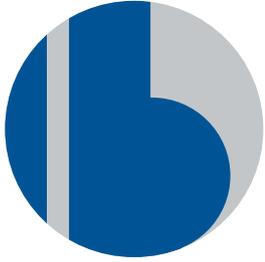


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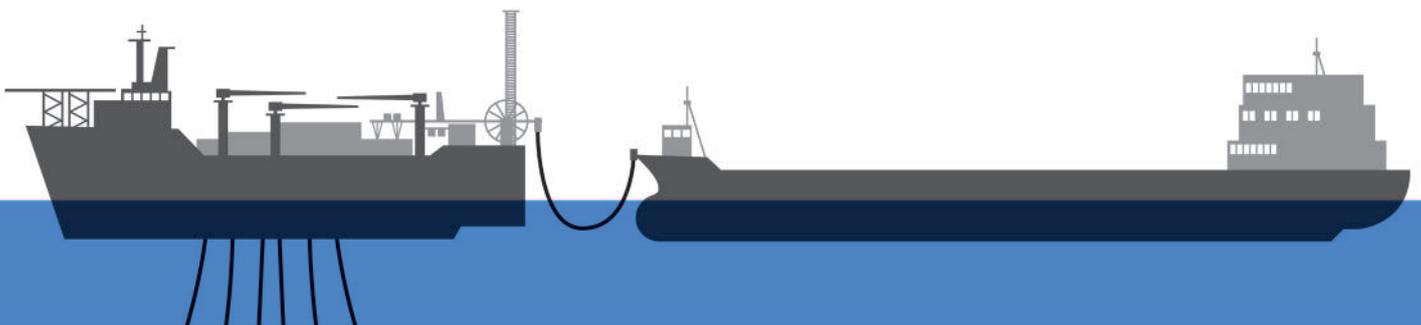
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Contents

04 Markets

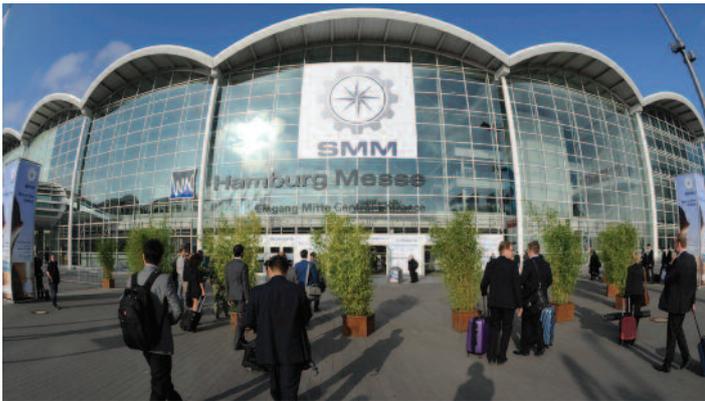
- Worrying statistics
- Older VLCCs popular

08 Profile

- Optimarin goes for market share

11 Germany Report

- Tax break benefits flag
- Digitalised SMM



17 Shipmanagement

- Keeping abreast of regs
- Partnership approach



25 Commercial Operations

- Q88 expands services
- Satcoms growing rapidly

31 Technology

31 Class Societies

- ◆ ABS's tanker man
- ◆ Improving efficiency
- ◆ Most economic fuel
- ◆ LR examining Brexit

41 Efficiency

- ◆ Operational changes
- ◆ MRV explained

44 Coatings

- ◆ Offering a little bit extra
- ◆ Performance standard nears
- ◆ Corrosion damage addressed

51 Tank Services

- ◆ Ballast water hints



Front cover - At SMM 2016 – Becker Marine Systems will be represented at two stands.

The three product lines - manoeuvring systems, energy saving devices and LNG hybrid concepts will be shown at the main stand in Hall A1 (stand A1.225)

In addition, Becker subsidiary Hybrid Port Energy (HPE) will be taking a stand to present its alternative solutions for shoreside power supply in Hall A5 (stand A5.200A), specifically dedicated to environmentally friendly propulsion technologies.

Becker Marine Systems will show its high-performance rudders, Becker Mewis Duct and Becker Mewis Duct Twisted energy-saving devices. Another as yet unidentified product will also be introduced.

Are we ready for the rigours of SMM?

I am currently getting myself fit to see if I can run around 12 or so exhibition halls in record time. This is the sign that SMM is fast approaching!

When I go to Hamburg in a few weeks to attend SMM, I am going to get digitised, apparently.

The SMM organisers have chosen 'digitalisation' as the theme for this year's event. No real surprise there!

What is a surprise is that every second year the show has expanded, despite the parlous state of the maritime industry. If the organisers carry on like this, we will soon be in Bremen as well.

It just shows the pulling power of this particular expo, which many years ago set its stool out as a technology showcase rather than just a commercial jamboree.

Several major discussion points will no doubt be aired, including - are the world's shipyards on the verge of bankruptcy; the question of the low sulphur cap, which looks like happening in 2020 now that the fuel availability report has been published and of course, we can't forget ballast water management, as much as most of us would like to.

However, one of the main discussions, which seems to have got the ear of everyone is shipboard data collection and how to use it to squeeze that extra half a per cent saving on opex.

Do we cover our ships in sensors? Who does the data analysing? What can data analysis prove? Probably that we are still at the mercy of the wind and waves - it is just that they can be made a bit more predictable.

The 'Eco' ships have recently lost their impetus, due to the low fuel costs and as a result, the whole fuel question has swung towards emissions control, rather than saving fuel on cost grounds. Of course, the two go hand in hand - if you save fuel you will reduce emissions.

No doubt the distillates, versus LNG, versus exhaust gas cleaning systems for NOx and SOx control will be hotly debated now that the IMO's commissioned report on the availability of low sulphur fuel has said this should not be problem going forward, thus the 0.5% cap will probably be introduced in 2020, rather than in 2025, which is not that far off.

Security problems

Another problem seems to be cyber security and how to implement it. This topic will be included in the full day Maritime Security and Defence (MS&D) conference. Just how serious this threat is has divided opinion.

At SMM, we will welcome the Iranians back into the fold. Tehran has booked a national pavilion, as this important country needs to get its shipping industry back into shape and probably has the money to do it.

I have not mentioned human resources thus far but if you read any incident report, human error is probably behind it somewhere. In our shipmanagement report in this issue, training has become major investment for most of the respondents to *Tanker Operator's* questionnaire, especially as vessels and their communications with the shore are becoming ever more sophisticated - back to digitalisation again.

Is there a skills gap? Again opinion is divided but I guess those who said that there

isn't did something about it a few years ago.

All of this is taken place against a backdrop of the regulators continuing to regulate. It used to be left to the IMO to sort things out but now we have nationalistic interests heavily involved in making their own rules, such as the European Union and the US in the form of the Environmental Protection Agency and the US Coast Guard, among others.

Political agenda

Political agendas will always impact on the entrepreneurial shipowner's ability to conduct his or her business. This has been going on for centuries. Someone will always profit from someone else's misfortunes. The shipowners have to pay for new equipment deemed essential by the regulators - back to ballast water- while the manufacturers make hay while the sun shines.

Hence shows like SMM, where the manufacturers and service providers try to persuade the poor old shipowner into parting with his or her well earned cash at a time when the majority of earnings are at rock bottom.

There seems to be no shortage of ideas in our industry and, as I think I've said before, the past 10-15 years has seen shipping technology move on at an ever increasing pace. With digitalisation, automation and data innovations all growing like 'topsy', the pace of change will not slacken but rather increase, which bodes well for expos like SMM to continue to prosper.

No doubt the 'autonomous' ship will rear its ugly head but I will politely pass on that and quickly move on to something else.

See you in Hamburg!!

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Worrying statistics - a challenging period to come

The statistics produced below, courtesy of Gibson Research, show that the tanker fleet has grown over the past 12 months by another 203 units and now totals 21.9 mill dwt.

This follows a period of very limited fleet growth across all segments except MRs, following a period of reasonable demolition activity at firmer lightweight prices prior to 2015, Gibson reported in its half yearly tanker fleet review.

Of course, the strength of the tanker market during the low oil price regime has meant that owners have had little need to even think about scrapping, as bunker prices headed south improving their margins still further.

Eco-ships no longer hold any significant

associated with the new Tier III regulations, which came into force on 1st January, 2016 in the US.

Newbuilding prices have been slowly falling since June 2014 but saw a small resurgence over the fourth quarter of 2015. However, the appetite for new orders across all the tanker sectors has evaporated this year, despite renewed softening of newbuilding prices and the mounting pressure on shipbuilders to fill their forward slots.

In addition, finance appears to have ended its love affair with the shipping industry, mostly due to the disastrous state of affairs in the dry cargo

Looking at the political scene, this time last year, we were talking about the return of Iran to the tanker market and in particular more crude being available for shipment.

Despite the lifting of sanctions in January, Iran continued to find it difficult to get significant traction into the market, but it will only be a matter of time as the difficulties associated with trading with the nation subside, Gibson said.

Iraqi production continues to rise, however, this may have peaked. The low oil price has limited investment in new infrastructure, which could restrict further increases in production going forward.

More recently, we have seen disruptions to Nigerian crude oil production, which has impacted heavily on Suezmax earnings - Suezmaxes also represent the largest segment of the orderbook in percentage terms, compared to the existing fleet.

Last December, the US lifted their ban on exporting crude. However, thus far, its impact has been minimal particularly as US shale oil production is falling, due to the low oil prices.

The situation in Libya remains unchanged from last year and appears to be a long way from a resolution.

Meanwhile, crude production continues apace, despite moves by several producers who in April failed to agree to cut production in order to stimulate higher oil prices. In its latest report, the IEA said that OPEC production of 32.76 mill barrels per day, had reached its highest level since August 2008.

Cheaper feedstock led to a renaissance of less efficient refiners, in some cases changing the threat of closure into a return to profit. However, a global products glut has hampered arbitrage opportunities pressuring product tanker earnings.

On the crude side, floating oil storage, mostly out of operational necessity, continues to provide support to the VLCC sector and employment for fuel oil storage is increasing.

So much has happened over the past 12 months that it is difficult to precis events into a single page.

	Jun-14		Jun-15		Jun-16	
	WS	TCE/day	WS	TCE/day	WS	TCE/day
Spot Rates/tce Earnings (a)						
VLCC Rates: Mid East-Japan	38	\$12,250	64	\$69,250	48	\$36,500
Suezmax Rates: West Africa-UKC	72	\$22,750	93	\$50,000	70	\$27,500
Aframax Rates: North Sea-UKCont	99	\$13,500	150	\$69,500	110	\$27,750
55k Naphtha: Mid East-Japan	110	\$13,000	141	\$32,250	95	\$11,750
37k Gasoline: UKCont-USAC	99	\$5,500	171	\$26,500	100	\$8,500
VLCC Total	626		638		666	
Suezmax Total	476		483		490	
Aframax/LR2 Total	895		931		961	
Panamax/LR1 Total	440		418		419	
MR (25-55mdwt) Total	1,843		1,880		1,962	
Deliveries Jul to Jun (25,000 dwt+)	17.7 M dwt (162 vsls)		16.7 M dwt (180 vsls)		21.9 M dwt (203 vsls)	
Orderbook (excl. options)	62.1 M dwt (590 vsls)		77.3 M dwt (599 vsls)		83.0 M dwt (627 vsls)	
VLCCs On Order	86		114		109	
Demolition Jul to Jun (25,000 dwt+)	12.3 M dwt (104 vsls)		4.7 M dwt (70 vsls)		2.5 M dwt (34 vsls)	
Ldtpri China/SubContinent	\$325/ \$495		\$220/ \$390		\$170/ \$270	
VLCC Price NB / 10yr old	\$100.5M	\$50M	\$95M	\$52M	\$86M	\$40M
Suezmax Price NB / 10yr old	\$66M	\$34M	\$64M	\$40M	\$58M	\$35M
Aframax Price NB / 10yr old	\$54.5M	\$24M	\$53M	\$31M	\$48M	\$23M
Brent Oil Price (ICE Close)	\$ 112.36(June 30th)		\$ 62.00(June 30th)		\$ 50.15(June 30th)	
Brent-Previous 12 mth Low/High	\$101.63 / \$117.34		\$112.29 / \$46		\$27.17 / \$63.21	
Bunkers 380cst Fujairah/Rotterdam	\$623/\$599 tonne		\$333/323 tonne		\$255/\$236 tonne	
World Oil Supply (Latest available)	92.6 million b/d		95.61 million b/d		96.2 million b/d	
OPEC Crude Production	30.2 million b/d		31.27 million b/d		32.76 million b/d	
Non OPEC Production	53.42 million b/d		54.85 million b/d		56.6 million b	

Some of the market developments affecting the tanker industry over the past 12 months. Source: EA Gibson

advantage as legislation on environmental issues continued to drag resulting in demolition numbers falling to a mere 34 tankers (2.5 mill dwt) during the past 12 months.

Of the 366 tanker orders placed in 2015, 218 were contracted in the second half of the year, as many were placed to circumvent the higher costs

market, but also the high tanker orderbook and the spate of deliveries scheduled for 2016/17.

In the first half of this year, 14 mill tonnes dwt had already been delivered, compared to 17 mill dwt in the whole of 2015.

Despite the strong earnings across most tanker sectors over the past two years, secondhand values also came under downwards pressure since the turn of this year, as freight rates began to decline.

