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TUG DEVELOPMENT SINCE 1996

TWO TUGS FULL CONTROL

By Rotortug.

Contents

Wärtsilä's dual technology option for Ballast Water Management Systems (BWMS) will enable Greek-based operator Eletson Corp to retrofit its entire fleet from a single provider.

A total of 23 product oil, chemical, and LPG carriers in Eletson's fleet will be retrofitted with up to 69 Wärtsilä BWMS units, comprising of both its Aquarius UV (ultra-violet) and Aquarius EC (electro-chlorination) systems. This order was booked in February, 2019.

"For Eletson, the BWMS supplier selection was a very important decision. Compliance enablement was naturally a prime requirement, but also the track record, the lifecycle costs, and the supplier's support capabilities had to be considered. For all these reasons, we chose Wärtsilä," said Lazaros Skoularikos, Eletson Corp COO.

Are safety concerns being overtaken by technology?

And so to London's Chandos House to hear a presentation delivered by DNV GL Maritime's head, Knut Ørbeck-Nilssen.

He described the shipping industry as being in the throws of tectonic shifts in three areas - the markets, which were becoming increasingly unpredictable; regulations in which complexity and expectations were growing; plus new technology, which will deliver a strong impact.

Ørbeck-Nilssen thought that the industry already had the means and methods in place to comply with the IMO's 2030 emissions edict but reaching a goal of zero emissions by 2050 would prove difficult.

He expressed concern over safety becoming lost in the desire to embrace digitalisation and all that goes with it. "We need to put safety high on the agenda," he stressed, adding that digitalisation brings both challenges and opportunities.

A safety net is required going forward, he said, highlighting five processes that were needed for shipping. For example -

1) Holistic regulations with safety at the core.
2) An improvement in the safety culture.
3) Unlock data silos enabling incidents and near misses to be examined.
4) Increase transparency on safety findings/ reports.
5) Apply barrier management taken from other industries, such as the aviation sector.

He outlined a few safety issues involving blended fuels, asking will they be compatible in Europe and Asia, for instance - could they clog filters and seals?

And then there's EEDI. De-rating engines to provide less power to save on fuel and thus emissions has its own dangers in that it would take longer for power to be applied in an emergency and there is the possibility of dynamic vibrations on propeller shafts.

He also warned that a high degree of autonomy on board ship would result in the reliance on sensors and the reliability of the data produced and analysed.

As for the scrubber debate concerning perceived washwater problems with open loop scrubbers by certain countries, he said that he would welcome more studies - DNV GL has recently completed a study with Carnival - as the industry should engage more.

He also urged flag states and administrations to be more open and make reports available to the IMO for a start, especially on accident investigations, etc.

One of the main problems with all this as I see it is that if a ship is ordered this year, it won't be delivered until late 2020 at the earliest and most likely it has been designed to trade for 20 years or so bringing us up to 2040. Do we need a fundamental design change, or can we just retrofit our way out of any regulations or technology changes that come after 2020?

Who pays?

Whatever the answer is, it will come at a cost. Who will pay the extras - owners, charterers or end users, such as consumers? Charterers are already taking a closer look at the situation. For example, the commodity traders already have their own shipping operations teams and some of the world's major companies involved in shipping goods are not far behind and are taking a greater interest in who they are shipping with on cost and environmental grounds.

Fortunately for the tanker segment, this scrutiny has by and large occurred through OCIMF's TMSA and other initiatives to keep the oil safely inside the ship. However, tanker owners and operators still face the question of what to do about IMO 2020 and installing ballast water treatment systems (BWTS) sooner rather than later, the same as other ship types.

When a scrubber system costs $2-$3 mill and a BWTS much the same on a large tanker and the price differential of distillates going forward against HFO or LNG as a fuel, still appears to be a bit of an unknown, this is rather worrying to say the least. Will some charterers insist on scrubber fitted tonnage as has been suggested?

At least the tanker sector has been somewhat buoyed by firming rates recently. Both brokers and owners are making the right noises when attempting to second guess the market for this year and beyond.

Most of the fourth quarter and annual results presentations released recently from the major quoted tanker companies were rather bullish and the brokers have certainly picked up on the good vibes when analysing the IEA report, for example.

However, some are gambling on several large crude oil tankers and to a lesser extent product tankers being taken out of the market this year for a few weeks for scrubber and BWTS retrofits. What happens when they return to the market?

There are also a lot of newbuilding deliveries still to come this year and next and so we need to see a recycling ramp up, which as of last month, had gone a bit quiet. We also need to see charterers invoke the 15-year old tanker rule in greater numbers to balance the market.

And this is just the tanker sector of the shipping industry. Other segments also have their own problems as is being illustrated almost daily in the media and elsewhere.

As I've said before - who would want to be a shipowner today?

But many still do and manage to survive, despite everything that's being thrown at them, including tectonic shifts.

TO

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Crude oil balance changes bode well for crude tankers

Iconic Norwegian shipowner, Erling Naess, said in the 1970s: "God must have been a shipowner; he placed natural resources far away from consuming nations and covered two-thirds of the earth with water."

At the time, he was primarily referring to the ever-increasing dependence of consumers in Europe and North America on crude oil from the Middle East.

However, more than 50 years later, a shipowner looking at the crude oil tanker market of today may come to the same conclusion, Poten & Partners said in an industry note.

The latest IEA Oil Market Report (Oil 2019), which was published during the middle of March, painted a bullish picture from a shipowner's perspective.

On the crude oil side, the story is well known - that is - the US is becoming a major player in the global oil trade as a result of the shale revolution. The crude oil export boom is facilitated by growing production capacity in the Permian Basin and to a lesser extent Eagle Ford and other light tight oil (LTO) basins.

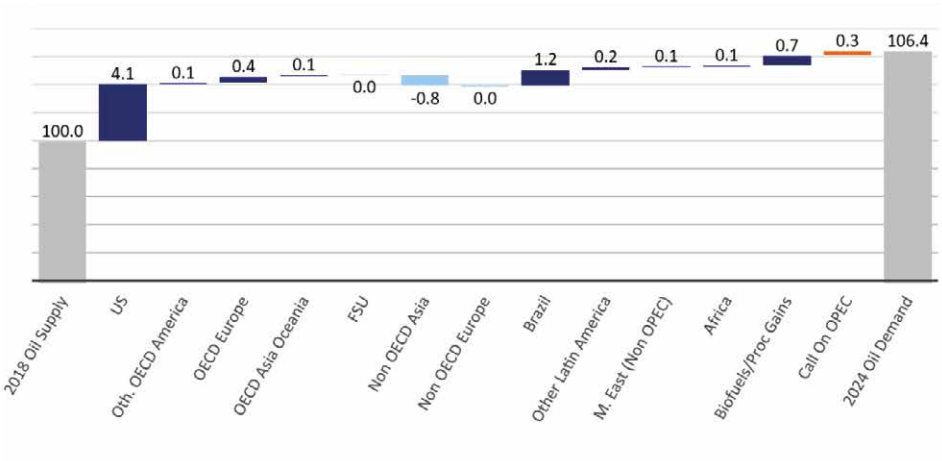
At the same time, US midstream companies are working hard to build new and expand existing pipeline capacity to bring the crude to the Gulf Coast. While pipeline capacity is still expected to be a constraint in the first half of this year, there will be ample takeaway capacity by 2020 and beyond. Most of these new pipelines are connected to new or expanded storage and export terminal projects.

In total, the IEA forecasts that the US Gulf will have crude oil export capacity of 5.1 mill barrels per day by 2024. Combining crude oil and refined product exports, this will bring the US on par with Saudi Arabia and Russia as one of the largest oil exporters in the world. Most of the US crude will be destined for Asia.

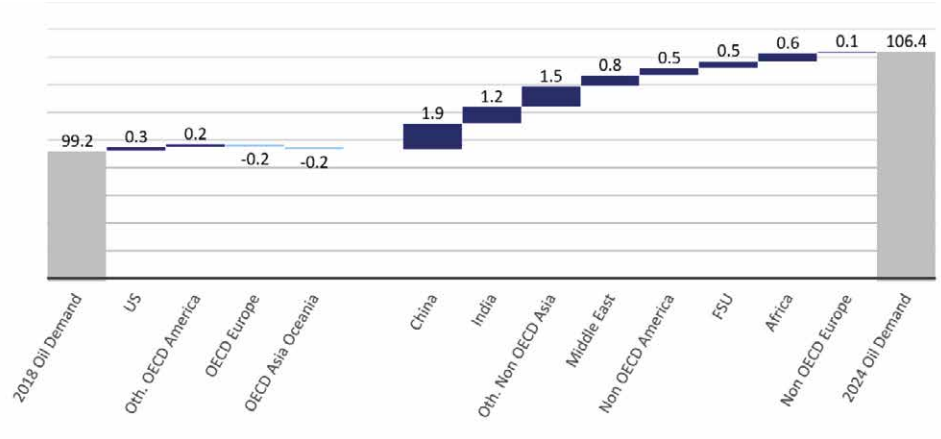
While the US will bring the biggest volumes to market, it is not the only country (outside OPEC) to ramp up production and exports. Brazil, Norway and Guyana are also worth mentioning.

After a disappointing 2018, Brazil is expected to add 1.2 mill barrels per day oil supply, growing its production from 2.7 mill barrels in 2018 to 3.9 mill barrels per day by 2024. Around 375,000 barrels is expected this year and another 225,000 barrels per day in 2020. Most of Brazil's production is exported long-haul to China, with lesser quantities going to other Asian countries, Europe and the US.

In Europe, Norway is also on the brink of another expansion. The IEA expects Norwegian output to increase by 600,000 barrels to reach 2.5 mill barrels per day in 2024, the highest production level seen since 2008. Most of this oil comes from the giant Johan Sverdrup field, which operator Equinor expects to produce between two and three



Change in global Oil Production 2018 vs 2024 Source: IEA



Change in global Oil Demand 2018 vs 2024 Source: IEA

billion barrels of oil equivalent and peak production of 660,000 barrels per day.

New player

Guyana is a new player in the crude oil market, but operator ExxonMobil and its partners continue to find new oil off the coast of this Latin American country. Oil will start flowing in 2020 at 120,000 barrels per day and is expected to ramp up to 500,000 barrels by 2024.

These increases in crude oil flows are different for a variety of reasons. First, this production growth is coming from non-OPEC countries and is therefore not subject to the vagaries of output cuts and other production restrictions that are driven by politics (eg sanctions) rather than economics.

Second, most of the additional flows are of the light sweet variety, which are deemed highly attractive in the run-up to implementation of the IMO 2020 sulfur restriction on bunker fuel.

Last, but not least, Asia - in particular China and India - will continue to be the main source of additional crude oil demand. According to the IEA, the East of Suez crude balances (Middle East and Asia combined) show a shortfall of 6 mill barrels per day at the end of its forecast: "This means that even if Middle East producers direct all their exports to Asian refiners, the latter would need to source another 6 mill barrels from other regions," the organisation said.

Diversification of crude supplies outside the Middle East is no longer a choice, but a necessity to fill the growing Asian need for crude. Since crude oil production in Asia is relatively small and declining, more crude will need to come from long-haul sources in the Atlantic Basin, boosting tonne/mile demand. This growing imbalance will also make triangulation more difficult, reducing the efficiency of the tanker fleet," the report said.

All this should be music to the ears of the owners of larger crude oil tankers, Poten said.

Tough choices

However, due to regulatory changes, owners will have to make tough choices on how to keep operating older tonnage.

The poor freight market in the first three quarters of last year led to the highest volume of tanker removals for at least 15 years. When freight rates improved in the fourth quarter, the number of ships recycled dried up. At the same time, newbuilding prices were relatively competitive, as shipyards tried to fill their depleted contract portfolios.

How should an owner respond to these contradictory market signals?

Last year, 33 VLCCs with an average age of 20 years and 24 Suezmaxes averaging 22 years old were removed from the fleet. This was a reflection of the poor freight market in 2017 and the first three quarters of 2018, as OPEC production cuts reduced employment opportunities for large tankers.

To put these numbers in context, in the previous 15 years, on average only nine VLCCs and seven Suezmaxes were removed each year. Even though scrapping was very high, the fleet still increased, due to newbuilding deliveries exceeding removals in both segments. For example, in 2018, 42 VLCCs and 33 Suezmaxes were delivered, Poten said.

For 2019, deliveries are still high, as Poten's orderbook shows 79 VLCCs and 44 Suezmaxes scheduled for delivery this year. However, the delivery schedule will likely change as the year progresses, as typically, about 20-25% of scheduled deliveries at the beginning of the year will be delayed.

The current VLCC fleet, as of the beginning of March, totalled 756 vessels, of which 170 were 16 years or older and 19 were over 20 years of age, while the Suezmax fleet was smaller at 583 vessels, of which 124 were 16 years or older.

Ships older than 15 years are more difficult to employ as some charterers reject older vessels, meaning that the owners of these older vessels will have to make a decision in the coming years.

For example, by September this year, all ships engaged in international trade need to have ballast water treatment systems (BWTS) installed at the first upcoming special survey. For larger tankers, BWTS can cost between $2-$3 mill, depending on the size of the ship and the configuration of the system.

In addition, on 1st January, 2020, new sulfur emission regulations for ships will come into force. After this date, ships will have to switch to more expensive lower sulfur fuel or have exhaust gas cleaning equipment (scrubbers) installed.

Many older tankers have higher fuel consumption than their modern counterparts, so they will become less competitive when they are required to burn more expensive fuel. It is also less likely that these vessels will have scrubbers installed, as their age will make it harder to see a return on investment, compared with younger vessels.

In preparation for the implementation of IMO 2020, owners will attempt to have scrubbers installed and operational by the start of next year, as the fuel cost differential between HFO and low sulfur fuel will most likely be highest early on, while the market adjusts to the new requirements.

If 10% of VLCCs and Suezmaxes install scrubbers and each vessel is out of service for several weeks, the operational fleet will be materially reduced, which will tighten the market and could offset some of the anticipated deliveries, Poten said.

It is likely that the combination of these regulatory requirements will lead to accelerated scrapping of tonnage, but it is impossible to quantify what the exact impact will be.

But by far the most important consideration for an owner deciding whether to scrap a vessel is the expected freight rates. If an owner foresees a healthy market, it is easier to justify the required investment. However, even though the supply side may have a significant impact on freight rates this year and next, tonne/mile demand will remain the key driver.

As they are deciding about how to respond to the new regulations, tanker owners will also need to keep a keen eye on OPEC production and US exports in the context of overall global oil demand, as mentioned above, Poten concluded. TO

Embracing technology change

***Tanker Operator* spoke with Synergy Marine Group's founder and CEO, Capt Rajesh Unni about running a third party service company in today's fast changing market.**

"At Synergy, we believe that if we continue to provide solutions that satisfy our clients, then our growth will be organic. This has been our strategy since we started in 2006 and it continues to remain the same. We have been fortunate in this aspect and have grown every year so we're not about to change course," Capt Unni said.

