backwards through the filter to clean it).

The problem turned out to be the diameter of the air-line providing compressed air to run a pneumatic motor driving the backflush in the filter. Compressed air is used because filters are in a hazardous environment, they cannot use electric motors.

The air line to the motor had only a quarter inch diameter, although just upstream a 2-inch air line was used. "Clearly there wasn't enough air flow," he said.

The lack of power to the pump, provided as compressed air, meant that the pump was not able to run fast enough to backflush the filters each time the backflushing was done, so it needed to be done more times.

As a result of the investigation, Filtersafe also updated its own guidance about the size of air lines.

Compounding

Problems with filters compound or lead to other problems, he said. For example, organisms which are not blocked by a filter can get into piping and tanks on a vessel, and it gets very difficult to get them out, and also the ship is no longer effectively treating its ballast water.

A 20-micron filter will not necessarily get clogged faster than a 40 or 50 micron filter, he noted – what's most important is that a suitable automated cleaning mechanism (back flushing) is in place. "We can increase the cleaning mechanism without changing the filter, using more nozzles on the same design."

Energy efficiency

Some shipping companies have been seeking ways to reduce energy consumption of ballast water systems – they can be one of the biggest consumers on the ship.

De Nora is developing tools helping companies work out if the system can run at a lower intensity (so less power consumption) but still achieve the ballast water specification ("G2" standards), said Susanna Wyllie, Global





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8 Jac

BALLAST WATER



Screenshot form the De Nora/ Filtersafe webinar. Left to right: Amie Pascoe, Blue Communications (moderator); Susanna Wyllie, De Nora; Mark Riggio, Filtersafe. Jon Stewart, IMTCI; Tim Fileman, PML Applications

Proposal Manager - Balpure at De Nora Water Technologies.

"With the data logs we can make that as optimal as possible," she said.

For example, De Nora's "Balpure" electrochemical BWTS is designed to be able to make up to 12ppm of hypochlorite injected into the full flow. But in a typical example the system calculated that it would only need 8ppm, so it started at this level. It was able to drop to 5ppm partway through. The hypochlorite is created by electrolysis of salt in seawater. The less hypochlorite required, the less electricity consumption.

The level of electrochemical dosing on Balpure is flexible, so it can be reduced until you reach the minimum dose needed to achieve the required water treatment standard, she said.

On ultraviolet treatment systems, which De Nora also makes, the strength of the lamp can be adjusted. More UV light is needed for dirtier water, but that uses more power.

De Nora is also sharing data on which ports in the world it has seen more challenging (dirtier) waters, which shipping companies can use in their decisions about which ports to do ballast water operations in.

"We are keen to make sure you are properly utilising the data you already have available," she said. "A lot of people don't know how to use the data coming in from their system."

Ballast water systems involve water and air environmental issues working against each other, in that killing organisms will happen more reliably if more energy is used, both for EC and UV systems, but more energy means more CO2 emissions in generating it.

Air environmental issues are visible, in that people can see the smoke coming out of the vessel stack from the auxiliary engines generating power for the ballast water system. But the water environmental issues - avoiding transport of microorganisms around the world – are not so visible.

"It is about understanding where you are and what you can change on your system, to ensure you are not using more than you need to," she said.

Ballast water system suppliers are likely to evolve more into service suppliers rather than equipment manufacturers, Ms Wyllie added.

"We're not here just to sell equipment at the best price and walk away. We're here to be the partner of choice. The majority of suppliers like Filtersafe feel the same way."

Investment in a "really good filter" can be one of the best ways to reduce energy consumption, because it can do much of the work of removing organisms from the ballast water, and clean the water, making it easier for EC and UV to finish the job off, added Filtersafe's Mark Riggio.

High sediment areas

A common source of ballast water treatment problems is doing ballasting operations in high sediment areas, said Tim Fileman, technical manager of PML Applications Ltd, a UK marine technology consultancy. One example is the Humber Estuary on the UK' East Coast, which has significant levels of sediment. Ships have been doing operations while berthed on the outside of a river bend, which is the worst place to be. They have seen sediment levels of 20-30g/litre, while 2-3g per litre is typical.