‘Disadvantaged’ VLCCs back in vogue

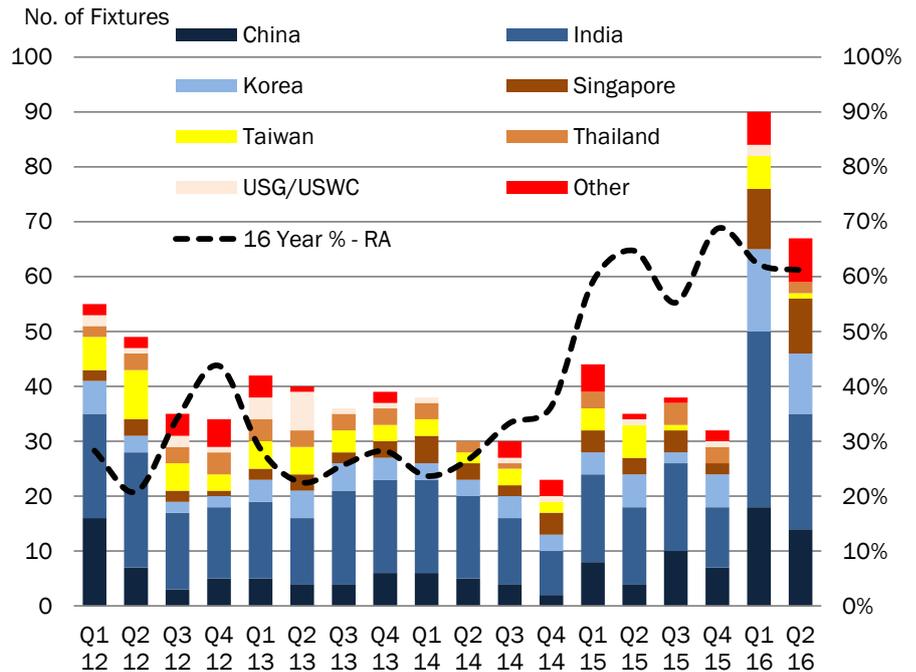
Recent weaknesses in VLCC spot rates has revealed an increasing amount of fixture activity carried out by so called ‘disadvantaged’ tankers.

Despite increasingly stringent vetting requirements by terminal operators and charterers, fixing older tonnage is nothing new to the tanker industry, McQuilling Services said in a recent industry note.

While the majority of charterers implement a maximum age restriction of 15 years for tankers, this requirement becomes somewhat more flexible when freight rates firm, illustrated by the significant increase in disadvantaged fixtures this year, following a favourable 2015 freight rate environment for owners.

By the middle of June, we counted 1,019 VLCC fixtures for 2016 thus far, in-line with fixture activity over the same period last year. Of these fixtures, 157 involved vessels over the age of 15, representing 15.2% of the activity, a 110% increase from 2015 levels where disadvantaged fixture activity accounted for 7.2% of the total volumes, McQuilling said.

This significant increase in disadvantaged fixtures recorded this year was likely caused by the firm freight rate environment experienced generally in 2015, with particular



Source: McQuilling Services

VLCC Disadvantaged Fixtures (Discharge Zone) Q1 2012 - Q2 2016.

emphasis on the fourth quarter. During the last three months of last year, WS rates on TD3

averaged WS105, the highest quarterly level since 2008.

As a result, January fixing activity of disadvantaged tankers rose to 18.6% of the total, the highest on record. Correspondingly, WS rates trended lower by 45 points and the continued use of older tonnage maintained pressure on rates for most of the year.

When analysing the trading patterns of older VLCCs, McQuilling noted that the majority of these fixtures occur in East of Suez markets. The primary discharge regions accepting disadvantaged tonnage are China, India, Singapore and other Southeast Asian destinations, such as Thailand.

Terminals in the West are not major contributors to the demand for older tankers with the US accounting for less than 3% of disadvantaged VLCC fixtures.

In contrast, India has ranged pretty consistently between 30% and 50% of all the demand and has seen VLCC fixtures on older

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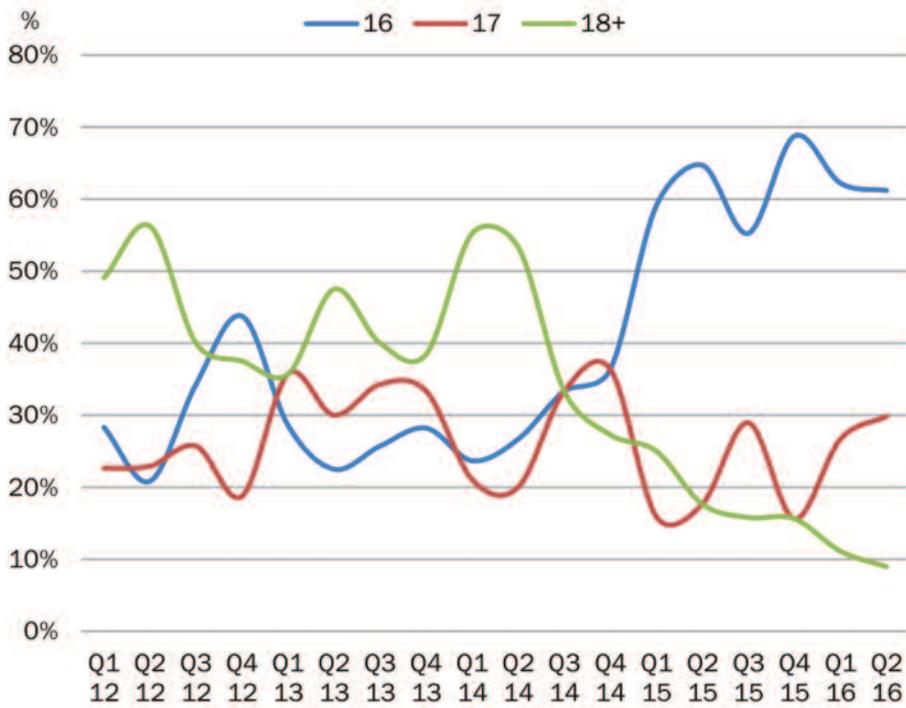
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Percentage of fixtures by Age of Ship Q1 2012 - Q2 2016. Source: McQuilling Services

tonnage rise from 30 to 53 year-on-year, which may be partially explained by the country's increasing refinery capacity and heightened demand for Arabian Gulf crude.

Common voyage

The short-haul trip between the AG and India is the most common voyage taken by disadvantaged tankers, due to its proximity and lack of interest from modern tanker owners.

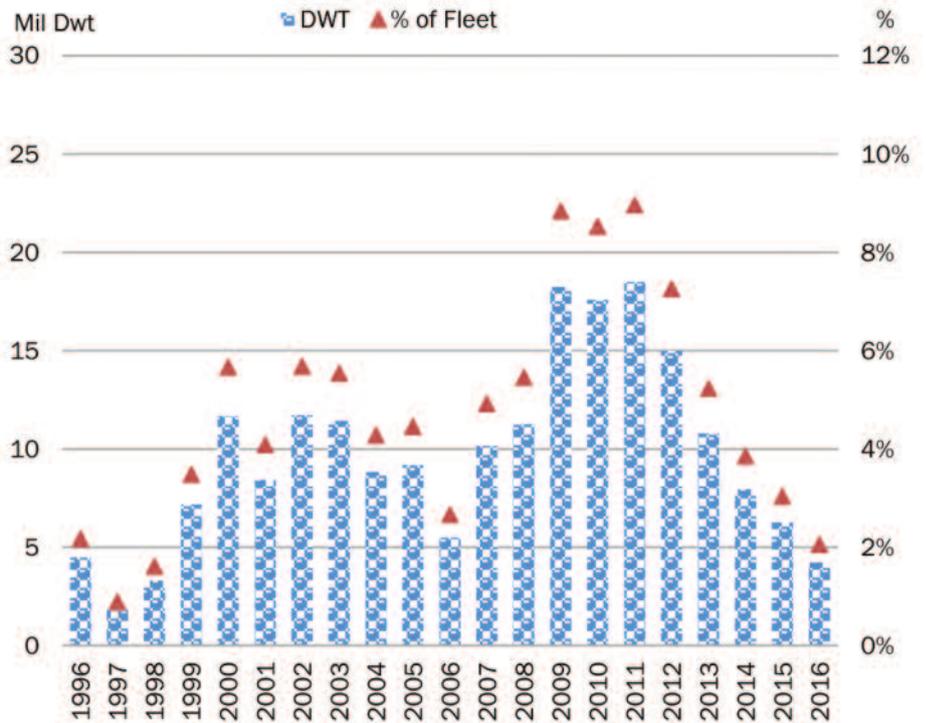
Older tonnage fixtures for China discharge have stabilised near 20%, after reaching a multi-year low of 9% in 2014. This year, we have seen notable increases in over 15 year old tonnage discharging in Singapore as well, with 22 fixtures year-to-date, up from seven recorded over the same period in 2015.

While there has been a clear demonstration of charterers fixing older tonnage this year as a response to elevated freight levels, it is also apparent that their preference has been for ships just above the 15-year threshold.

For example, in the last two quarters of 2016, 16 year old ships represented 61% of all disadvantaged VLCC fixtures, while 17 year old ships accounted for another 30% with only 9% of disadvantaged fixtures this year coming from the 18 plus age group, McQuilling said.

From our analysis, we can see that the increasing freight rate environment has prompted charterers to consider fixing

older tonnage, but decreasing the use of tankers aged 18 and over, instead opting for vessels aged 16 and 17, McQuilling said.



VLCC Fleet Age Profile. Source: McQuilling Services

A further explanation for this could be found in the age composition of the VLCC fleet. The consultancy noted that 5.7% of the VLCC fleet was delivered in the year 2000, up from 3.5% built in 1999.

The freight rate environment for VLCCs

is likely to face headwinds from the older tonnage list, as we move through the year. Looking ahead to 2017, the number of 16 year old tankers available to charterers will decline, due to a drop in 2001 vessel deliveries, perhaps providing owners some respite.

However, the orderbook for VLCCs (18%) is biased towards the second half of this year and 2017, which is likely to add pressure of a different kind, McQuilling cautioned.

For owners, not everything looks negative, as 2018 may be a banner year for VLCC owners, as the recent issues at shipyards and continued financing constraints have significantly reduced orders this year. As a result, 2018 is beginning to look very promising for freight rates from a supply perspective.

According to McQuilling's updated supply outlook, VLCC net fleet growth is projected to be just 1.9% in 2018, down from 7% and 5.8% in 2016 and 2017, respectively.

However, for the time being, we are turning slightly more pessimistic about short term VLCC freight rates than we were at the beginning of this year and we

are likely to revise our earnings forecasts during our upcoming Mid-Year Update report, due to be published this month, McQuilling warned.

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Schein defines culture of groups as a pattern of shared basic assumptions that was learned by a group as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and therefore to be taught to new members as the correct way to perceive, think and feel in relation to those problems”.

So, organizations can be seen as a group, meaning a body with many members. Each one has their unique position and deserves respect. In other words, You are because I am and I am because You are! We succeed together, we fall apart together.

The maritime safety regime is highly complex. What is the role of

safety leadership in an emergent complex environment? The ultimate weapon against ambiguity is the safety culture. In a global environment there are many players representing different interests and with objectives not always coincident.

What’s the solution? As everyone can function only in the level of their character at the same way an organization can reach the desired future at the level of its culture. Culture is everywhere. If you try to hide it, it will find the way to emerge. No one can escape from their culture. It’s the hidden meaning below the surface. You cannot deceive culture. It’s your judge, your teacher, your father; It disciplines, teaches, cares and protects.

Working in a complex, unpredictable and constantly changing environment, safety culture is the key to success because it is the only stable foundation to rely on.



Optimarin hoping for significant BWTS market share

Norwegian Ballast water treatment (BWT) system specialist Optimarin has won its first Ex-Proof BWTS order, which calls for systems to be fitted on board 10 Turkish chemical tankers.

Also this year, the company completed the US Coast Guard's (USCG) environmental test and all land-based and shipboard testing for marine, brackish and fresh water. Optimarin is believed to be the first



Optimarin's Tore Andersen.

supplier of UV-based BWT technology to satisfy the USCG's stringent CMFDA testing criteria – a development that it believes can be “a springboard for global success.”

The company has been specialising in environmentally friendly UV treatment technology for the past 22 years and installed the world's first commercial system in 2000 on the cruise ship ‘Princess Regal’.

As well as its success with the USCG, the firm is currently enjoying its best year ever, with close to 100 systems ordered thus far in

2016, many of the orders being framework fleet agreements.

“The conclusion of the USCG approval testing marks an important evolutionary step for our business,” said CEO Tore Andersen, who also said that full USCG type approval was expected in the third quarter, once all the necessary documentation has been completed.

“Our customers can now be assured that our system meets the most stringent regulatory standards in the world, giving them peace of mind for all global fleet operations now, and into the future.

“With the ratification of the IMO's Ballast Water Management Convention finally on the horizon – just a further 0.13% of global tonnage is required to bring it into force – our total compliance is a real strength. That, along with the fact our technology is market proven and simple to maintain, with no moving parts, puts us in pole position for a segment that is predicted to be worth in excess of \$3 bill by 2023,” Andersen said.

Significant share

He said that the number of vessels in Optimarin's systems size range was around 25,000 worldwide, and he believed that his team – in conjunction with engineering partners Goltens and Zeppelin – can take “a very significant share” of this retrofit market.

“We know retrofit,” he explained. “Of the approximately 500 systems we've sold, over 100 have been retrofits. Our modular systems and expert engineering partners mean the solutions we offer are flexible and easy to install onto any ship, of any type. Shipowners appreciate this, laying the foundation for the growing number of framework fleet agreements we are now

signing.

“We've spent over two decades, and many millions of dollars, in our quest to develop the best, most compliant BWT technology on the market. That dedication is now paying off. We have an excellent orderbook, stable finances and management, and a very bright future ahead - with what we believe should be five to seven years of exponentially rising revenues.