Size, he said, was always secondary to service. Whether one is talking about 100 ships or 500 ships, the key consideration is what is deliverable on service and quality.

"If expansion results in a loss of management efficiency and a deterioration of customer service, then we are in the realms of dis-economies of scale. If there are too many layers of management, a lack of effective control or too many locations then it becomes unsatisfactory for us and our clients. Big is only beautiful if economies of scale are achieved and tailored services can be delivered.

"I also think the supposed benefits of fleet growth in terms of purchasing cost reductions are hugely overstated. Operational, resource capacity and flexibility are far more important in terms of delivering for customers. That is especially true if the client is expanding. A good negotiator is far more important than fleet size in determining purchasing outcomes," he explained.

"We view our fleet size and its relevance to clients in terms of liquidity, meaning how flexible we are in being able to meet their needs. For example, if a major investor or owner was looking to buy into tanker markets, say, by purchasing 25 tankers, they will need management and crewing options. And they will need to meet the requirements of oil companies and an avalanche of regulations all in a short time frame.

Synergy's founder Capt Rajesh Unni

"Our liquidity comes from the fact that not many companies could take that management contract on. But for us, we have the capacity, structure and resources in place to make that type of contract entirely manageable, even at short notice," he added.

Synergy has a dedicated team of superintendents who look after tanker operations and separate team of superintendents who look after LPG carriers.

The company also provides many different services to the tanker owning community, for example, crewing, training, technical, newbuilding supervision, insurance, accounting and many other back office functions.

"A more commercial role has been introduced for some clients, including recently setting up N2Tankers with Reederei Nord and Nissen Kaiun, which is proving to be a great success and something that the market really needs at this moment," Capt Unni stressed.

In the tanker team, technical superintendents manage two to four vessels and the marine superintendents manage between six to eight vessels.

Synergy's tanker fleet consists of VLCCs, Suezmaxes, Aframaxes, MRs, VLGCs, MGCs and chemical tankers. Two years ago, the company prepared and trained a specialist crew to operate the world's first very large ethane carriers (VLEC).

"As a technical partner for shipowners, we need to be prepared to take on the challenges posed by new technology. As a modern shipmanagement company, we are about

preparing the next generation of crew to face these challenges and put in place processes that work seamlessly for new kinds of vessel operation," he explained.

Digitalisation

As for the march of digitalisation, Capt Unni said that in terms of fleet size and the pros and cons of expansion, this equation might change in the future, due to digitalisation. "From a management perspective, I think we will soon have game-changing solutions that will soon be mature enough to run a 600-ship platform. It's not there yet, but this technology can help manage scale a lot better. The key challenge is marrying scale with tailored service. That's a management challenge as much as a technology challenge," he said.

He added that he didn't believe digitalisation had transformed the heart of shipmanagement yet, as so much is about customer service and this element will not change. However, change is inevitable. Internet of Things (IoT), machine learning and cloud-based big data science will be transformative in terms of all shipmanagement processes. The benefits for clients in terms of efficiency and transparency are already apparent, he said.

Synergy is addressing this head on. For example, in 2017 the company invested in Alpha Ori Technologies (AOT). AOT has developed SMARTShip solutions to serve the shipping industry. This is an Internet of Things (IoT) platform that enables the on board operation of several systems with varying degrees of autonomy. It accomplishes this by gathering thousands of data points from various vessel systems and feeding the data into a powerful on board server that analyses the information and enables decision support for the crew.

These solutions are already available at Synergy. 'Trammo Dietlin', a Singapore-registered vessel in the Global United Gas Carriers fleet, recently became the first ship in the world to carry Lloyd's Register's cyber AL-SAFE notation [AL-SAFE means 'autonomy level safe'] that certifies the safety of on board autonomous systems. She was constructed by Hanjin Heavy Industries in collaboration with AOT, which supplied the SMARTShip autonomous control system.

From Synergy's perspective, this type of solution is just the first step on the path. Essentially, AOT was established because it was recognised that shipboard operations can be made more efficient and cost-effective by bringing in relevant and customised technology to cater to the specific needs of the industry and the exact needs of Synergy clients. An AOT Center of Innovation has been opened in Singapore, which operates a Network Operating Centre to remotely monitor and control digitally enabled ships.

The team collects >5K data points from all parts of the ship with the ability to refresh data every 1-3 secs. It enables Synergy to create a platform that provides for a plugged-in feel of the entire ship. Disparate systems can now be connected into one common platform to allow the technology to continually monitor data and make rules based decisions.

"I don't think technology changes the essence of what third party shipmanagement is, as clients need a partner they can trust. It may sound like a cliché, but this business really is about integrity, safety and transparency.

"This is still a 'people' business. As a third-party shipmanager, you need to be a reliable partner. You need to have a fantastic workforce that is constantly upskilled to keep pace with the changing environment, including changes related to new technology," he said.

Digitalisation is not an event, it's a constantly changing landscape. To be an effective manager you need to adapt to this landscape every day, and you need to predict and prepare for how it will change in the future. This is one of the reasons why Synergy invested in Alpha Ori, as it is a window into the future, as well as providing solutions for the here and now.

"We see the ship as a digital enterprise, this is the essence of our thinking. The idea is that if you can digitally connect the entire ecosystem within the ship, then plug this ship into a digital cloud that connects to many other ships, you create the system, tools and business process that are needed to activate remote monitoring and control of these digitally connected ships, while using collected data as a strategic weapon to drive economic value for the business.

"By building a true 360 deg view of all this maritime data, this enables us to discover hidden relationships, dependencies, and correlations amongst non-obvious and non-intuitive data sets. By using Alpha Ori's systems, we can process over several hundred Terabytes of data with more than several trillion relationship possibilities.

"We then use advanced analytics and high-performance computing capabilities to bring the most relevant insights to the forefront. That is absolutely vital information for shipmanagement. It opens up all sorts of performance gains and it establishes a platform for effective predictive analytics, effectively allowing us to affect future outcomes by efficiently controlling those dependent operational parameters for the benefit of our clients," he explained.

Training

As for training in the digital age, Capt Unni said that there is a lot of virtual reality being used in innovative training programmes. Placing seafarers in realistic scenarios under similar pressures as faced on board via training games is a memorable and fast learning means of improving training.

He thought that the best simulations allow seafarers to be trained for worst-case scenarios on board, which don't happen often but require a clear-cut plan. It's costly to replicate an environment for training based on situations on board, which rarely happen. This method of training is improving in quantum leaps with the technology and he foresees that this process will continue to benefit everyone.

"There are many applications for technology in training, but I think the approach and the philosophy behind technology in training, must be consistent and well thought out. The crew must understand and buy into the benefits of digitalisation. They must understand how it helps them.

"If you look back to ECDIS, for example, there was seafarer resistance to this. But we now know that the introduction of ECDIS has helped ease the paperwork and facilitated easy planning and monitoring, real-time information availability, etc.

"Digitalisation is more of an evolving landscape than an event like ECDIS, but in the end, both call on the seafarer to adapt, which means every seafarer must receive top class training and support on an ongoing basis," he said.

He also stressed that a modern seafarer must not be treated as a mere content consumer, but as a resource, capable of sharing inputs that enhance learning for seafarers and the facilitator. Empowering seafarers – providing them with the tools, resources, processes and enabling them with new technology - is the future of seafaring and maritime training.

"As shipping becomes more technical, the demands for highly skilled and specialist crew will intensify. More learning will need to be done on the job, and all of us will have to be prepared to develop new skills outside our comfort zone," he concluded. TO

At the forefront of shipping operations

Denmark is now striving to become a driver of future smart shipping.

On 1st March, a not for profit organisation - ShippingLab - was established within the Den Blå Danmark (Blue Denmark) concept.

ShippingLab's aim is to solve challenges that are too big for separate companies to tackle alone.

Almost 30 partners, including J Lauritzen, Maersk Tankers and TORM are working together to achieving results in the field of maritime research, development and innovation.

The group is currently working on five themes over a three year period, the expected life of ShippingLab's remit.

1) Digitised ship operation - A model-based approach and good, reliable data must enable crew and land to make better decisions. The result is the 'digital twin' - a computer model that can be used to digitally optimise operations - as well as troubleshoot, develop and test new equipment better and faster. A 'centre of excellence' will be created to attract operators and further development.
2) Automation and autonomy - Technology development and new competences within independent navigation and machine monitoring will increase safety and reduce opex. The focus is on the areas where Denmark is at the forefront in terms of research. Equipment suppliers can mature products where sub-elements can be tested today.
3) CO2 reduction and emission free - The objective of this project is to demonstrate emission and fossil-free energy supply on board existing ships, where a common test setup must make the results comparable. The first milestone is independent port calls without CO2 emissions for large ships - a step towards electrification and the completely emission-free ship. The CO2 challenge can only be solved jointly.
4) Maritime technology and circular economy - The intention is to be a leader with a circular economy approach to sustainability and automated scrapping of ships in Denmark. The automation technology must be developed and the economic, technological and organisational aspects must be in place before effective circular economy-based innovation centres can be established on scrapping and recycling in Danish ports.
5) Integrated logistics and new business opportunities - Automation of processes, removal of data silos and end-to-end digitalisation must streamline and bind the logistics flow between ship, port, and freight

forwarder. Denmark must be a knowledge centre for integrated logistics for the benefit of Danish shipowners, ports and technology suppliers in a global market.

This partnership is supported by various Danish Funds, including the Danish Innovation Fund, the Danish Maritime Fund and Lauritzen Fonden. ShippingLab is scheduled to run for three years.

Although connected to Blue Denmark, the partners have stressed that any other organisation is welcome to join.

Ship registration

Digital ship registration will soon be available in Denmark, following the Minister of Business and Industry submitting a bill. The bill is a follow-up to the agreement on initiatives for Denmark's digital growth between the government, the Danish People's Party and the Radical Liberals signed in February, 2018.

The purpose of the legislative changes regarding ship registration is primarily to create a modern legal basis for the digitalisation of the Danish Ship Register, Danske Rederier (Danish Shipping) said.

Digital ship registration will give shipping companies the opportunity to register their vessels through a self-service solution. The proposal was claimed to be welcome in the shipping industry, as it strengthens Denmark's competitiveness as a maritime nation.

Danish Shipowners look forward to these issues being discussed in connection with an upcoming legislative amendment to the Maritime Act this year, where among other things, the Danish Shipping's Maritime Committee is expected to be involved.

Value creation

As for Blue Denmark, as recently published report said that for each employee, the group creates more than twice the gross value added of the average Dane.

'Employment and production in the Blue Denmark 2018', was prepared by COWI for the Danish Maritime Authority and maps the employment in the Blue Denmark and describes the importance of the industry to the Danish economy.

"The figures for value creation, remuneration and geographical spread clearly show that it makes sense to focus on more jobs in our industry. Especially in a situation where there is a rage about the Danish labour force, " said executive director, Danish Shipping, Jacob Clasen.

The report claimed that the value of the total production in The Blue Denmark is DKK327 bill. Thus, the 96,000 direct and indirect employees - 60,000 in the maritime sector - in Blue Denmark account for 6.5% of the Danish gross value added and 27% of Danish exports.

The largest production value is created within shipping, which accounts for more than half, followed by the equipment industry and other sectors.

TO

Danish matirime sector has not lost its bearings. Photo credit- Maersk Tankers

Danish tanker companies survive the storm

With due respect to the many other tanker companies in Denmark, the biggest news to come out of the country last year was the proposed merger between Hafnia Tankers and BW Tankers.

On 16th January of this year, the merger was completed. Hafnia and BW Tankers Corp, a Marshall Island subsidiary of BW Tankers (NewSub), merged under the laws of the Marshall Islands with NewSub being the surviving entity, Hafnia explained.

All of Hafnia's assets and liabilities, contracts, rights and obligations in their entirety were assumed by NewSub.

As part of the deal, Hafnia shareholders received common shares of BW Tankers.

Subsequently, NewSub merged with BW Tankers under the simplified rules for a merger between a parent and a subsidiary.

Finally, BW Tankers became the surviving entity of the second merger and has since changed its name to Hafnia Limited and now has offices in Singapore, Copenhagen and Houston, plus a presence in Mumbai.

Hafnia Limited claims to have the world's largest product tanker fleet, consisting of 102 tankers, four newbuildings and three product tanker pools – managed by Hafnia Management and Straits Tankers - with vessels in the LR2, LR1, MR and SR segments.

The new company's CEO, CFO and technical director are now based in Singapore.

As for **Hafnia Management**, this commercial operation currently has around 61 MRs and 28 Handies in its pools, while a 50% joint venture partner with MOL, Straits Tankers, has three LR2s and 77 LR1s in its pools under commercial management.

CEO Anders Engholm told *Tanker Operator* that BW Tankers staff were taken into Hafnia Management, which gives the company a "sufficient match" following the merger.

He confirmed that on the owning side, Hafnia's Limited's head office was now based in Singapore, while the commercial operations, pools, chartering, operations, demurrage, etc was run by Hafnia Management out of Copenhagen with branch offices in Singapore and Houston.

Handysize 'Hafnia Soya' seen in the River Thames last year

Despite having a 'critical mass' of tonnage worldwide, Engholm said that the company was a strong believer in consolidation and so more tonnage might be invited to join the pools going forward.

Turning to another champion of the pool system, through its commercial management services, **Maersk Tankers** operates vessels in the Intermediate, Handy, MR, LR2 and Aframax segments.

Digital platform

To help monitor and disseminate data in real time, last October, Maersk Tankers launched the digital platform InSite digital for its pool partners.

This platform gives partners access to real-time vessel and pool performance data, along with market commentary, enabling them to stay close to the market. The software was developed in-house.

InSite digital provides partners with the data to track both their vessels' and overall pool performance. It also offers benchmarking, forecasting and market insights. Every week, market commentary is added to the platform, providing partners with an insight on market developments and trading strategies for their vessels.

The platform is part of the company's strategy to increase the number of vessels under commercial management, Maersk Tankers said. This involves the optimisation of existing services, as well as the addition of new ones, to retain partners.

"A vessel is a highly valuable asset and therefore it is only natural that owners want to be able to closely follow how the vessel is performing to ensure maximum returns. To assist them, we are increasingly developing digital solutions. The new platform is one such solution," said Soren Meyer, Maersk Tankers chief strategy officer.

As well as providing commercial data, the software also gives technical information, such as the vessels' fuel consumption and vetting status.

"As a shipowner, you want to know how your vessel is traded, how to improve your earnings, how relevant markets are developing and, most importantly, what you can expect to see on your bottom line. With InSite digital, we give our partners a way to keep up to date on this anywhere and at any given time," said Ulrich Schittek, Maersk Tankers Head of Management Services After Sales.