"A UV system needs relatively clear water to operate above alarm levels," he said. "It's really important that you understand the environment you're wishing to ballast in when selecting a system."

Automation is expensive

Many shipping companies had an idea that systems would be a fit and forget 'black box', noted Filtersafe's Mark Riggio.

But there is a play-off, in that making systems which you can 'fit and forget' require a lot of automation and sensor systems, which are expensive.

If people purchase the cheapest type of approved system they can, they are less likely to end up with a system which they can fit and forget, he said.

"If you're not willing to pay for systems that have that kind of automation, you end up with a more complicated system [to operate]", he said

The video of the webinar is online here https://filtersafe.net/blog/blog-marine/ powerful-lessons-to-be-learnt-from-bwmsoperational-data/

Techcross reports record BWMS sales

outh Korea ballast water management system (BWMS) manufacturer Techcross reports that over the first three weeks of January 2022, it sold BWMS for 81 ships, worth \$23m. The company said it anticipated \$26m sales in January 2022 altogether.

The company said it also did Factory Acceptance Tests (FATs) for systems for 93 ships in January 2022, a new monthly record. A further 83 ships will have their FAT in February.

Also by the third week of January, it had shipped products for 72 ships, the



BWMS ready for shipping in Techcross factory in Busan, South Korea

largest figure for a month in company history, achieved in 3 weeks.

The high sales are due to mandatory

installation dates approaching.

"Those ship owners who postponed installation are changing their stance," Techcross says. "The BWMS market is expected to experience a bottle neck phenomenon over the next 1 or 2 years."

"Under these circumstances, the most important thing is a maker's production capacity and product installation capability."

"Techcross has the largest production factory in the world and is capable of producing more than 3,300 sets of BWMS."





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LNG beyond fossil LNG

SEA-LNG says a 180k dwt vessel with fossil LNG fuel could stay in CII's "C" band until 2030; thereafter, every 10% increase in the LNG fuel blend which is decarbonised will give it two more years. But will it be available?

EA-LNG, an organisation which promotes maritime LNG fuel, estimates that a 180k DWT capesize dry bulk vessel would be able to continue operating as normal under requirements of the Carbon Intensity Indicator system until 2030 (C grade or higher).

Beyond 2030, it envisages that the fossil LNG would be blended with decarbonised LNG. This could be bioLNG, gas from agricultural, forestry and human waste, or synthetic LNG, gas formed from renewable electricity to make hydrogen, reacting with CO2 drawn from the atmosphere or from biomass.

With every 10 per cent increase in the content of the fuel which is a decarbonised fuel (such as bioLNG or synthetic LNG), the vessel gains two years of further compliance, according to the analysis.

The analysis is based on two 180k DWT capesize dry bulk vessels, one on conventional oil-based fuel, the other using LNG.

The results showed that in the first year of CII (2023) the LNG-fuelled vessel would score 'A' while the oil-fuelled vessel would score 'C'.

But the LNG-fuelled vessel would go to 'D' score after 2030, making it noncompliant, unless it was blended with decarbonised fuel.

So if you, as a shipowner, believe that bioLNG or synthetic LNG will be available at an acceptable price and volume in 2030 to use as a 10 per cent blend, and supplies will increase further after that, this should mean that LNG-fuelled vessels ordered today can operate for the expected lifetime of the vessel, such as 25 years.

The bioLNG or synthetic LNG are both made mainly from methane (CH4 molecule), and so they are fully interchangeable with fossil LNG. The same bunkering infrastructure, including port storage and loading systems, can be used.

SEA-LNG bases its analysis on an LNG vessel having approximately 20 per cent less greenhouse gas emissions than an oil-fuelled vessel.