“The imminent USCG approval is paving the way for us to make an even bigger impact on the global marketplace than we have to date. A surge of new BWT business is on the horizon, and we aim to take advantage of that – giving shipowners the technology, service and expertise they need for trouble-free, compliant worldwide operations,” he said.

Optimarin's Ballast System (OBS) is fully IMO compliant, gaining type approval in 2009 and is also approved by DNV GL, LR, BV, MLIT Japan, and ABS.

Optimarin, explained Andersen, chose to develop BWTS for use on board vessels of up to 60,000 dwt and with a maximum capacity of 2,500 cu m per hour. He estimated the number of vessels falling into this size range is around 25,000 ships of all types. The average cost for a system in this size bracket is about NOK2.5 mill.

Among the most recent orders were several key fleet series contracts for BWTS to be fitted on board several types of ships, including 10 systems for Atlantis Tankers.

These will be the first tankers fitted and will be the first Ex-Proof systems won by the company. The systems will be of 500 cu m per hour capacity and, as most tankers are fitted with deepwell pumps, the pump room

INDUSTRY - PROFILE - OPTIMARIN

is thus avoided. There is usually no space in the engine room of a small chemical tanker for such as system, but a void space between the engine room and the cargo tank will be used for the chemical tanker installations.

For the tanker sector, Optimarin is developing systems with a capacity of 750 and 1,000 cu m per hour to tender for contracts.

Optimarin has also developed a deck house where a 'plug and play' system can be installed with the piping connected to the ballast tank. However, the pump's power will need increasing or a new more powerful pump installed, as they usually operate at 2.5 bar but 2 bar will be needed to get the ballast water to the deck house.

Upon ratification, owners will attempt to bring their scheduled drydocks forward for retrofits but dock space could become a problem. Optimarin will need to work on a fleet contract at least six months ahead of the drydocking to prepare an installation plan. For newbuildings, the shipyards are keen to undertake the installations to keep their employees working in today's newbuilding crisis.

Optimarin offers an engineering package together with the company's two partners - Goltens and Zeppelin - which involves the plans and the final commissioning.

Crew training is another necessity, as a vessel could be fitted with a BWTS and the necessary training undertaken only for the crew to be replaced a few weeks later. Training can be conducted at Optimarin's own research facilities in Norway or in a classroom.

The company also has an agreement with third party shipmanager Anglo-Eastern (AE), whereby training can be conducted at AE's training centre in Mumbai, by Optimarin trained tutors. Andersen said that a similar package will be introduced at AE's Manila training centre soon.

The BWTS operating menu was claimed to be simple. Optimarin developed the system, together with major open hatch bulk carrier operator Saga Shipholding, whereby each pumping operation uses just one button. It will be the Chief Engineer's choice as to which ballast tank will be used, thus avoiding crew members making the wrong decisions, Andersen claimed. Optimarin used Saga bulk carriers for its USCG shipboard tests.

Andersen thought the need for service engineers would be high in the first 12 months of a BWTS operation and this is where Goltens and other worldwide service networks come in.

Spare parts

Some spares should be kept on board but only purchased when recommended by the OEM. At least two companies will be qualified to supply spare parts to Optimarin's BWTS, Andersen said. Spares will be kept in stock but by and large most will be tailor made as required.

Optimarin uses Boll & Kirch filters for its BWTS. Other filters will be tested in the Spring of next year.

As mentioned, Optimarin has spent millions of dollars on developing the system. The company was able to sign convertible loan agreements with its backers and recently transferred the loans into shares in the company, thus putting the balance sheet on a firm footing going forward. "We need financial muscle to take the boom and liquidity and cash to deal with the orders," Andersen said.

Revenues last year were NOK84 mill, while the revenue forecast this year is NOK95 mill and, according to Andersen, "the sky's the limit", once ratification is in place in 2017 and beyond. The firm currently has a solid capital base of between NOK30-40 mill, he said.

Of the current 22 employees, around 18 are shareholders, which gives them an extra incentive, Andersen explained. Another five to 10 people will join the company in the coming year as orders ramp up. 

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Positive news for German flag

By re-flagging of the car carrier 'Patara' from Gibraltar to the German flag, Hamburg-based F Laeisz became the first German shipping company to return to the crisis-hit national flag.

With the increase of Lohnsteuereinbehalts (tax wage reduction) to 100% for seafarers on board German flag agreed on 1st June and soon to become effective, the change in the manning rules for German shipowners will enable them to operate their vessels under the domestic flag economically, the German shipowners' association (VDR) said.

The tax reduction is granted to shipowners flying the German flag. It enables a shipowner to keep the income tax charged for German and European seafarers serving on board the vessels instead of sending it to the federal tax authorities.

This puts the German flag into a more or less equal position to other European flags, such as the Dutch or Danish flag. The result can already be seen, as almost a dozen vessels changed to the German from foreign flags within a few weeks, a VDR spokesman told Tanker Operator.

"We want to secure German and European seafarers and their knowhow for the local maritime industry and other sectors where their knowledge and experience is needed," he explained.

In a statement, Ralf Nagel, VDR's managing board member, said, "The relief with respect to the non-wage labour costs and the more flexible requirements regarding manning provide much needed wind in the sails of the German flag and will thus open up new opportunities for German seafarers.

"The economic disadvantage of the German flag has thus largely been addressed. Germany now is at the European level, which our neighbours in Denmark and the Netherlands have already sustained for quite some time. Without these actions, the German flag would have soon disappeared from international shipping.

"A large number of other flags like

Liberia and Antigua & Barbuda have been increasing their standards for some time and are now among the world's 43 high-quality flags. In flag state control, which aims to secure conformity with the numerous regulations, eg in safety and work conditions on board, these flags regularly achieve the best results. They also offer quick and professional service to shipowners.

"Thanks to uniform training standards, shipowners can find good personnel outside of Europe. Many shipowners co-operate with maritime academies abroad, eg in the Philippines, and are training highly qualified personnel there. The industry in Germany needs its own knowhow in order to sustain a competitive flag and to secure the training of young seafarers.

"Shipowners – in the midst of the crisis – established the German Shipping Foundation for Training and Education of Seafarers (Stiftung Schifffahrtsstandort Deutschland). Each year, they provide €30 mill for training new seafarers. Roughly 1,300 youngsters have already benefited from the foundation's support. These most recent measures help seafarers achieve long-term careers.

"Multiple VDR member companies have reacted and flagged their ships back to Germany, which is a very positive development that will profit the entire German maritime industry. Indeed, the shipping and engineering knowledge of the seafarers is needed not only on ships but also in many economic sectors – research institutes and shore administrations – including the harbour masters and pilots who are essential for the functioning of the ports," he concluded.

Nicholas Schües, F Laeisz head and member of the VDR Board said of the flag change: "The wise policy decisions give us leeway in a serious crisis and creates new perspectives for German sailors. F Laeisz

will re-flag three more car carriers, two of which are to be registered as training vessels for engineers."

Rüdiger Kruse, Commissioner for Maritime Economy in the CDU/CSU parliamentary group, said: "Our policy measures to preserve the German flag are now showing results. This is not just a North German theme. Future-oriented and competitive companies across the country need experienced sailors to work in shipping companies, in manufacturing, shipyards, service providers, government agencies and many other places, to acquire expertise."

More German shipowners have already announced plans to bring back more vessels to the German flag, the VDR claimed.

The high labour costs and rigid employment requirements for European seafarers has led to a sharp decline in the number of German flag vessels to 186 since the 2008 shipping crisis - out of a merchant fleet totalling 2,995 ships - as at 30th April, 2016. In addition, during the last two years, around 10% of German seafarers have lost their jobs.

Talking with Stephan Polomsky, managing director of Offen Tankers, he agreed that there was some movement towards the German flag.

MCA meetings

Offen Tankers has been a champion of the UK registry and Polomsky explained that the company has had two meetings with the UK flag (MCA) about 'Brexit' and other matters but said; "There are presently no indications that there will be any effect. They are improving their services and to benefit their good customers, they will start a pilot scheme on delegating some surveys (ISM, ISPS, MLC) to recognised organisations, thus class. We will be the first to participate in this pilot project," he explained.

Offen Tankers started off with a series of Handysize and MRs from Hyundai Mipo, which were upgraded to Offen's specifications.

Today, as well as managing these vessels, Offen Tankers took over the technical management of 10 Handysize tankers from Scorpio Tankers in 2015 and 2016.

Sister company, Offen Bulkers, also manages eight Capesize vessels for Scorpio - four of which were taken over in 2014-2015.

In addition, Offen took over the management of three Kamsarmax bulk carriers and purchased four secondhand Handysize chemical and product tankers from another German owner.

In an attempt to widen the company's portfolio, Offen Tankers recently inspected smaller chemical carriers of between 12.000 - 18.000 dwt as potential management candidates.

"Our current newbuilding project is pointing to the larger tonnage. We are actually working on a six plus six LR1 newbuilding project at a Chinese shipyard.

"Furthermore, we participated recently together with a partner in an auction for a bigger fleet of tankers, which also consisted of Aframaxes," Polomsky explained.

In another move, Offen Tanker and CPO Bulker, are to implement DNV GL's e-learning course 'Energy Efficiency on Board' across their entire fleet. This e-learning tool, developed by DNV GL's Maritime Academy, enables users to identify potential savings in a simple way and so implement them in ship operation, the class society said.

More than 700 Offen Group Masters, senior engineers and ship officers are being trained with the e-learning tool and made aware about some of the simple ways to improve energy efficiency by changing crew behaviour and optimising how equipment is used on board.

The individual modules outline a number of ways to increase energy efficiency looking at resistance, propulsion, main and auxiliary engines. They handle practical and theoretical aspects of on board operations, such as trim and ballast optimisation, potential savings with propeller and rudder, as well as options for better route planning.

DNV GL's Maritime Academy developed a customised solution with Offen in which the basic learning modules were complemented by the actual business processes and software applications used on board the Group's vessels.

Elsewhere, a vote was passed at the ordinary shareholders' meeting of HCI Capital on 23rd June to change the company's name to Ernst Russ.

The Executive Board and Supervisory Board put the proposal to the shareholders' as one element in the strategy to strengthen the maritime services segment and position the company as an asset and investment manager.

One stop shop

The future business model, in which the Group will offer its services as a one-stop shop covering the entire value chain, was presented to the shareholders at the general meeting.

The main change is that the Group will be no longer be solely dependent on its previous business model of raising and managing funds. The change of name is

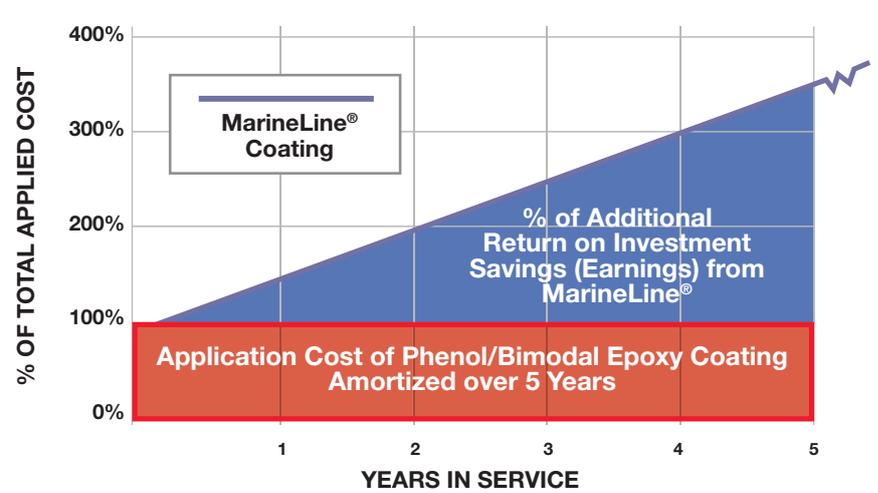
intended to represent how the company has repositioned its business and relaunched its own brand.

Jens Mahnke, CEO, said: "Ernst Russ has been in existence for more than 120 years; it is one of the oldest shipping companies in Hamburg and one of the best known internationally. It is in this spirit that we intend to adopt and perpetuate its name, which stands for Hanseatic dependability, resoluteness and quality. Our group of companies embodies a holistic approach and offers our partners expertise, extensive sector knowledge and a unique network."

A decision was also taken to increase the number of supervisory board members from three to four, which was also adopted at the shareholders' meeting. Robert Lorenz-Meyer and Robert Gärtner were elected as the new board members.



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SMM goes digital - new halls open up

More than 2.100 exhibitors and over 50,000 visitors are expected to attend SMM Hamburg, which takes place from 6th to 9th September, this year.



The main theme of the expo is 'digitalisation' in all its forms.

The conference programme will kick off with the Maritime Future Summit to be held on 5th September and will cover the major trends and latest developments in automation, digitisation and big data.

For the first time SMM will host a conference dedicated to digital shipping, covering autonomous ships, smart on-board systems, as well as other initiatives seen as the future of shipping.

Under the chairmanship of Prof Volker Bertram of World Maritime University, two expert panels will discuss topics, such as 'Building Ships for The Future' and 'Digitalisation and Automation'. In his keynote address, Knut Ørbeck-Nilssen, DNV GL Maritime CEO, will share some thoughts on current mega trends, which pave the way for the future. "In economically challenging times such as these, innovative technologies play an essential role in strengthening our industry," he said.

Software experts and executives from leading manufacturers of propulsion technology will exchange views on major industry trends, as will software providers.

Paolo Tonon, CEO of Maersk Maritime Technology (MMT), will explain the 'Maersk Vision'. More than 140 engineers are working on improving the fleet in service and developing innovative solutions for tomorrow's ships.

