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OCIMF news for May and June

OCIMF's news for May and June includes a management trip to Rotterdam; perspectives on decarbonisation; a tribute to two inspectors; and a number of studies, meetings and reports

n May, senior OCIMF management spent a week in Rotterdam meeting vessel operators and managers, including from the European tanker barge sector which carries fuels, chemicals and lubricants.

They visited an inland barge carrying hydrocarbons, visited a training and simulation centre and attended a safety seminar hosted by ExxonMobil.

During the trip, OCIMF hosted a joint safety seminar in collaboration with Platform Zero Incidents (PZI) at Maritime Industry Gorinchem, a major inland barging trade show that took place in the Netherlands from 17 to 19 May.

OCIMF attended the Green Award Board of Experts meeting, a voluntary quality assessment certification scheme established in 1994.

OCIMF met officials at the Port of Rotterdam Authority to discuss projects for onshore power supply for vessels.

Decarbonisation

OCIMF attended the Argus Green Marine Fuels conference in Rotterdam. It concluded from the event that "methanol seems to be strongly supported as the best future fuel option for several technical and economic reasons. Green methanol seems the preferred option, followed by green ammonia."

"Drop-in biofuels are the primary low carbon fuel option considered by relevant shipowners for complying with short-term GHG reduction goals. The enthusiasm for LNG as a transition fuel seems to have reduced."

"An intense emphasis on the importance of the life-cycle assessment (LCA) guidelines being developed by the IMO was given by



OCIMF senior management meet the IMO. From left to right: Arsenio Dominguez, Marine Environment Director, IMO; Nick Potter, Chairman. OCIMF; Kitack Lim. Secretary general, IMO; Karen Davis, Managing Director, OCIMF; Saurabh Sachdeva, P&A Director, OCIMF

many. The well-to-wake approach is common sense."

"Huge investments will be needed for the transition. Most investments will not be on the vessels but on onshore infrastructure."

Tribute to two inspectors

OCIMF published a tribute to two OCIMF inspectors who died in 2022, Captain David 'Nobby' Styles and Captain Ian David Smith.

David 'Nobby' Styles "was a big presence who never lost focus on the central tenets of our profession and truly believed that we were making a difference to safety at sea," wrote Captain William Austin in the OCIMF newsletter.

"Diagnosed with prostate cancer in 2010, Nobby refused to let this cruel disease define his life and continued to inspect for the next ten years. Captain David Styles was braver than many of us could ever hope to be, and his passing has been cruel. We will miss his steady hand on the tiller."

Captain Ian David Smith, "also known as 'Tank', will be remembered by many for his guitar playing at events, "especially the BP inspector seminars, where his rendition of 'American Pie' became part of the annual event," wrote Tony Jones in the OCIMF newsletter. "In 2015 Ian was diagnosed with prostate cancer. Although it is devastating that he is gone, he always said that he must pass away before Bruce Springsteen does, and he got his wish!"

OCIMF Annual Report

The OCIMF Annual Report 2022, which

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/ EVENTS

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Vol 20 No 5

Future Energy Publishing Ltd 39-41 North Road London N7 9DP www.tankeroperator.com

PUBLISHER / EDITOR ADVERTISING SALES

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PRODUCTION

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

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covers its work during 2021, is available for free download online. It provides an overview of OCIMF's organisational structure, committees and expert groups and the work they did in 2021. It includes a focused look at SIRE 2.0 and reports on other work, such as its joint industry initiatives and the Environment Plan.

Security

OCIMF attended the first in-person meeting of the Maritime Collaboration Forum/SHADE-Gulf of Guinea (MCF/ SHADE-GoG) hosted by the Nigerian Maritime Administration and Safety Agency (NIMASA) in Abuja, Nigeria on 9-10 May.

A recurring theme was the need for continuous collaboration with regional and international stakeholders to ensure the sustainability of security in the Gulf of Guinea.

Secretary General of the IMO, Kitack Lim, congratulated Nigeria on the efforts it has embarked on to improve security in its territorial waters and the Gulf of Guinea domain at large. "Maintaining the momentum of gains made so far is the main challenge for the regional navies," he said.

Prior to the plenary, the IMB reported piracy is at a 28-year all-time low in the region.

Ukraine

OCIMF's Human Factors Committee developed a position paper (available for download from its website) related to the conflict in Ukraine, published in April. The position paper highlights challenges that personnel on tankers, terminals, barges and offshore maritime sectors are confronted with as a fallout of the ongoing crisis.

STS study

OCIMF published a new study, Mooring Load Analysis during Ship to Ship Transfer Operations, to support the assessment of weather conditions and if STS operations can be conducted.

"Despite best efforts, mooring line failures are still a leading cause of incidents, potentially causing harm to people and environment, thus jeopardising the integrity of such transfers," it said.

Engineering Expert Group

The Engineering Expert Group held a virtual meeting on May 20, mainly focused on the collaboration opportunities with OCIMF's Environment Functional Committee, including providing engineering expertise to environmental publications.

This includes publications relating to risks

associated with shaft/engine power limitation, minimum power guidelines, and speed reduction zones because of Energy Efficiency Existing Ship Index (EEXI) and Energy Efficiency Design Index (EEDI) regulations or local regulations.

Meeting IMO leaders

In June, OCIMF's leadership met with IMO Secretary-General Kitack Lim and Marine Environment Director, Arsenio Dominguez, to discuss furthering its support and strategic partnership. OCIMF holds consultancy status at the IMO (see photo on previous page).

Future of shipping summit

OCIMF sponsored and attended the International Chamber of Shipping (ICS) summit on the future of shipping, held in London on 21 June. OCIMF "supports the ICS intent to create a collaborative international knowledge hub to drive common solutions and more effective engagement across regions and organisations and avoid duplication of efforts," it said.

"We also recognise the need for flexibility and choices when looking at alternative solutions, whether new fuels or technology such as carbon capture. OCIMF's priority is to maintain a clear focus on risk management, training, handling and practicability of implementation."

Low carbon fuels initiative

OCIMF has joined the "Renewable and Low-Carbon Fuels Value Chain Industrial Alliance", a European initiative that focuses on boosting production and supply of renewable and low-carbon fuels in the aviation and marine sectors. It has participants from fuels supply and demand sides, from the aviation and waterborne sectors, as well as organisations, governments and agencies.

Mooring safety videos

OCIMF noted that a range of mooring safety videos has been created and uploaded to YouTube by the European Harbour Masters Committee, a regional committee of the International Harbour Masters Association. OCIMF participated in development of the videos.

The new series features seven short videos aimed at making the mooring process safer and more efficient for personnel and preventing damage to terminal equipment and vessels. All the videos can be accessed free of charge on the IHMA website.

New Quality Assessor

Tony Jones has joined OCIMF as Quality

Assessor for Europe. He started his seagoing career with Shell in 1977 and has been a SIRE inspector since 1998. He has been involved in the SIRE 2.0 project since November 2020.

"SHIELD" taxonomy

OCIMF was invited to attend a one-day workshop on the Safety Human Incident and Error Learning Database (SHIELD) taxonomy and its benefit to the maritime domain, organised by the SAFEMODE project.

The taxonomy was run by the University of Strathclyde. SAFEMODE is an EU-funded project that works towards strengthening cooperation between the aviation and maritime sectors in the area of human factors,

SAFEMODE stakeholders include regulatory bodies, shipping companies, accident investigators and training establishments, who are using the taxonomy to help develop the practical implementation of accident, incident and near-miss investigations. An online version of the taxonomy will be made available to wider stakeholders in autumn 2022.

ECDIS good practise

The IMO Sub-Committee on Navigation, Communications and Search and Rescue (NCSR) held its 9th session virtually from 21 to 30 June.

OCIMF submitted a paper on the proposed amendment to SC.1/Circ.1503/Rev.1 "Revision of ECDIS Guidance for Good Practice" and is pleased to note that most of the proposed suggestions have been included in the revised MSC circular.

It states that "any updates essential to make an ECDIS compliant with the performance standard should be particularly identified and be actively communicated to the user of the system."

"A manufacturer, upon receiving information on a malfunction of their product, should communicate the symptom and mitigation measures to the flag administration(s) and the recognised organisation(s) and identified users, at the earliest possible opportunity."

"Manufacturers should have a mechanism in place to ensure they notify users of their ECDIS systems about any noted anomalies and close-out subsequently with relevant upgrades."

This report is based on OCIMF's May and June newsletters – the full text is available free online at https://www.ocimf.org/newsand-events/news/newsletter

What MEPC78 meant for tankers

IMO's MEPC78 meeting covered a number of areas of interest to tanker operators, including updates to emissions regulations, the Mediterranean Sea as a new Emission Control Area, and a review of ballast water regulations

mportant topics discussed at IMO's Marine Environment Protection Committee (MEPC) 78 meeting on June 6-10 were changes to greenhouse gas regulations, reducing air pollution, review of ballast water rules, anti-fouling restrictions, the Mediterranean as an emission control area, marine plastic litter records, and the work program of the committee and subsidiary bodies, said Daniel Barcarolo, Senior Sustainability Engineer, ABS, who attended the meeting.

MEPC78 was held part in person, part virtual, with 5 hours of discussion a day.

ABS discussed the outcomes in a webinar on June 14, "MEPC 78 Outcomes and Industry Impact."

The main discussion was about greenhouse gas (GHG) emissions. This included determining whether the level of ambition to 2050 and the initial strategy needed revising, and the outcomes of intersessional working groups.

IMO's GHG strategy agreed in 2018 was to reduce carbon intensity by 40 per cent by 2030 and by 70 per cent by 2050; and to reduce absolute GHG emissions by 50 per cent by 2050. The discussion was about whether that should be toughened.

A coalition of countries put together a proposal to phase out greenhouse gas emissions entirely from shipping by 2050, with additional progress checkpoints in 2040, and possibly strengthen the ambition for 2030.

Although other countries wanted to discuss availability of fuels and define more intermediate targets, Mr Barcarolo said.

Over 70 delegations of member states and observer organisations "took the floor" to share views on this issue.

The was an agreement for further discussion at the next meeting (MEPC79 in December 2022), and to finalise a revised strategy at MEPC 80 in Spring 2023.

The strategy for getting there is divided into short term, mid term and long-term measures. EEDI, SEEMP, EEXI, CII are

considered short term measures; marketbased measures are considered mid term.

EEDI, EEXI and CII

There were additions to EEXI regulations, including what to do if a speed-power curve is not available, and how to assess EEXI for ships with a shaft generator (generating power from the shaft rather than a separate generator).

For CII, there have been updated reference lines for roro vessels, and a new category of vessels "high speed craft".