The 20 per cent figure comes from the "2nd Lifecycle GHG Emissions study" by Sphera, which concludes that LNG-fuelled vessels are capable of achieving a reduction in their carbon footprint of up to 30 per cent on a tank-to-wake basis, when compared with an otherwise identical conventionally fuelled ship. The step from 30 per cent to 20 per cent reflects emissions in the gas production chain (well-to-tank).

In terms of pricing, Mr Esau notes that bioLNG is already commercially available and used in northwest Europe as a bunker fuel.

Other commentators have estimated the price of bioLNG as double the price of LNG, and the price of synthetic fuels at 3 - 5 x the price of LNG.

Availability of bioLNG

The big question for a shipowner based on this is how much bioLNG will be available in 2030, and at what volumes and locations.

SEA-LNG has commissioned two studies on this, one in 2022, with Dutch independent research company CE Delft and a further study underway with results to be published in the summer.

"The surprising thing that came out of the analysis [is that] there's potentially a vast supply," says Steve Esau, SEA-LNG's chief operating officer.

The study only looked at biomass which is already available, such as human waste, agricultural waste and forestry waste.

"The amount of useful energy will be multiples of the amount of energy used by the global shipping industry in [both] 2030 and 2050," he says.

There is enough biomass today to create biomethane which could replace 20 per cent of current European gas consumption, he says.

"The International Energy Agency [IEA] also published a report at the same time. The key message is that it is potentially a very big resource."

"Biomethane is the simplest molecule. It is incredibly pure. It can be used without modifications into infrastructure."

Availability of biomass is different in different parts of the world, for example Canada has more forestry waste, and the East Coast of the US has more agricultural waste.

Some of the US agricultural waste, such as straw, which was previously planned to be converted to bioethanol, is not now being



Steve Esau, Chief Operating Officer, SEA-LNG used for this, says Esau.

It is not so helpful to shipping if there is a lot of competition from other possible consumers of gas. To try to work out how much might be available for shipping, SEA-LNG is doing further research with the Maritime Energy & Sustainable Development Centre of Excellence (MESD), a research unit of Nanyang Technological University (NTU) in Singapore, one of Asia's top 10 universities.

This study will also try to estimate costs. The research is planned to be published in summer 2022.

Carbon capture

Another way which operators of LNG-fuelled ships could stay compliant for longer is by operating carbon capture equipment onboard, which removes some of the CO2 from the engine exhaust. The CO2 is then compressed and cooled into liquid form, so it takes less space onboard. The CO2 can then be pumped into a shore reception facility, and later permanently sequestered in the ground.

Companies do not need to capture all the CO2 initially – they could gradually increase the amount of CO2 captured, to keep the ship in line with the gradually tightening limits of CII's "C" band. Operating carbon capture equipment, and handling CO2, is expensive, so companies may wish to capture as little as possible for commercial reasons.

Carbon capture equipment can be degraded easily by flue gas from fuel oil, but LNG flue gas will be much less harmful since it contains very little impurities.

There is an alternative chemical process onboard, reforming CH4 with air into hydrogen and CO2, then burning hydrogen in the engine. The CO2 then does not need separating from the flue gas.

Tanker pooling 'can ease environmental reporting'

By moving your tankers into a pool, the burden of environmental reporting and monitoring can be passed onto the pool operator. Tankers International explains By Matthew Smith, senior vice president commercial & operations, Tankers International

hese represent clear costs, in the form of staff, systems, and resources employed.

EEXI and CII, as well as the EU Emissions Trading Scheme in 2023, will create particularly complex requirements and heavy burdens for shipowners.

The pooling model shifts much of the responsibility of meeting operational emissions and efficiency regulations.

Tankers International's pool will calculate and monitor efficiency, to help optimise ships for CII rules later this year, and will support meeting the EU's Emissions Trading Scheme requirements.

Compliance will require significant investment for some VLCC owners.

For those without bottomless war chests, planning and allocating funds for those investments will be a cash flow challenge.