Dennis Morais, Chief Engineer at SSI, the developer of ShipConstructor, will demonstrate how the design and building of ships can be optimised using computer technology. High-technology will also be the focus of the lecture presented by Mary Etienne, Business Development Director at the computer company Dell. She will explore what future-proof technologies such as the Internet of Things can do for the maritime industry.

Matthias Schulze, CEO of maritime business unit of the technology giant Siemens, will explain how advanced propulsion technology can boost the efficiency of ships sustainably, and what systems are most likely to be successful in the future. Willie Wagen, director - market innovation at the Finnish ship engine manufacturer Wärtsilä, believes the industry has reached a historic turning point. He will describe his company's conceptual strategy for supporting the shipping sector's transition into a new era.

In his closing address, Carsten Wiebers, Global Head of Maritime Industries at KfW IPEX Bank, will investigate to what extent new

technologies are fit for practice. "Where would I place my bets?" – Hearing a banker's answer to this question should be especially intriguing since ultimately, visions need financing to become realities, the organisers said.

Alternative propulsion

The following day, the global maritime environmental congress (gmec) will focus on alternative propulsion systems, digital transport control, and sophisticated measurement electronics.

The IMO Marine Environment Protection Committee's (MEPC) chairman, Arsenio Dominguez will deliver a keynote speech.

Tom Boardley, LR's executive vice president will explain where he sees opportunities for further technical improvements to achieve sustainable emission reductions.

Clarksons Research Martin Stopford believes that shipping is moving into a process of fundamental change. Smart Shipping calls for investments in tools such as sensor-controlled information, satellite communication, data storage, user-friendly apps, IT systems and automation – keeping up with the technology will be essential in the market.

Inmarsat Maritime 's key innovations will be presented by its president Ronald Spithout.

Propulsion solutions will be presented by Oskar Levander, vice president of Rolls Royce Marine.

Alternative propulsion systems – is LNG the answer? China recently announced its intention to create ECAs around its coasts. Limits for sulphur emissions are to be applied from 2018 onwards, on the same basis as the existing SECAs (sulphur emission control areas) in the North Sea and the Baltic and off the North American coasts.

Classification company DNV GL is one of the front runners in development of LNG as a fuel technology. Knut Ørbeck-Nilssen, CEO Maritime of DNV GL, will describe how to accelerate the build-up of the necessary infrastructure.

Offshore Dialogue, to be held on 8th

September, will feature leading speakers from the maritime industry, academia, universities and government organisations. This conference is supported by the German Ministry of Economic Affairs and Energy (BMWi) and it will focus on the oil and gas crisis, and on the impact of digitisation.

Security concerns

Security has become a major topic whether it is anti-piracy and kidnap or cyber security.

On 7th September, the Maritime Security & Defence (MS&D) conference under the banner of ‘Strategies for Maritime Security’ will be held in conjunction with SMM.

At MS&D, the opportunities and risks resulting from recent developments will be discussed under the heading of ‘Naval Technology for Naval Operations’.

The list of speakers includes high-ranking naval officers from around the world, as well as industry representatives. The conference will be subdivided into a plenary session and two panel discussions entitled ‘Naval Operations’ and ‘Naval Technology’.

A keynote speech by a German Naval representative will give an overview of the global maritime security situation and its



repercussions for the mandates of naval forces, one of which is rescuing refugees and fighting human trafficking in the Mediterranean.

Piracy continues to be one of the greatest threats for commercial shipping. While the situation off Somalia has relaxed somewhat thanks to the deployment of naval forces and substantial shipowner investments in security personnel and equipment, the threat of piracy is still very high in the Gulf of Guinea, the waters along the East African coast, the Arabian Sea, and the Southeast Asian straits.

In his speech, Michael Howlett, deputy

director of the International Maritime Bureau ICC-Commercial Crime Services, will present an overview of the statistical development of attacks by armed groups, and suggest possible solutions.

Addressing cyber issues, Dietmar Hilke, director – cyber security at Thales Germany, will explore how naval units in particular can defend themselves against the threat of cyber crime.

To cater for this particular topic, an additional exhibition hall (Hall B8) has been set up and will be entirely dedicated to risk mitigation.



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Women will be taken into consideration at SMM's Maritime Career Market. A highlight will be a presentation of the 'Personality of the Year 2016' award by the Women's International Shipping & Trading Association (WISTA).

SMM's Maritime Career Market on 9th September, 2016, will put the spotlight on career opportunities for women. Shipbuilding companies, equipment suppliers and port companies are feeling the demographic change and desperately seeking skilled workers, executives and young talent. The German Federal Ministry of Transport and Digital Infrastructure (BMVI) has recognised their importance and has sent a clear signal – the recently adopted National Ports Concept explicitly recognises as an ongoing task the need to “increase the percentage of women employed at ports.”

An example held up for the business prospects for women in a largely male dominated industry was the rise of Angeliki Frangou, Chairman and CEO of Navios Maritime Holdings.

A new dedicated exhibition area at SMM will be unveiled for alternative marine propulsion. Hall A5 will cover all aspects of LNG. Shipyards and suppliers will showcase their LNG related technologies.

Other low-emission propulsion technologies will also be highlighted, including methanol and fuel-cells, as well as hybrid and dual-fuel propulsion systems.

Iranian pavilion

For the first time after the end of the trade sanctions, Iran will be represented by a national pavilion at SMM.

A delegation from Hamburg Messe visited Iran last December to attend Iranimex, the International Marine Industries Exhibition.

According to the national shipping company Islamic Republic of Iran Shipping Lines (IRISL), Iran intends to invest roughly \$120 bill



by 2020 to rebuild its national fleet.

Naturally, there are far too many exhibitors for Tanker Operator to highlight, except to say that **Alfa Laval** will celebrate 100 years of marine innovation at SMM.

The company said that it hoped to make SMM 2016 a historic occasion for visitors to its stand. As it marks the 100th anniversary of its first marine separator, the company will present marine customers with more new solutions than ever before.

Alfa Laval's stand will showcase the latest innovations for new fuels, energy efficiency, environmental compliance and reducing operational cost, including new offerings in oil cleaning and service. Among the highlights will be the new Alfa Laval hydraulic control oil (HCO) filter, as well as the skid-mounted Alfa Laval PureBallast 3.1/300 Compact, claimed to be the smallest ballast water treatment system on the market for flows up to 300 cu m per hour.

Besides exhibiting new solutions on the stand, Alfa Laval will look back at the one that started it off. It was exactly 100 years ago that the US Navy asked Alfa Laval to develop a centrifugal

oil-cleaning separator, which was delivered in 1917.

To commemorate the anniversary, visitors will be invited for a 20-minute stand tour each day at 16:30. Afterwards, happy hour will begin with a signature drink and the sounds of a period jazz band.

In addition, **SKF** will also showcase its many marine innovations, including two new launches - a new design of Simplex intermediate shaft bearing and a SKF dynamic stabiliser cover (DSC).

Other new products launched by SKF during the year on show at SMM, include the Turbulo Sludge Buoy – a mechanical device that separates oil and water, eliminating manual drainage. Also on show will be the SKF marine condition monitoring route kit – a condition monitoring and condition-based maintenance solution that has cloud connectivity to cut downtime and boost fleet reliability.

Furthermore, the company will present its environmental monitoring system that ensures compliance to environmental regulations by storing and mapping the ships emission data - SKF BlueMon.

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Third party shipmanagement- the way forward

The main priority for today's third party shipmanagement concerns is keeping abreast of regulations while at the same time, meeting very stringent client requirements.



Photo credit- Columbia Shipmanagement.

This has to be achieved when running a vessel on a shoestring, Kuba Szymanski, **InterManager** secretary general said, speaking with Tanker Operator.

He didn't see training and recruitment as a particular problem but agreed that the recent BIMCO/ICS manpower report highlighted potential problems ahead.

"Today we have plenty of cadets among which are a serious number of female cadets who cannot find berths, as they are all taken," he said.

He didn't think the rapid advance in technology was a problem but rather it was the advance in red tape and demands for more procedures and paperwork that were leaving seafarers behind.



InterManager's Kuba Szymanski.

"Collecting data is one thing, analysing it and making good use is another. Less than 2% of ships are using condition based maintenance (CBM) regimes. Why? Because owners prefer to use 'cheaper HR resources' than invest in new technology," he said, responding to a question about the use of data and sensors on board.

"Shipmanagers always find it easier to expand their fleets when times are tough, as owners struggle to run their own fleets and are happy to outsource the headache of managing ships. This is especially true when talking about crew management, which seems to be outsourced first," he said, adding that there was always room for consolidation as recently demonstrated by Anglo-Eastern and V. Ships.

"Having said that, some owners prefer to

have smaller managers looking after their assets. Horses for courses I believe!" he stressed.

He asserted that there was a greater need today for third party shipmanagement given all the international and national rules and regs in force or coming into force. "There is definitely a need for more specialisation. The shipping world is very competitive and those who are running highly specialised operations are in far better position to win business," he said.

As for mitigating risks, Szymanski said that third party shipmanagement companies deal with this by trying to offer job security for their sea staff. "Third party shipmanagers are usually more robust and resilient to changes affecting owners. Seafarers have a better chance of long term employment and better conditions working for operators whose core business is their employment," he explained.

Keeping operating costs on budget is still a key challenge for the shipmanagement sector. "Owners are very concerned and limited earnings are having its impact too. Having said that, the tanker market is quite good at present, which allows for some extra space," he said.

Partnerships

He also believed that the way forward was a partnership arrangement between owners, cargo owners and shipmanagers. "A realisation that we are here to help each other. That shipmanagers work for the benefit of the owners. Being listened to when it comes to long term solutions, not only short term for quick gains," he said.

Szymanski also said that InterManager now has 21 member companies who are involved in the tanker sector.

Remaining with the above themes, *Tanker Operator* asked several tanker management companies for their views, some of which were answered with the help of InterManager. Their responses are highlighted below in strict company alphabetical order.

For example, Bjorn Hojgaard, CEO of **Anglo-Eastern Univan Group** said that training was one of the key areas that the company focuses upon, in order to ensure the Group operates safe and efficient vessels on behalf of the owners. "We need well trained crew and officers," he said.

As for recruitment, Hojgaard said; "It is a global challenge to encourage young people to consider a life at sea. However, our modern training centres and career opportunities, due to our extensive fleet, means that we are able to attract good quality recruits to our officer cadet programme. Of particular note is Anglo-Eastern Maritime Academy, our cadet training school in

Karjat, near Mumbai, India."

As for the advance in technology, he said that the group was seeing a trend that more technology is being installed on ships and all of



Anglo-Eastern's Bjorn Hojgaard.

the crew need to be trained in how to operate and understand the benefits of automation. Technology training is ongoing throughout the fleet, both ashore and on board ships.

"The role of 'big data' in shipmanagement is just getting started. There is huge potential for data collection and analysis by manager for the benefit of owners, for instance in the areas of engine and vessel efficiency to optimise sailing conditions to reduce fuel and operating costs," he said.

He thought that the rationale for outsourcing shipmanagement is just as valid today, if not more. Third party shipmanagers have the ability, through scale, to invest in training and attract the best seafaring and shoreside talent.

"For us it is not all about continuing to grow for the sake of growing, our focus is more on developing and improving our capabilities across all vessel types and in the offshore sector," he explained.

"I think there comes a point where smaller shipmanagers need to consolidate in order to

offer the range of technical and crewing services that owners require. But we don't foresee a sudden rush of deals (M&As)," he said.

As for risk management, Hojgaard said that the Group's primary focus is and always will be maintaining a safety culture and ensuring we never become complacent. This ethos is at the core of the company and is reflected in our investment in training and our rigorous QHSE system.

"Our key consideration is safety, which will never be compromised for opex. But owners are certainly feeling the pinch, as the shipping sector, particularly drybulk and offshore, is at a very low ebb. So we are working closely with the owners to identify areas where we can be more efficient and save operating costs," he explained referring to budgetary constraints.

He thought that third party shipmanagement as an industry had come a long way in the last few decades. "As a service company, our role is to respond and adapt quickly to market and regulatory conditions and to technological advances.

"Every shipowner has their own particular reason for deploying various fuel saving and emissions cutting devices. Our job as managers

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is, where we can, to support and implement that decision-making process through our accumulated in-house technical expertise," he explained.

AE Univan has around 180 tankers under management, including most types of crude, product and chemical, plus LPG carriers. The Group operates with separate tanker management offices in both Hong Kong and Singapore dedicated to the oil, gas and chemical fleets.



BSM's Capt Norbert Aschmann.

Capt Norbert Aschmann, CEO of **Bernhard Schulte Shipmanagement (BSM)** explained that training is a major priority for BSM and a cornerstone of the safe, reliable and efficient services provided by the company's 20,000 sea and shore-based employees worldwide.

To conduct training, BSM has its own network of wholly owned, state-of-the-art Maritime Training Centres, located in Limassol, Shanghai, Mumbai, Manila and Gdynia.

"Our philosophy is to ensure that all personnel employed by BSM are trained to be fully competent in the duties they perform and prepared for the next step in their careers. Our quality training system is based on continuous professional development and comprises a progressive mix of theoretical and practical training. Simulators, workshops and facilitated discussions all play their part in a blended learning approach, which is delivered both ashore and on board," he explained.

"BSM has a very rigorous and effective cadet recruitment programme, coupled with high retention levels. We continue to focus on attracting young talent into the company and then developing and retaining the right people across our managed fleet," he continued.

As for the question of being ready for the advance of new technology, Capt Aschmann said; "We see advancements in technology as being key to improving safety and efficiency on board ship, with the prerequisite that seafarers are fully trained and competent in the use of

new technology."

The increased use of data is one recent technical innovation. However, although newbuilds are currently being delivered with sensor capacity installed or ready to install, BSM was not capturing this data and employing it in the management of a ship, thus far, he explained.