The MR 'Maersk Tangier' is soon to be joined by newbuildings

New features will be also added to the platform going forward, the company said.

Maersk Tankers is also boosting its pool management business to win new partners.

As a result, in January of this year, Nicolai Dannebrog Frederiksen became senior sales lead for Maersk Tankers' pool management services.

His main responsibility is to develop new partnerships with vessel owners worldwide to grow the company's partner network and pool management business.

Perhaps not so well known is Maersk Tankers' intermediate fleet operated under the Broström banner.

It claims to have a market-leading position in Northwest Europe in which around 85% of the vessels operate.

As part of operations in this region, the pool has a long-term Contracts of Affreightment (COAs) in the West Coast UK. This results in a steady and predictable cargo flow, which the company utilises to optimise triangulation, minimising ballast and idle times for the vessels. This, in turn, translates into better returns for the pool partners, the company claimed.

Northwest Europe is a region where customers have high demands on the vessels not only in terms of vetting requirements and experience of the crews on board, but also on technical specifications and vessel design, as many ports have draft restrictions.

In addition, Maersk Tankers' Intermediate pool operates in the North American Great Lakes, one of the few product tanker companies in the world in the region. This region has specific restrictions, not only on the legal side, but also as far as technical requirements for vessels are concerned.

Maersk Tankers currently has nine Intermediate vessels able to trade in and out of the Lakes. The Ice Class vessels are mainly redeployed in the Mediterranean and the US Gulf during the Seaway's winter closure.

Maersk Tankers also has a proprietary methodology called Bunker Adjustment, which is used to distribute payments to pool partners, based on the bunker consumption of their vessels compared to the pool average.

The methodology was recently reviewed by Lloyd's Register, confirming its conformity to recognised industry quality standards.

Bunker Adjustment was previously known as Observed Performance Factor (OPF). The name was changed this month to ensure a more adequate fit between name and methodology.

This system calculates how much fuel each pool vessel consumes in relation to the pool average and allows Maersk Tankers, as pool manager, to distribute payments to pool partners accordingly, giving them a fair and transparent distribution of money, the company said.

LR independent subject matter experts conducted an audit of the Bunker Adjustment calculation engine and have assessed its conformity with established methodologies and published international standards, such as ISO 15016:2015 and ISO 19030:2016.

"We use the Bunker Adjustment methodology, as we believe it is the fairest and most accurate way of distributing payments related to bunker consumption to our partners. The third-party verification by Lloyd's Register speaks to that," said Ulrich Schittek, Maersk Tankers' Head of Management Services, After Sales.

Bunker Adjustment rewards good operational performance and offers a healthy return on investment to pool partners that invest in vessel fuel efficiency, which can be achieved through applying anti-fouling hull paint or training their crews to operate the vessel in a fuel-efficient way, etc.

The rewards are tangible, not only for pool partners with the most fuel-efficient vessels. Inherently, Bunker Adjustment encourages bunker performance and through that, benefits the pool as a whole. The data that goes into the methodology is further utilised to evaluate each vessel's saving potential.

"We support pool partners on initiating the right actions to improve fuel performance and consequently, the pool partners' earnings," explained Per Navndrup Pedersen, Head of Bunker at Maersk Tankers. Through this, efficiencies are achieved across all pools.

Bunker Adjustment uses data which is normalised to remove the impact of speed, draft, cargo handling and weather from a vessel's performance. Through this, the actual performance of all vessels is assessed under the same conditions.

This methodology was launched in August, 2015 and was built on robust metrics and algorithms and known naval architectural methodologies. The Bunker Adjustment core is calculated by the external performance provider Vessel Performance Solutions (VPS). "The fact that we combine naval architectural practices with the pool distribution allows us to compare the vessels' performance by equal standards and is unique in the industry," Pedersen claimed.

Through Maersk Tankers' pool partner platform InSite digital, pool partners can examine adjustments for the vessels in their pool.

This platform allows pool partners to compare the actual consumption of their vessel with the optimal consumption which includes vessel specifics and, for example, the time until the next upcoming drydocking. "InSite digital assists partners in maximising their vessels' potential and increasing their earnings," said Schittek.

Rotor sails fitted

In another move, last August, Maersk Tankers started to test two 30 m high Norsepower rotor sails on board the LR2 'Maersk Pelican' in co-operation with Shell. They were installed at Rotterdam.

As a result, a reduction in fuel cost and associated emissions on typical global shipping routes of 7-10% is forecast.

The rotor sails had completed rigorous land testing, including thorough testing of various mechanical and performance criteria, and were the first rotor sails to be class approved for use on a product tanker.

Extensive measurement and evaluation of the effectiveness of the sails are now underway to test the long-term financial and technical viability of the technology.

Independent experts from Lloyd's Register's (LR's) Ship Performance team will acquire and analyse the performance data during the test phase to ensure an impartial assessment before technical and operational insights, as well as performance studies are published.

Norsepower told *Tanker Operator* that the

results of the tests should be available towards the end of this year.

Finally, it was recently announced that Maersk Tankers is to fit four scrubber systems on board one operational LR2 and three newbuilding LR2s before January, 2020 to comply with the IMO's sulfur regulation.

To comply with the regulation, Maersk Tankers has analysed and evaluated various options, taking into account the long-term financial viability of available options and potential environmental impact, the company said.

"We have carried out extensive analyses while also consulting with industry specialists and relevant regulatory bodies. Based on that, installing scrubbers on selected larger-sized product tanker vessels is assessed to be a financially viable solution while combining it with the use of compliant low sulfur fuel on the majority of the fleet," Tommy Thomassen, Maersk Tankers CTO said earlier this month.

Installing scrubbers on smaller-sized tankers was not deemed financially viable.

Maersk Tankers also said that it was ready to handle scrubbers for vessels operated in its commercial pools.

As for **NORDEN**, this major shipowner had to rely on its drybulk operation to claim an adjusted result for the year of $20 mill, compared with $28 mill in 2017.

NORDEN's tanker activities are being split along similar lines as seen in the company's drybulk sector to increase its presence in the short term timecharter market.

A couple of years ago, NORDEN's drybulk segment was split into Dry Operator and Dry Owner.

Soren Huscher, CEO Norient Product Pool (NPP) explained; "Increasing focus on short term activities allows us to leverage the agility in the market and increase stability, despite the market downturns, limiting the effects of such down cycles.

""With our extensive knowledge, vast relations in the market and the mindset of a shipowner, we come to market as owners who care for the steel, seeking solutions to the benefit of all parties," he said.

NORDEN said that it was seeking to strengthen its relations to new and existing owners, operating with long term targets and objectives to create a more agile business for all parties.

"As a successful shipowner for close to 150 years, NORDEN is a market player, which understands what is important from a shipowner's perspective and we are not here to exploit it," Huscher added. Drawing on on the strong earnings capability of NPP and NORDEN's solid access to short term chartered tonnage, paired with focused risk management, market timing, good technical performance and access to off-market deals, enables us to become better equipped to deliver attractive returns. We wish to be recognised as a charterer of ships with an owner's mind.

Timecharter desk

As a result, NPP has set up a timecharter desk in the Copenhagen office. Three experienced brokers are now employed running the desk, including the ex head of Maersk Tanker's Handytankers commercial operation.

The aim is to double the number of short term chartered-in tankers from 20 today to around 35-40 in the near future.

The company forecast an adjusted result of between $5-$20 mill in Tankers for this year.

Last year, the total tanker fleet averaged a daily TCE of $12,497, while the average daily opex was $6,348 for MRs and $6,391 for the Handysizes.

Last November, NORDEN added two 2009 vintage South Korean-built MRs to its fleet. The acquisition further expands the company's product tanker fleet ahead of the expected market improvement towards 2020, it said.

Including this purchase, the owned tanker fleet was expanded with four MRs in 2018, bringing the total NORDEN tanker fleet up to 58 vessels, including chartered vessels.

CEO Jan Rindbo said at the time: "While product tanker market conditions have suffered from oversupply and weak demand this year (2018), we expect an improvement towards 2020.

"Recently, the crude tanker market has recovered strongly, oil price has declined to a 12-month low and oil inventories have been drawn significantly. This points to a recovery in demand for product tankers and improving market conditions.

"We therefore believe this purchase is a good opportunity to take advantage of the relatively low prices on tonnage now, to increase the capacity," he said.

At the end of last year, NORDEN's tanker fleet totalled 44 MRs of between 45,000-50,000 dwt and 12 Handysize vessels of 35,000-37,000 dwt. In addition, NORDEN has two LR1s on charter.

Of the total, 24 tankers were wholly owned while the remainder were chartered-in. All of the tankers are commercially operated through Norient Product Pool (NPP).

Last November, NORDEN finalised a test voyage on the Handysize 'Nord Highlander', which was powered by CO2 neutral biofuel.

This test voyage was supported by an international NGO. Kåre Press-Kristensen, Senior Adviser, Ecological Council, commented; "We appreciate that NORDEN is investigating specific solutions to the climate challenge. We need actions here and now to meet the climate goals of the IMO and we are proud that NORDEN takes action, taking a leading role in biofuels, and look forward to following the development."

The test documented that second generation CO2 neutral biofuel is technically and economically suitable and thereby a realistic alternative to comparable fossil fuel. The test on board the Handysize proved that the engine performance was not affected, ie a full performance envelope can be delivered without restrictions.

NORDEN acknowledged that biofuel may not be the sole solution in the long run, however, believed that the carefully chosen second generation biofuels used can contribute significantly to reducing our CO2 emission here

NORDEN is looking for calmer waters this year

and now.

The test voyage was conducted in September, 2018 in co-operation with Rotterdam-based GoodFuels. This was a ballast trip from Rotterdam to Tallinn.

To compare how the engine reacted on the biofuel as an alternative to low sulfur fossil fuel, the departure from Rotterdam was conducted on fossil fuel. After a visual inspection of the engine, the vessels switched to biofuel.

During the voyage the engine was operated at different loads for sufficiently long periods to establish stable performance. After the test, a final visual inspection of the engine was conducted, which confirmed that the engine was not negatively affected by the biofuel.

NORDEN said that it will continue to work with GoodFuels to gain further experience with biofuel as an alternative to low sulfur fossil fuel.

This year, NORDEN expects to drydock certain vessels to fit scrubbers, mainly in Turkey and clean the tanks ready for 1st January, 2020. Side stream type USCG and IMO approved ballast water treatment system are also being fitted.

Having totally recovered from its rocky ride a few years ago, rival **TORM** celebrated its 130th birthday on 14th January this year.

In a statement on its recently released 2018 Annual Report, chairman Christopher Boehringer said that following challenging market conditions for the majority of 2018, product tanker rates rebounded significantly towards the end of the year.

He thought that positive dynamics continued to be present. He outlined that in particular, the implementation of new restrictions on sulfur emissions is expected to positively impact the product tanker market by increasing demand for clean petroleum products.

"TORM remains well-positioned to leverage the positive market development, due to our spot-oriented chartering strategy, our continued strong operational performance and the preparations made ahead of the implementation of the new IMO 2020 sulfur regulation," he said.

Last year, TORM took delivery of four LR2s from Guangzhou Shipyard International (GSI). As part of the ongoing efforts to modernise the fleet, the company ordered an additional three MRs from GSI in 2018, bringing the total remaining newbuilding programme up to two LR1s and seven MRs that are due to be delivered in 2019 and through the first quarter of 2020.

Scrubber fitted

All of the nine newbuildings were ordered with scrubbers installed and at attractive prices, the company claimed. The newbuildings were also all fully financed.

TORM seems to have put the bad weather behind it

In 2018, TORM completed an equity raise of $100 mill and secured debt financing and loan extension for a total of $203 mill.

"As a testament to the 'One TORM platform', TORM has continued to deliver TCE earnings and cash flow at the top end of what comparable industry players delivered throughout the year and under difficult market conditions," Boehringer said, adding; "TORM currently expects the IMO 2020 sulfur regulation to lead to an incremental increase in product tanker trade during 2019 and 2020."

In 4Q18, TORM established a joint venture with scrubber manufacturer, ME Production, and GSI, holding a 27.5% stake. The joint venture, named ME Production China, will manufacture scrubbers in China and deliver them to a range of maritime industry customers for both newbuildings and retrofits.

In connection with the above, TORM ordered a number of scrubbers from the company. TORM will install scrubbers on 21 vessels and signed a letter of intent for installations on up to 39 vessels, or about half of TORM's fleet.

Last year, TORM undertook the first retrofit scrubber installation on the MR Ice Class vessel 'Torm Lene'. On 15th October, 2018, TORM took delivery of the first newbuilding fitted with a scrubber, the LR2 'Torm Hilde'.

"This comes at a time when demand for scrubbers is expected to increase significantly. This strategic move provides us with a substantial economic interest in a venture that has the potential to be a large-scale international scrubber manufacturer whilst at the same time securing the availability of high quality scrubbers," Boehringer explained.

On 12th February, TORM's $250 mill universal shelf registration statement on form F-3 became effective with the US Securities Exchange Commission (SEC). This will provide the flexibility to raise capital over the next three years from offering common shares, debt or other traded securities in one or more future offerings.

"TORM's commercial performance over the past year has continuously been among the best within its peer group. The product tanker market has rebounded significantly since November 2018, and looking ahead, we are well-positioned to leverage the ongoing market recovery, illustrated by a 43% increase in freight rates achieved so far in the first quarter of 2019 compared to 2018,"added executive director, Jacob Meldgaard.

TORM also executed newbuilding options for three MRs at GSI for a total of $93 mill, last year bringing the total number of newbuilding deliveries in the 2017-2020 period up to 15 out of which, TORM took delivery of four LR2 vessels during 2018.

The remaining newbuilding programme covers two LR1s and seven MRs with expected deliveries in 2019 and the first quarter of 2020.

Last year, TORM also sold four older vessels (two MRs and two Handysize vessels) for a total of $27 mill. Three of the vessels were delivered to their new owners in 2018, and one vessel was delivered in the first quarter of 2019. In 1Q19, TORM also sold and delivered one older MR.

For the full year 2018, TORM achieved TCE rates of $12,982 per day across its fleet, compared with $14,621 per day in 2017.

As of 31st December, 2018, 10% of the total earning days in 2019 were covered at $17,306 per day and, as of 5th March this year, 85% of the total earning days were covered at $18,522 for 1Q19. Around 24% of the total earning days in 2019 were covered at $18,193 per day.

TO

BSM- Coping with future challenges

Bernhard Schulte Shipmanagement is critically looking at its training methodologies and competency management system and has started a process to revise its methods to cope with future challenges.

This includes for example modernising training videos to become more interactive and experimenting with the first virtual reality training, BSM deputy COO Jeroen Deelen told *Tanker Operator*.