Regular income

By providing a guaranteed, regular income, the pooling model can smooth out cash flow issues and make it easier to plan for a future that will include CAPEX-intensive emissions reduction technologies. Zero-carbon shipping is the end goal for regulators, and it is almost certain that they will implement new rules to achieve this.

This creates huge cost for shipowners – and, given that there is no consensus on the technical path to zero-carbon ships, a significant amount of technical risk.

Information sharing

This complements the technical support and inter-owner knowledge sharing associated with the pool.

Given the scale of the decarbonisation task, and the inherent risk, there is a real appetite for high-level information sharing and support.

Pooling offers owners to benefit from regular forums, organised for their technical delegates, to share insight and experience on important innovations and their learnings from new and novel technologies or best practice.

The scale of the challenge will stretch many shipowners' bandwidth. The pooling model helps owners make well informed, strategic decisions – that will put them in the best place to take advantage of shipping's future path.

Offsets

Voyage-based climate compensation helps charterers and cargo owners meet their environmental commitments today.

Tankers International recently launched a new option for charterers alongside Vertree, a subsidiary of longstanding pool partner Hartree.

Our Climate Compensation Voyage Scheme allows us to offer quotes for tailored, voyage specific climate compensation packages alongside our normal quotes.

The scheme uses scientifically recognised methodologies and proprietary data to calculate an emissions baseline on a per voyage, monthly or annual basis. Shipowners and operators can then choose from a range of nature-based options to offset the carbon, tailored to price, geographies and impact targets.

Climate compensation alone is not a total solution to climate change. However, it can play an immediate and meaningful contribution to reduce cumulative emissions, as the industry moves towards low or no carbon alternatives.

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Investor perspective on LNG fuelled ships

Are investors ready to put money into LNG-fuelled ships? Ryan Lynch of Maritime Opportunity Investment Corp shared his perspective

he main concern with transitioning to an LNG fuelled future is first the infrastructure," said Ryan Lynch, managing partner, Maritime Opportunity Investment Corp, speaking at a webinar organised by software company Voyager.

"LNG infrastructure for the bunker aspect is not as robust as it is for heavy fuel oil and low sulphur fuel oils. There aren't bunker barges, terminals, globally available."

This means that for vessels on a tramping service, going around the globe to wherever they get the highest dollar, LNG "is not viable," he said.

Although there are certain "pockets" of the world which do have LNG bunkering assets in place – Mr Lynch cited the US East Coast, Gibraltar, and the 'ARA' region (Amsterdam, Rotterdam, Antwerp).

One of the limitations of providing more LNG infrastructure is the time taken to build new LNG carrier ships. They currently take 12-36 months to build in the US, depending on the size, and 12-48 months in Asia, he said.

Mr Lynch is based in Texas. His former roles include managing director of Clearlake Chartering in Houston, freight trader with Gunvor, and chartering manager with Navi8 Group.

He was speaking at a webinar about the feasibility of LNG fuel for shipping, organised by Voyager, a company based in Houston and Santa Caterina, Brazil, which makes software tools for shipowners, brokers and agents.

LNG costs

A second concern with LNG fuelled ships, from an investor's perspective, is the higher and more volatile costs. Altogether it means a higher expenditure of \$10m-\$20m for an LNG fuelled ship, he calculates.

The engine itself is more expensive, typically 20-25 per cent more than a traditional engine.

The extra cost of LNG fuelled ships is not necessarily something which can be passed onto the end user. "In order to fund an LNG fuelled carrier, you'd need somewhere to the effect 20-25 per cent roughly increase day rates."

Also, gas is seen as "highly volatile" (in price) as a commodity. "We're just not certain what the future of the gas price will hold, except [we expect] it's going to be volatile."

"In a volatile market, where you don't have visibility into your marginal cost functions, this becomes an impediment to investment."

"Unfortunately, that makes the [overall] investment diagnosis much less viable for a shipowner," he said.

It can work if the end user (the charterer) is willing to absorb the cost, "or some sort of government subsidy."

For cargoes going into Europe, there are, or will be, costs of carbon emission, which Mr Lynch describes as "direct price-ability of carbon".