"Within BSM, the PAL platform that forms part of the ship management software suite, incorporates a PMS module that has the flexibility to capture and use this data. BSM is investigating condition based monitoring as a replacement for the current time-based monitoring approach, where accessing and using this data is one element.

"Assessing the benefits of remote delivery using wireless technology on board against more conventional electronic logging using hand held devices to swipe sensor readouts is a key component," he said.

Capt Aschmann thought that with only 15-20% of the world fleet currently under third party shipmanagement, there were always opportunities to grow the number of ships being managed.

"With the pressure on shipowners to meet more stringent international and regional regulatory requirements against a backdrop of difficult market conditions, the ability for high quality third party shipmanagers, such as BSM, to operate ships safely, cost efficiently and in full compliance with regulatory requirements, is an increasingly attractive option," he said.

The question of mitigating risks should be tackled through robust procedures and processes and, again, the provision of appropriate and effective training, coupled with a paramount emphasis on the importance of safety and quality.

On the question of keeping operating costs within a pre-set budget, Capt Aschmann said; "Operating a ship within an agreed budget has always been a pre-requisite when managing ships on a third party basis, and this has not changed in the current market climate.

"The emphasis is on supporting customers to achieve higher income at the lowest possible operating cost, with economies of scale that companies, such as BSM, are able to achieve being important with respect to cost efficiency," he said.

He thought that third party shipmanagement has developed into a highly professional industry. "I would like to see this continue with an increasing recognition of the value-added capabilities and comprehensive services available through high quality managers, such as BSM," he said.

BSM has over 40 years experience in

managing tankers and currently has 165 oil, chemical and product tankers under management, of which 30 are owned by Bernhard Schulte. In addition, another 75 LNG/LPG/Ethylene gas carriers are also currently under management.

The company operates through a decentralised model with 10 dedicated shipmanagement centres worldwide, each having fleet teams appropriate to the type and number of ships under management.

"Through this approach, we are able to provide customers with access to responsive, locally-based specialist knowledge and expertise supported by centrally co-ordinated and regionally based functions, for example loss prevention safety & quality (LPSQ)," Capt Aschmann concluded.



Columbia's Andreas Hadjipetrou.

Andreas Hadjipetrou, managing director, **Columbia Shipmanagement (CSM)**, said when asked about the merits of training; "Naturally, we rely on our seafarers, so their continuous training and career development is one of our top priorities, as expectations are continuously increasing.

"Columbia considers its employees at sea and ashore as its most valuable assets and places significant emphasis on retention and training initiatives in order to ensure quality and performance standards as required by our clients," he said.

He explained that CSM maintains a large pool of seafarers with high retention rates for a diverse fleet of vessels and clients. They are recruited through an extended network of wholly-owned crewing agencies, which are located in Europe, eastern Europe and Asia and are managing some 14,000 seafarers.

Having a company owned worldwide network of crewing agencies, CSM is normally able to recruit cadets. "We are very keen to recruit the right candidates and offer them a career on board our ships. During the last few years, we have experienced a drop in the quality of new recruits, however, we are able to overcome this challenge by establishing



Photo credit- Columbia Shipmanagement.

dedicated onshore teams who oversee the training and career development of each and every one of our cadets,” he explained.

The advance of technology is another industry challenge, which needs to be overcome via intensive training. “Columbia, via its dedicated training team, has taken the necessary proactive measures to identify the required training and competencies resulting from the continuous changes within the marine environment, whether technological or

legislative, and has addressed these requirements in a timely manner. As such, we do not see any major effect or negative impact,” Hadjipetrou said.

For vessels which have the technology, the development of data collection via sensors has facilitated the efforts of shore staff having to monitor vessels and machinery performance remotely.

This is definitely a positive development, as it helps shore management review the

performance timely, examine trends and act in a proactive manner avoiding breakdowns. “We expect the industry to move towards this direction in the long run, as this technology will also become cheaper,” he said.

As the industry undergoes significant changes this affects shipmanagement, as owners are increasingly demanding/expecting competitive management fees and operating expenses, whilst quality requirements, vetting performance, best practices and TMSA rating are essential.

“At Columbia, we have concentrated during the last few years on improving our quality of service and our product that we offer the client, providing tailor made services when needed. We have positioned ourselves as a high class operator, which combines vast tanker expertise, as well as a large number of vessels, thus cost competitive management. This strategy has paid off especially during the last few years and we are very pleased with our fleet developments both in Europe and Asia,” he said.

Consolidation

Turning to consolidation in the third party shipmanagement business, this is not new

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as companies have been joining forces since the early 1980's. Similarly, new companies have entered the market and CSM does not believe that 2016/17 will be any different.

"We will see mergers and acquisitions, but we will also see new entrants in the market. All integration strategies have their pros and cons and are mostly unique in their own way, depending on the level of integration, as well as restructuring after the integration.

"Again, these strategies come with certain levels of competitive advantage, but also at the same time with levels of disadvantage. Economies of scale from large mergers are also not limitless and therefore, competitive advantage derived from the large size is also not always significant. Most important is probably the ability to achieve higher and extended service levels to clients and better client satisfaction and value added," Hadjipetrou explained.

Shipmanagers represent an essential part of the shipping industry. Professional shipmanagers like Columbia gain accumulated expertise by working for different shipowners across the globe, on all ship types, therefore they are able to offer specialised services to shipowners at typically cost effective pricing - whilst quality standards are maintained at high levels.

With the increasing regulatory framework and the pressure on shipowners to keep costs competitive, CSM saw an increasing demand for its shipmanagement services and expects this sector to gain market share over traditional shipowning setups and in-house shipmanagement.

The fact that many shipowners team up with shipmanagers to create joint shipmanagement companies proves that there are opportunities in this sector moving forward. He gave the example of CSM, saying that in 2011, the company was amongst the first to team up with a traditional shipowner (Tsakos) for the management of

the owned fleet out of Athens. "Many other owners have followed this model," he explained.

Third Party management is reliant on owners who choose to outsource the expertise for various reasons, including, but not limited to, increasing regulations, economies of scale and lack of expertise to manage vessels in-house.

Challenges

Any developments, which make management of vessels more challenging, helps to promote and move third party management forward, while at the same time, creates higher entry barriers for new entrants to the market and also creates challenges for existing third party managers who perform at lower quality levels.

Such developments help to promote company's like Columbia and ultimately leads to higher performance levels required by third party practices and a better perception and reputation in the market of using managers and the benefits of using quality managers.

Hadjipetrou said that both energy and fuel management were high on the agenda, with CSM actively working towards full ISO 50001 compliance, which is expected shortly.

With regard to fuel management, CSM has recently implemented an in-house designed computer module throughout the entire managed fleet to actively track vessels speed and consumption performance, alerting both operators and technical superintendents when sub-optimal performance is identified, thus allowing proactive measures to be taken.

In addition, the company is currently working with a range of potential vendors regarding a number of specific projects identified to enhance fuel efficiency globally.

About 50% of Columbia's managed fleet consists of tankers, ranging from 4,800 dwt to VLCCs, totalling 153. Columbia is considered

to be one of the largest tanker fleet managers within the industry and enjoys strong relationships with oil majors and has significant expertise in this field, Hadjipetrou concluded.

Training- top priority

A company spokesperson for MMS, part of Tokyo-based Meiji Group, agreed that training was one of the top priorities, saying; "But there is an urgent need for an innovative approach/tools for retraining. Seafarers having undergone training are least interested in attending again."

For example, 'Positive Confirmation' of 'Training Results & Effectiveness' is very subjective and is left to each oil major to interpret. It should be noted that there are 32 sections in TMSA talking only about training. "No other topic is highlighted as much as training," MMS said.

Oil majors such as Shell are doing something for the industry with innovative tools like reflective learning, LET and resilience type workshops, which have seen amazing results. Most important is that it's free. "There is need for an approach like this," the spokesperson said.

MMS didn't think that the seafarers were behind on technical advances but said but the office staff and shore leaderships were lagging behind.

The company also said that it was also finding it difficult to increase the managed fleet partly due to the lack of finance available in the shipping industry.

As for risk management, MMS said that this was down to due diligence, as the only assets that third party shipmanagement companies have are its human resources.

In the future, the MMS spokesperson said there should be less SIRE inspections (one per month maximum), less TMSA office reviews (one per year) and less regulatory interference. The company also monitors its

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vessels on a monthly basis.

MMS' tanker department has the responsibility for a mix of oil, gas and chemical carriers. It currently manages 19 tankers - seven MRs, five Aframaxes, three VLCCs, two chemical tankers and two LPG carriers.

Relative newcomer **New Building & Ship Management (NBS)**, based in Limassol Cyprus with an operating office in Genoa, was established in March, 2012.

NBS CEO Marco Montorsi said that training was a top priority in today's shipmanagement companies, but agreed that there was no lack of recruits, especially in the EU.

He also thought that some seafarers had been left behind by new technology, especially when crew technology training is considered a millstone around the neck of owners and managers.

He thought that data should be used as needed for the shoreside technical managers to be at the highest level professionally.

Montorsi also thought that too many small shipowners do not like to handover management to third parties, hence, coupled with financial restraints worldwide, NBS was finding it difficult to reach a critical mass.

However, he said that there was a greater need today for third party shipmanagement companies given the amount of international and national rules and regs in place and coming into force.

As to the question of mitigating risk, he said that this came down to crew selection, crew refresher courses and training, more on board inspections and good control of a vessel's ISM system.

He explained that NSB manages two tankers and three ethane carriers at present.

Fundamental skills

Scorpio's Francesco Bellusci said that training was important to cover a lack of fundamental skills, due to a shorter seagoing career and too many procedures. He also said that the company was not experiencing a problem with recruitment.

Those with the fundamental skills were adapting to the latest technologies far easier than those without these skills. However, nobody has yet invented new physics laws, he said.

The analysis of real time and direct data as opposed to data, which had been 'normalised' by the Master and Chief Engineer is very challenging for those lacking in fundamental skills.

As for the question of risk management,

Bellusci said that here again training was important, as was risk management to avoid problems.

He agreed that keeping to an agreed operating budget was an increasing consideration, as more and more owners were becoming financial controllers rather than shipowners.

Scorpio currently has 95 tankers under management, including Handymax, MR and



V.Ships' Capt Alex Halavins.

LR2s, he concluded.

Capt Alex Halavins – **V.Ships** General Manager, part of V.Group - said that safe and compliant operations were achieved through investing in people – not just at sea but also for shore-based staff.

"We have dedicated global training resources and facilities in all our crew offices and also on board. And by integrating bespoke elearning courses into our training matrices, developed by our training business Marlins, we ensure our seafarers are able to meet not only their daily operational requirements but also the demands of new industry regulations and technologies," he said.

Cadet programme

He explained that V.Ships has a dedicated cadetship programme, which helps the company attract and invest in the next generation of seafarers from various countries, including the UK, following the acquisition of Bibby Ship Management in March of this year.

"Investment in our lifetime career approach is critical to retain cadets – particularly to meet the gaps that BIMCO/ICS highlighted in officers," he said, referring to the recent manpower report.

He thought that rules and regulations had always been there but they can still be a burden – especially for the smaller shipowning companies - thus partnering with a shipmanagement company makes

commercial sense.

"However it's not just about shipmanagement. For example at V.Group – we offer a complete maritime services package to our clients – from repairs through to insurance, as well as travel and training. And what we don't directly offer we indirectly offer through Marcas - the association of shipping companies group," Capt Halavins explained. "It's these additional services combined with shipmanagement, which enables us to generate the highest possible returns for our clients."

Turning to risk mitigation, he said that the focused investment in people already mentioned also extends to the group's technology and to its systems to assure safe and compliant operations. "It starts with our recruitment process and extends through to on boarding, training and operational practices. People are our greatest asset and we invest to ensure their growth and to mitigate risks," he stressed.

Most of V.Ships global shipmanagement offices manage tankers, which is undertaken through dedicated fleet cells to ensure safe and compliant operations. "As a Group, we are actively involved in enhancing the safe culture across the whole shipping industry but specifically for tankers, we have taken part in working groups in Intertanko, as well as various global shipping chambers.

"We have a dedicated ChemHelp team who are engaged with cargo related consultancy, tank cleaning advice services and training of personnel both at sea and ashore," Capt Halavins said.

As for optimising voyage performance and reducing the amount of emissions from vessels, V.Group has a dedicated team (TACT) specifically focused on energy efficiency and operational performance. Many shipowners and charterers have their own instructions, including but not limited to, bunker savings, propeller polishing, hull cleaning and as mentioned, the Group can support any of these initiatives by offering high level services to clients.

V.Ships has 306 tankers under full technical management and over 108 tankers in crew management, as of June, 2016. "We have an established track record across different types of tankers ranging from ULCCs to bunker tankers," Capt Halavins claimed. "And we also manage chemical and gas tanker vessels of all types. Our managed fleet of tankers are operating worldwide on timecharter to oil majors, as well as spot fixtures on major tanker trades."

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A partnership approach to technical management

Safe and successful operations in the tanker industry rely on strong working relationships and there is no more important relationship than that between a shipowning technical management and crewing entities.*

This relationship can take many different forms. At Ardmore Shipping, it is summed up in one word - partnership. We believe that only through a strong, seamless partnership with our technical managers can we deliver the quality of service that our customers expect and uphold the performance standards that we expect.

We operate with two technical managers, Thome and Univan Ship Management. Between them, they provide technical management for our 22-strong fleet, which will soon grow to 28.

We benefit tremendously from the expertise, assets and capabilities that both of our technical managers bring to bear on our behalf, but it is important to appreciate that this bears no resemblance to an 'out-sourced' responsibility.