More than 15 possible correction factors and exclusions were discussed; some were revised. some were rejected. They were assessed based on the capacity to assess them, the policy justification, and their accuracy. There will be further evaluation about CII correction factors and exclusions before 2026.

There are voyage exclusions, where the vessel and crew need to do something for safety reasons, or for sailing in ice conditions. There are fuel consumption exclusions,

including fuel for electrical generation, refrigeration / cargo cooling, cargo heating, reliquefication for gas carriers, and electrical/ steam driven cargo pumps on tankers.

There was discussion about correction factors for shuttle tankers and ship-to-ship transfers. There was a discussion about excessive port waiting time exclusion and adverse weather conditions.

There was a discussion about timelines for CII. Every year, data collection ends in December, the data is sent for review by March 31st the following year, and



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verification starts. If it gets an 'E' grade, a revised Ship Energy Efficiency Management Plan must be submitted one month later. The Statement of Compliance (SoC) deadline is May 31st. By Nov 30th, any company audits must be completed. Then the cycle repeats.

A Ship Energy Efficiency Management Plan should contain details about how the program will be implemented, what methodology will be followed, what data will be acquired, and how the carbon intensity will be reduced – whether through technical or operational measures. What impediments there might be, what contingencies are in place. What CII is required, and what the target is.

The lack of implementation of the CII implementation plan could be considered a "detainable deficiency" by Port State Control, Mr Barcarolo said. There will be further discussion at an "Implementation of IMO Instruments" meeting in July 2022.

The Data Collection System (DCS) may allow reporting of additional information, including the attained EEDI and EEXI, the "Annual Efficiency Ratio", and voluntary metrics.

There was discussion about whether to include shipboard carbon capture data in the EEDI and EEXI framework, many delegates were supportive, but there were comments that the technology is still under development and more data is needed.

Mr Barcarolo advises shipowners that they should start work on CII as soon as possible. Get a better knowledge on what CII rating their vessel will achieve, look at exclusions and corrections which apply to the vessel, understand what is driving the CII of the vessel, and plan what can be done to improve it, such as retrofit of an energy saving device. They should also implement monitoring tools, which streamline data collection and help take actions immediately.

Other carbon discussions

There was a discussion about using market-

based measures to encourage decarbonisation – participants seemed to agree that they are needed, Mr Barcarolo said. Proposed measures include a greenhouse gas fuel standard, an emission cap and trade system, a zero-emission vessel incentive scheme, "Agreement was reached to develop a basket of measures."

There was a discussion about the need to develop guidelines for 'lifecycle' (well to wake) emissions of marine fuels, including discussing which greenhouse gases to include, such as methane and N20, and to set up default values.

"A correspondence group will look at fuel pathways and feedstocks, and third-party verification mechanisms. It will provide an intermediate report to MEPC 79 and final report to MEPC80," Mr Barcarolo said.

There was discussion about using biofuel blends, and also other air pollutants, including NOx. There was a discussion about what level of biofuel content is required for a fuel oil to be considered a biofuel.

If it is under 30 per cent biofuel, it is considered to be a "fuel oil of blends of hydrocarbons derived from petroleum refining".

Ballast water

There was discussion about the ballast water management (BWM) convention and anti fouling systems. Member states consider these initial years of BWM convention as an 'experience building phase'; they are asked to collect information on how successful they think the convention is, which aspects have proved most effective, and which are difficult to comply with. "A convention review plan is being developed to identify areas for improving BWM system performance and reliability," Mr Gardemal said.

Member states will decide if a BWM system has been modified to the point where re-approval is needed. "The best thing - is to work with that administration and come to an agreement on what modifications could require a re-assessment for that approval," he said. Examples could be changes to active substance, dose, filtration, or the need for human interface.

A correspondence group will report progress in MEPC 80 in July next year.

The question of requirements for ships storing sewage or 'grey water' in ballast tanks on a temporary basis was deferred to MEPC 79 in December 2022.

Other discussions

There was discussion about scrubber discharge water into the sea, and a methodology for risk / impact assessment for member states to use when developing their own regional regulations.

There was agreement among member states to recognise the Mediterranean Sea as a new Emission Control Area. Vessels will be required to utilise fuel oil of 0.1 per cent sulphur content in this region. The earliest date for entry into force is May 1, 2024.

There was concerns that there may not be enough compliant fuel oil. "However, organizations representing the bunker industry gave their perspective that fuel oil supply will be sufficient, said Joseph Gardemal, manager regulatory affairs, ABS, in Houston.

A ban on the toxic antifouling component Cybutryne will come into force in January 2023. Guidelines were updated about how to sample to determine the presence or absence of cybutryne,

The requirement for keeping a garbage record book was tightened, lowering the threshold for ships to keep these records to 100 GT and above (previously it was 400 GT and above).

Much detail has been removed here for ease of reading – a more comprehensive report is available on the ABS website, if you Google "ABS MEPC 78 Brief"



How AET attracts and retains talent

Tanker operator AET has a staff retention level of 91 per cent, and an almost equal gender balance (44 per cent female) in its onshore staff. HR director Linda Murray explains how it does it By Linda Murray, Global Director, Human Resource & Facilities, AET

ET is owner and operator of more than 60 vessels including dual-fuel vessels, a growing fleet of Dynamic Positioning Shuttle Tankers and specialist lightering support vessels..

It has approximately 200 staff across seven offices in Asia, Europe, North and South America.

At sea, more than 2,600 personnel crew its fleet, employed by AET's ship managers. It has an additional 80 plus mooring masters and workboat crew dedicated to its offshore support vessels.

We have a rich cultural diversity, and also benefit from the diversity of multi-generations, gender, background, skills, experiences and

opinions.

We ended 2021 with a retention level of 91 per cent. One of the main reasons is our focus on individual development in a meritocratic culture.

Yet the industry still suffers from an image problem outside our bubble, with a common misconception that it is slow to evolve, and lacking in opportunity.

To attract the right talent, we will need to compete not just within the sector, but with other sectors.

We must demonstrate how we can meet the demands and aspirations of existing and potential employees and promote a progressive and inclusive mindset.

We must invest in creative ways to



Linda Murray, Global Director, Human Resource & Facilities, AET



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AET, cultivating talent excellence

attract rising young people who are building their career paths for the first time while concurrently discovering their interests.

We must be prepared to evolve our talent strategies to keep pace with the changes within the sector.

Inclusion / diversity

We focus on creating an inclusive workplace for all. We know this drives greater understanding and alignment with our stakeholders. It also builds resilience to changing markets, while enabling us to stay flexible in serving our customers' needs.

We enjoy an almost equal gender balance (56 per cent male and 44 per cent female) amongst our onshore staff.

Our global team is represented by more than 20 nationalities. This range of backgrounds and perspectives keeps us balanced as a business. It ensures there is no hegemonic way of thinking to limit the formation of new ideas or opinions.

AET sees Diversity and Inclusion (D&I) as an essential component of its sustainability goals, and the focus has been on continuing to build trust and empowerment through an inclusive work culture.

AET benchmarks its diversity performance against the Bloomberg Gender-Equality Index (GEI).

We aim to grow diversity initiatives further, and equip leaders with the skills and ability to lead inclusively and with accountability. We have continuous and ongoing inclusion and self-awareness training and education of our people.

Learning

In 2021, our staff clocked a total of 4,840 learning hours via 3,286 learning places. In addition, there were 20 leadership and 95 functional programmes conducted through various modes of training delivery.

Most of AET's learning activities remained virtual during the pandemic, but there was greater emphasis placed on on-the-job learning . This included participation in strategic projects and secondments, allowing people to broaden skills, experience and cultural perspectives. Over 8 per cent of employees have been given an overseas secondment development opportunity in the last five years.

Given the significant challenges relating to sustainability, digitalisation and energy transition, constant upskilling of our teams is required to avoid a skills gap emerging.

Succession

Retaining and nurturing talent is pinned on having a clear leadership succession strategy. This means putting the structures and processes in place to allow people to learn from each other and encounter a diversity of skills and perspectives amongst their peers.

This includes group-wide leadership programmes, mentoring and line manager coaching communities of practise.

These programmes were supported by an annual 'calibration' exercise with our



AET interns on a conference call – part of AET's efforts to nurture future leaders

succession planning framework to identify and develop successors for group-wide critical positions.

The same is true of bridging people from onboard to onshore. Being able to transfer skills and perspectives from roles at sea into onshore professional services positions is vital to the ability to truly understand how to operate ships safely and efficiently.

Prospective cadets know from the outset that there are multiple career pathways available to them throughout their working lives.

Attracting people

The more challenging issue facing the maritime industry is attracting people from other industries, specialisms and educational backgrounds.

We have offered an internship programme for many years. In 2021, we welcomed 20 university interns in our offices globally, providing them with three to six months of hands-on training and experience in a variety of job functions.

Capacity building programmes such as internships are important as a means to attract people into the industry, some of whom, we are pleased to say, transitioned to become our full-time employees.

AET continues its cadet sponsorship programme in the Malaysian Maritime Academy (ALAM) with 460 approximate cadets sponsored over the past four years.

We also provide scholarships through the Singapore Maritime Foundation and Texas A&M University at Galveston, USA.

Expectations

The workforce of today across all global industries have different expectations of what is possible in terms of career opportunities and aspirations.

Many people expect to climb the career ladder faster and are more likely to jump between jobs. This is particularly true since the pandemic, because it forced individuals and organisations to reflect on what they are doing, why, and how.

Increasingly, a company's ESG agenda is a strong consideration in prospective candidates.

To promote better work-life integration, flexible working arrangements were piloted in AET in 2021, with an official launch across all our locations in early 2022.

Wellness activities are key incentives to enrich employees' working experience.

Every October, an annual wellness month is conducted to support the physical and mental well-being of our global workforce. Themes range from social and financial well-being to talks on mental health, basic first aid and alternative medicine by medical practitioners and health experts.

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ESG reporting for tanker operators

Tanker operators are increasingly being asked to report emissions related data, and data on other aspects of 'social' and 'governance' (ESG). INTERTANKO is formulating guidance

NTERTANKO members have been increasingly asking the organisation for more guidance and leadership on Environmental, Social and Governance (ESG) reporting, following requests from investors and charterers for this data.

In November 2021, INTERTANKO started

work on providing

said Tim Wilkins,

Deputy Managing

this guidance,

Director and

Environment

Director with

INTERTANKO.

He was speaking

at the OTG London



Tim Wilkins, INTERTANKO

User Group Conference on Jun 16. OTG is a maritime training technology company.

INTERTANKO has 184 tanker owners and managers as members, and 20 associate members, he said. An unusual aspect of this project from INTERTANKO's perspective is that the interests of both small and large tanker operators is very aligned.

For some time now, companies of a certain size and location have been subject to "Non-Financial Reporting" regulations from various jurisdictions. These do not typically impact tanker operators directly, because they are not the largest companies.