He said that as ships become more complex, the need to attract the right people has become a 'must have'. However, shipping has struggled to attract these young men and women to serve on board.

"The industry spends large sums of money on training each year and the returns are questionable. An example would be ECDIS. The majority of the world fleet is now navigating using ECDIS. Each watch officer must have generic ECDIS training and type specific training. However, we regularly find the understanding and user competency with ECDIS insufficient," he said.

"It is not just the senior positions that are under pressure, as the pool of skilled ratings is also declining, a problem as we move towards smaller crew numbers. We need to encourage the seafaring industry to regain confidence in the shipping industry and start valuing more our crew. Sea-based staff is our key asset and valuing each and every member is so important.

"We continually engage with our crew to better understand their needs and preferences. We have a mobile app for seafarers, which allows a very direct engagement between crew and office and makes processes much easier. For example, the exchange of travel information and pre-boarding documentation, " he added.

Highlighting BSM's approach to digitalisation, Deelen said that BSM is working with a range of innovative technologies for the maritime sector and has been doing so for several years.

For example, the company owns a software applications business, MariApps Marine Solutions, which is a technology company offering applications for the shipping industry. BSM is investing significant sums in the production of these software solutions.

"We believe shipping as an industry should digitalise to an even greater extent and this will give us greater efficiencies via the application of Big Data, Artificial Intelligence, etc. BSM is wholly committed to applying new technologies across a range of shipmanagement functions both on board and in the office," he explained.

Performance centre

BSM is always interested to improve efficiency and cost effectiveness of operations on board for clients. The company has a specialised 'Ship Performance Centre' to look at various technologies that are either currently available or being developed. The focus of this unit at present is efficient fuel consumption. Effective and stable communications, ever more important in the modern era, is another area where BSM looks to technology to improve efficiency," he added.

He also explained that the third party shipmanagement industry is generally aware that embracing new technologies that produce automation, the application of artificial intelligence, digital technology and the growth of online training are essential, more so than ever before.

As for data and its analysis, BSM uses an ERP suite of modules covering all aspects of shipmanagement from crewing, accounting, planned maintenance systems, voyage management, etc. This is developed and supported by MariApps and is implemented in all of BSM's offices and on board all BS-owned and BSM-managed vessels.

MariApps has a specific team, which closely interacts with the various stakeholders to develop the specific business metrics and trend patterns against fixed KPIs.

BSM was one of the first to study data obtained from ships, including the review of incidents/accidents and near misses. By adopting analytic methodology, there is an increase in the use of 'predictive maintenance' practices. This will continue to grow and will be a contributor to cost savings and improved efficiency.

For several years, the company has successfully employed a two-pronged approach to ensure the reliability and availability of the fleet:

(i) A bespoke planned maintenance system covering the equipment & structure for each ship under management. Inspections and overhauls carried out as recommended either by equipment manufacturers and/or compliance with statutory and class societies.

(ii) A condition based maintenance (CBM) programme, wherein a combination physical examination, review of operational parameters, as well as applicable scrutiny, for example lubricating oil analysis reports, are examined prior to the execution of overhaul of each equipment. This risk-based analysis, which has refined over the years has resulted in increased TBO (time between overhauls) and in some instances preponement of maintenance to prevent potential breakdown of equipment.

With improvement of available technology, the use of vibration analysis, ultrasound measurement, as well as thermal Imagery are ongoing projects to support CBM, Deelen said.

TO

How the digital revolution changed the way we work

The last 12 months have really felt like a big acceleration in the digitisation of the shipping industry.*

The fourth Industrial revolution, that we have all been talking about for so long, has finally arrived and there is barely any part of the maritime sector that has not seen some form of digital disruption.

With the exponential growth of VSAT, which our owner KVH Industries has been heavily involved in, along with the launch of HTS antennas, the trend looks set to continue.

Coming from the content side of the business, digitisation seemed slow to get going although, in my entire 14 years at KVH Videotel, we have always worked digitally and eLearning has been a staple of almost everyone's training and development strategy for many years.

So, it might seem that, as an established digital business, little would change for us at KVH Videotel but nothing could be further from the truth. Over the last few years we have been undergoing some major behind the scenes transformations of our own, which have had a huge impact in the way we work and design our training materials, software and services.

The first big change started around five years ago when we started to have more and more conversations with customers around the data we collect. The hunger from customers to do more and more with their training records and reporting led us to completely re-engineer from scratch the entire way we processed and stored training events.

This was not a trivial exercise, as we currently hold more than 14 mill training records and all historical data had to be retained for our customers. However, it did give us a chance to take stock and consider how the data could be made to work better for all of us.

As we rolled out our new systems, we noticed an interesting side benefit which has transformed the way we work. Being able to see usage statistics across the thousands of vessels that use our services and being able to filter these by trade, ship type, etc, meant we could very quickly focus on the titles that our customers got the most value from and identify those that were less used.

Using this information in our Content Evaluation Committee meetings, where we review the catalogue and agree on priorities for development, forms a huge part of the discussion.

This has been an enormous help over the last two years when undergoing the biggest content update that the company has ever attempted. Using the data, we could see instantly which training titles formed part of each of our customer's schedules, where they were viewed and for how long, making it much easier to know which ones to prioritise.

This also neatly brings me to the second biggest change in the digital revolution which has influenced the way KVH Videotel works.

Smart phone explosion

One of the key drivers to digital has been the proliferation of smart-phones, as we have all got used to being able to download data, access services and content in the palm of our hands. This becomes especially important when we are on the move and so it is no surprise that they have become a favourite with the world's seafarers.

KVH Videotel realised very quickly that the trend towards mobile learning would be inevitable and that would mean we would need to refactor our entire catalogue of hundreds of training titles into a format that would play on any device.

Once again, such a massive undertaking gave us the time to pause and ask what our customers as consumers wanted and

KVH Videotel's Raal Harris

ourselves as authors preferred from our new eLearning platform. The driver may have been a simple one, to switch to a mobile friendly technology, but the switch to support multi-device learning required a complete overhaul of the way we designed and delivered learning.

Touch control responsive layouts, the way in which we design activities and describe events, have all required re-evaluation. So, we have changed a lot in recent times so much so that I am not sure whether it should be defined as an evolution or revolution from where we started all those years ago.

Which brings me to my final point which is that, as compelling as the advances in new technology are, we must not lose sight of the fact that what we are really trying to achieve is better trained seafarers who can keep themselves, others and the environment safe.

**This article was written by Raal Harris, Managing Director, KVH Videotel.*

Danica embraces the training evolution

Training the officers of tomorrow should encourage leadership skills, said Henrik Jensen, CEO of crewing specialists - Danica Group.

"I think that the focus today is too much on training about rules and compliance," he told *Tanker Operator*. "Of course it is necessary to understand the rules and regulations, but there should be more focus on training in leadership and behaviour.

"When you train about rules the result is that you get people who comply. However, when training in behaviour we get people who can think and who can create a self-improving safety culture in the organisation – and that is what it is all about!

"We saw a need for the senior officers to have a set of leadership tools empowering them to create and improve the safety culture on board. With this in mind we worked with psychologists to develop leadership courses specially designed for senior officers and the special environment they have to lead in," he explained.

Danica Group, which deploys more than 1,300 seafarers, mainly senior officers, provides training using a combination of learning methods, including: written training materials, one-to-one training, classroom training, computer-based training (CBT) and also the most up-to-date virtual reality training (VR).

According to Jensen, all the learning methods have their good points and, by combining them, Danica achieves the best learning environment. He said: "For example, when a seafarer has done a CBT session at their own time, our instructors will then conduct a one-to-one session with them in order to verify that the training was efficient and to clarify any misunderstandings."

Danica's CEO Henrik Jensen

Danica has now extended its training portfolio to include VR, which Jensen said is a highly efficient and cost-effective training tool for today's crew. He added: "We have developed a crane driver's course where, when the trainee puts the VR-glasses on, suddenly he is in the crane driver's cabin! The course includes sessions on safety checks and limits of the crane and teaches practical crane driver skills."

VR drawback

The downside of VR training, he said, is that it can take a little time for the trainee to feel comfortable with the world they see through the VR-glasses. In fact he recalls that the that first time he tried the VR-glasses himself he was afraid of falling when walking around the deck!

Danica is now in the process of implementing VR tools for pre-employment assessment. Jensen explained that the advantage is that an officer candidate can be 'placed' on deck to conduct an inspection. "During the round the officer will be faced with various deficiencies, such as a scupper not being plugged-in, and we can then monitor how they react."

But he warned: "Skills cannot be learned simply by reading or doing a CBT or VR session – you need hands-on experience too. In the same way that you cannot learn to swim by reading an instruction book – you need practical training too!" TO

Catering courses thrive on technology

MCTC's Managing Director, Christian Ioannou, said: "Technology is enabling crew to access all types of support on board a vessel or ashore, any time day or night. MCTC's Learning Management System has allowed crew to access courses anywhere in the world while being supported by a tutor."

Technology is also enabling crew to learn on the job and, as a result, it is also helping to improve the industry.

MCTC's Galley Management System (GMS) simplifies on board catering tasks, such as helping crew to compile weekly menus, aiding dietary issues while also conducting the entire food supply chain. These systems save crew time while simplifying tasks to free them up for other jobs, the company said.

"The internet is a fantastic tool which has transformed the shipping industry. Technology is changing and evolving at a fast pace, I predict that webcams should arrive on the scene within the next two years. One day I also think MCTC will be running holographic training sessions! Watch this space…It's an exciting time for the shipping industry," he concluded.

First STS training in Brazil

Between 18th and 26th February the DYNAMARINe Training Academy conducted its first Ship to Ship (STS) Service Provider Management and Auditing Course in Rio de Janeiro, Brazil.

This five day course was undertaken at the invitation of the Brazilian Directorate of Ports and Coasts and the participants came for the Brazilian Navy, who has the responsibility for Coast Guard activities, including pollution prevention in Brazilian ports and waters, and PETROBRAS the Brazilian oil major.

The course material was developed by DYNAMARINe Training Academy and following accreditation by the American Bureau of Shipping (ABS), was presented by four members of DYNAMARINe's staff, Dr Alex Glykas, Dr Stelios Perissakis, Anargyros Zenios and Petros Kanellos, supported by Capt George Deligiorgis, DPA of Thenamaris (Ship Management) Inc.

Four training sessions were held every day and each day concluded with a workshop to apply and reinforce the training material that had been delivered.

Active participation and interventions by individual course members were encouraged and a very high level of participation and commitment was maintained throughout the course, DYNAMARINe claimed.

Led by Dr Glykas, the first day focused on the activities, responsibilities, and liabilities of STS service providers. Particular emphasis was placed on their management and organisational structure. Following this, Kanellos conducted the first workshop on the assessment of the 'STS Location'.

During the second day, the standards and practices found across the world-wide STS industry were covered emphasising the likely safety and environmental benefits of enhancing Brazil's coverage of STS operations undertaken in its waters.

Zenios concluded the second day with the workshop on mooring equipment assessment.

During the third day, Dr Perissakis focused on the principles and structure of a quality management system with relevant references to STS operations. He emphasised the need for continuous oversight and improvement of the processes involved to maximise the attainable safety and environmental benefits and to eliminate any substandard practices.

He detailed the essential elements for a quality management system correlated with those found across STS service providers and cross-referenced to TMSA. The day concluded with a workshop led by Kanellos and Zenios covering audit trails.

During the fourth day, Dr Perissakis detailed the importance, relevance, and resources required for each stage of a self-assessment scheme. Course members were encouraged to provide their own feedback on the elements they considered would be appropriate for each stage of such a scheme. The last workshop simulated an audit of a specific process associated with incident investigation.

Substandard practices

On the fifth day, Thenamaris' Capt Deligiorgis brought his extensive experience in the conduct of STS oil transfer operations outlining substandard practices he had encountered in the past along with lessons his company had learned.

Vice Admiral Roberto Carneiro Gondim da Cunha, the Brazilian Navy's Director of Ports and Coasts, addressed course participants on the need to set a framework for safe and pollution free STS transfer operations in Brazilian waters.

From its foundation, DYNAMARINe said that it has sought to enhance the safety and environmental protection associated with worldwide STS oil transfer operations. The courses now offered by its training academy continue this initiative encouraging the dissemination of best practice, appropriate management practices, and procedures and the handling and exchange of information and knowledge.

It is the responsibility of all stakeholders in the STS segment to continually monitor and enhance their practices and procedures through the development of coherent and consistent self-assessment schemes, the company stressed.

Particular responsibilities rest on flag and coastal states under international conventions and national law to ensure the appropriate monitoring of safe and pollution free STS transfer operations.

The course itself was not an achievement, but instead, it was a recognition of hard, systematic and enthusiastic work that was supported by shipowners with a vision, technical operators with a treasured safety culture and STS service providers having respect for their jobs, DYNAMARINe concluded.

TO

Training against cyber-attacks

The Institute of Marine Engineering, Science & Technology (IMarEST)'s MLA College, together with the University of Sunderland and Stapleton International, has developed an online Maritime Cyber Risk Awareness Course.

Bridge systems, such as GPS, ECDIS, radar and autopilots, can be compromised by outsiders, which poses a significant safety risk. And it is not only vessel navigation that can be undermined, but also control systems for ballast water, vessel stability, engines and propulsion can all be targeted by increasingly sophisticated cyber criminals.

The infrastructure that supports shipping, such as ports and shore-based businesses, are just as vulnerable as ships. As the frequency and complexity of these attacks is set to rise, organisations will have to build stronger defences, chiefly by training their employees and equipping them with the knowledge to keep the business safe.

It will soon become crucial for all employees - no matter how big or small the company - to understand the latest threats, the extent of the damage they could do, and the best way to prevent or deal with a breach of security.

Employing a permanent cybersecurity team is not yet common and it is worth noting that even if it were, staff are usually the weakest link when it comes to security. Providing regular training for all staff to ensure they are not fooled by clever attackers may currently be the most cost-effective solution available.

"Businesses that are pro-actively investing in cybersecurity training are future-proofing themselves against increasingly ingenious crimes. Global trade relies on shipping and maritime operations so anything that might interfere with them is problematic at an international level. There is also a growing shortage of qualified cybersecurity personnel, with unfilled roles on the rise. Upskilling staff through courses such as this one must be included in the short-term strategies of maritime businesses globally to meet this demand and to improve overall safety at sea." IMarEST CEO David Loosley said.

Inmarsat has included this training course as part of its cyber security service- Fleet Secure.

"We understand the importance the role 1.6 mill seafarers play in the maritime industry. These same seafarers are a large component of a mature cyber security position for any shipping company and Inmarsat is happy to endorse the cyber security course aimed at the raising the awareness and competence of seafarers." explained Peter Broadhurst, senior vice president safety and security, Inmarsat Maritime.