"If there is a carbon market, such as there is in Europe, you can potentially offset some of these inflationary cost pressures," he said.

But "in the US we don't have anything in that capacity. We don't keep

track of carbon emissions on ships directly. We don't have an obligatory carbon trading market. So, if you're trading a US Service, there's no [financial] benefit directly with an LNG fuelled ship."

Over the longer term, Mr Lynch expects that LNG bunker fuel "will transition and will become more robust," and it will be "instrumental" in the future of maritime merchant shipping.

"But it does take some time."

Green credentials

Investors are not fully convinced about LNG's 'green credentials', he said. "Until that is adjudicated or discussed, that is prohibitive to the underwriting of these highly capital-intensive investments."

The main concern is methane slip. While engine manufacturers have done a lot of work to abate the concerns, "it is still a material problem for the future," he said.

Methanol and ammonia

On methanol and ammonia as a fuel for ships, Mr Lynch sees these as "very bespoke products".

The challenge from an investor's perspective is the lack of "long term price discovery," in other words, no-one knows how much it will cost.

"It's not listed on futures exchanges, or at least not robustly trading," he said.

"Without price discovery long term, you have a difficult time substituting your cost basis."

This article is based on a video interview with Ryan Lynch by Voyager. The videos are online here https://www.voyagerportal.com/videos/



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Thordon Bearings' new shaft sealing system

Thordon Bearings has launched a new propeller shaft sealing system for merchant vessels, including a very low friction seawater lubricated axial lip seal (thus no oil-based lubricants to leak into the water), and a Safe Return to Port (SRTP) emergency -up seal which can get you to port without tugs if the main seal fails

hordon Bearings of Burlington, Ontario, Canada, has launched a new propeller shaft sealing system for merchant vessels, called the BlueWater Seal.

Just to remind you of the basics, the shaft is the rotating component which connects the engine inside the ship to the propeller outside it, through a hole (known as the 'stern tube') in the rear of the hull. The seal is the assembly which stops seawater from leaking through this hole into the ship.

Thordon's new sealing system incorporates particularly low friction levels (thus less seal wear, increased seal life, and increased pressure limits); seawater lubrication (thus there are no oil-based lubricants to leak into the water); and a back-up emergency seal with Safe Return to Port (SRTP) capability which can be used if the main seal fails, enabling a vessel to get back to port under its own power, so no tugs are needed.

The seal is also particularly robust, with low maintenance requirements, Thordon says.

The seal can be installed on all vessels with shafts between 300mm and 1000mm diameter.

The individual elements of the seal are not new, but the package is, particularly including the emergency SRTP seal which allows the vessel to continue under its own power.



Thordon's chief research engineer, Gary Ren, pictured with the BlueWater Seal with the RENFORM main sealing ring



TECHNICAL

The seal is offered as an individual component, and also part of Thordon's COMPAC open seawater lubricated propeller shaft bearing system.

This includes AFT and FWD bearings, shaft liners, an anti-corrosion shaft coating, a water quality package, a condition monitoring system, and the BlueWater Seal.

The system and the seal have class approvals from ABS, LR, DNV, BV and CCS.

Thordon Bearings was founded in 1911 by shipowner George J Thomson, and has been family owned for four generations. It was the first to develop self-lubricating elastomer bearing and seal system, in the 1970s.

The company head office is in Burlington, Ontario, Canada, where it provides engineering, quality control and production service. It also has a production site in Slupsk, Poland.

The seal

The main sealing ring, called "RENFORM", was developed in house by Thordon's Chief Research Engineer Gary Ren, who is also the source of the Ren in the name.

The main sealing ring is made from a high strength, abrasive resistant elastomer. It has a unique 'sealing lip' design which allows facing elements of the seal to operate nearly without friction, during all operational conditions.

The geometry (shape) of the sealing lip has been carefully designed so that the contact pressure is optimized to promote lubrication.