But there is a trickle-down effect. Tanker companies work together with many large companies which do need to provide the data, such as oil companies, trading companies and underwriters, Mr Wilkins said. Smaller operators are being asked by charterers for their ESG Policy.

Some large or publicly listed tanker operators are making their own ESG reports, he said.

"Some [tanker] companies are on their third iteration of their ESG report. They are probably publicly listed and have close ties with financial institutions. They are asking for better frameworks to help them to be more transparent."

INTERTANKO is also keen to make it easier for tanker companies to communicate what they are doing around ESG topics, including to people who don't understand how the industry works and what reporting systems it already uses, he said. INTERTANKO is developing a framework for what reporting should look like – the objectives are to be "understandable, relevant, representative, verifiable, comparable," Mr Wilkins said.

The reports can include qualitative data such as narratives and descriptions of initiatives being taken, not just quantitative data (numbers).

There is an important distinction between having a framework for reporting, and the specific methodologies and standards for reporting. Other organisations are developing the specific standards, such as the Global Reporting Initiative (GRI) and the Sustainability Accounting Standards Board (SASB).

But the INTERTANKO framework can help you select which ones to use. INTERTANKO is developing mapping tools, which show reporting elements which appear in a number of reporting schemes.

It would be better if the tanker industry establishes a reporting framework, rather than it being imposed from outside, he said.

It has set a number of aims from the work. It wants to make something specific to tankers.

It should be possible to use data which the tanker industry is already gathering, and the system should also be non-prescriptive, so it can be used with many different data types.

For example, companies could use data they are already gathering for crew management, anti-corruption, or TMSA, where it is relevant to ESG reporting.

Although people outside the industry often don't have a lot of understanding of tanker terminology and processes, such as TMSA, he said.

INTERTANKO is keen that it does not create an additional administrative cost or burden. "We didn't want another 'ISO' [type standard], we want to provide a map," he said.

Another requirement is that any reporting should be credible. Many industrial companies have been accused of 'greenwash', trying to convince people that they are more environmentally friendly than they really are. TMSA data is already credible, since it is assessed by an outside auditor.

INTERTANKO will now be promoting its framework. "We need to make sure it is recognised by our stakeholders - charterers, investors and regulators," he said. It could also link to a shipping specific standard which the Global Reporting Initiative (GRI) is developing, he said.

The efforts so far are just about reporting, which is different to actually improving performance, although they are assumed to be related.

We have seen charterers in the Sea Cargo Charter publishing a report showing their emissions performance, based on emissions from vessels they charter. But this doesn't show what they are actually doing to help the industry decarbonise, Mr Wilkins said.

INTERTANKO had been hoping the Sea Cargo Charter report would show how charterers would behave in different ways to drive decarbonisation, for example making a decision to charter more efficient vessels and having the discussion with owners about it.

How to do ESG



Kristian R Andersen, partner with The Governance Group, based in Oslo, shared some advice on how tanker companies should approach ESG, speaking at the

Kristian Andersen, The Governance group

OTG user event.

"It is important to have a structured approach to sustainability," he said. "You need to integrate reasonable targets into the strategy,

train people and have procedures in place.

Many companies make the mistake of seeing it as a compliance exercise, he said. But instead, you need to see it as something you need to develop a strategy for.

"You need to have a story to tell, not just report. You need to have measures that make sense.

In the past, some companies appeared to think what was of most importance was the size of your ESG report, not the substance behind it. But thankfully this is now changing.

Mr Andersen formerly worked at the UN and Norges Bank. He is currently involved in setting up "sustainability linked bonds," where a company receives funding with a structure with sustainability targets and penalties if they are not reached.

Training challenges with decarbonised fuels

There will be big challenges training seafarers to handle decarbonised fuels. It leads to a question of whether we need seafarers with a higher level of qualification, and if they will want to work in shipping

here have been many future fuels suggested for shipping, which are all viable, but all have safety hazards. This includes the use of small nuclear reactors to power ships, said Captain Jeff Parfitt, head of safety and environment with the Nautical Institute.

"Serious upskilling of seafarers is required. The days of a motorman with a rubber hose and hammer are about to end."



Captain Jeff Parfitt, head of safety and environment with the Nautical Institute

"We cannot under estimate the people challenge that awaits us. We will need many new safety standards. I feel we are being complacent," he said.

He was speaking at the OTG London User Group Conference on Jun 16. OTG is a maritime training technology company.

Mr Parfitt shared particular concerns about ammonia fuel, because it can cause a fatal lung injury if inhaled as a gas. Liquefied ammonia can cause frostbite and corrosive injury to eyes and skin.

Ammonia fuel also needs a tank capacity of 2.5x the size needed by current fuels, and redesigned engines, he said.

The STCW training methodology, which assumes people are competent if they have the right certificates, will not work for the training needed for these fuels, he said.

The Nautical Institute is planning a 'Green Maritime Curriculum' to train crew to use new fuels, he said.

And if the industry now needs people educated to university level, then it is competing with other employers who also want graduates and may look more attractive to young people, he said. Or to put it another way, "if you had a degree why would you go to sea?"

"I went to sea for adventure, and I found it. But those days are coming to an end."

Automation

One pathway forward could be for the industry to make more use of automation, said Adam Lewis, head of training and operations, with employers organisation IMEC.

The shortage of seafarers is already leading to more interest in automation among members, he said. "Labour is already leaving us. Technology fills the gaps."

In this sense automation is not putting people out of a job, as it may have done when factories were automated. Instead, organisations are seeking out automation due to shortages of people, he said.

IMEC represents 260 shipping companies. One of its roles is negotiations with seafarer unions such as ITF. It also organises its members to make collective commitments. For example its members provide funding for training Filipino seafarers, with the amount of funding based on the number of Filipinos they employ.

IMEC's members employ 180,000 ratings and 145,000 officers.

IMEC sees the pathway to autonomous ships not as a binary change (is this vessel autonomous or not), but as a gradual pathway over decades.

It likes the automation grading system developed by LR, where level 1 is no automation and level 7 is fully unmanned and autonomous. On this scale, today's space



Adam Lewis, head of training and operations, with employers organisation IMEC

industry is about level 5, where much is done by automation, and astronauts are doing highly specialist tasks, Mr Lewis said.

On this scale, today's shipping industry is generally at between level 1 and 2, with some tools to help mariners with decision making, he said.

A cruise ship today has more automated tools for engine operations and navigation, which puts them at between level 2 and 3. In 10 years time, most new cargo ships will be like a new cruise ship today, he said.

After another 10 years, so 2042, automation in most cargo ships could be at levels 3-4, with officers having more of a role to supervise the vessel. At this rate of technology development, we may see fully autonomous ships in 2050.

A challenge related to the growth of automation is that shipping companies need crew with higher skill levels. A 2021 seafarer welfare report determined that there is a surplus of ratings. But shipping companies say that there is a shortage of ratings with skills to operate complex equipment.

So we are seeing "skill biased technical change" – technical changes which will lead to a bias towards more skilled people.

STCW cannot be relied on to keep pace with technical improvement, because the pace of updates is so slow. It may be until 2030 when a new version of STCW is released, and on current patterns, that will not be updated until about 2050, he said.

Mr Lewis noted that interest in seafaring careers has waned in the Philippines. 12 years ago, it was a popular choice – now technically minded young people are more interested in working for technology companies.

IMEC made a competency management system for ratings in 2021, describing 262 competencies needed by ratings on deck, engine and in catering.

The syllabus is based on IMEC's Competency Management System for Ratings (CMS-R) – see imec.org.uk/training/cms-r

For 70 of these competencies, it will make short videos describing what good looks like.

IMEC takes underprivileged school leavers in Philippines and trains them to be engine ratings.

OTG – making training time more efficient

Maritime training technology company Ocean Technologies Group (OTG) is working to make its training more time efficient. Here's how it can work

aritime training technology company OTG makes e-learning modules, some of which are used hundreds of thousands of times. If it was possible to make a few minutes cut to the time it takes to complete each module, it would add up to many hours of saving, said Knut Mikkelsen, learning solutions director with OTG.

At the same time, OTG wants to improve learning effectiveness – the degree the training is successful in producing a desired result. It is sometimes possible to measure this.



Knut Mikkelsen, learning solutions director with OTG

He was speaking at the OTG London User Group Conference on June 16.

Too often, learning products are promoted as 'solutions' which are nice to have. But the only way to have a good solution to any problem is to make sure the problem is well defined first – what outcome is needed and for who. That is the way to improve learning effectiveness, he said.

OTG is looking at "adaptive learning" – where the learning system can give different paths to reach a learning goal, just as in the real world. You can have four people with the same ultimate learning 'requirement' – what they need to know – but get there in different ways, with different gaps in what they already know.

"If people only do what they need to do, think of the time you would save," he said. OTG is redesigning its systems into small modules, each covering a specific learning outcome. Each learning unit is developed using the most suitable method. For example, a computer game 3D world type graphics, a lecture-style instruction followed by a quiz, a simulation where people adjust things to get the desired outcome.

Mr Mikkelsen illustrated how this can work by showing how seafarers could be trained about tanker inert gas systems.

An inert gas system is used to reduce the oxygen level in the gas in a cargo tank to a level where it cannot cause an explosion – such as by pumping in nitrogen (an inert gas).

There were separate software modules, providing awareness, knowledge, and application of the knowledge.

For awareness, it made a video showing how tank vapours were sometimes released to the atmosphere in the past, and how this led to explosion and death of seafarers. This was shown graphically with computer game style imagery. "Attribute / awareness is quite difficult to teach, you need quite strong visuals," he said.

For knowledge, there was a more traditional lecture-style computer based training video, discussing combustible vapour, the lower and upper explosive limits and the flammable range between them.

For application of knowledge, there was a simulation of the gas inerting operation. Seafarers could practise starting and stopping the inerting, so they would end up with gas outside the explosive limits.

By the third quarter of 2022, OTG will have over 100 modules like this.

It is also working on a new assessment platform. Assessment needs to be designed alongside the e-learning, because it is the only way to work out if the person has developed the necessary understanding, and if the course is effective, Mr Mikkelsen said.

The assessment platform will have tools to spot cheating, and test people's skills and ability to apply the knowledge, as well as the knowledge itself, such as with simulation assessments.

The assessment can lead to a learning 'gap analysis' – what is it that the person doesn't

know – and then update the person's learning requirements, and then find the training which fills the gaps.

Improving core technology

OTG is developing its core technology. A new "next generation" Software as a Service (SAAS) platform will be launched in 2024, with all OTG products accessible via a web-based interface. It will be possible for seafarers to connect to it onboard with mobile phones. This is part of what OTG calls its online first approach.