We invest a huge amount of time, energy and resource into these partnerships and have tailored a bespoke set of working relationships with our technical managers in order to meet the needs of our fleet and our customers.

These relationships are built upon a shared set of values, working standards and clearly defined performance objectives. We also share a commitment to excellence in our operations – and a shared vision of what 'excellence' means.

We are in contact with our technical managers on a daily basis, discussing a wide array of issues; ranging from vessel-specific passage planning, reviewing performance data in order to maximise fuel-efficiency, discussing crewing requirements, reviewing vessel maintenance schedules, managing opex budgets, and specific customer requests.

Importantly, we regularly participate in crewing conferences organised by our technical managers, as well as holding our own conferences for senior staff from both Thome and Univan. We visit our ships on a regular



Ardmore's Mark Cameron.

basis and always spend time with the crew, as well as making a real effort to get to know our senior officers. So it's safe to say that we take a very 'hands on' approach.

Of course, the single most important asset within our organisation are the men and women that serve on the Ardmore fleet. With this in mind, it's impossible to separate our relationship with our technical managers from our approach to crewing.

Our seafarers are in the front line of the service that we deliver for our customers. They are our ambassadors around the world, in port and at sea, and custodians of our reputation. As such, we work hard to ensure that every crew member is proud to sail on an Ardmore ship.

Direct involvement

Working with our colleagues at Thome and Univan, we are directly involved in recruitment and appraisals. We have an interview process, particularly for senior posts, in which we try to get to know the candidates as people and to understand their character. We add our own comments to performance reviews at the end of every contract, from both a commercial and a

technical operational perspective, and sanction promotions to all senior officer ranks.

We also work closely with our technical managers to instil the right qualities in our crew. We want our seafarers to be leaders, thinkers and doers, empowered to use their initiative to make the best operational decisions, and our technical managers play a vital role in helping to nurture this mindset in everyone that sails on an Ardmore ship.

We take a keen interest in the living standards on our ships and work to ensure these standards remain high. We see a strong correlation between crew welfare and commercial results – when it comes to welfare, little things can make a big difference like good quality towels and bed linen, decent gym equipment and internet access, meals catering for all nationalities, religions and dietary requirements, with high quality ingredients. These things matter to our crew, so they matter to us too.

Part of our fleet currently operates in commercial pooling arrangements. This is a deliberate policy of pursuing a blend of timecharter, spot fixture, and pooling across our fleet, in order to maintain commercial flexibility, independence, and customer diversification.

Our managers are a vital part of the Ardmore team and the importance of their role will grow as our fleet expands. Although some owners may view technical management as a convenient way to take a back seat, we take the opposite view.

Working with high quality managers enables us to take a very active, involved role in the operation of our fleet to ensure that our values and our high performance standards are upheld.

**This article was written by Mark Cameron, COO, Ardmore Shipping.*



Q88 introduces HazMat and medical services

Developer of vessel management software systems for the tanker and drybulk sectors, Q88 has unveiled a global support programme to co-ordinate quick response and expert consultation for chemical spills/incidents and medical emergencies on board ship.

Known as the Q88 Response Center, the new initiative taps into the resources of the Spill Center, a provider of emergency response communications and incident management services, including environmental, technical and legal expertise.

At the Q88 center, trained personnel monitor telephone calls, dedicated email and web site requests for assistance on a 24/7 basis to gather details, determine the issues and dispatch the right resources.

In cases of major or minor spills or other chemical incidents, the center is able to provide expert advice, resources and contractors to assist with mitigation of the incident and the clean up of the spill.



Capt Soren C Ibsen, reporting to subscribers to Milbros Onboard.

The center also includes services from Future Care, a medical care management service provider to the maritime and related industries worldwide.

As a result, it combines medical assistance and chemical incident and spill assistance under one response number, making it easier for the Master, QI, or office to request assistance.

Future Care offers medical case management and cost containment services to shipowners and their crews 24/7, both on board ship, at sea, and on land. The company's team includes physicians, nurses and medical case managers experienced in managing seafarers' healthcare, as well as access to preferred medical networks, explained Gordon Cooper, a Future Care spokesman.

The service manages the medical response from the time of incident on board the vessel through shoreside treatment, repatriation and out-patient care, until the seafarer is fit to return to duty or achieves maximum medical improvement, as

deemed necessary.

In short, the Q88 center in co-operation with Future Care, will provide Telemedicine services for on board injuries or illnesses at sea or arrange for monitored shoreside care for a patient.

Future Care's medical auditors review and negotiate all major medical and related charges incurred in the US and in many ports worldwide.

Tom Moses, Spill Center President and founder, observed: "This programme gives ships at sea access to a world of resources that they need after chemical and medical emergencies."

Spill Center resources include advanced communication and geo-location technology and up-to-date listings of national and international environmental regulations, as well as spill-reporting contacts and reporting deadlines.

"The Q88 Response Center gives our Milbros Onboard subscribers a single call center to get help with chemical and medical emergencies while at sea. With this partnership, Milbros Onboard customers can now access expert cargo handling and cleaning, emergency response and medical advice all in one programme. We're extremely excited to be able to offer a programme we felt the industry definitely needed," said Capt Ibsen.

Feedback positive

Positive feedback has been received from subscribers and some P&I Clubs, who have been introduced to the programme, he claimed.

Explaining why such services were deemed necessary, Capt Ibsen said that while he agreed that oil spill response is quite well covered around the world with existing services, however, if there was a spill or release of a hazardous chemical, he did not think the response organisations were really fully equipped or ready to handle a HazMat release from a tanker.

"While the chemical tanker industry has been relatively safe and there are not many spills or releases, this new resource could prove invaluable if there is a release," he said.

The Spill Center has a worldwide network of HazMat spill contractors that can be called upon to assist with mitigation and clean-up of an incident. Based on the ship/incident location, the system

provides a list of contractors and the distance they are from the incident's location worldwide.

"All ships have a number of chemicals on board that they use in the engine room or on deck for the normal ship operations. If small amounts of these products are spilled on board or drums/containers are leaking, the Spill Center can assist with mitigating the incident and/or provide a list of contractors that could come on board to help with the clean up process," he explained.

As for the medical care on offer, Capt Ibsen also conceded that there were other services available to the maritime industry. However, for some incidents, the first course of action may be to have the patient evacuated from the ship, which requires vessel deviation and the resulting significant expenses to the owner. While this may be the best course of action in some cases, it may not be in others.

"Future Care looks at the whole situation with the intention to get the patient back 'fit for duty' with the best care in the right time frame at the overall lowest cost," he said.

Free to subscribers

The response center is available to all of Q88's Milbros Onboard subscribers at no additional charge and all the vessels signed up to the service will be entered.

Capt Ibsen explained that if a shipowner were to register for medical and spill services separately the costs could be as much as \$1,000 per ship per year. "This makes a Milbros Onboard subscription a real value," he stressed.

As mentioned above, access to the center's services is provided as part of the Milbros Onboard subscription free of charge. However, actual calls to the response center or assistance provided by Future Care will incur additional charges.

In addition to providing the expert advice and assistance, the response center will also alert all parties on a notification list for incidents, such as office staff and authorities and also log date and times of all calls and notifications for future reference.

Q88 Response Center, Q88's latest service, adds a new dimension to the Milbros platform, Capt Ibsen said. Already claiming the industry's leading

database of over 12,300 chemical and oil cargoes carried on tankers, including cargo handling, cleaning, regulatory, safety and personal protective equipment (PPE) information for all cargoes, the new service further enhances on board decision making and safety.

Since its founding in 2001, Q88's goal has been to continue developing solutions to better connect the maritime industry. Q88 subscribers credit the

company's 24/7 global support and staff of maritime experts as key components in ensuring the flexibility and reliability needed to remain competitive in this ever-changing market, the company claimed.

Spill Center was formed in 1990 to provide support to vessels involved in marine pollution incidents and spill-related claims wherever they occur around the world, helping to contain costs

and limit liability arising from environmental releases.

Future Care is a provider of global medical care management services to seafarers, shipowners and managers and the respective International Group member P&I Clubs. The company's team of first responders, physician and nurse medical case managers collaborate with the treatment provider to ensure the highest quality medical care, it said.

Examples of Q88 Response Center calls

Chemical/HazMat incidents:

- **Minor spills of chemical cargoes, leaks from various chemical drums stored on board.**

If at sea the response center would provide assistance and advice over the phone regarding mitigating and clean-up of the spill.

If needed, the center can provide a list of contractors in the next planned port that can arrange for disposal of any of the spilled product and cleanup materials.

If the incident happened in port, the call center can provide a list of contractors that can assist with the clean-up.

- **Chemical cargo starting to react unexpectedly, such as gassing off vapours, smoking, unexplained temperature rises.**

The response center would put the caller in contact with experts related to the chemicals involved to provide assistance and advice on how to best mitigate the situation on board.

- **Major spill or cargo release at sea or in port.**

The response center can follow the ship's spill response plan (provided that information is shared with the call center in advance of an incident) and make notifications and contact spill response groups as outlined in the individual ship's spill response plan.

The call center can provide an additional list of response contractors that may be able to assist with the emergency.

Medical emergency or request for medical services:

- **Crew member(s) are accidentally exposed to a hazardous chemical, such as exposure to vapours, exposure to skin, splashes in eyes, accidental ingestion or any other exposure.**

The response center would put the caller in contact with Future Care doctors and nurses to provide prompt telemedical diagnosis and treatment options on board ship and/or manage subsequent shoreside medical care, as and when required.

- **Crew member has been injured or has taken ill while at sea.**

The response center would put the caller in contact with Future Care doctors and nurses to provide prompt telemedical diagnosis and treatment options on board ship and/or manage subsequent shoreside medical care, as and when required.

- **Crew member requires a medical appointment at the next port of call.**

The response center would put the caller in contact with Future Care, who will arrange the appointment with an appropriate treatment provider; coordinate the crew member's transportation with the Master and port agent; initiate follow-up contact with the provider for details of diagnosis and treatment and report results to the ship's Master and/or shoreside personnel, as instructed.

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Satcoms services continue to grow

Inmarsat has ramped up its maritime offerings and increased the number of service provider partners over the past couple of months.

For example at the beginning of June, the organisation launched Fleet One Global, which is claimed to be a simple, cost effective service designed to offer basic voice and data connectivity and aimed at the smaller vessel market.

The plug-and-play service delivers 100 kbps voice and data at one global rate, eliminating the need for shipowners to use a patchwork of different providers. Fleet One Global achieves a 99.9% global reach, ensuring that ships are never out of range for voice calls, business emails, text-based crew emailing, electronic chart synching, updated vessel routing, weather forecasting and planned maintenance information, wherever they are operating, the organisation claimed.

"Fleet One Global offers voice, data services and uninterrupted access to the internet, all based on user need and at performance levels that are consistent across all regions," said Shane Rossbacher, vice president of product management, Inmarsat Maritime. "It brings a unified offer and cost transparency to sections of the shipping market, including river-sea ships, and coastal vessels that have been at the mercy of hidden roaming and usage costs."

Available via the Inmarsat L-band satellite network, the new service offers voice calls, IP rates of up to 100 kbps and standard 160 character SMS email messaging for crew. No specialist skills are needed to install the low-cost and compact antenna and below-deck units from manufacturing partners, each of which weighs no more than 2.8 kg.

As for the service providers, also in June, Marlink signed a strategic alliance with Inmarsat, which will see Inmarsat's new Fleet Xpress (FX) service integrated into its existing service portfolio. Through the agreement, Marlink will bring more than 2,000 vessels onto FX over a five-year period.

SpeedCast International also recently signed up to Inmarsat's FX service, as a key offering within its maritime services portfolio. It is fully integrated with SpeedCast's existing maritime SIGMA gateway and other services. Over the next five years, SpeedCast has also committed to roll out FX to around 2,000 vessels.

SpeedCast will also position Inmarsat's FleetBroadband (FB) service, as a back-up for its maritime VSAT services.

Satlink Satellite Communications also recently became an Inmarsat partner for FX and FB. Satlink's solutions will be integrated with Inmarsat's FX service, including the in-house developed Satbox, and Tracklite service.

New applications

FX was launched on 31st March this year and according to Inmarsat, heralds a new era of innovation in the maritime sector. It facilitates the deployment of a new generation of 'connected ship' applications.

Powered by Global Xpress (GX) network of satellites, FX offers a higher bandwidth through GX Ka-band technology, at the same reliability as the mainstream FB service.

At a recent presentation, Inmarsat's Maritime's

President Ronald Spithout said that Inmarsat was investing between \$1-\$5 billion on new satellites every five years, as the life expectancy of each satellite is around 15-20 years.

He explained that the idea of using service provider partners was due to the organisation not wishing to become a software developer but an enabler. The network was ready for any application, he claimed. Basically, a ship operator can use the application for operational efficiency, safety & compliance issues, crew welfare and other areas.

In a month or so, cyber security will be offered by slotting into SingTel's Trustware software in another partnership agreement recently signed.

Peter Broadhurst, Inmarsat's vice president service development, explained that with the new satellite constellations, regional coverage and higher bandwidths can be attained. He described FX as a combination of GX and FB in one integrated solution. There have been around 45,000 FB terminals supplied. "IP traffic to vessels is growing very fast," he said.

Inmarsat estimated that by 2020-2021, there will be around 40,000 ships fitted with some sort of broadband capacity.

He said that Inmarsat had 16 partners and was talking with a few more potential partners. Inmarsat is also working towards the development of its own terminal with a hardware provider and will license it once developed. At present, the organisation uses Cobham Sailor, Intellian and JRC terminals to connect vessels with the satellites. **TO**

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ABS appoints a tanker tsar

ABS recently appointed Tom Blenk to the position of Vice President, Tankers & Bulk Carriers, ABS Global Marine.