Awareness training is becoming mandatory within the industry - a cyber security component has recently been introduced to TMSA - but many shipowners are reportedly ignoring the warnings and not providing training.

This new training course can be completed online and consists of four modules: the cyber security threat; the digital threat using your personal information; the digital threat using your IT device and the physical and human threat. TO

HRA reduced - Vigilance still essential

The geographic boundaries of the High Risk Area (HRA) for piracy in the Indian Ocean have been reduced.

The Round Table industry, including BIMCO, International Chamber of Shipping (ICS), INTERCARGO, INTERTANKO and the Oil Companies International Marine Forum (OCIMF) responsible for setting the HRA, emphasised that a serious threat remains despite the reduction to the area's geographic boundaries.

Correct reporting, vigilance and adherence to fifth edition of the Best Management Practice (BMP5) remains crucial, they said.

The HRA reduction takes full account of recent shipping industry experience, pirate intent and capability and follows extensive consultation with nations, collations and military naval forces, including Combined Maritime Forces, EUNAVFOR and the United Kingdom Maritime Trade Operations (UKMTO), which continue to provide vital advice and protection to shipping.

The regional UKHO Maritime Security Chart, Q6099 will be updated by a Notice to Mariners and a new version produced to reflect these changes, which will take effect from 1st May, 2019.

The new HRA co-ordinates are:

- In the Southern Red Sea: Northern Limit: Latitude 15º 00'N.
- In the Indian Ocean a line linking: From the territorial waters off coast of east Africa at Latitude 05º 00'S to 050º 00'E.
- Then to positions: Latitude 00º 00'N and Longitude 055º 00'E; Latitude 10º 00'N and Longitude 060º 00'E plus Latitude 14º 00'N and Longitude 060º 00'E.
- Followed by bearing 310º to the Arabian Peninsular's territorial waters.

The industry associations said that will continue to monitor developments to the security situation, and will adjust the HRA, if and when the situation warrants it.

Naval Dome secures Totem Plus

A license has been issued to Totem Plus to allow the use of Naval Dome's cyber security software.

Totem Plus has signed a license agreement with Naval Dome to use its maritime cyber security software across a range of its automation and navigation solutions.

Under the agreement, Totem Plus is licensed to integrate the Naval Dome software with the hard drives across several hundred systems in the Totem Plus portfolio.

Capt Azriel Rahav, Totem Plus CEO, said: "It is crucial for our customers to be supplied with systems that are protected at the very highest level. It is especially important for Totem ECDIS, the only ECDIS in the world offering Collision Avoidance DST.

"The Naval Dome system is the only dedicated maritime cyber security system to have so far achieved Security Level 4 under DNV GL CP-0231. There are currently no other OEMs supplying equipment embedded with this level of protection," he claimed.

The two companies began working together in 2017 when the Naval Dome solution was used to protect the Totem Plus ECDIS, IMAC (integrated monitoring, alarm & control), VDR and BAM (bridge alert management) installations on board a containership.

Totem Plus equipment is now protected by Naval Dome software

All existing Totem Plus systems currently in operation, including ECDIS, VDR, bridge management and machinery control systems, can be automatically updated with the Naval Dome security system, when technicians carry out software upgrades. New hardware orders can also be specified with Naval Dome protection.

Naval Dome CTO, Asaf Shefi, said: "I am delighted that Israeli-developed technologies are now at the very forefront of maritime cyber security. As the first original equipment manufacturer (OEM) licensed to integrate the Naval Dome software with its hardware, Totem Plus leads the way in the provision of equipment optimised for safeguarding against unauthorised penetration."

Totem Plus can also supply the Naval Dome Dashboard. This provides ship and shore personnel with a picture of the security status of critical equipment on board ships across entire fleets.

Mooring rope with built-in sensor tested

Mitsui OSK Lines (MOL) in partnership with MOL Coastal Shipping and MOL Information Systems has started a demonstration test of a mooring rope fitted with a built-in sensor and rope status monitoring system.

In general, mooring rope tension is hardly accurately determined, except at certain ports equipped with tension monitors.

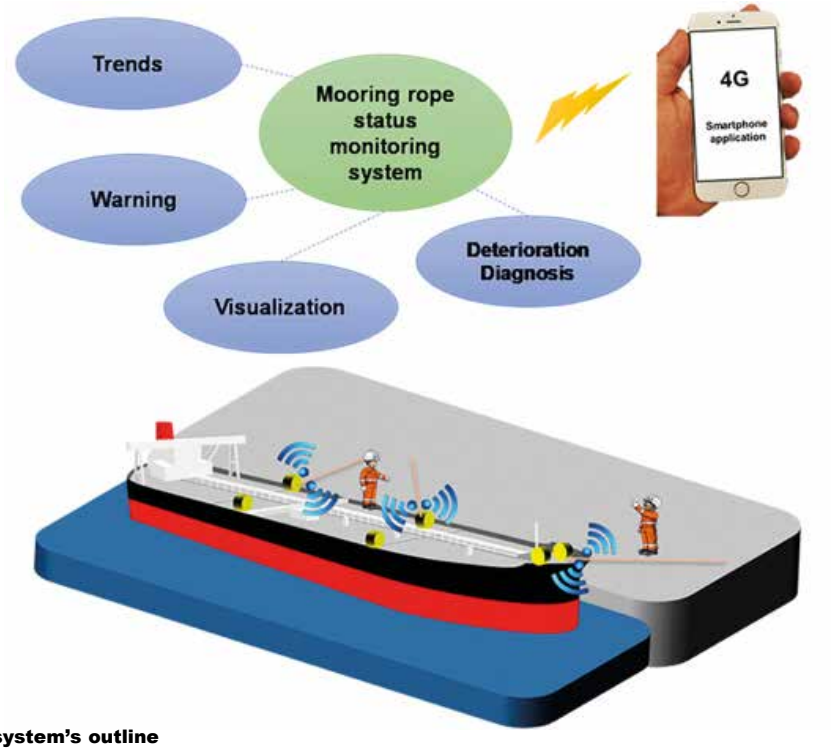
As a result, ropes may break because crew members do not take effective measures against external forces that are stronger than anticipated, due to weather and sea conditions, MOL said.

In addition, visual inspections alone cannot always identify ropes that are damaged or deteriorating faster than expected, even if they are at the proper tension, and this may lead to premature breakage.

Broken mooring ropes pose a serious risk of accidents that may damage port equipment and facilities and vessels. To address this, MOL, Teijin Limited, and Tesac Corp jointly developed a mooring rope with a built-in sensor, as well as a status display system that allows the crew to readily determine the tension and strength of the rope.

The mooring rope also contains Teijin's patented Technora para aramid fibre, which is claimed to offer excellent dimensional stability*. This test marks the first use of this rope on board an MOL Group vessel.

The demonstration test are being conducted with MOL Coastal Shipping-operated drybulk carrier, which is equipped with the ropes and monitoring system.



The system's outline

System adoption

Based on the results of this demonstration test, MOL plans to adopt the mooring ropes and status monitoring system to enhance safety during cargo handling operations in port and on board. And in the future, it plans to use this experience to develop a more advanced mooring monitoring system to achieve even greater safety and effectiveness in cargo handling.

This project forms part of MOL's technological development initiative, 'ISHIN NEXT - MOL SMART SHIP PROJECT'. MOL will draw upon the knowledge and expertise gained through the development process for various ship types, while taking a proactive stance in adopting the Internet of Things (IoT) to enhance safe operation and reduce vessels' environmental impact, the company said.

** Dimensional stability refers to the ability of the fibres to return to their original dimensions even after repeated expansion and contraction due to tension, MOL explained.*

Goltens offers fast-track retrofit solutions

Whether it's scrubbers or BWTS, planning is essential as the bottleneck begins to kick in, as owners rush to comply.

As green regulations continue to kick in, the retrofit rush has started and being in compliance can be as simple as choosing the right partner.

"Urgency has set in among our customers," explained Maarten Jeronimus, vice president Goltens Europe and responsible for Goltens Worldwide Green Technologies. "Whether it's exhaust cleaning or ballast water management, they know there's no way around compliance. But so many have waited to make their moves that the retrofit bottleneck has also become a reality."

In order to offer customers a faster track to compliance, Jeronimus said Goltens had been ramping up its retrofit capacity on exhaust cleaning and ballast water treatment systems (BWTS). "For the past year or so, we have been adding resources to ensure capacity when the orders come in. We have been investing in hardware, software, personnel, and developing our expertise," he said.

Goltens ability to provide high end engineering work allows the time needed in drydock to be reduced. "This is of course a big concern for owners. With our scanning and detailed design, Goltens, or the shipyard, can prefabricate the necessary structural and piping changes. With as much as possible prepared in advance, only the necessary work is done in drydock. The rest we can do while the ship is sailing. Basically we do everything possible to reduce drydock time. Our crew is flexible to sail with the ship, anywhere in the world," he said.

Onshore, Goltens usually has a station close to the shipowner or manager, allowing communication in the same time zone. "Efficient communications with owners and operators is a priority with us," said Jeronimus. "Having local staff means we are familiar with local cultures as well, including manufacturers. We can get the necessary information quickly, just by making a local call."

Worldwide locations

As one of the few companies with strategically located facilities worldwide, Goltens is able to quickly deploy resources from any of the company's different locations for a specific job. At over 1,000 employees and growing, with 22 stations in 14 countries around the world, Goltens is one of few global players that can offer such service, Jeronimus claimed.

"We can also prefabricate pipes and other structures, without depending on sub-contractors," he said. Availability of fabrication capacity for highly accurate piping is going to be a bottleneck, Jeronimus warned. Goltens is able to offer this service to, not only for steel pipes but also for more exotic materials such as ceramic coated steel pipes, cunifer and glassfibre reinforced epoxy (GRE) pipes. "We consider this to be a big advantage as it reduces uncertainties in the entire process," he explained.

Goltens has now completed, or is in the process of completing, 435 BWTS retrofit projects worldwide, ranging from 3D scanning and modelling to turnkey installations of systems, and boasts an engineering package orderbook covering more than another 100 vessels.

Goltens Worldwide Green Technologies Asian division recently announced contracts with NYK Bulk & Projects Carrier and BW Fleet Management for support in retrofitting 37 vessels with BWTS. The European operation also won an order for more than 50 shipsets from an undisclosed owner in the late Autumn of 2018.

On the sulfur emissions control side, Goltens has completed or is in the process of completing 75 scrubber and LSMGO conversion projects, and has been contracted

Goltens' Maarten Jeronimus

to assist with the engineering of 50 out of 100 scrubbers ordered by Newport Shipping Group in a deal targeting shipowners looking for turnkey retrofits.

Several fleet agreements have also been signed, adding up to 30 more scrubber projects. Goltens will provide 3D scanning, as well as services, such as design, prefabrication and installation for partial or full retrofits while the vessels are in service.

"For both scrubbers and BWTS, the orderbook is growing. 2019 will be very busy, especially since we will continue to develop the group," Jeronimus said.

"We are building Goltens Green Technologies to be in for the long run, and that means cultivating long-term relationships. Shipowners can count on the fact that Goltens is going to be around to deliver a wide range of specialised services for many decades to come, not just for the installation of BWTS or scrubbers. We will be there to serve them long after the green wave has subsided," he concluded.

TO

New LNG-fuelled Aframax design

A joint development project (JDP) between DNV GL and South Korea's Daehan Shipbuilding Corp (DHSC) has resulted in a ready-to-build design for an LNG-fuelled Aframax.

With LNG rapidly gaining ground as an eco-friendly ship fuel, DHSC, South Korea's leading Aframax builder recognised the need to build up competence in LNG fuel technology.

To gain a competitive advantage, DHSC focuses on eco-friendly and fuel-efficient tankers satisfying the growing demand for vessels, which not only comply with current and future emission regulations but feature an especially small ecological footprint.

The company had not designed any gas-fuelled ships in the past and turned to DNV GL for support. In July, 2018 the two companies launched the JDP with the aim of producing a ready-to-build design for an LNG-fuelled 115,000 dwt Aframax.

DNV GL provided comprehensive technical advice for the project. Vidar Dolonen, DNV GL Maritime's regional manager of South Korea & Japan, said: "We are pleased to have been chosen by DHSC as a partner for the project. We take this as a demonstration of trust in our expertise in gas-fuelled ships. As a first step we supported DHSC in understanding the implications of the IGF Code and our rules."

In addition, the class society guided the shipbuilder through the process of preparing the design documentation required for approval.

Based on this knowledge transfer, DHSC compiled the drawing packages for the on board LNG systems and submitted them to DNV GL's Approval Centre Korea (ACK) for review and verification.

Thanks to the thorough preparation, DNV GL was able to grant the shipbuilder Approval in Principle (AiP) for the design at the end of December, 2018. The complete design is now ready for execution and available to interested customers, the companies said.

"We appreciate DNV GL's efforts to ensure a successful JDP. Widening and deepening the technical expertise is essential to achieve DHSC's vision to be the best medium-sized shipyard in Korea. DNV GL is the right partner to accomplish this," said Yong-Duk Park, DHSC CEO & President.

Principal Particulars

Length, oa	249.9 m	Main engine	WinGD 7x62DF
Length, bp	242 m	MCR	13,520 kW at 87.1 rpm
Breadth, moulded	44 m	Cargo tanks	12 + 2
Cargo tank capacity	129,500 cu m	Depth, moulded	21.2 m
Cargo pumps	3 x 3,000 cu m/h	Design draft	13.6 m
Hose handling cranes	2 x 15t	Scantling draft	15.2 m
Power generator	3 x 1,050 kW (df)	Service speed	14 kn

LNG fuel system

A key feature of the tanker's design is its dual-fuel, low-pressure engine that can run on MGO or LNG. The design features two Type-C tanks holding 850 cu m of LNG each. Made of 9% nickel steel, a material typically used in cryogenic applications, the tanks and the fuel handling system are located on the upper deck in front of the crew accommodations, with the tanks sited in the longitudinal direction of the ship.

This open-air placement above the cargo tanks is preferable for crude oil and product tankers for safety reasons: in the event of a gas leak, gas cannot accumulate to dangerous levels in an enclosed space and ignite in the presence of electrical equipment or other ignition sources.