It is developing what it calls "remote proctoring", tools which monitor people's online exam submissions to make it harder to cheat – such as by asking them to have a camera and microphone switched on while they type their answers to the questions and detecting if anyone is assisting them.



Ian Hepworth, CTO, OTG

It recently recruited Ian Hepworth as its CTO. Mr Hepworth was formerly working on Software as a Service (cloud software) products as CTO of Ideagen, a software company which makes products for regulated industries and claims to be one of the world's fastest growing software companies.

Mr Hepworth is driving efforts to improve OTG's digital technology, including modernising the user interface, having a single sign-on to multiple products, and setting up an online store for selling courses directly to seafarers.



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Columbia's Leonid Zalenski – SIRE 2.0 and seafarer shortage

Captain Leonid Zalenski, group COO with Columbia Shipmanagement, shared perspectives on SIRE 2.0 and the seafarer shortage, speaking at the *Tanker Operator* Athens forum in May

IRE 2.0 is "a challenge which comes very soon to all of us in the tanker industry," said Leonid Zalenski, group COO with Columbia Shipmanagement, speaking at the Tanker Operator Athens forum in May.

"I'm afraid I do not have a recipe and do not have solutions. I can [only] bring the challenges."

SIRE stands for Ship Inspection Report Programme. It is developed by the Oil Companies International Marine Forum (OCIMF) to check vessels that oil companies charter are up to standard. The first version of SIRE was launched in 1993.

"I am young enough to remember the time before SIRE," Captain Zalenski said. "When SIRE was introduced in 1993, it was a revolution in the tanker business."

[At the time] "it was a big challenge to understand the concept of SIRE, implement it and get successful SIRE results."

Many people believed it would not work,

and the workload was too big. "But at the end we did manage, and we improved the safety standard in industry significantly." Similarly, "I am sure we will handle [SIRE 2.0]," he said.

I remember times when 7-8 observations during a SIRE inspection was [considered] a great success. "It is not anymore. Now, it is normal to have three observations or less in the SIRE report."

"We definitely managed to bring the safety of operation in the tanker industry to a much higher level than we had before SIRE."

SIRE also helped Columbia raise standards in its vessels which are not tankers.

"In our organisation we operate a fleet of close to 300 vessels, half of them are tankers. In terms of management system requirements, we do not differentiate between tankers and non-tankers. We utilise SIRE Vessel Inspection Questionnaire as the company standard of operation. Whatever is good for tankers is equally good for any other vessel when we are talking about safety of operation."

"By implementing this concept, we managed to improve the safety standard onboard our container vessels, general cargo vessels, bulk carriers, quite significantly.

So, SIRE "did the trick," he said. But it has reached its limits in driving further improvement. "You don't really identify areas of real concern any more, unless you have a complete failure," he said.

"In the majority of cases these observations are not really helping the industry to improve and increase the safety standard onboard."

SIRE 2.0

OCIMF started working on SIRE 2.0 "some time ago", initially calling it Vessel Inspection Protocol. Details were released in January 2022, with an initial plan to implement it in April 2022. Mr Zalenski participated in a tanker industry working group looking at it.

"By the beginning of February 2022, OCIMF decided to delay implementation of SIRE 2.0 to Q4. We know it is going to be October, which is fantastic news. But at the time nobody know about the intervention in Ukraine. SIRE 2.0 is something we have to expect in October, I don't believe there will be any further delay."

"There will be some grace period for 6 months when the inspecting company will decide whether a vessel goes for SIRE 1 or SIRE 2.0. But we need to start preparation."

There will be complexities with the two types of SIRE in use at the same time. The same vessel could have a SIRE 1 inspection and get 1 or 2 observations, then a SIRE 2.0 inspection and have a longer list of observations. Will the screeners understand that they are equivalent performance, or will there be an advantage to getting a SIRE 1 inspection? The answer is not yet known, he said.

"OCIMF did a fantastic job preparing this. I have seen a draft of training modules offered



Delegates at Tanker Operator Athens

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Captain Leonid Zalenski, group COO with Columbia Shipmanagement

by OCIMF, a short video for the crew and a bit longer video, 45 minutes, for the ship operator. The video for the operator is very comprehensive. Compared to many other releases in the industry, OCIMF did their management of change properly, I would say."

Changes with SIRE 2.0

"The difference between SIRE 2 and SIRE 1 is very simple."

"SIRE 1 was a snapshot of vessel's condition at the date of inspection. The inspector comes onboard, reviews the status of the vessel's condition, status of machinery, status of equipment, and he records this in the report."

"The intention of SIRE 2.0 is to bring the human element into the process of vessel inspection, actually connect the processes, the hardware, and human element and see how the vessel is managed in the long term."

"It also brings certain TMSA elements into the process. It puts a lot of consideration on the human factor. The inspector will perform interviews of crew members at all ranks."

The inspector will seek to identify what is known as "performance influencing factors," and these will be recorded in the SIRE report.

Uploading documents

The inspection will start well before the physical attendance of the inspector onboard.

All tanker operators had an experience with remote SIRE inspections during the Covid period, being required to upload data to the OCIMF database, rather than documents being physically inspected. "This concept is largely implemented in the SIRE 2.0 process," he said.

The tanker operator will need to complete pre-inspection steps in advance. They will need to complete pre-inspection questionnaire, upload all related certificates and some specific photographs to the system. All of this will be reviewed by the inspector before going onboard.

It may not be possible to arrange inspections at short notice anymore. This could cause planning complications, such as if a vessel is asked to go to a different discharge port with short notice.

Physical inspection

In the physical inspection, the inspector will carry an explosion-proof tablet computer, which will be used to take photographs and record findings. The photographs will be timestamped. The software will record how much time during the inspection was spent doing various tasks.

If the inspector sees anything wrong while walking around the vessel, the observations must be reported on the spot using the tablet, rather than submitted later.

The inspector will be able to compare photographs submitted in advance with what can actually be seen, so shipping companies will need to ensure that all the photos they submit are taken recently.

The inspection report will have 4 categories of finding – 'exceeds expectation', 'as expected', 'largely as expected', 'not as expected'. 'Largely as expected' will be considered a negative answer.

The minimum duration of the physical inspection will be 8 hours; there is no maximum.

Questions

The inspector use compiled vessel inspection questionnaire (CVIQ) generated by the system based on the data uploaded. The questions will be detailed and comprehensive. There will be core questions, rotational questions and campaign questions.

The core questions are asked in every inspection. The rotational questions might be assigned randomly, or assigned to a certain vessel every third inspection, or asked every time with a certain company.

The 'campaign questions' will not be included in a published 'question library'. They will be on areas where OCIMF wants to make particular emphasis, like the concentrated inspection campaigns from port state authorities.

"There will be no two identical inspections anymore. Even the inspector will not know which questions will be generated for him by the system," he said.

For the crew interviews, the inspector is required to interview people from all ranks onboard.

The interviews are not intended to be challenging for crew. They will be asked to explain what they do onboard, what the processes are, and detailed answers are not required. "Show me what you do, what is your task, what is your level of involvement, what are your duties, where are these duties recorded in your management system".

It is possible that seafarers will not have sufficient grasp of English to do the interview,



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even though they speak English well enough to do their jobs and follow instructions. And the stress of the interview may make this worse.

Post inspection

If during the closing meeting, the crew manage to convince the inspector that a certain observation was not justified, or has a valid cause, the inspector cannot just delete it. Instead, the inspector can add an additional comment, showing why the observation recorded initially was removed from the final list.

The tablet does not have any connection interface, so if a ship wants to get a list of the observations, they will need a wi-fi printer.

Inspection reports will be valid for 6 months.

Preparing for it

In preparation, Columbia has been reviewing the question library, and completing gap analysis, ensuring its management systems cover everything that may be required. It is defining a 'company position' on how it would answer each question, what evidence it could provide, and how it relates to the core management system. Columbia is also making its own training module for office personnel and crew.

Tanker operators need to plan for an increased workload. "If you have one or two persons in your vetting team in the office, they may not be able to cope with the workload. The amount of information which needs to be uploaded to the system before the inspection will be unbelievably high."

Tanker companies should also expect an increase in the number of observations – which also means more work. For each observation, the company will be required to note the immediate cause, root cause, corrective measures and preventative measures.

Software systems could be helpful in helping people quickly find the relevant requirements from their management system, to answer questions more quickly, and to follow up on findings, he suggested.

Then there is the question of the commercial impact. Every oil major has different criteria for screening a vessel. The same vessel can pass five screenings and be rejected on the sixth, all using the same vetting report. Although this is something tanker companies are used to, and SIRE 2.0 will not necessarily increase the likelihood of getting rejected.

All tanker companies will start off with a similar level of compliance, and they will gradually get better at it, he says.



Panos Chatzikyriakos, HSQE Director with Unitized Ocean Transport Limited, talks at Tanker Operator Athens

OCIMF has already run a number of trials with tanker companies, although they were required to sign non-disclosure agreements, so have not shared much about their experiences. "I've spoken to people who went through the trial, they said it's a challenge, but we need to manage."

Will it work?

The most important question is whether SIRE 2.0 will lead to improvements in safety.

"To be frank, I do believe its going to improve safety," Capt Zalenski said. "People will [better] know what they are supposed to do onboard, we will spend more effort training our people."

It should also shift focus on better support for the human element. While most people are familiar with the basic human element concepts of supporting people rather than blaming them, not all companies put it into practise.

Captain Zalenski is very keen on more focus on the human element. "We all make mistakes, and it is so easy and so attractive to blame and punish, when in fact we need to learn and improve. It is a balance which can be difficult to find."

Seafarer shortage

Another big challenge for tanker operators now is the seafarer shortage following the Russian invasion of Ukraine, he said.

The industry had a seafarer shortage even before the invasion. "All of us in the tanker industry are familiar with these challenges, these did not start yesterday and will not end up tomorrow," he said. "The Russian intervention in Ukraine created more problems and made it more complicated for all of us."

The industry statistic suggests that 10 per cent of tanker crew are Russian and 4.5 per cent are Ukrainian. "In our fleet the proportion may be even higher."

"As you probably know, male Ukrainians age 18-60 are not allowed to leave the country for obvious reasons which is fully understandable. But it doesn't help us, if we need to replace a significant part of our crew."

Before having an OCIMF inspection, tanker operators are required to fill in the online Officer Matrix, with data about crew rank, nationality, certificates, issuing country, training, years with the operator, years in that rank, years on that type of tanker, date joined the vessel, standard of English, and other questions.

Replacing Russian and Ukrainian crew with new crew, including crew with experience on other types of vessels, or crew promoted from junior ranks, will mean lack of compliance with qualification requirements set by major oil companies, he said.