In conversation with *Tanker Operator* he outlined his role within the class society's marine division and gave an insight into ABS today.

"My role is part of the ABS Global Marine team, which has been put in place to help provide a truly global perspective to our entire organisation. This team brings together the worldwide perspective of the global tanker sector with the local perspectives of our operating divisions and 220 offices worldwide.

"This wide knowledge base and market exposure will allow us to better understand key trends impacting our members and clients, thereby better informing the development of products and services needed to support the industry," he explained.

Blenk said that tankers had always been a core sector for ABS and will continue to be so well into the future. To enhance service delivery across all sectors, ABS has focused on three guiding principles: 1) provide great class service; 2) continue to be leaders in technology; and 3) work to be a trusted advisor.

"Fundamentally, this means we will proactively work with the industry and our clients to understand their challenges and opportunities for success. Doing so allows us to better identify practical solutions that work while delivering on our commitments safely and efficiently," he said.

This commitment is now being played out in various places around the world. For example, ABS has been a part of the Greek shipping community since the 'Liberty Ships' came over after World War II. ABS strives to understand the community's needs and have been committed to the success for decades.

"Focusing on that historic knowledge and our forward thinking approach to class services has led to continued growth in our operations within the country," Blenk explained.

A few years ago, ABS adopted a new

approach to its Greek operations. Areas of expertise were established in a country rather than relying solely on headquarters in say London or Houston. So as the Greek shipping community began to diversify, ABS has been ready to assist them with specialists in areas such as gas, energy efficiency, vessel performance, regulatory issues, and environmental solutions.

This allows ABS to have local specialists prepared to respond to clients' needs with the ability to leverage the global network of technical specialists, he said.

At the same time, ABS has made a concerted effort to build a strong team on the ground in Greece. This began with the leadership team, which includes Vassilios Kroustallis, Senior Vice President- Eastern Europe and Dimitrios Kostaras, Vice President of Engineering for ABS Europe, and Dimitrios Houliarakis, Assistant Chief Surveyor- Europe, all being based in Greece.

"This 'Global Greece' approach really has helped to further strengthen our position and meet the needs of our clients. The model has helped to drive the larger Global Marine approach we are adopting across the company," he explained.

Global reach

In today's market owners are global, so ABS needs to be global, which is why ABS has created the Global Marine team.

"While on the local level we will certainly concentrate on unique issues impacting tankers or any other sector, the real value is being able to tie it all together. How do we help a Greek owner that is building a ship in a Korean yard understand the operational and regulatory issues in the US Gulf coast? Taking that type of approach and improving the flow of information both internally and to our clients is making a positive impact," he claimed.

Talking of the UK operation and Brexit, he thought that at this point, it was



ABS' Tom Blenk.

premature to evaluate the impact of the referendum on the industry or on ABS operations. However, ABS in Europe has already taken steps to increase its presence in key locations.

Greece is a focal point for survey and engineering work for the entire continent. It also serves as a centre for ABS' technology and research programme, gas solutions team, and efficiency, performance, and environmental solutions professionals.

In addition, Hamburg is a major operational hub and also has local specialists in areas of energy efficiency and vessel performance. Copenhagen is home to the class society's global leaders in energy efficiency and vessel performance.

This approach is reproduced globally and allows ABS to have a 'global reach with a local touch', Blenk said.

Turning to the newbuilding downturn, Blenk said that as an organisation, ABS has been in existence for 154 years and has gone through many shipping cycles. "Our key to long term success is simple—no matter the market conditions, we will help



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support our clients in meeting their operational and regulatory needs. Despite the downturn, work still continues, as more than 12,000 ABS-classed vessels operate around the world,” he stressed.

“In addition to supporting our client’s day-to-day operations through traditional class service, ABS has developed a suite of technical offerings we believe adds significant value. We’re helping owners and operators conduct technical evaluations in areas such as ballast water treatment, hull form optimisation, energy savings devices, and emissions control technologies, just to name a few. Tanker owners need to have a trusted advisor that can help them safely and effectively address their challenges and ABS is committed to being that partner,” Blenk added.

Technology evaluation

The role of class is to understand the impact of both new regulations and operational needs of the industry. A key part is helping to not only evaluate the safety of new technologies but also help clients evaluate the technology options available to them.

With this in mind, ABS regularly participates in a number of joint industry and joint development projects to help address regulatory and operational issues.

Last year alone, ABS participated in 43 projects with industry and an additional 37 research projects with leading academic institutions. These efforts led to 64 new Rules, Guides, Guidance Notes, and Advisories along with 29 new or updated software applications to assist the industry.

These efforts also laid the groundwork for future projects in areas, such as cyber security, new survey technologies, shaft alignment, emissions controls, noise reduction, and human factors, plus others, Blenk said.

For the tanker sector, one area of recent development is the publication of the ‘Guide for Enhanced Cargo Cleaning’. This Guide helps set out requirements for tank cleaning systems that are able to clean cargo tanks without needing confined space entry. Compliance with the Guide can lead to the ECTC(C) or ECTC(SC) (vessels with slop tanks) notation.

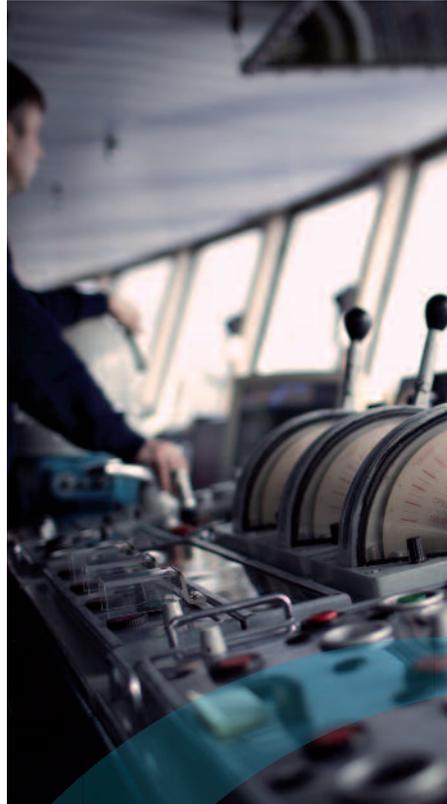
He further explained that another area of growing interest in the tanker sector has been the use of LNG as a fuel. ABS is working with a number of industry stakeholders on the potential for gas fuel tankers, as well as assisting in the development of new vessel designs that are ‘LNG Ready’, preparing for the future adoption of gas fuel during initial design and construction.

As for the use of drones for surveys, he said that a key area of research for ABS is how to make the class survey process more efficient and less intrusive to the owners and operators. This includes using technologies, such as drones and identifying how to better leverage ‘smart technology’.

“In the near future, we will be able to begin discussing more in-depth cutting-edge advancements that we believe will help redefine the future of classification.

“At ABS our role is to help the industry understand current and future requirements, including the impact of regulatory changes on assets throughout their lifecycles, by providing practical guidance on potential solutions.

“We combine our understanding of the regulatory environment, technology leadership, and the industry’s needs to help identify solutions unique to the needs of each sector based on the current and prospective regulatory trends,” he concluded.



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COSSMOS – improving energy efficiency

Market volatility and environmental regulations are currently driving the maritime industry towards more cost-effective and environmentally friendly operations.*

This has a significant impact on ship machinery, which is often pushed to the design limit, imposing higher degrees of sophistication, both in the configuration and in the operation of vessels. Advanced computer-aided methods today can successfully manage this increasing complexity of integrated marine systems.

DNV GL Research & Development Piraeus has developed COSSMOS, a computer platform that enables the analysis and optimisation of the design, operation and control of any ship machinery system at integrated-systems level.

An acronym for Complex Ship Systems Modelling & Simulation, COSSMOS is able to represent all governing phenomena of ship machinery and energy

build virtual engine rooms, digital twins of the vessel machinery either to be built or operated. The virtual engine room is then coupled with the entire operational profile of the ship together with cost data to perform advanced techno-economic analyses of practical use.

COSSMOS is used by the class society to assist shipowners at the pre-contract phase of newbuildings, for performance assessment and optimisation of machinery and operations for fleets in service, and it is also DNV GL's main application in analysing the potential of new ship machinery/energy technologies and concept designs.

For tankers, COSSMOS supports a variety of applications, from techno-economic evaluations and optimisation of

operations and holistic energy management.

A key part of a tanker's operation is cargo handling. Cargo loading, cargo heating (when relevant cargo is shipped) and discharging are complex and often challenging operations involving complex machinery, operations from different officers at different locations on the vessel, which are affected by the terminals, cargo specifications and environmental conditions.

COSSMOS can assist in managing such complexity in an effective way. Figure 1, for example, shows a typical model for cargo discharge systems, and Figure 2 depicts a typical cargo heating model.

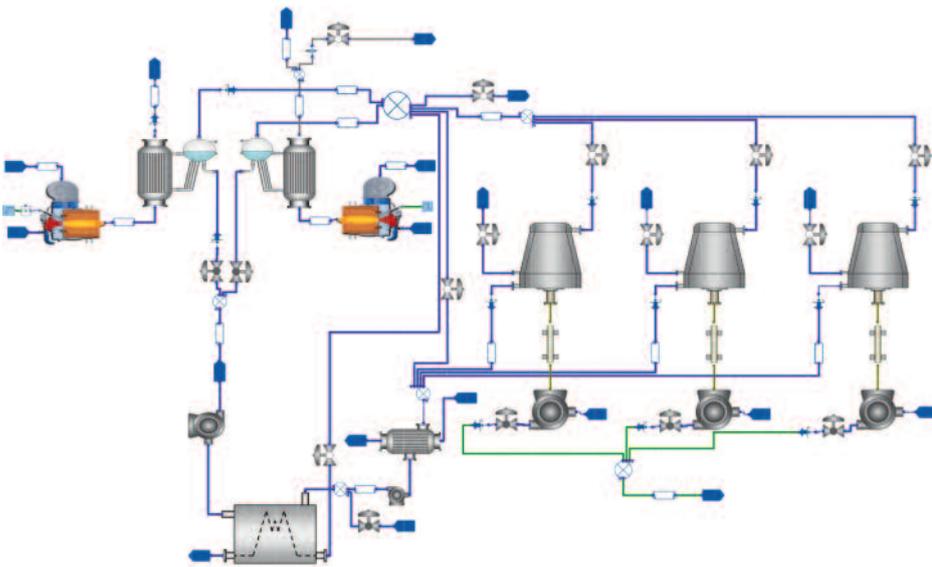
Cargo discharge

More specifically, cargo discharge is a focus area for many operators. COSSMOS can simulate the discharge operations under actual/realistic conditions. It can serve as a performance assessment baseline for evaluating the condition of various components and the effectiveness of applied operational strategies.

It may also be used to optimise the overall discharge operations (both the engine room and cargo handling side) by making the optimal selection of discharge control variables for given terminal schedules, tank capacities and operational constraints.

The module (see Figure 1) is customised and calibrated based on each vessel's system on board in order to reflect its actual behaviour. On board measurements collected during the discharge operations (manually or automatically) are used as input in the simulations.

It can be used to execute a wide range of studies, such as an assessment of the discharge process with regard to energy

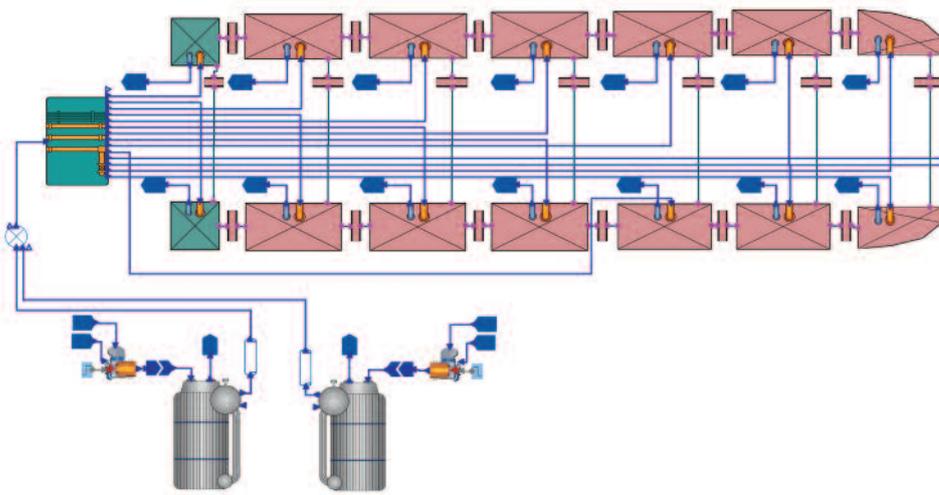


Typical COSSMOS model of a cargo discharge system.

systems (thermodynamics, transport, mechanics, electrical) in a realistic manner.

In essence, DNV GL uses COSSMOS to

machinery, propulsion and waste heat recovery configurations to performance assessments, optimisation of cargo



Typical COSSMOS cargo heating model.

efficiency and fuel consumption. Iterating this procedure for various discharges can benchmark each operation against the system’s ‘good-as-new’ performance.

In addition, the studies’ findings provide a means to identify ways of improving operational and crew procedures and assess the condition of the system components.

Finally, COSSMOS can be used to provide sensitivity analyses of important operational variables and has shown to improve the operator’s system knowledge and awareness, DNV GL claimed.

The potential fuel savings and other

findings depend on the system’s condition, on the understanding of the governing processes and interaction between components and on the crew’s operational knowhow and communication.

A series of projects have demonstrated the practical benefits of COSSMOS for tankers. Key value-adding features include systematic assessment and understanding of equipment and crew performance during cargo discharge, improved efficiency and fuel savings (currently up to 10%), as well as better crew awareness.