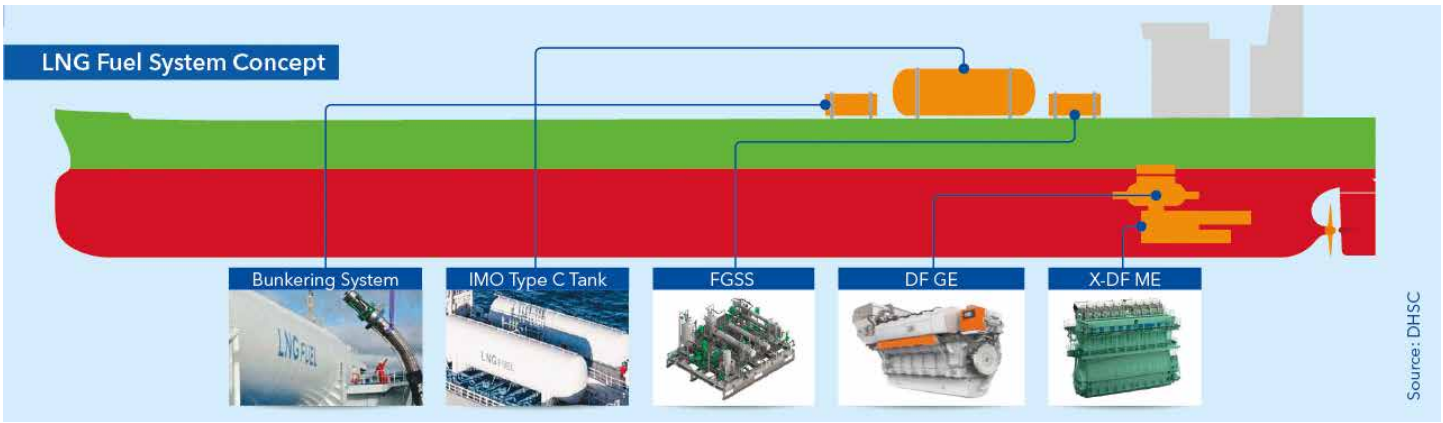
Furthermore, the arrangement on deck means that no cargo space is lost to fuel tanks, which would be the case if a membrane tank system was used.

Type-C tanks are pressure vessels designed to handle significantly higher pressures and loading rates than other tank types. They are considered very safe and reliable, are comparatively easy to fabricate, and can handle the pressure increases caused by boil-off gas. DHSC will leave the choice of tank design - double-walled or foam-insulated - to the customer.

DHSC has received several enquiries from shipowners and brokers. The shipbuilder is planning to visit several shipowners in Norway, Greece, Southeast Asia and other countries to present the design, and is confident that building contracts will follow eventually.

"We believe the completion of this joint development project will allow us to take a competitive position in a challenging market," said Park. "We are certain the eco-friendly designs by DHSC will attract newbuilding orders. The result of the JDP will be another enabler for us to strengthen our marketing strategy."

It has been designed with a full spade rudder with a twisted leading edge and a rudder bulb, plus a DSME duct. TO



All eyes on January 2020

Come the 1st January 2020 fuel switchover date, there will be safety, quality and compatibility concerns, ABS' Dr Kirsi Tikka said at a recent conference.

She described it as the most significant even in shipping since OPA 90.

Immediately following, there will be a period of volatility in fuel supply, she said in a presentation given at the recent Navigate/IPTA Chemical and Product Tanker Conference held in London.

Not surprisingly, the first day's proceedings were dominated by the forthcoming IMO low sulfur regulation and how to deal with it.

There will be a significant change in the demand profile overnight from 1st January, 2020, Dr Tikka warned, as there will be around a 3 mill barrels per day fuel switch.

This will be predominantly met with compliant fuels, such as MGO and 0.5% LSFO, which is categorised under ISO 8217.

The market could be boosted by increased product and crude oil trades, plus the fact that some ships will be taken out of the market to have scrubbers fitted and there could be a certain amount of slow steaming adopted by operators.

Charterers/operators will have a choice of vessels burning efficient compliant fuels or those fitted with scrubbers.

LNG and alternative fuels will probably make their mark after 2020 as, thus far, LNG take-up has not been very high. The charterers could be the drivers in making the choice to switch to LNG, but the infrastructure is still lacking and both capex and opex could be high, she said.

For example, the siting of the fuel tanks could cause problems. However, she thought LNG could be a viable option for 2030 and beyond.

IBIA's Unni Einemo warned that there needs to be a new Bunker Delivery Note (BDN) format, exhaust gas cleaning systems (scrubbers) guidelines and fuel sampling guidance.

Delegates were advised that the key IMO MEPC 73 HSFO carriage ban from 1st March next year did not mean that vessels could burn the non-compliant fuel after 1st January, 2020 but they had extra time to dispose of it.

Einemo outlined what she called the three

ABS' Dr Kirsi Tikka

'Ps' for compliance -

Preparation - new hardware installations, etc.

Plan - tank cleaning, fuel switching, etc.

Practice - fuel switching.

She said that a question that should be asked at May's MEPC 74 was - if a BDN says a fuel stem is compliant but it proves to be otherwise and the ship operator has taken the fuel on board in good faith, does the ship have to de-bunker or can alternatives be agreed?

Commenting on the final HSFO date of 1st March, 2020, she said it could prove to be difficult to de-bunker and dispose of it.

Rob Cox of IPIECA, which represents the refinery sector, said that a 0.5% sulfur content distillate market will contain blended fuels and said that the ISO and CIMAX were working on new test methods.

Thus, segregated storage tanks will be needed on board ship and he also warned of fuel compatibility and stability issues. For example, there could be viscosity and density changes, especially when switching fuels. There must be a culture change among the crew who should not mix fuels from different stems. "They will have to become familiar with the different fuel rules," he stressed.

He thought that the IMO's Ship Implementation Plan (SIP) (see page 27) was "absolutely vital" as the engineers and other crew might not have any experience in operating a ship with low sulfur fuels if they had not previously sailed in an ECA region.

MAN's take

An engine manufacturer's take on the situation was provided by MAN Diesel & Turbo's Claus Vogel, who claimed that the company's 2-stroke engine portfolio did not present a problem with the 0.5% sulfur cap.

He said that the MC/ME/-C single fuel engines combustion chambers will be designed to house fully coated cermet piston rings, while the ME-GI/ME-LGI dual fuel engines are already designed with combustion chambers able to house the piston rings.

As for the HSFO MC/ME/-C type engines, they will be able to burn HFO and MDO with a scrubber fitted.

Vogel warned that lubrication will be critical going forward and that tests should be carried out on lubricants to see if they are compatible.

According to reports, he said that 1,800 ships would be fitted with scrubbers by 2020, 5,100 by 2025 and some 16,000 by 2035, representing 2%, 4% and 13% of the world's fleet, respectively.

IBIA's Unni Einemo

He advised that MDT was working on a multi-fuel engine to burn alternative fuels, such as LPG, LNG and LEG.

Uni-Tankers Michael Eskeling said that a lot of training will be necessary. He advised shipping companies to make a plan and ensure that the crew are primed for possible problems.

He also advised that fuel switchovers should be undertaken well before entering a river, harbour or narrow channel in case of problems, as there could be technical issues.

Eskeling thought that there will need to be a new relationship between bunker consumers and suppliers and a risk assessment should be made ahead of a stem.

He thought that LSFO would be available in many places by the second or third quarter of this year and advised operators to get started as soon as they can to learn.

Uni-Tankers is closely allied to the Bunker Holding Group who thought that the price differential between HSFO and LSFO will be around $300 per tonne by 1st January, 2020 and then, HSFO will fall in price. Hybrid fuels price spread will be somewhere in between, he said.

Eskeling gave his guidelines on what to do when facing new fuels, for example, make a tank inspection plan, which could be retrospective.

Tank inspections should include looking into the tanks whenever possible to see if there is any build up of sediments, debris and/or cat fines. This should be part of a planned maintenance system and at a minimum conducted at every planned drydocking period.

Make a bunker plan, which should include-

- Make compatibility tests.
- Evaluate bunkers ROB and make sulfur ratio calculations for each tank.
- Empty the storage tanks, before filling.
- When all the HSFO is burned, empty the settling tank(s) before filling.
- Empty the service tank before filling.

Make a risk assessment-

- Ensure the crew is aware of what's going on.
- Ensure the auto filters are in good condition.
- Until the company is familiar with the new products, keep some extra filters and separators in stock.
- Make the plan so it proves due diligence has been undertaken and document each step.

Finally, start in good time, which is NOW – if not started already.

This is NOT rocket science, but common sense. Sulfur levels can easy be calculated.

The biggest issue is old residue remaining from previous bunkers, which can be solved by using new and very aromatic fuels.
Any remaining residue can cause filter and separator problems and not least heavy cat fine volumes in the service system.

IMO and compliant fuels

Just what is happening at the IMO in the run up to 1st January 2020 fuels switch over date?

There have been at least two significant meetings in the past few months - MEPC 73 and PPR 6 with another - MEPC 74 - coming up in May.

For example, at last year's MEPC 73, the IMO committee approved guidance on the development of a Ship Implementation Plan (SIP) aimed at the consistent implementation of the 0.5% sulfur limit under MARPOL Annex V.

MEPC 73 agreed that flag administrations should encourage ships to develop SIPs, and outline how a ship might prepare in order to comply with the regulation.

For example, the plan could include a record of actions taken by the ship in order to be compliant by the applicable date.

Administrations and Port State Control (PSC) authorities may take a SIP into account when verifying compliance with the sulfur limit requirements going forward.

The IMO advised that ship operators should complete a compliance plan for each vessel to achieve compliance prior to 31st December, 2019 in respect of the percentage content in emissions.

Under the new guidance, a SIP for 2020 could cover various items relevant for the specific ship, including but not limited to:

1) Risk assessment and mitigation plan (impact of new fuels);
2) Fuel oil system modifications and tank cleaning (if needed);
3) Fuel oil capacity and segregation capability;
4) Procurement of compliant fuel;
5) Fuel oil changeover plan (conventional residual fuel oils to 0.5% sulfur compliant fuel oil);
6) Documentation and reporting.

All fuel oil supplied to a ship shall comply with regulation 18.3 of MARPOL Annex VI and chapter II/2 of SOLAS. Meanwhile, operators could consider ordering fuel oil specified in accordance with the ISO 8217 marine fuel standard.

The following potential fuel-related issues may need to be assessed and addressed by ships in preparation for the implementation date:

- Technical capability of ships to handle different types of fuel (eg suitability of fuel pumps to handle both higher and lower viscosity fuels, restrictions on fuels suitable for use in a ship's boilers, particularly the use of distillate fuels in large marine boilers);
- Compatibility of different types of fuels, eg.when paraffinic and aromatic fuels containing asphaltenes are commingled in bunkering or fuel oil changeover;
- Handling sulfur non-compliant fuels in the event of non-availability of sulfur compliant fuels;
- Crew preparedness, including possible training with changeover procedures during fuel switching from residual fuel oil to compliant fuel oils.

In addition, the SIP could be used as the appropriate tool to identify any specific safety risks related to sulfur compliant fuel oil, as may be relevant to a specific ship, and to develop an appropriate action plan for the organisation to address and mitigate the

The IMO has much to talk about at MEPC74

concerns identified.

Examples should include:

- Procedures to segregate different types of fuel and fuels from different sources;
- Detailed procedures for compatibility testing and segregating fuels from different sources until compatibility can be confirmed;
- Procedures to changeover from one type of fuel to another or a fuel oil that is known to be incompatible with another fuel oil;
- Plans to address any mechanical constraints with respect to handling specific fuels, including ensuring that minimum/maximum characteristics of fuel oil as identified in ISO 8217 can be safely handled on board the ship; and
- Procedures to verify machinery performance on fuel oil with characteristics with which the ship does not have prior experience.

It was also stressed that an SIP is not a mandatory requirement.

As for this February's Sub-Committee on Pollution Prevention and Response (PPR 6) meeting, draft guidelines were agreed for consistent implementation of the 0.5% sulfur limit under MARPOL Annex VI.

This, together with other relevant guidelines, formed a comprehensive package of new and updated instruments that will assist industry and administrations to effectively and uniformly implement the new fuels limit.

Draft 'Guidelines on consistent implementation of the sulfur limit' includes sections on the impact on fuel and machinery systems resulting from new fuel blends or fuel types; verification issues and control mechanism and actions, including PSC and samples of fuel oil used on board; a standard reporting format for fuel oil non-availability (FONAR); and possible safety implications relating to fuel oils meeting the sulfur limit.

MEPC 74, to be held in May this year, is expected to adopt these guidelines.

The Sub-Committee agreed a draft joint MSC/MEPC circular addressing the delivery of compliant fuel oil by suppliers, for approval at MEPC 74 and at the next Maritime Safety Committee meeting (MSC 101).

This draft circular states that members states should urge fuel oil suppliers to take into account MEPC.1/Circ.875 guidance on best practice for fuel oil purchasers/users for assuring the quality of fuel oil used on board ships and MEPC.1/Circ.875/Add.1 guidance on best practice for fuel oil suppliers for assuring the quality of fuel oil delivered.

The meeting also agreed draft amendments to MARPOL Annex VI on sulfur content definition and sampling, for approval by MEPC 74 and subsequent adoption by MEPC 75 (Spring, 2020), with an expected entry force date of mid-2021.

Draft consequential amendments were agreed to update the IAPP certificate by adding a reference to sampling points and also to note where there is an exemption to the provision for low-flash point fuel.

Draft 2019 guidelines for on board sampling for the verification of the sulfur content of the fuel oil used on board ships were agreed, thus updating the previous version. Again MEPC 74 is expected to approve these guidelines.

Also agreed was a requirement to draft 2019 PSC guidelines in principle under MARPOL Annex VI, updating the 2009 version. These are also expected to be adopted at MEPC 74.

The Sub-Committee has developed draft interim guidance for PSC on contingency measures for addressing non-compliant fuel oil and invited concrete proposals to MEPC 74.

The Sub-Committee is also undertaking a review of the 2015 Guidelines on exhaust gas cleaning systems (EGCS) or scrubbers. A request for an extension of the target completion year to 2020 was agreed with a view to continuing the work at PPR 7.

In the meantime, the PPR 6 agreed to forward a new draft Appendix 6 to the EGCS guidelines, developed by the correspondence group, to MEPC 74 for review and finalisation, with a view to potentially issuing it as an MEPC circular. It aims to address situations in which there is a malfunction of the EGCS system.

The Sub-Committee reviewed a submission from the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP), a body that advises the United Nations (UN) on the scientific aspects of marine environmental protection. GESAMP provided comments received from four of its members.

PPR 6 was also informed by member states regarding studies and preliminary studies carried out on washwater discharge (under the current washwater discharge standards set out in the 2015 guidelines) and the impact on the marine environment.

The IMO Secretariat was also asked to explore the possibility of GESAMP carrying out a review of the relevant scientific literature and also to oversee a modelling study of the impacts of discharge washwater from scrubbers. Member states and organisations in consultative status were invited to submit further scientific studies and information. TO

Fuel samples analysis

Last year saw a huge increase in bunker quality disputes.