"I know that INTERTANKO approached OCIMF and suggested it take a more pragmatic approach when they screen vessels for business. I think we all know this pragmatic approach was encouraged in the COVID time. Sometimes it works, sometimes it doesn't. Each oil major has their own level of risk appetite. We don't know how they will react."

Columbia is looking for new sources of crew supply, and helping people within the company to move up the ranks.

Up to now, when people fail promotion interviews, they have been told, 'you are not ready now, try it again after one contract, two contracts', Captain Zalenski said.

"Now we don't have the luxury to do this. I suggest to my team to summarise the reasons of interview fails. If we see a lack of certain skills and experience, you can develop a focussed training model, try to build up your people and promote them faster."

"It is more attractive than getting new recruits. People are familiar with your system, you know them, the level of trust is there."

Whether [recruitment challenges] will disappear in two years or stay for ten years, I can't predict, and I don't think any of us can predict."

"I don't have all the answers but I thought I'd share the challenges with you," he concluded.

You can watch Captain Zalenski's talk on video – see the 'videos' tab on www.tankeroperator.com



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The 2010s, the changing risk picture, and the human element

The tanker industry looks very different to how it did in the 2010s - and we are still not grasping the risk of 'black swan' events, or giving our 'human element' the space they need to manage them, said

ooking back to the 2010s from the problems of today, they seemed like a "wonderful decade", said Martin Shaw, managing director of consultancy MOAMS and president-elect of IMAREST, the Institute of Marine Engineering, Science and Technology.

He was speaking at the Tanker Operator Athens forum in May.

In the 2010s, people assumed that epidemics were local, globalisation would work, it was efficient for countries to specialise in something, and Russia and Ukraine specialised in producing wheat. The need for economic co-operation would stop anyone invading another country

Factories did not keep much in stock, because they could expect new deliveries to arrive when they needed them. "The container ship became the world's warehouse," he said. People realised the fragility of this with container ship Ever Given running aground and blocking the Suez Canal in 2021.

People had more time to think about the environment in the 2010s. While not denying it is a big issue, today it is one of a number of things people can worry about, he said.

And today, as a result of the concern for the environment in the 2010s, we have equipment onboard which have their 'challenges', including scrubbers and ballast water treatment plants, he said.

Another way to reduce carbon emissions, if that was truly the priority, would be to reduce actual shipping trade by shortening supply chains, but that is seldom considered, he said.

The number of low carbon ships being ordered today does not seem anywhere near enough to achieve IMO's target of a cut in carbon intensity of 40 per cent from 2008 levels, by 2030, and a 50 per cent cut in total GHG emissions by 2050.

There are significant technical challenges. "We know a lot about LNG, but we don't know much about ammonia."

In the 2010s people thought digitalisation

Martin Shaw

would change the world for the better, such as with autonomous ships. But we are still nowhere near having them. "It is not going to happen quickly, there's no pressing social, economic or safety case," he said.

In the tanker shipping industry in the 2010s, more and more procedures were written. The work to build procedures goes back to the introduction of the ISM code, following the 1987 Herald of Free Enterprise disaster. Before that, people thought that it was enough to have competent people and good hardware, Mr Shaw said

The writing of procedures increased with the introduction of SIRE in 1993, with industry best practise being codified and enforced through them. There is no doubt procedures have made a difference, but it needs all good people and good hardware to improve safety.

Over time, a law of diminishing returns has set in. "We've got less and less benefit from more and more process. And now we have increasing workload and increasing complexity [from them]," he said.

Risk analysis

Risk analysis was also a big theme in the 2010s. identifying the size and likelihood of risks. There was a theory that by gathering data and doing statistical analysis, we could work out what the biggest risks are. But "again the law of diminishing returns hits there," he says.

Today, the biggest risks can be high severity, unpredictable and rare events which are beyond the realm of normal expectations. These risks were given the name 'black swan' in a book by Nassim Nicholas Taleb.

"There's more 'black swan' events than you think. They are happening more and more regularly. The world is changing more quickly, so we get more and more."

Examples can be from ballast water systems not fully understood (there have been car carriers capsizing for this reason); technology to reduce emissions having implications which are not understood; and digital technology having



Martin Shaw, managing director of consultancy **MOAMS** and presidentelect of IMAREST

an insufficiently human centred design, so it is hard to use.

"My argument these are problems we're going to have to deal with. Its not going to stop anytime soon."

Replacement ships are going to be more complex, "you need

an educated workforce to build them.

Shipowners have limited budgets. "You've got to balance what you have to pay for, and what you might want to pay for."

Human element

We are supposed to be now in the era of the human element, "but we're not really getting there," he said.

"I had a conversation with someone very senior in IMO not so long ago where they said, '80 per cent of incidents are caused by the 'human element'. I said, no, the human element is a means by which we avoid accidents. If 80 per cent of accidents are caused by the human element, we've got a problem."

He may have meant that 80 per cent of accidents are caused by 'human error', a frequently heard statement, but Mr Shaw has not been able to trace it to any actual study.

"Actually, 100 per cent of incidents are caused by human error. But not error by the seafarer, they are errors by those ashore including class society, shipbuilders, equipment suppliers, regulators, shipowners. The seafarer is just the last person in the chain."

"If we ever do get total unmanned ships the percentage of incidents caused by human error will still be 100 per cent."

"My argument is, the skills that you need to reduce incidents are engrained in the seafarer. These are the ones you need to deal with the world at the moment. To [be able to] think

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effectively about things and not be driven by process."

An example of an error caused by people other than seafarers is when they are put under time pressure.

This is not a new problem – the accident report into the Titanic stated, "the loss of the said ship was due to collision with an iceberg, brought about by the excessive speed at which the ship was being navigated."

This report led to the creation of SOLAS and ultimately the IMO. But there's still nothing in IMO regulations now that deals with the risk of putting people under time pressure, he said.

The Titanic accident report did not blame the captain, stating, He couldn't be blamed for things that other skilled men would have done in the same position'.

Another force which can increase risk is the drive for 'optimisation'. "It drives you to minimising manning, both quality and quantity," he said. "You reduce margins, create a tighter and tighter world, you assume that you can cover all scenarios. It is very centralised; you don't give people any scope."

The opposite of this is to find good quality decision makers for employees and crew and give them the space and permission to make and follow decisions. This means you have spare adaptive capacity to recover from any problem, including manning, spares and tools.

"The most important thing about it is, you've got a diverse group of professionals who can work together closely, rather than [having] people above them who say, 'this is what you're going to do,'" he said.

"The simple fact is - you've got to be prepared for the unexpected because that's what's going to happen. You don't prepare people for the unexpected by turning them into robots. It's all about leading people to a position where they can think rather than just react."

Mr Shaw is part of a group which is working to bring in requirements at IMO that human element issues should be considered with every regulatory change. The group's suggested requirements were approved by IMO's Human Element Sub Committee in May 2022, and now just needs approval from the Marine Environment Protection Committee to be accepted. "Every new piece of regulation at IMO will have to go through this process to make sure it can be operationalised," he said.

Charterers and SIRE 2.0

Oil company charterers are asking for higher standards for tanker operations via OCIMF, although they are keeping these demands separate to the commercial discussions.

This is leading us to have a split market in tankers – vessels which are in the vetted pool, which follow the higher standards, and vessels which aren't and don't.

There are about 7,000 vessels in the SIRE database, and 30,000 to 40,000 tankers in the world, Mr Shaw said. "More and more tanker cargoes are in the 'unvetted system' than there were before."

"If you are a Chinese national oil company, picking up a cargo from Angola - its a fair chance the ship is not necessarily vetted, unless the loading terminal requires it. There are more and more bipartite deals being done nationally. Is China going to let vetting get in the way? No."

Also, charterers are not offering more money for the higher standards they ask for. They argue that shipowners will have no option but to spend the money in order to stay in business.

"The rate the charterer pays depends on that spot in the world, that position in the world at that time. It is not a question of preference for owners."

The SIRE program is about providing information to the charterer. In the early days of vetting, it became clear to vetting inspectors that their job was to make the largest number of acceptable vessels available to chartering organisations, Mr Shaw said.

You can watch Martin Shaw's talk on video and download slides – see the 'videos' tab on **www.tankeroperator.com**



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Crew challenges – shortages, costs, fabrications, restrictions

Crewing challenges today include a shortage of people, rising costs, seafarers fabricating experience, travel restrictions, and increasing safety reporting requirements, said Konstantinos Galanakis of Elvictor

hallenges for tanker operators with crew today include recruitment in general following the Russian invasion of Ukraine, rising costs, fabrication of experience, trade sanctions, charterer requirements and safety reporting requirements, said Konstantinos Galanakis, CEO of crew management company Elvictor Group.

He was speaking at the Tanker Operator Athens forum in May.

"Daily operations are more difficult than they used to be in the past," he said.

Crew shortage

There have been forecasts from the International Chamber of Shipping of a seafarer shortage of 274,000 people if Russian and Ukrainian crew are no longer available. It estimates that 10.5 per cent of all crew are Russian and 4.3 per cent are from Ukraine. On tankers, the proportion of Russian crew can be as much as 30 per cent, Mr Galanakis said.

Half of Ukrainian crew are unable to leave Ukraine, with the other half of Ukrainian crew resident in other countries. A shortage of 2 per cent can be confirmed, he said.

Many charterers are requesting Russian seafarers to disembark, which Mr Galanakis sees as unfair. "Russian seafarers are not politicians," he said.

"It is going to cause problems in manning of the vessels. We will end up with many new tankers and no crew to man the vessels."

The solution is that ship managers have to provide cadetship and promotion programs, and offer benefits and incentives. They need more focus on crew welfare and other matters of importance to crew, he believes.

There are not many cadet schemes today. Rather than train people themselves, tanker companies are trying to recruit crew from other companies.

9 years ago, in 2013, Elvictor Group decided it would look at crew recruitment from Georgia. "It was very hard and a big risk," he said. But by 2020, it had over 1200 Georgian crew on its books. Since the Ukraine war, 73 vessels have decided to switch to Georgian crew. Crew from Georgia mainly have experience on product and chemical tankers; not so many have experience with LPG vessels, containers and bulk carriers.

"There's not enough pool there to solve the shortage we face," he said. "The need is to develop junior officers for LPGs, containers and bulkers."

Another option is to work with more Ukrainian crew who do not live in Ukraine. But "the logistics are crazy," he said. For example there is the challenge of working out how they can renew Ukrainian certificates, without having to go back to Ukraine.

Seafarer wages

Meanwhile, many operators who did not work with Filipino seafarers before are now looking to recruit them. Filipino crew have recognised they are in more demand, and are raising their prices.

"For a tanker - most were giving \$12,500 [a month] for a captain, if it is the first time with the operator."