On other axial lip face seals, the thickness of the sealing lip is typically uniform and does not promote lubrication during dry running or high-pressure conditions.

The BlueWater Seal design promotes a stable hydrodynamic lubricating film while minimizing seawater leakage into the ship. During all operations, the seawater film remains consistent.

This means that there is less frictional wear on the seal, and subsequently the seal lasts longer and can withstand higher pressure, says Anthony Hamilton, Technical Director



Thordon's new BlueWater Seal with Safe Return to Port capabilities

at Thordon Bearings.

Customers should not have to replace the main sealing ring until after 5 years of operation. The seal assembly should have a lifetime of over 20 years.

"We've spent a lot of time and effort developing an axial lip seal design that is better than those currently available, a twoto-three year service life is not acceptable. Thordon has been able to extend the service life to 5 years," says Mark Fucic, Senior Project Engineer at Thordon.

This seal is expected to leak between 0 to 3 litres a day. It is not possible to make a shaft seal which is completely leak free – the two moving parts would need to be very tight together and generate a lot of heat. "They would last long enough for the installer to get to his car and leave," says Mr Fucic.

"The goal is to find the balance between leakage (lubrication) and wear."

In terms of pressure of the seawater, it is rated to operate at 1.5 bar, which is a pressure encountered at depths of 15m. But this is something which a laden tanker may encounter.

"The draft we will allow with the BlueWater Seal is higher than any other axial lip seal that I know of," says Sam Williams, Regional Manager – Asia & Greece at Thordon Bearings.

The BlueWater Seal can "self-adjust" to maintain the optimum lubrication film, so the



The full propeller shaft seal and bearing system with seawater lubrication

change in pressure does not cause it to wear out faster, Mr. Hamilton says. This is also better for a vessel with a draft that changes, as a tanker would, between being laden and empty.

All lip seals are typically made of rubber. The alternative is a 'mechanical seal', which is more complex with two faces of silicon carbide facing each other, one stationary and one rotating, pushed together using a spring.

Safe Return to Port

The Safe Return to Port (SRTP) capability is a second seal used as a back-up. If the main seal is damaged for any reason and there is a leak into the engine room, the back-up seal can be inflated by compressed air.

If there is no seal around the propeller shaft, seawater will flow into the hull and eventually sink the ship.

The SRTP seal allows the shaft to continue to rotate, so the vessel can get to a safe port under its own power, with no need for tugs.

The SRTP seal can be later deflated and be available for use again.

The SRTP seal can also be used as a static seal during maintenance. The SRTP seal joins together the shaft with the hull. While used as a static seal the shaft cannot be rotated.

It is activated in the various modes by adjusting valves on a supplied control panel.

The Safe Return to Port system is not an entirely new technology. It is also used in Thordon's TG100 mechanical seal for workboats, and its SeaThigor mechanical seal for cruiseships and naval vessels.

Seawater Iubrication

The Bluewater Seal is designed to be lubricated by seawater rather than oil.

This means there is no possibility of oily lube leaking into oceans and seas.

It is essential that the seawater is filtered and provided in a consistent flow. To deliver this, Thordon provides the Thordon Water Quality Package.

If the seawater has high sediment level, the sediment will be filtered out in the Water Quality Package.

The seawater continually flows through the seal and then out to the sea.

The seawater lubrication also means that shipping companies do not have to spend money on lubricating oils.

This article is based on an online press conference from Thordon Bearings. It can be viewed online here

https://register.gotowebinar.com/ register/4929846621571945486

Using next generation lubricants

By using 'next generation' lube, together with engine monitoring, it is possible to save thousands of dollars a year, both on cost of lubricants and reduced maintenance. Shell's Marcus Schaerer explains *By Marcus Schaerer, GM Technical & Services, Shell Marine*

he relationship between an owner/ operator and their lubricant supplier should not simply end with the provision of the lubricant.

Today's operating environment is complex, with several common factors affecting lubricant development and performance, such as increased thermal stress and a higher risk of deposit buildup. This makes cleanliness performance increasingly key.