These disputes started around March/ April with bunkers stemmed in Houston and gradually spreading to different regions and countries.*

It is also thought that there may be issues regarding fuel quality, due to blending in order to provide IMO 2020 Sulfur Cap compliant fuel.

However, the purpose of this article is to bring into focus the need for a proper fuel testing and analysis regime to be in place.

Testing fuel samples on board is possible but there are limitations as to these findings, which generally are limited to density, viscosity, pour point, water content and compatibility.

Whilst on board testing is useful to get early indications of problems, it is not sufficient to test for some of the issues seen recently, for example the presence of contaminants, such as phenolic compounds. However, Skuld understands that owners routinely send bunker samples for laboratory testing for the presence of these compounds.

Correct sampling and which of the samples are to be tested and analysed are just as important as the analysis itself. In most cases, the relevant contract between the parties specifies which samples are to be used for analysis (and be binding) and how those samples are to be collected.

For example, the BIMCO Bunker Terms 2018, stipulate at Clause 4 (a) that: -

"…. a primary sample shall be drawn at a point, to be mutually agreed between the Sellers and the Buyers…. closest to the Vessel's bunker manifold and otherwise in accordance with the procedures set out in IMO Resolution MEPC.182(59) Guidelines for the Sampling of Fuel Oil for Determination of Compliance with MARPOL 73/78 Annex VI or any subsequent amendments thereto…"

In terms of quality claims, at Clause 9(b)(ii): -

"In the event that a claim is raised…. the Parties hereto shall have the quality of the Marine Fuel analysed by a mutually agreed, qualified and independent laboratory"

For timecharters, the BIMCO Bunker Quality Control Clause for Time Chartering provides that: -

"(3)… during bunkering representative samples of the fuel(s) supplied shall be taken at the Vessel's bunkering manifold and sealed in the presence of competent representatives of the Charterers and the Vessel…(4)…and any dispute as to whether the bunker fuels conform to the agreed specification (s) shall be settled by analysis of the sample(s)….whose findings shall be conclusive evidence as to the conformity or otherwise with the bunker fuel specification(s)"

The MEPC.182(59) 'Guidelines for the Sampling of Fuel Oils' are benchmark guidelines to ensure the integrity of the sampling process and sets out details, such as sample location, handling and storage. In relation to the sampling method used to take samples from the manifold, as set out in the above clauses, the guideline recommends that the sample should "…be drawn continuously throughout the bunker delivery period".

Various methods of tank sampling are possible, but some are more representative than others. Thus it is important to include on the sample bottle a label detailing the method used.

Did it start here?

It is also important to seal and label the bottles correctly and to ensure that a sufficient sample volume is collected. It is usually recommended that five samples are collected; the MARPOL sample, supplier's sample, vessel's own retained sample, on board analysis sample and a sample for independent analysis.

Testing

A suitable testing laboratory should be agreed upon in advance and set out in the contract. If this has not been done then the parties should agree on a laboratory to test the agreed, binding, sample. Such a laboratory should be qualified, independent and accredited and capable of undertaking the specific tests and analysis required.

It should also be noted that not all laboratories allow the testing to be witnessed and the parties will need to make clear if this is acceptable. It should also be noted that where there are samples to be tested under both a charterparty and a bunker supply contract then the same laboratory should be used for both samples in order to ensure the same methodology and processes are applied.

There should also be a testing protocol as agreed between the parties' experts as this will avoid any later arguments as to the method used.

The results of the analysis will then be measured against the fuel specifications as stipulated under the relevant charterparty or bunker supply contract, ie typically ISO 8217 (and whichever version is agreed eg 2012, or 2017). The results will show whether the fuel was on specification under the ISO 8217 'Table 2' requirements, which set out limits for, amongst other things, sulfur, water and aluminium. Further gas chromatography testing, combined with mass spectrometry (GC-MS) will provide analysis of the fuel for the purposes of the remainder of Clause 5, such as indicating whether the fuel is *"free of any material that renders a fuel unacceptable for use in marine applications"*.

TO

**This article, written by Andrew Glynn-Williams Vice President, Head of FDD at Skuld, first appeared in an industry note issued by the P&I Club.*

The scrubber option versus the LNG option

A growing number of countries and regions around the world are introducing bans on open loop scrubbers that use seawater in the exhaust cleaning process.

What are the ambitions behind the bans, what are the consequences for stakeholders along the entire value chain, and what are the options?

Yara Marine Technologies R&D manager, Shyam Thapa examines the facts behind the debate: "Some studies have shown that open loop bans have no real environmental impact, while others maintain that the effects of washwater on marine life have yet to be assessed or may even be harmful."

Regardless, he said, there are different reasons for enacting bans. Open loop scrubbers do not perform effectively in water with low alkalinity, such as rivers and inland waterways. "In these areas, systems supplying alkali in a closed loop are required, so open loop bans are largely formalities."

Some private ports are also enacting open-loop bans, but Thapa said that this may often be for reasons other than environmental concerns. He believed that a combination of 'want to' and 'need to' is a likely future scenario on open loop scrubber bans, with flexibility being the common key to ensuring compliance and unrestricted operations.

Yara Marine manufactures both open and closed loop exhaust scrubber systems, and hybrid scrubbers capable of operating in either mode depending on applicable geographical regulations. "Open loop is still viable for 80-90% of global marine transport," Thapa claimed. "Our estimates for hybrid solutions assume maximum 15% of operation time using closed loop mode. But if the vessel is operating in waters where open loop is forbidden, owners either need to be able to operate the scrubber in closed mode or switch over to alternative fuel."

Scrubber smart

For those still pondering their options, Thapa is sympathetic. "I think the main thing is to emphasise that the overall picture is more complex than what is presented in the media. There are many factors in the calculation, and each case is different. There is no blanket solution for every situation."

He noted that vessel specific considerations and trading profiles will determine the choice of solution for many, venturing that the spread of open loop bans could influence more owners to choose hybrid solutions in order to ensure flexible operations for the life of the vessel.

A Yara scrubber system

Thapa claimed that those choosing Yara Marine will benefit from a simple, light and efficient solution. The company's in-line system has no internal moving parts, and Yara's magnesium oxide technology is cheaper to operate and maintain and safer than systems requiring caustic soda.

International research continues into the effects of scrubber washwater discharge to the sea. Several major shipowners have been collecting data from their fleets as well, and all will have to be considered before consensus can be reached on the ultimate consequence of open loop scrubbers for marine environments.

Yara is involved in an ongoing research project with Chalmers University of Technology to combine SOx and NOx gas cleaning in a single system. The project is also investigating possible industrial uses for exhaust sludge. The results could be applicable for both marine and land-based applications, giving the project wider environmental significance.

The company is also working intensively to solve the issue of particulate matter (PM) from combustion processes. The goal is to reduce harmful PM smaller than 2.5 micron by more than 95%.

Yara Marine Technologies CEO, Peter Strandberg, would like to see further investigation into scrubber options, supported by more hard facts: "We want to see more independent research to move the debate forward, and we invite owners and operators who are uncertain about the best scrubber solution for them to contact us. With our flexible technology, Yara Marine can help owners and operators comply, whatever the abatement requirement."

LNG as a fuel

One of the champions of the use of LNG as a fuel is the Sovcomflot Group (SCF).

At the Digital Ship - Vessel Performance Optimisation (VPO) Forum held in Limassol, Cyprus last month, Dr Oleg Kalinin, SCF Management Services' fleet director gave an outline of the company's involvement in utilising LNG for part of its tanker fleet.

He explained that SCF had taken delivery of four out of eight LNG powered Aframaxes ordered from Hyundai Samho and latterly at Zvezda and had ordered another three LNG fuelled MRs at Zvezda.

The vessels form part of SCF's 'Green Funnel' operation whereby ships use LNG as the primary fuel source.

He said that accepting there are more that 2,500 vessels fitted with scrubbers, this equates to around 10-15% of of the total fuel

SCF's LNG powered Aframaxes are set to lower opex

consumption with the result that the remainder of the fleet will have to burn IMO 2020 compliant fuels.

The challenges of running on LNG depend on the vessel design and performance, safety, shore staff and seafarer training, operations and maintenance, the infrastructure and capital costs.

On the Aframaxes, SCF opted for WinGD X-DF 7x62DF low-speed dual-fuel propulsion units with low-pressure gas injection. They are rated at 13,800 kW at 86 rev/min each giving a service speed of 14.6 knots. The daily fuel consumption is 42.3 tonnes when operating in Tier II fuel oil mode, or 34.7 tonnes daily when burning gas.

For bunkering, SCF is involved in a joint industry initiative with Shell and is participating in a Shell working group to develop LNG bunkering procedures and manuals.

As a result, SCF's quality and safety management system bunkering procedures have been amended. The company has also requested Shell to ask OCIMF to amend the SIRE VIQ for vetting purposes, Dr Kalinin said.

He pointed out that SCF has been operating DFDE powered vessels since 2014 and there are currently eight in the fleet, mainly LNG carriers. Ships' engineers from the LNGC pool are helping engineers on board the new Aframaxes with gas fuel operations.

Extra training

Additional training is also undertaken at the OEMs' premises, at the shipyard and in-house, making use of the St Petersburg SFC Training Centre, as well as on board the ships.

He said that there were more than 100 ports worldwide with either LNG bunkering infrastructure in place or planning to fit facilities.

The Aframaxes are designed principally to trade between Northern Europe and the Baltic and have an Ice Class 1A Hull notation. Maintenance and repairs can be undertaken in the region, for example, at Blohm + Voss and Remontowa.

Port discounts are available for LNG powered vessels, for example Antwerp is offering 15% discount for LNG fuelled ships, plus 20% of those fitted with closed loop scrubbers. Rotterdam is also offering a similar package for LNG fuelled ships with a Green Award certificate.

Dr Kalinin said that the higher capital costs involved in fitting LNG fuel equipment on board could be offset by lower opex brought about by cheaper bunker costs from the Shell co-operation deal. At present, the Aframaxes are being bunkered from Gate Terminal in Rotterdam or the Baltic using Shell's bunkering vessel 'Cardissa'.

He said that lower opex and shorter returns on investment will drive LNG market penetration, as soon as ship operators face higher distillate costs.

TO

Stena Bulk's IMOIIMAX fleet performs at top level

Stena Bulk has been operating its fleet of 13 MR type IMOIIMAX vessels for more than a year with the help of Jotun's tank coatings.

An in-house evaluation showed that these chemical tankers have been a success, both in terms of performance and business, the company claimed.

An IMOIIMAX tanker has 18 separate tanks (3,000 cu m capacity per tank), which provides for a freedom of choice as regards cargo combinations. The IMOIIMAX vessels are also characterised by high safety and low fuel consumption.

"Utilisation of and entry into the chemicals market has gone better than expected, and we have secured a good market position that we are continuing to build on. We have achieved this through not only our hard work in marketing, but also through operational performance," confirmed Stena Bulk president and CEO, Erik Hånell.

The 13 sisterships operate in one of Stena Bulk's global logistic systems, which focuses on refined petroleum products, vegetable oils and chemicals. In total, the fleet consists of 60 vessels in the products & chemicals segment and is operated from Stena Bulk's recently opened office in Copenhagen with support from the Singapore, Houston and Dubai offices, plus its head office in Gothenburg.

"It's now been just over four years since we took delivery of our first vessel in the IMOIIMAX series and the vessels have performed beyond our expectations. Both the technical and the commercial concepts have proved to be very successful and have set a new standard for cargo efficiency and bunker consumption.

"The IMOIIMAX fleet is a significant and competitive addition to our high-quality fleet. At the same time, it is an important step forward and a development of our existing sophisticated trading system," Hånell added.

IMOIIMAX is a project that focuses on flexibility and is a further development of an already well-established concept. The technical design was developed by Stena Bulk and Stena Teknik together with the Chinese shipyard, GSI.

It offers several advantages, the company claimed, such as extra large cargo flexibility, a high level of safety and economical fuel consumption. An IMOIIMAX tanker has 18 separate 3,000 cu m capacity tanks.

Furthermore, an IMOIIMAX type's cargo flexibility and ability to quickly clean the cargo tanks for different cargoes maximises its capacity utilisation rate.

"The vessels perform well in terms of speed and bunker consumption. Additionally, in respect of loading, transport, discharging and Tank Coating, it has technically performed above expectations," Hånell concluded.

New tank coating

Each tank has been coated with Jotun's new Tanguard Flexline. As a result, they can also be easily cleaned and thus be used for other cargoes when quickly switching between different markets.

Jotun's Global Director - Tank coating, Marc Giesselink said that the coatings company had been working with Stena Bulk since the second quarter of last year, as the company moved from vegoils and CPP into the carriage of chemicals with the new vessel design.

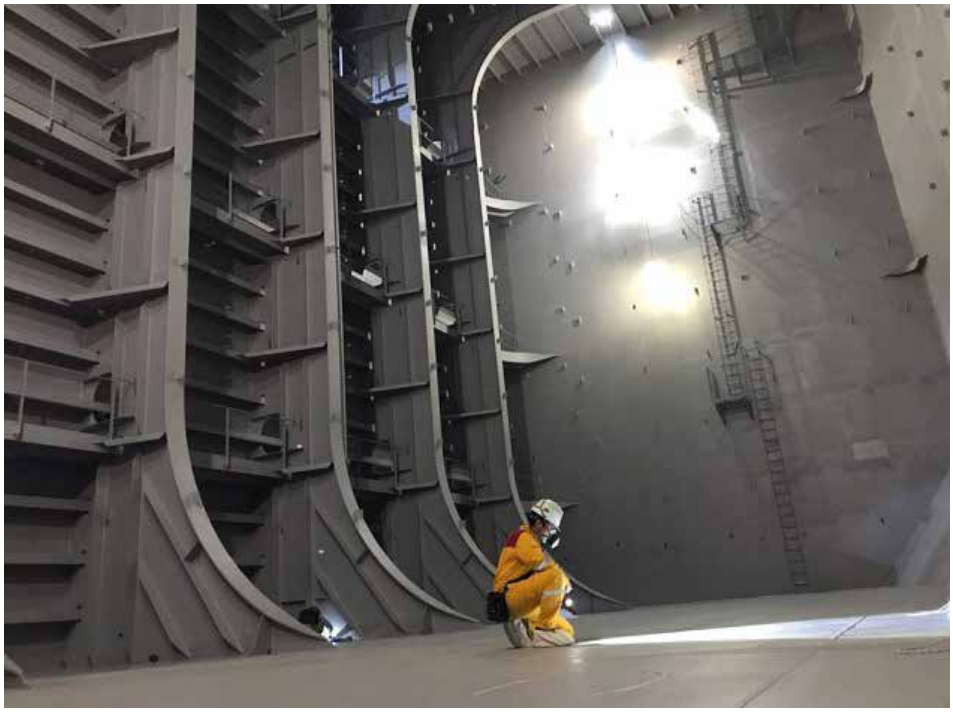
He claimed that the coating could handle around 97% of the aggressive cargoes and 85% of the total cargoes under the IBC Code, giving broad cargo carriage flexibility. Giesselink also claimed that the coating provided the longest maintenance interval, compared with other coatings.