"Now they request \$13,500 - \$14,000 in the Philippines through their applications. They have another two pages of requirements and incentives."

"The seafarers are price makers and not price takers, especially over the last 2 months (Apr-May 2022).

Elvictor Group uses Facebook to keep in touch with Filipino crew – since they may move house or change mobile phone, but they don't change their Facebook account.

But it has seen Facebook discussion groups for Filipino seafarers sharing tips on how much money different companies pay and how to file claims against a company, he said.

Crew who have been loyal to one employer for many years are now reviewing their options and applying to crew agencies, wondering if they could make more money elsewhere. "The giant companies have invested a lot of money to make them senior officers."

"Croatian seafarers are known as the top in shipping - but the most expensive in shipping. The budget goes up 7 -8 per cent."

Wages are not the only crew cost to increase.



Flight costs for crew have doubled compared to a year ago, he said.

Fabricating experience

Some seafarers have been submitting false information about their experience.

Konstantinos Galanakis, CEO of Elvictor Group

"There are a lot of fake previous sea services," he said.

It would be useful if maritime authorities maintained a system of record. The Philippines said at one point they would make a national database of crew experience, but it never happened. Ukraine had a database, but it was not kept up to date.

"There is not a global database that guarantees the previous sea service of a seafarer today," he said.

Elvictor does its own checks on seafarers' past experience. It builds up its own database about vessel locations in the past, and which crew were on them.

One way to spot fakery is if seafarers have a stamp in their documents about when they signed on or off a vessel at a certain port, but the vessel was not in that location at the time, he said.

"We have developed as much as feasible to our powers."

But still, much of the data submitted by shipping companies about crew experience to OCIMF in the Officers Matrix may be based on fabricated data, he said.

Trade sanctions

An issue related to the Russian invasion is the sanctions and associated restrictions on travel. These can make it hard to do crew changes in some ports. Scheduling crew is getting increasingly difficult and there are concerns that it could get worse.



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"Geopolitical tensions will test the sustainability of shipping operations," he said. "We never know how this will escalate to the rest of the world."

"We have to think also what will happen with China. It is not only Russia. If this happens, we are talking about 3-4 nationalities that will be 'extinct' [in terms of supplying crew]."

"One of the biggest threats is the Philippines. If something happens there, God knows what's going to happen, due to geopolitical tensions, conflict between US and China."

Charterer requirements

If tanker companies have to replace Ukrainian and Russian crew, there will be an impact on submissions to OCIMF's Officer Matrix, where companies are required to declare how long each crewmember has been employed on a certain ship operator and in a certain rank.

"If a tanker company has a full Russian crew and needs to remove them to meet charterer demands, they must have a completely new crew – so a crew retention of zero and zero 'years with operator," he said.

It would be useful if OCIMF's officer matrix could be relaxed just for a short period, "in order to provide more space for new seafarer entrance."

To add to the complexity, some charterers are saying they don't want more than two or three different nationalities on a ship at once, he said. "This can't be done in today's world."

Charterers have specific concerns about having Ukrainian crew onboard, thinking they may want to leave the vessel to join the Ukrainian army, or to look after families who have left the country.

Safety reporting

Another complexity for crew is the continuous increase in volume and complexity of safety related reporting, he said, including TMSA 4 and SIRE 2.0.

"If you compare safety rules today with how it was 5 years ago, shipping companies have over 300 control documents onboard they have to fill in," he said. "Seafarers have to keep taking photos, writing reports."

The documents can only be completed by people, the work cannot be automated, he said.

Organisations making rules never seem to check with shipping companies what is actually going on, or whether the rules are in conflict with other rules. They just "do whatever," he said.

BSM – developing a just culture

BSM lives by the philosophy that making mistakes is human but that not all mistakes are the same and individuals remain accountable for what they do. Adele Crothers from BSM explained what this means



ernhard Schulte Shipmanagement (BSM) lives by what it calls a "just culture".

This means "it recognises that no human is perfect, that all professionals will make mistakes and that most incidents are the result of complex interaction between people, conditions and processes," said Adele Crothers, Customer Relations and Business Growth Manager BSM Greece, speaking on behalf of Theophanis Theophanous, Managing Director, BSM Greece.

"A Just Culture acknowledges this fact and prioritises learning from mistakes over punishing mistakes. It means that we should not be afraid of raising our hand to make an observation or say 'I've made a mistake'".

She was speaking at the Tanker Operator Athens forum in May.

While a just culture recognises that mistakes and unhealthy habits can happen it still means that people can be held accountable for their



Adele Crowthers, Customer Relations and Business Growth Manager BSM Greece, with Martin Shaw (MOAMS)

mistakes. "A just culture differentiates between acceptable and unacceptable behaviour," she said.

"The vast

majority of unsafe acts are 'honest mistakes', mistakes that happened unintentionally. These can be reported with no blame or punishment."

If an honest mistake occurs the company aims to offer support to help understand what went wrong and how to learn from it.

"The main focus of our culture is support, training and coaching, rather than punishment," she said.

"However, there are certain types of behaviour - 'wilful violation' and 'reckless conduct'- where action must be taken."

Wilful violation is "when a person knew there would be an undesirable consequence to an action but went ahead and did it anyway".

Reckless conduct is "when a person knew there may be an undesirable consequence but went ahead with the action anyway".

The "stop work" authority is an important part, ensuring that everybody is comfortable demanding that work stops immediately, if anything unsafe is happening or developing.

As part of the "learning culture", people should be encouraged to want to improve. "Everyone from leadership down has to be aware of the company values. The company values are there to guide everybody," she said.

BSM keeps records of "exceptional behaviour", which can be shown to others as an example.

To improve, you also need the ability to adapt, and an ability to see a bigger picture. "This has to start from the senior management, or it will never work," she said.

"Our aim is to encourage all employees ashore

and onboard to participate and contribute."

BSM develops manuals in a handheld format which state what needs to be done in a concise way, and where it is easy to find what you need. The manuals are also available online and can be viewed on mobile phones. This is a manual publishing approach adapted from the aviation industry, she said.

Supporting crew

"We have to make sure crew stay healthy, motivated, with high morale, not only physical wellbeing, also mental well-being."

BSM encourages interaction between crew members, including cooking classes, exercise classes and competitions, such as table tennis or karaoke. The philosophy is "keeping everybody close".

It provides a 24h multilingual helpline to crew mental as well as health awareness videos onboard.

There is an online "BSM seafarer portal" for crew to use via mobile phones, including a facility for chat with the office, understanding crew assignments, monitoring finances, tracking the location of other BSM vessels. They can see if there is another BSM vessel in the same port.

It includes checklists they should follow and company policies they should be aware of before joining a vessel.

Bernhard Schulte is a family-owned business. "We try to offer services from that perspective," she said. "The key operational factor is the crew. A ship is only as good as the crew onboard."

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How Pleiades uses Ecospeed coating to reduce rudder damage

Pleiades Shipping Agents, a tanker operator based in Athens, used Ecospeed coating from Hydrex on its rudders to stop cavitation damage. Here is the story

leiades Shipping Agents, headquartered in Athens, Greece, operates a fleet of five Panamax, three Aframax, three Chemical/ Product tankers and has on order two new Aframax tankers to be delivered beginning 2023.

The company has a 50 year history, and was formerly one of the largest operators of multipurpose general cargo vessels in the world. IT entered the tanker market in the 1980s.

It built 10 Panamax vessels between 2002 and 2006, and 5 new build tankers between 2011 and 2018.

With the Panamax vessels built in 2005 and 2006, it was experiencing erosion problems on the rudder blades, and a 'wake equalising duct' on the propeller, resulting from cavitating flow.

The propeller duct is a hollow ring with hydrofoil-shaped section forward, and fin-like or plate aft, all the way around.

The problem was most severe in the forward part of the hydrofoil (underwater fin) section, facing the water flow, said Dimitris Gyftopoulos, Naval Architect and Marine Engineer at Pleiades.

Cavitating flow is when the negative pressure (sucking) behind the rudder blade



Cavitation damage on the rudder of the MT Asopos, a sister vessel to the Aliakmon, in 2015 prior to Ecoshield application

causes any gas in solution in the water to come out as into bubbles, like when opening a bottle of carbonated drink. These bubbles can then collapse and cause big impact loads on the rudder blades.

In every dry docking, the company had to do a large amount of welding to replace eroded metal, or it was covering up the deep pits with epoxy filler material, then grinding and applying paint.

In 2013, the company started working with two sister companies, Subsea Industries and Hydrex, to try out their "Ecospeed Protection Coating", first launched in 2013.

The relationship was via N. Bogdanos Marine Bureau, a ship repair and underwater service company, which represents both Subsea Industries and Hydrex in Greece.

Ecoshield was first applied on the tanker Evrotas, when in drydock in Poland in 2013.

"The decision to apply the coating on the first vessel was not an easy one," Mr Gyftopoulos said. ""But the results obtained made the choice to extend the coating to other vessels obvious. We started applying it to the other ships, one by one."

"Later on, when we saw the vessels in drydock the next time, 2-3 years later, we had the positive result of having a rudder blade and a propeller duct ring in practically intact condition."

"I am the one who usually drydocks all the sister [vessels] so I saw the result was astonishing."

"Even now with [vessel] Xanthos a few days ago, my memory is fresh, after the high pressure washing to remove all the slime and dirt from the entire hull, we could see that the rudder blade and propeller nozzle were in excellent condition. We did not have to do anything. "

"The Ecoshield was applied seven years ago. It's still there.

"There was a section which had some minor damage, most probably mechanical, and this was washed down and repainted. Apart from this, the entire ring [of the propeller duct] was excellent. We did not have to do anything. It's



MT Aliakmon's rudder in drydock in 2020, still in excellent condition 7 years after the initial application with no repaint.

fantastic."

"She is already 17 years old, and I don't know how long the owner will keep her, but I think for the remaining years of her life she's going to be a beautiful lady."

Dry dock time

Using Ecoshield also means a saving in dry dock time of between half a day to a day, Mr Gyftopoulos said.

"If you have a rudder blade that is really bad, you have to apply welding or a popular filler from another company, you have to wait for it to dry and then grind it down, then do steel work on the duct. You could lose a day."

"The market right now is \$15-20.000 per day so you can save \$15-20.000 off the drydock just for one off-hire day."

"In one drydock period, you recover your money. Since it will last for several drydockings it is definitely a cost-effective measure."

HiLo - getting insights from your safety data

HiLo Maritime Risk Management is helping tanker operators get insights from their safety related reports. It has 55 shipping company clients. Here's how it works

a UK company, is helping tanker companies get insights into their biggest risks – by analysing their data and providing objective insights.