It also means selecting the right lubricant is just the first step in protecting tanker performance.

Equally as crucial for operators is the detailed monitoring of specific engine parameters. Because, whether overloading, contamination, wear debris, or lubrication (i.e., lack of base number) related, most machinery failures can in fact be avoided by regular sampling and structured data management.

Manufacturers must be aligned on the need for constant lubrication monitoring to establish baselines, so operators can react to changes immediately.

Engine monitoring programmes, such as Shell LubeMonitor and Shell VitalyX are becoming a critical piece of the modern operator's toolkit.

In the past, operators may have felt compelled to focus on reducing cylinder lubrication feed rates despite potentially risking engine performance.

Now, direct monitoring tools like Shell LubeMonitor use both onboard and onshore tests to help identify the lowest possible feed rate and optimum wear rate combination for two-stroke engines.

Meanwhile, customers can have vital and predictive information at their fingertips to make decisions on maintenance planning while extending equipment life.

Digital technologies available today, like Shell VitalyX, combine the industrial internet of things (IIoT) with artificial intelligence (AI) to provide operators with insights based on real-time sensor data.

This is a useful addition to the predictive maintenance toolkit that operators often



Marcus Schaerer, GM Technical & Services, Shell Marine

already use to monitor critical machinery.

In turn, it helps to identify unseen, lubrication-related issues before they can contribute to performance loss or the loss of an asset.

As both a lubricant manufacturer and operator of a large fleet of tankers, Shell is able to work together with both the customers who are facing evolving operational and legislative environments, and the original equipment manufacturers (OEMs) who are developing higher efficiency and alternative fuel-based engines.

As OEMs release new design and retrofit options that allow operators to use a wide range of fuels, Shell can work in tandem to formulate lubricants that are not just able to ensure operational performance, but help reduce environmental impact too, no matter the engine-fuel combination. This includes HSFO, VLSO, and LNG to LEG (liquefied ethane gas), and methanol/ethanol, LPG, biofuels and ammonia.

Case study

In a March 2019 announcement, Shell said its lubes had helped a tanker operator reduce main engine lube costs on one vessel by \$5775 a year. Lube oil consumption was also reduced from 11,900 to 7,700 litres per year.

Savings were made by switching to Shell Argina S3 40, because it is more suitable for an engine running marine fuel oil.

The tanker is operated by Blue Ocean Intertrade of Bangkok. The distributor and advisor was Krissana Intertrade Co. Ltd of Thailand. During the changeover, Krissana also provided the Shell LubeAdvisor and Shell LubeAnalyst technical services to monitor the quality of the used oil samples and to help optimise maintenance.

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LR - funding technologies to reduce risk

Lloyd's Register's "Safetytech Accelerator" is offering £25k funding to companies developing digital technology to reduce risk, through the 3rd round of its "Waypoint" program

stablished by Lloyd's Register and Lloyd's Register Foundation, is offering £25k funding to companies developing digital technology to reduce risk, in the 3rd round of its "Waypoint" program. Deadline for applications is Apr 8.

It ran a webinar in February to launch the program and explore where digital technologies might be able to do more to improve safety and risk management in maritime supply chains.

Peregrine Storrs-Fox, TT Club

Peregrine Storrs-Fox, risk management director of transport insurer TT Club, said that fires aboard container ships continue to be a major problem. "Most are relatively small but we're seeing fires on pretty much a weekly basis," he said.

Many can be attributed to misdeclaration or non-declaration of hazardous cargoes, he said.

The difficulty is that there are multiple systems. For example, the International Maritime Dangerous Goods (IMDG) regulations for shipping dangerous goods by sea; the CAS REGISTRY from the American Chemical Society; and the "Harmonised System" commonly used for customs.

Mr Storrs-Fox would like to see better technologies "which support carriers, shippers and freight forwarders in how they are identifying things correctly," he said.

Another concern is containers falling overboard or collapsing under the weight of containers above them, which can also lead to fires he said.