Most damage occurs on the tank tops and he advised operators to undertake regular maintenance and pump repairs to minimise downtime. Jotun has maintenance guidelines for coatings and can train company personnel face-to-face, or through the internet, as necessary.

He advised companies to take into account coatings regulations, cargo stowage time, temperature, additional ventilation and the use of cleaning agents when addressing cargo tanks and their coatings.

Tests have been carried out by Jotun with consultants L&I on absorption and desorption to try to understand why tank coatings breakdown. Giesselink claimed that the new

Stena Impero



A typical tank

coating is not detrimental to the health and safety element when a person inspects/surveys a tank. He also explained that Jotun would prefer to conduct the after sales if possible.

As for the use of drones for inspections/surveys in tanks, he said that Jotun was looking into it, but that certified specialists must be used. He thought their use was "coming".

He also said that some chemical tanker operators opted for epoxy and zinc coated tanks, while others preferred the more expensive stainless steel type tanks.

Tankguard Flexline was launched at last year's SMM in Hamburg. Typically, one day saved on ventilation equates to $14,000 in increased earnings, the company said at its launch last September.

Jotun also claimed that its prolonged coating life can save up to $600,000 in maintenance costs on a typical tanker.

"Extensive trialling of the product has produced the results the firm has been searching for," added Johan Jäwert, Vice President Commercial Operations, Stena Bulk. "Using Jotun's Tankguard Flexline cargo tank coating enables us to carry an extensive range of products and chemicals, including methanol, with higher flexibility, capacity and durability. This improves our operational efficiency."

Scrubber investment

In another move, Stena Bulk is to install 16 scrubbers before January, 2020 on 10 IMOIIMAX types, five Suezmaxes and one standard MR.

The total investment is $55 mill, including equipment, installation and time offhire. Return on investment is between 1.5 and 2.5 years, which has already been secured by hedging the fuel spread.

By installing scrubbers on board, Stena Bulk will comply with the upcoming IMO sulfur cap regulation.

The fuel availability around the globe, to a degree a given one, has now become a concern to many, the company said.

"We evaluated the different options and came to the conclusion that for our business by installing scrubbers we will secure greater availability of fuel for our vessels and by so limit our exposure to not finding the right fuel around the world and by that stay flexible in our trading.

"Even doing so, we know it will require some changes and probably massive challenges in the planning logistically. We will however prepare ourselves best possible so that we can secure at least the same level of support to our customers as today," Hånell explained.

The scrubbers will be supplied by Shanghai Bluesoul Environment Technology, which has had a collaboration agreement with the Stena group for around 18 months.

Bluesoul is the first Chinese enterprise to be awarded Lloyd's Register Exhaust Gas Cleaning System Machinery General Design Appraisal, as well as DNV GL and ABS AiP.

The scrubbers to be installed will be of the open loop hybrid ready types with water cleaning, which not only remove the sulfur but also particles from the exhaust.

In addition to the equipment, the most important part to make this work is of course the people. Stena Bulk said that for the last 24 months, the company has prepared its business teams to assure minimal to no disruption caused by the scenario it is now facing as from 1st January, 2020.

Going forward, the company's digital platform, Orbit, one of many tools will be able to confirm global supply of fuel to optimise the planning in bunker operations, as a support to commercial operations, bunker trading and chartering departments. TO

How the cloud helps to improve efficiency in shipping

Technology is reshaping the tanker business, helping to improve efficiency and streamline processes.*

Whilst the shipping industry has not been known for leading the way when it comes to welcoming new technologies there are signs this is changing.

One of the most talked about topics currently is 'smart shipping' - highly automised or autonomous vessels. The Clyde Co and IMareEST Technology in Shipping Report[1] published last year, found that most respondents forecast the introduction of smart shipping in the next 10-15 years and 75% of respondents believe smart shipping will impact their business.

Companies, such as Rolls-Royce[2], even suggest autonomous shipping is the future of the maritime industry. The company says it's as disruptive as the smartphone and the smart ship will revolutionise the landscape of ship design and operations.

Some shipping companies are taking a 'wait and see' approach when it comes to adopting smart shipping technologies[3]. However, There is one technology that has been dominating the business world for over 10 years and which shipping companies are beginning to recognise can bring tremendous benefits to how they operate.

This is cloud technology. The cloud facilitates the access of business data and applications from anywhere at any time and with any mobile device. Investing in cloud technology is improving collaboration between teams on shore and at sea and creating a connected workplace culture that supports strategic business goals.

One of the main benefits for companies who are technology wary is that cloud software doesn't require big expense on new infrastructure and staff don't need to have great IT skills, as most shipping cloud software is intuitive and requires minimal training.

The Technology in Shipping Report[4] highlighted that the skill set and competencies of crew to use new technologies was a concern when it came to smart shipping. With the cloud this need not be a barrier.

The cloud in practice

A report by the Seafarers International Research Centre found that part of the effective operation of a modern vessel is determined by the quality of the relationships between shore side personnel and sea staff and recommended companies take steps to address the gulf between ship and shore personnel in order to improve ship/shore relations.

Cloud-based software is enabling companies to optimise the management of their entire fleet, automate their processes, improve their communications, increase their business performance, improve operational efficiencies and drive down costs.

A major benefit is the improved communication between staff on board ships and those in head office. Whether that's crew planning, the execution of payroll or the evaluation of seamen, digital data is always up-to-date and available where it is needed.

Without the cloud it would be difficult for crews, head office teams and other parties to keep up to date with processes and other management and administrative issues, making companies less agile and able to deal with issues immediately.

One of the challenges facing tanker companies is the integration of systems and processes from different departments to a central data source. The same information might get requested multiple times from the Master, which forces him to respond manually to each request.

With tasks carried out by both land and sea teams, a lack of integration has previously meant less transparency across the business. The cloud is resolving this. It's enabling information to be centralised and made accessible no matter where staff are based. It is ensuring that systems and processes are integrated and data silos removed – allowing operators to gain a complete 360 deg overview of their fleet and entire operations.

Most importantly, the cloud is changing how information is exchanged and accessed. There is no more need to send emails back and forth, requesting or forwarding information. Data that is entered at one end is automatically available to everybody else using a cloud-based solution. Information is available in real-time regardless of time or location, reducing time spent on administration.

The cloud is also helping automate and improve tasks, such as purchasing and stock planning, as well as complying with regulations, such as keeping track of waste, sewage and sludge disposals. Even staff well being can be addressed using cloud applications, as crew shifts and rest periods can be tracked to ensure companies comply with industry guidelines and standards.

A key benefit of using cloud applications is that they are constantly updated and improved as new technologies become available. These updates are automatically installed with no need for manual effort and can help shipping companies' future proof their business.

The cloud is being embraced by some of the world's leading shipping companies who are taking advantage of increasingly affordable and accessible cloud platforms to implement smarter, faster and more effective processes.

Companies looking to improve efficiencies in 2019 can't afford to ignore the cloud any longer. TO

**This article was written by Alexander Buchmann, Hanseaticsoft managing director*

[1] *www.clydeco.com/insight/reports/technology-in-shipping*

[2] *www.rolls-royce.com/~/media/Files/R/Rolls-Royce/documents/customers/marine/ship-intel/rr-ship-intel-aawa-8pg.pdf*

[3] *www.clydeco.com/insight/reports/technology-in-shipping*

[4] *www.clydeco.com/insight/reports/technology-in-shipping*

Scorpio – embracing digital class

Scorpio Group, with over 200 ships in the tanker, bulker and offshore trades, is a clear front runner in digitalisation, DNV GL said after talking with the company.

We are an early mover in many technologies," explained managing director, Francesco Bellusci. "Due to our volume of vessels, we are always looking for ways to simplify the job. We need support to be able to keep track and operate 200 vessels efficiently, and the digital approach is a natural choice."

Among the most practical and beneficial applications of modern class services for Scorpio has been remote surveying: "We saw this as a way to utilise the extensive competence within DNV GL, rather than being dependent on the more limited number of local surveyors at remote survey stations. Now we can apply DNV GL's competence wherever we are, and also involve our own expertise in the process. Remote surveying makes both the process and the expertise mobile," Bellusci said.

A big plus has been their introduction of e-certificates. "We have seen huge savings in time and money. There are fewer people involved in the big transactions, and very complicated processes have become streamlined," he added.

The transition to digital certificates presented its challenges, but Scorpio was prepared to make the move. "Other stakeholders had some issues due to legal and formal requirements, and some did not understand the validity of e-certificates, but eventually most accepted the advantages," he said.

"We are also using the Port State Control Planner application, a tool that offers support information on port state control that we distribute to shipmanagers and on board crew. We have not done a survey of efficiency gained through using the app, but we have seen a clear reduction in port state control deficiencies. Fewer mistakes also mean improved safety, so this is another benefit," he added.

Even as they embrace many of the digital class services offered, including data analysis and performance monitoring, there are still more services to be explored. "We are not actively using the open industry platform Veracity for exchanging data yet, but we are very familiar with the concept. Data sharing is still a sensitive area for some, and not everyone is fully comfortable with it. But at Scorpio, we do not want anything to be hidden. Even a mistake, if it is made in good faith, can be a learning experience.

"We want an open business culture, and there are many who share this sentiment. Lenders, banks, class, charterers, traders, underwriters, all these stakeholders want document sharing. They expect to see what the others are seeing, and that fits well with our way of doing business," he explained.

Tankers were the first to embrace Scorpio's digital plans

Tankers first

Scorpio first started using digital class systems on tankers, the most heavily regulated of any segment, then moved on to bulk. "Once we had the answers from the most challenging segment, it was easier to implement the solution on the others," Bellusci explained.

However, the majority of verification documentation in shipping is still paper-based. When did Bellusci expect that this will be replaced by fully digital transactions, for the ship operator and the industry at large? "We are very happy to invest in improvements, but right now freight markets are not helping further investments in innovation. The rate decrease in some markets risks widening the gap between those who can move and those who cannot, and overall, this is not a good thing for shipping," he warned.

Despite the challenges, Bellusci believed that paperless shipping is a natural conclusion: "You don't need to be a top 10 company to understand this. It is happening in all areas of society, and it is fairly obvious that things are moving in that direction. There are still some areas like banking and bill of lading where the responsibility is simply too great to risk losing everything to computer failure, so paper is still required. But it is going in a digital direction.

In five years' time I think we will see a 50% reduction in paper transactions. In 10 years even more. Back when we had 10 ships, the office was full of paper. Now we have 200 ships, and much less paper," he said. TO

A digital path to tanker prosperity

Prioritising operational and strategic activities is something that tanker operators are well accustomed to because it's often the difference between success and failure.*

Every day they are forced to make tough decisions, and while the specific priorities will vary from fleet to fleet, we're seeing a growing number recognise that the emergence of digital technologies are one of the most cost-effective ways to enhance operational effectiveness, and also differentiate themselves from the competition.

When I talk to owners, the topic that comes up time and time again is how many areas of their business remains analogue, and would remain completely familiar to colleagues who left the industry years ago.

These owners have come to appreciate that new ways of working present huge opportunities, and that often the best solutions to their challenges will be digitally led. However they also recognise that this doesn't mean it's a simple transformation or that there's one specific technology driver.

Take marine telematics, it solves a key challenge – but it's only one part of improved operations. This technology enables tanker owners and charterers to remotely monitor and diagnose their assets for better efficiency, as well as enabling the highest level of condition monitoring – an improvement that means they're far less subject to the time drain of planned maintenance and its associated costs.

Investing in it comes with many rewards, but it entails an adjustment from traditional operations. First and foremost, for example, it requires a reliable and consistent high-speed connection to share the information it collects, instead of an engine rating and a notepad.

The results are broadly similar, but the efficiency of the process is enormously improved and ultimately reduces the mean time between failure (MTBF).

Experience has consistently shown me that first movers have an increased likelihood of doing better than their competitors in the subsequent years. However it's not a guarantee of success. What's crucial for realising your company's goals is how the investment is strategically implemented.

SES Network's Stephen Conley

Experienced Hand

In the same way that a Master's skills affect the ability of his/her ship to navigate from port to port, it takes an experienced hand on the tiller to get the best results from a digital investment.

At some large tanker companies, these skills exist in house. But for small and medium-sized owners especially, it pays major dividends if you pick a partner, such as SES Networks, with long standing expertise and understanding of your sector to deliver the solution you need.

Efficiency, safety, and environmental performance are – to take three examples – important to any high functioning tanker fleet, and in many cases digitalisation can make improving in all three easier and more effective. But to receive a performance that gets them beyond the industry standard, it'll take a connected maritime solution that's underpinned by high-quality satellite enabled data connectivity.

In our experience it would also ideally combine advanced wide-beam and high-throughput satellite (HTS) capabilities, high-performance ground infrastructure, and VSAT terminals optimised for tankers.

Global impact

Working to reduce the barriers that hinder connectivity is a key priority for us. In merchant shipping that's primarily ship-to-shore offices, but it also plays a vital role improving crew welfare.

To be thousands of miles away from friends and families is a burden that few other professions endure. For today's seafarers, there's now an expectation that they'll be able to speak to those that matter most to them regularly.

As Capt Yaris, Master of Euronav's VLCC 'Ardeche' told our team last year, "A few years ago, I had been on board for about two weeks when I got a message from home that my wife was very sick and had to be hospitalised. In that situation, you want to have a connection on the spot, so you can get the information you need – even when you are a long distance from home."

These are just a few of the ways that digitalisation is redefining how business is being done and how recruitment and retention is being improved by seamless connectivity. Well managed data can lead to better decision-making, and positively change the way we work. If you invest in the right partnerships to enable this transformation, yours will.

**This article was written by Stephen Conley, Global Maritime Segment Lead, SES Networks.*

TANKEROperator

KEY PLAYERS IN THE TANKER INDUSTRY
will be profiled giving their views on current legislation, recommendations and trends. These will include chief executives from all sectors of the industry from equipment manufacturers to the top shipowners

INFORMATION
about meeting oil major requirements
(TMSA / vetting)

DEVELOPMENTS in management/ safety/ environmental best practice

NEW TECHNOLOGIES
and commercial industry developments

COMMERCIAL TANKER OPERATIONS
including shipbroking, legal matters and financing

IN DEPTH INFORMATION
on the latest newbuilds, sale and purchase, freight rates and derivatives markets, using industry known commentators

A STRONG FOCUS
on shipbuilding and repair

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Irene Rosberg
– Programme Director,
Executive MBA,
Shipping & Logistics

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