The company receives data from incident management systems, but also looks at other data which may indicate risks, including vetting observations, and items flagged in the maintenance system, such as equipment being broken or problems with repairs.

The project was first set up in 2016 by Shell, Maersk Tankers and LR.

The first prototype of the system was developed by Shell and Maersk, built by LR Energy Consulting, and peer reviewed by academics from Imperial College, London. The final statistical analysis system was developed by UK company Select Statistics.

Eight further shipping companies joined in 2017 to be part of a second pilot, including Gaslog, Maran Gas, Northern Marine, Stolt, Teekay (now Seapeak), Torm, Tsakos Columbia Ship Management and V Ships.

Because these companies were involved in setting up the system, they started with a high degree of trust, says Emily Dyson, marketing manager of HiLo. They also recognise that since HiLo is not a regulator or charterer, the data cannot be used to the shipping company's disadvantage.

Current customers, according to HiLo's website, include Almi Tankers, Andriaki, K-Line, Avin International, BSC, BSM, Blue Planet Shipping, Bourbon, Bumi Armada, BW, Chevron, China LNG Shipping (CLSICO), Costamare, Columbia, Dorian LPG, Euronav, Executive Ship Management, Gaslog, Latsco, Maran Dry, Maran Gas, Maran Tankers, Minerva Marine, MOL, Northern Marine, NSML, Optimum Marine Management, POSH (Singapore), Prime Marine, Scorpio, Seapeak, Seaworld, Shell, Stolt Tankers, Thome, TMS Cardiff

Gas, TMS Tankers,

TORM and V.Group.

The company is

expecting to receive

of various types

500,000 event reports

during 2022 from 55

companies, so 7,200

reports per company

per year on average.



Emily Dyson, marketing manager of HiLo

This is an increase from 221,000 event reports in 2021 and 184,000 in 2020.

Customers pay HiLo a fee per year, to get their entire data analysed. The pricing is based on the type of vessel and the size of the fleet.

Its data modelling steps are to cleanse the data, pull out useful indicators, run them through a statistical model, then rank the risks and help companies develop a safety strategy, Ms Dyson says. Each company receives a personalised analysis.

Trends across the shipping fleet can be identified because the analysis reports from HiLo for each company are themselves in a standard format. Companies are shown how they compare with the fleet average.

This means that HiLo does not have to compare granular data between one company and another. This would be very difficult to do or impossible, because every company keeps the data in different formats and follows different procedures. Companies use a variety of labels for incidents, such as 'unsafe acts' and 'near misses'.

Instead of using labels, HiLo treats all the data which may relate to risks as a 'leading event' – something which may indicate a risk, or something which might go wrong. It will accept whatever data the company has available – including spreadsheets, pdfs and Word documents.

HiLo's staff have three key specialisms. There are ex-mariners, who understand the data and help train the digital system to read it. They also work directly with HiLo customers to help them understand their data.

There are risk experts, who understand the causal relationships between different events. There are technology people, who build digital tools, including ways to automate the analysis, and show the output on dashboards.

HiLo has developed a central risk model for shipping, which has been tailored for different vessel types, and is continuously improved.

An interesting difference between HiLo and other shipping industry accident reporting schemes is that with HiLo, no additional work is required from the shipping company employees, except to transfer data which they already have, in the format it is already in. Typically this is done once a month.

Other industry schemes have asked shipping company employees to actively fill in a form with details about any incident. Filling in a form means that data can be provided in a standard format, but it does create an extra work burden.

HiLo's analysis is not dependent on being able to compare one shipping company's submitted data with another.

Case studies

Here are five separate specific examples of where companies have found value from the system.

HiLo analysed data from one large ship operator with multiple vessel types. It found that 'fire in accommodation' was in their top two risks, and the most common causes were 'laundry fire' or 'electrical equipment'. The company did not immediately act on the advice, but shortly afterwards, the vessel had a major incident due to a faulty heater in a crew cabin causing fire in the accommodation area.

A tanker operator, managing 15 tankers with over 200 seafarers, was seeing increasing lifeboat related issues, according to HiLo's analysis. The HSE team did not believe that lifeboats were a safety risk because they had not had a lifeboat incident for over 5 years. But four months after the analysis, the company had a dangerous incident during a routine lifeboat drill.

Analysis of data from a medium sized tanker and bulk carrier operator showed that 'accident during personnel transfer' was in its top three risks. Shortly after the analysis was done, it experienced a major accident from a seafarer not wearing a life vest while being transferred to or from the vessel.

With another company, managing 80 tankers with 1500 crew members, HiLo identified that the risk of spills was going up. The company had not had any bunker spill incident in recent years, but the analysis looked at the factors which were leading to spills, and saw they were going up. This included high 'topping off rates' (the speed of pumping when the tank is nearly full) and insufficient crew supervising bunkering.

Based on the analysis, the company updated its safety management system to specify higher numbers of crew supervising bunkering and updated its filling tables to include the minimum and maximum flowrates, including for topping off.

HiLo also identified the onset of COVID in late 2019 in its incident data, before it was widely known about. There were pockets of "Unknown viral infections' on a number of ships.

Should we use electric propulsion on tankers?

Electric propulsion, where the shaft is driven by an electric motor with power from generators, offers the ability to run at slower speeds without a decrease in efficiency

lectric propulsion is used in nearly all big cruise vessels today, says Jussi Puranen, Head of Product Line, Electric Machines with Yaskawa Environmental Energy/The Switch. There is no reason it could not be used on large tankers as well, he says.

The big advantage of electrification, from an energy efficiency point of view, is the flexibility. You can have multiple generators onboard and only operate the ones you need. Or you can use a variable speed genset, which can be kept always operating at its optimal point.

The reason it is more carbon efficient is that a combustion engine directly driving the main engine (known as 'diesel-mechanical') will have a much-reduced efficiency outside its 'optimal load'.

When operating at full speed, dieselmechanical propulsion has a slightly higher overall efficiency to electric propulsion efficiency. The reason electric propulsion efficiency is usually a little lower is due to losses in the electric power conversion equipment; gensets, transformers, and propulsion converter and motor, Mr Puranen says.

But when operating at less than full speed, as is increasingly likely for decarbonisation reasons, the efficiency of the dieselmechanical propulsion rapidly drops.

But if propulsion is by electric motor powered by multiple generators, you can just switch some of the generators off, while operating the rest near optimal load from efficiency point of view

Typically big vessels which have electric propulsion have between 4 and 6 generator sets making all electric power, Mr Puranen says.

An electric motor is at its highest efficiency when operating at 50-70 per cent of its maximum power, when its efficiency is 97 to 98 per cent. Most diesel-mechanical engines are also most efficient at this load.

But the efficiency of a diesel-mechanical engine drops sharply as the load is reduced below 50% or so. This is not the case for electric motors. One electricity generator itself is about as efficient as one diesel-mechanical engine, and one electricity generator at 50 per cent load is about as efficient as a diesel-mechanical engine at 50 per cent load. But one electricity generator never needs to run at 50 per cent load because you have a bank of generators and you switch off the ones you don't need.

And electric propulsion can supply enough power to run the largest vessels. One permanent magnet motor from The Switch today can provide 15-20 MW of power; but you can use multiple motors, either on the same shaft, or on multiple shafts. The largest tankers need about 50 MW, Mr Puranen says.

And if you ever want to switch fuels, or switch some of your fuel consumption, you could switch just one of the generators. All fuels can be used to generate power. In future, companies might want to generate power from fuel cells, batteries, possibly nuclear reactors.

In May 2022 data was released from a 26,000-dwt bulk carrier Nukumi, operated by Canada Steamship Lines on the North American Great Lakes with direct drive electric technology from Berg Propulsion and The Switch. The vessel delivers de-icing salt from a salt mine in Quebec to be used on roads in Quebec and Newfoundland.

Canada Steamship Lines said that the vessel had 25 per cent less greenhouse gas emission, and 80 per cent less emission of other pollutants, compared to the previous vessel on this service. This was due to using electric propulsion with "Tier III" diesel electric engines, and an optimised hull form.

In September 2021, Wärtsilä announced it was working with ABS and Hudong-Zhonghua Shipbuilding to develop an electric propulsion LNG carrier concept, which it expected to have much lower carbon intensity.

Yaskawa Environmental Energy/The Switch is a Finnish company (part of Yaskawa), specialising in green power conversion technology in wind, marine and industrial applications,

How it works

A conventional electric propulsion system involves a generator, a power distribution



Jussi Puranen, Head of Product Line, Electric Machines with Yaskawa Environmental Energy/The Switch

system, a frequency converter, then an electric motor, driving the propeller shaft either directly or via a reduction gear.

Gearless solution is often more feasible, and it can be done with slowly rotating PM motor, the speed of which is controlled by frequency converter. This means that the energy losses due to the gearbox are eliminated. It also means shorter shaft lengths, less bearings, a smaller engine room.

It also eliminates a major cause of complexity and breakdown in ship operations. "Everyone knows replacing a dodgy gearbox on any vessel is a huge task," Mr Puranen says.

With electrical propulsion, you also have full torque available starting from zero speed. This is particularly useful for icebreakers which need to break through ice ridges from a standing start. Conventional combustion engines have very small torque at close to zero speed.

Yaskawa's technology is based on permanent magnets. This means the magnetic field created requires no current to be fed into the rotating unit, making the technology very efficient.

The rotation speed of the motor is around 100 rpm instead of 1,000 or 1,500 rpm for other motors connected through gearbox. The permanent magnet motor needs much less maintenance due to mechanical simplicity, which results in lower operating costs.

Improved operations and insights from AI-powered CCTV

Shipin Systems has developed video analytics technology to alert shipowners, managers, and seafarers to onboard events in real-time, improving safety, security, and operations

I technology to analyse and digitally interpret video has been steadily improving over the past few years. It has advanced to a level where Amazon uses it in its shops to detect what items a customer has put in their basket, using video

from CCTV (closed circuit television) cameras. The customer can be billed automatically as they leave, without having to go through a check-out.

Could video analytics technology also be useful on ships? Boston-based ShipIn Systems has been developing technology to do this over the past 3 years, and now offers a commercial service to tanker operators.

As of July 2022, there are 5 fleets using its FleetVision system, including two publicly

traded large companies, one of which has the system on their entire fleet, ShipIn says. It is used on all types of vessel including tankers, dry bulk, ro-ro and containers.

It is becoming increasingly common for ships to fit CCTV cameras onboard to record what has been done, in case there is a dispute or accident later, says Kevin Brunn, director EMEA with ShipIn.

But the video is not used to get a better understanding of what actually goes on, in times where there are no incidents. Even to do an investigation, finding the right segment of a CCTV video can be a very time-consuming task.

But with FleetVision, it is possible for a digital system to identify what is actually

happening on the video, and so provide useful insights and alerts continuously.