The lashing gear is "unwieldy, heavy and causes plenty of injuries," he said. "There could be some automation, monitoring tightness of lashings and providing feedback."

There could be systems which monitor load distribution within a container, so they can detect if any cargo has broken loose, which could also make the container more likely to collapse.

Better understanding of the different data flows would help, both for shippers and carriers, he said. "There are criminal shippers, to be candid, but many shippers [just] mis-understand what they need to do."

This misunderstanding could be reduced if software could be aligned with the same terminology that shippers use themselves to communicate.

Wallenius Wilhelmsen

Roopesh Das, senior VP, digital accelerator, Wallenius Wilhelmsen, said he would like to see better digital technologies for identifying fire risks.

Wallenius Wilhelmsen is a logistics company focussed on vehicles and heavy equipment such as for mining, construction and agriculture. It has 120 vessels.

The increased use of batteries in vehicles is increasing fire risk, he said. Perhaps there could be better digital technologies for "early detection, monitoring and quick extinction" of fires.

Another area digital technology might help is reducing misdeclarations of cargo, including misdeclarations of weight, he said.

Another challenge is biosecurity. Some ports of the world require a vessel to turn back if it has certain bugs onboard (for example Australia and stinkbugs). No technologies yet exist to detect this bug – it can only be detected by dogs or people. It can only be treated using heat or chemicals.

There could be better digital prediction systems, for problems like fires or stinkbugs onboard, he said. "It kind of narrows down the problem."

Mr Das said he would like to see better training systems and support to people. "We are incubating VR based training. People can do hands-on training without a need to be at that location." They can "get instant help from experts around the world in an instant and costeffective manner."

Shell

Richard Holdsworth, who leads digital transformation and change initiatives in maritime transportation at Shell, with a focus on decarbonisation, sustainability, diversity and welfare, said he is "particularly interested in technologies to help vessels reduce risk of collisions."

He is also interested in ways to eliminate risks of injury, for example by replacing people by machines. One example of this is wind turbine inspections being done using drones.

Shell would like more ways to vet vessels it is considering chartering, such as to see if they have switched off their AIS in recent months or been to ports "they shouldn't have been".

Perhaps there could be approaches to

understand geospatial risks, such as to look at weather patterns, he said. "Can we use technology to look at all kinds of data sources and see what's coming?"

Ran Merkazy, LR

Ran Merkazy, VP product and services innovation with Lloyds Register, noted that 60 per cent of accidents happen in the near shore, where typically better data connectivity is available, such as through 3G.

Perhaps this connectivity could be used to find ways to prevent accidents, he suggested.

Another area of interest is maritime insurance. "80 to 90 per cent of cargo is under or un-insured, because insurers can't work as fast as the supply chain moves. Up to a quarter of claims are related to cargo," he said.

Many companies involved in shipping are also providing transportation services in other sectors. "It creates a problem of visibility and management of risk as cargo moves from one mode to another," he said.

A third area of interest is misdeclaration of goods – Mr Merkazy estimates that nearly 70 per cent of containers have cargo misdeclared in some way or other. That can cause risks to shipping lines, including from actual fires and explosions, and also fines for misdeclarations.

"I think data is a great 'space'," he said. "We've found the whole ecosystem of marine [data] is fragmented."

Waypoint 3

For the third round of Safetytech Accelerator's "Waypoint" program, it "wants to support entrepreneurs who are tackling [these challenges], or tackling opportunities we haven't spotted," said Dan Poots, innovation associate, Safeytech Accelerator.

"Maritime risk is a deliberately quite broad topic. We invite 'expressions of interest' for all sorts of solutions. Risks to ships, assets, people, environment. Avoiding, analysing or mitigating risk."

"We'd like to hear from start-ups with safety or risk management solutions and the ambition to scale in maritime. We'll work with you to pursue projects. Ideally, you'll have done or have underway a project in a maritime environment already. You've spotted the 'next big thing in maritime risk'."

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