For example, Shipin's visual analytics system can determine if the bridge is properly manned, if maintenance and inspection tasks have been done, if the proper PPE has been worn, if a mooring operation has been done safely, or if there are any suspected drug smuggler vessels approaching the vessel.

Data analysis can show how much time has been spent doing a certain task, or if it has been done on all cylinders of the engine, for example.

All of this data can be logged and available via dashboards for each individual ship. There is also high-level analytics to compare different vessels, compare one month with another, compare cargo operations in one terminal with another, or see how effective new procedures are. With alerts sent directly to the captain and the shore office staff at the same time, it's possible to intervene quickly if an unsafe activity is detected. ShipIn actually holds patents on the communication of this data seamlessly from ship to shore, minimising required data bandwidth.

The company was founded in 2018 by Osher Perry, a former lieutenant commander with the largest vessel in the Israeli Navy, who also worked in the technology sector for 8 years.

The chief scientist is David Michael, who has over 70 US patents in computer vision. The co-founder and CTO, Ilan Naslavsky, was most recently head of data science with Quantum Pacific Exploration, a mineral data company.

Examples

As one example, which you can see live in Digital Ship's webinar (see link below), a camera in a vessel steering gear room captures video of an engineer doing maintenance. The video analytics identifies that maintenance is taking place, there is water ingress in the engine room, and the engineer is not wearing a helmet.

In another example, the video captures a person doing maintenance in the engine room – it can detect the person's arms and face, the way they interact with equipment, the spaces they are moving in, the frequency and duration of activity, when the activity stops, and if the activity did not happen.

In one operational example, a tanker operator had seen some incidents due to bridge behaviour. It installed ShipIn, and the video analytics detected some short lapses in watchkeeping practises.

The master was alerted, and in discussion with the bridge team ashore, implemented corrective actions. "In the following month, the system documented 100 per cent effectiveness of these corrective actions," Mr Brunn said.

Another customer example is a container ship operator, frequently trading in high-risk parts of the world, which had experienced smugglers attempting to board the vessel and leave drugs in containers. There is a possibility that the crew could be blamed for the smuggled drugs. The system was able to detect suspicious water craft



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approaching and if anyone came onboard. The company was able to report suspicious activity to authorities.

Other companies have used the video to identify inefficiencies in port calls, or more time being spent on tank cleaning than was necessary, Mr Brunn said.

Using it

Mr Brunn sees the system as giving management a similar level of awareness to what they have in an onshore factory, when they can monitor operations by walking around.

The video analytics can be used to support safety 'campaigns'. For example, if a company wants to make improvements in mooring safety, it can gather video of all the mooring operations and check they were done properly. It can check mooring was done without trip hazards, and without people standing in 'snap back zones', where they could be hit by a snapped mooring line springing back. It can check they are wearing appropriate protective equipment.

The system will also detect if any of the cameras are faulty or switched off, something which can be hard to detect in normal CCTV recording.

In terms of data privacy, it should be no different to any other CCTV installation. The cameras are only installed in non-private areas of the ship. There is no facial recognition technology or any means to identify a person individually. The shipowner has full ownership and control over the data. Stickers are normally placed around the vessel reminding people of the CCTV.

Seafarers have been largely enthusiastic about the system so far, Mr Brunn says, because they recognise it can give them cover if they are ever blamed for something they didn't do. Often seafarers have taken the initiative themselves to install extra cameras in other parts of the vessel, or asked for more cameras, he says.

Set-up

The set-up is to install CCTV cameras in key locations on the vessel, such as the bridge, engine room, pump room, deck, and looking out to sea.

The vessel is supplied with a server, cabling and networking equipment, and spare cameras.

The data is fed to a server, which stores the

data and runs analysis algorithms. On the basis of the analysis, alerts can be sent to shore or to the captain, including the relevant segment of video.

Companies simply pay a subscription for the system, with no CAPEX for the cameras or other hardware. If any camera breaks, it is fully covered under warranty and replaced as part of the contract.

Setting up the system, to the point where it is providing useful insights, takes about 3 weeks, Mr Perry says. The data sent to shore is typically 100 MB a day, and never any more than 20 percent of a vessels' available bandwidth.

But it does not need a complete bespoke setup for each customer." Most fleets have very similar concerns and very similar risks," Mr Perry says. "They're up and running and seeing value immediately."

You can watch Digital Ship's webinar about ShipIn online here

https://youtu.be/s2YQkZtwD8Y

Automating the ship-shore safety checklist

Lots of information needs to be shared between terminal and tanker prior to arrival – and the exchange is cumbersome work which is error prone. A Dutch company is automating it

he sixth edition of ISGOTT – the International Safety Guide for Tankers and Terminals - contains recommendations for a checklist which is exchanged between terminal and tanker prior to arrival.

Data which is usually shared include all prearrival, after mooring, pre-transfer and cleaning checks of both terminal and tanker such as jetty parameters, mooring instructions, data about the cargo, construction of tanker hoses, the connection to shore fire hoses, the PV valves, the oxygen analysers, inert gas system, oxygen content in the tank atmosphere, order related documents, service and permits and part 1a, 1b, 2, 6 of the ship shore safety checklist.

This can mean a lot of manual work on paper or in a pdf file, but everything need to be filled in manually and lots of communication goes back and forth to complete and sign the documents. This is normally done with e-mails and phone calls, and it can be error prone work. As a result, it can be difficult to complete your dossier, and very difficult to be compliant with the ISGOTT6 regulations. UAB-Online, a company based in Mijdrecht, The Netherlands, created a solution for the complex pre-arrival process for sea-going shipping. It is based on its similar service for use on inland waterways in the Amsterdam / Rotterdam / Antwerp region, running since 2008, as an announcement system for barges. It is now promoting it for use internationally as well, particularly in Houston and Singapore.

It says its software is now the "recognised industry standard for seagoing and inland vessels coming into ports", as a single integrated tool for charterers, boat masters, terminals, agents and surveyors. It is used by over 60 terminals in the Netherlands and Belgium, 2800 vessels and all surveyors active in the region, the company says.

The software is entirely cloud based. Regularly provided data can be stored under the vessel's account with the software, and automatically added to the forms.

Using the software, it can be easier for vessels and terminals to get prepared before the vessel arrives. This means that operations can be planned in detail in advance, the surveyor can arrive exactly when needed, the port call itself might be quicker, so lower costs, lower emissions, and more throughput for the port.

There is no confusion about what to provide. The software can also support document creation, including with electronic signatures, and other parties can see the information including surveyors and agents. All the data is in one place.

UAB-Online helps its customers to implement and integrate the tool and provides training and support where needed.

Since June 2022, Dow Benelux has digitised its ISGOTT 6 process via UAB-Online, while in May, BP added UAB's sea going module for digitising its ISGOTT 6 process after it had already digitised its inland shipping physical checklists (ADN, VOW, CDNI) via UAB-Online.

Since February 2022, Zeeland refinery also digitised its sea going process via UAB-Online, and a month earlier, ATPC digitised its ISGOTT 6 process via UAB-Online.Inland shipping at ATPC already went via UAB-Online.

Developments with tank cleaning

Chemical tanker operators are increasingly using APC's MarineLINE coating partly for ease of cleaning and reduced fuel costs; Alfa Laval buys Scanjet. Our roundup of tank cleaning news

n July 2022 Advanced Polymer Coating announced a deal to supply its "MarineLINE" coating to an LNG powered, dual fuel, 6,000 dwt chemical tanker being at China Merchants Jinling Shipyard in Yangzhou, China, for British marine services provider James Fisher and Sons plc.

It also announced a contract to apply MarineLINE on a fleet of 50,000 dwt medium range tankers being built at the New Times Shipbuilding Co Ltd in Jingjiang City. The vessels are owned by China's Shandong Shipping and chartered by Shell as part of its Shell Project Solar programme.

APC announced another deal in June 2022 with Turkey's Chemfleet to coat 10 tankers. It won separate contracts in June 2022 to recoat a further eight vessels for a range of Turkish ship owners.

"Charterers are increasingly involved in choosing the tank coating and they want a coating that can perform and cope with a wide variety of chemicals over a sustained period," says Captain Onur Yildirim, global marine manager with APC.

"The low absorption characteristics and highly glossy surface of MarineLINE allow operators to reduce overall tank cleaning times. Less hot water is required for wall washing and tank cleaning compared to other types of coating."

"This immediately cuts the fuel use required for heating vast amounts of water. In addition, we can play our part in seafarer welfare by reducing the amount of time required in confined spaces for cleaning."

Alfa Laval to acquire Scanjet

In June 2022, Alfa Laval signed an agreement to acquire Scanjet, a supplier of tank cleaning systems and machines for marine, offshore and industrial applications. Closing of the acquisition is expected during Q3 2022.

Scanjet also provides the ITAMA "Intelligent Tank Management" system, which includes automatic tank monitoring alarm and control, remote valve and pump control, fixed and portable tank cleaning, P/V valves, gas-freeing equipment, an inert gas system, an oil-discharge monitor and vapour emission control.

These tank management systems can help reduce water and energy consumption associated with tank cleaning.

Alfa Laval can combine the Scanjet equipment with its 'Framo' cargo pumping



solutions, thus providing a service covering all aspects of cargo handling.

Scanjet tank cleaning simulator

Scanjet has launched a tank cleaning simulator, available for free download from its website, which can be used to visualise and better understand the operation of a tank cleaning machine inside a tank. It can be used to compare Scanjet tank cleaning devices.

The software can be configured for different tank sizes and shapes. At the end of the simulation, it will show the amount of time, water and cleaning chemicals consumed.

It can be downloaded at https://www. scanjetsystems.com/tank-cleaning-simulator/ index.htm

MOL's spectrophotometers

In May 2021 MOL Chemical Tankers announced that it had equipped its vessels with spectrophotometers, which can be used to assess if sufficient tank cleaning has been done.

The device analyses a washwater sample taken from the ship's manifold. The analysis is sufficient to detect if the tanks and pipelines are sufficiently clean.

It means that seafarers do not have to enter the confined spaces of the cargo tanks to do a traditional 'wall wash' test, which involves pouring a chemical down the tank wall and into a container.

The need to pass a wall wash inspection can also lead to over-cleaning of vessels, which has an environmental impact in terms of CO2 (from heating water) and discharge of cleaning chemicals into the sea, MOL says.

"Confined space entry has accounted for a number of fatalities on board tankers in past years, and we are absolutely committed to minimise this risk in the future," said Dorte Creaven, General Manager, MOL Chemical Tankers Europe A/S.

"We recognise the weakness of the wall wash inspection, which is the primary reason why seafarers are forced into the cargo tanks multiple times, during the tank cleaning process."



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