For example, Minerva Marine signed up

its fleet of 56 crude, chemical and product tankers for cargo discharge operations in April, 2016.

“Over the last two years we have been using COSSMOS to monitor and improve the energy efficiency of cargo operations of an Aframax and a Suezmax tanker,” reported Meropi Mantzouranides, energy efficiency engineer at Minerva. “After implementing COSSMOS successfully in collaboration with R&D Piraeus, we were able to thoroughly monitor the operation, fuel savings and crew awareness. To fully realise these benefits, we decided to proceed with a roll-out of the service across our entire fleet.”

Other tanker owners using the COSSMOS service include Consolidated Marine Management, Eastern Mediterranean Shipping, Euronav, Mideast Ship Management, Samos Steamship, SK Shipping, Thenamaris Ships Management, Tsakos Columbia Shipmanagement, and Unicom.

**This article first appeared in DNV GL’s latest ‘Tanker Update’ and was written with the help of the class society’s Nikolaos Kakalis, manager R&D and advisory, region Southeast Europe and Middle East.*

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Determining the most economic fuel type for an LR1

In a comprehensive study, DNV GL in co-operation with MAN Diesel & Turbo (MDT) examined a set of scenarios for various LR1 product carrier designs to determine the most economically feasible fuel type.*

Considering the current volatile market situation, the conclusions are quite different depending on the development of fuel prices.

The goal of this study was to analyse costs and benefits of various fuel options for a newbuild. The alternative fuels selected included LNG, LPG and methanol plus others. The costs and benefits were determined by looking at the additional investment and operating costs, compared to a standard fuel variant using HFO and MGO.

An LR1 on a fixed route was selected for a financial analysis. The machinery set-up was the same for the various fuels, except for the fuel system. The ship was assumed to operate on a route between North America and northern Europe.

Based on AIS data, the typical speed for similar-sized product tankers on comparable trades was determined to be 12.5 knots. This speed was then used as the fixed transit speed of the ship. For the selected operating pattern, 87% of the time was spent in transit, 3% in approach and 10% in port.

The study assumed that the reduction of the global sulphur cap will be enforced in 2020. Therefore LSFO with 0.5% sulphur will be the reference fuel outside of SECAs by that year.

For the alternative fuels considered, one variant included the use of the alternative fuel for the entire round trip (one-fuel variant) while a second variant assumed use of the alternative fuel in the SECAs only and HFO/LSFO outside (mixed-fuel variant).

The additional investment costs relative to the reference scenario for tanks, piping and engine modification were considered in the financial analyses. Tanks were assumed to be placed on deck without reducing cargo capacity and compromising the earnings. The investment year was set at 2017, with operations between 2018

and 2030.

An MAN B&W 6G60ME-C9.5 was selected as the main engine, which could give the ship a design speed of 15 knots at 90% engine load, including a 15% sea margin. This engine is available as a standard oil-fuelled diesel engine, but also in dual-fuel versions capable of burning LNG, methanol and LPG - the ME-GI and ME-LGI types, respectively.

The propulsion system is equipped with a fixed-ratio power take-off (PTO) having a capacity of 778 kW, which offers a simple and cost-effective way to supply all electric power from an alternative fuel when the ship is on voyage. The tank size for the alternative fuels was selected to give the vessel half-round-trip endurance with a 20% margin.

Fuel price scenarios

The fuel price scenario is important for the financial viability of the various fuel options. Apart from the expected variations for each fuel type in concert with the crude oil prices, the relative position of fuel prices has changed over the past five-years - MGO has become less expensive than methanol, and LNG has become as expensive as LPG.

Two price scenarios were developed: a high-price scenario based on the fuel prices in mid-2014 when the Brent oil prices were \$100-\$110 per barrel; and a low-price scenario based on fuel prices in mid-2015 when the Brent oil prices were about \$50 per barrel.

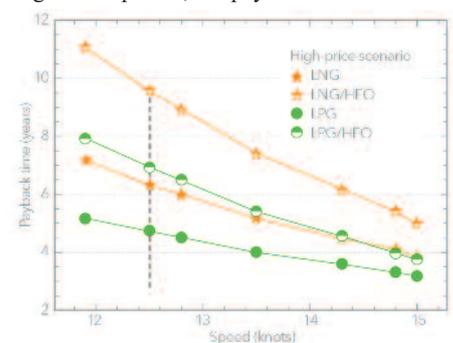
In the high-price scenario, LNG and LPG both in the one-fuel variants and mixed-fuel variants, delivered a cost advantage during operation when compared to the reference vessel. There are, however, substantial investments needed for these alternatives related to the tanks.

In the low-price scenario, both LNG and LPG are less attractive. The cost difference for LPG stays positive for all operational years,

whereas LNG was estimated to be negative prior to the global sulphur cap and positive thereafter.

Choosing methanol does not give a positive cost difference, compared to the reference case for any of the price scenarios so the investments needed for the engine upgrade, the gas supply system and the tanks will not offer a payback.

In the high-price scenario, both LNG and LPG have payback periods in the 5-10-year range. As expected, the payback time decreases



Payback time as a function of ship transit speed for LNG and LPG pure and combined variants in the high-price scenario.

at higher vessel speeds as shown in Figure 3. At 15 knots, the payback times are less than five years for all four variants.

The payback times are shorter for the single-fuel variants than for the mixed-fuel variants. Therefore, the increased initial investments are more than compensated by the lower prices for LNG and LPG, compared to LSFO in the high-price scenario.

In the low-price scenario, the payback time for LNG is longer than the 13 years considered in this study, whereas LPG has a payback time of around 6.5 years. The payback times for LPG in both price scenarios are shown in Figure 1. Based on the fuel-price scenarios presented in this study, LPG is at least as good



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as LNG based on the shorter payback time, reduced sensitivity to reasonable price variations and lower initial investments.

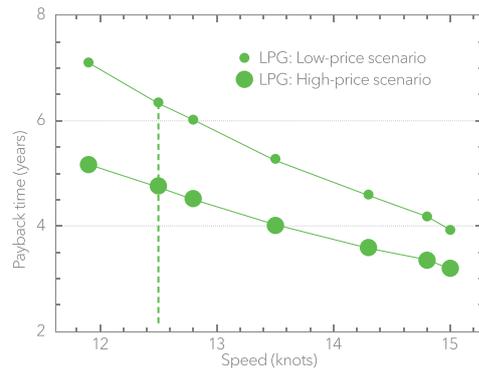


Figure 1. Payback time as a function of ship transit speed shown for LPG in both price scenarios, with LPG used both inside and outside SECAs. The dashed line indicates the reference speed.

Fuel prices with their intrinsic uncertainty are critical for the outcome of the financial analysis. To account for this uncertainty, a sensitivity analysis was carried out between LSFO and the alternative fuels. A wide price spread indicated a larger driving force for a fuel switch to LNG or LPG. As shown in Figure 2, LPG

requires a smaller discount than LNG to be financially attractive. This is due to the lower investment costs.

While the expected discount is lower for LPG than for LNG, the payback time is shorter. Nevertheless, with reasonable prices for LNG and LPG in the high-price scenario, the additional investment required for the alternative fuel variant pays back within the 13-year project period.

In this study, a tank capacity sufficient for half a round trip was assumed, which means that the vessel would need to bunker in both Houston and Rotterdam. However, considering the fuel price difference between these ports, the scenario was also checked for bunkering LNG and LPG at the cheapest location on the round trip only, which is Houston.

When LNG is used for the entire round trip and bunkering is limited to a single location, the payback time increases from 76 to 97 months. Therefore, the additional investment cost for the tank is not compensated by the lower fuel price. However, the payback time for LPG is reduced from 57 to 51

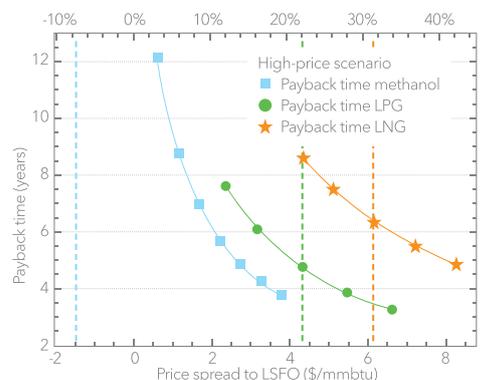


Figure 2. Payback time as a function of price difference between LSFO (at \$19.55/mmbtu) and the alternative fuel. The dashed lines represent the values used in the high-price scenario for each fuel.

months when enough tank capacity is installed for a full round trip. The main reason for the difference is the high tank price for LNG compared to LPG.

*This article first appeared in DNV GL's latest 'Tanker Update' and was written with the help of the class society's Dr Hendrik Brinks, principal researcher, strategic research & innovation; Dr Pierre Sames, Group Technology and Research Director and Dr Christos Chryssakis, principal researcher.



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LR watching Brexit situation closely

In conversation with Lloyd's Register, the topic inevitably turned to Brexit, as the service giant is headquartered on the outskirts of Southampton, having moved from London's Fenchurch Street last year.

A company spokesman said that LR was looking carefully at the impact of and future for the UK after Brexit.

For some time, LR has been considering the potential consequences of the UK leaving the EU. "While, of course, we do not yet know what restrictions will be imposed on the free movement of people, it is clear that we are now in a period of significant political, economic, legislative and market uncertainty," he said.

"Our view is that whilst we believe an exit from the EU is unlikely to have a significant impact on LR, the general uncertainty in the financial markets will not make trading conditions any easier going forward. However, we are a strong and resilient

business that benefits from a global footprint, so we are in a good position to deal with the immediate aftermath," he explained.

However, one question, in transition from being in an EU member nation to one outside the EU, is the possible effect this could have on the process by which LR receives its status as a Recognised Organisation (RO) within the EU. This will be addressed in due course.

It was stressed that LR is a global business supporting clients and flag states all over the world, including within the EU, and this will continue to be the case.

Talking of tankers, the spokesman said that LR's tanker capability is spread worldwide, while in the Southampton GTC, experts on tanker structural,

performance and regulatory requirements are available. He also claimed that LR's share of the tanker orderbook was rising.

LR's Condition Assessment Programme (CAP) inspects tankers to assure oil majors that the vessel they are chartering are safe for their cargo. CAP is a comprehensive programme, which looks at hull structure, coating condition, machinery and cargo equipment.

He said that tankers were now much safer and less environmentally damaging than they were a decade or two ago. Much of that improvement has come through regulatory drivers or charterers requirements that have put increasing pressure on the ship through additional inspections.

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Changing tides of marine operation

Ships have been sailing the seas for thousands of years, and with modern technological advances and innovation, the industry continues to improve and innovate.*

Connected devices, modern radar, sonar, data and GPS equipment are able to show where obstacles lie and re-route any ship onto a safer path, whatever it's carrying. Connected ships are growing in popularity at sea thanks to their ability to streamline and improve marine operations.

The key benefits of connected components remain the same no matter what industry we are discussing. This is why forward-looking fleet operators are investigating using advanced software analytics to harness data and provide insights into enhance operations.

We have outlined the five key benefits of implementing digital operations on board a vessel:

1) Route optimisation and fuel efficiency
Navigation is no longer a leap of faith, it's a science. Each modern vessel is fitted with a digital navigation system, which can not only identify the quickest routes in advance, but can also spot obstacles and re-route ships when necessary.

This is crucial for the safety of the crew and also for reducing fuel consumption. Both fuel saving and optimising operations have been the main drivers of introducing digital technology into a fleet because in some cases, fuel costs account for up to 40% of total operational expenses.

Use of technology has the ability to reduce this figure, as predictive analytics tools can bring in weather forecast data to optimise route planning, manage propulsion levels and reduce overall fuel consumption.

2) Fleet management

Fleets are growing in size, and vessel operators may have hundreds of ships out at sea at any one time. Keeping track of all these ships at once may not be simple, but that knowledge provides an advantage to operators.

By looking at an entire fleet, not just at each vessel in a silo, operators can automatically check a vessel's performance

against other ships, highlighting anomalies or inefficiencies on board a specific vessel, which might indicate the need for upgrades, operational tweaks or repairs.

Digital technologies are revolutionising and simplifying this process, and the use of predictive analytics systems also allows GE experts worldwide to compare operational statistics and data against other fleets, providing a greater pool of data from which they can draw insights.

This allows GE to use its wider global visibility to provide support at scale, spot trends, increase the reliability of a fleet and provide crucial information for decision support.

3) Improve design and testing from the outset

The use of data and predictive analytics is also crucial at the design phase. Combining decades of experience, software modelling tools can analyse a vessel's anticipated operational profile, optimising the design from the offset.

It has the ability to test the performance of a ship's systems against mathematical models and against different combinations of weather and other marine conditions to assess and refine vessel performance.

Used during the shipbuilding process, software analytics can also provide fast, real-time comparisons of the performance of different electrical configurations, enabling improved design and configuration of electrical solutions and estimating the annual running costs incurred by the vessel design, so equipment selections can be made to reduce fuel consumption and achieve further savings.

4) Reduce downtime

Unanticipated outages on board vessels can cost money. However, predictive analytics tools, such as GE's SmartSignal software, can identify impending equipment failures before they happen, reducing unplanned downtime.

A digital model, called 'the digital twin,'

can be built based on years of a vessel's data history. By comparing asset to asset and vessel to vessel with 'the digital twin,' the software is able to search for anomalies and give early warnings of a potential failure, enabling the industry to shift from planned to condition-based maintenance.

5) Remote monitoring

The use of data allows companies to monitor vessels in real time, record and analyse their histories and search for anomalies. Software and connectivity can bring the issues encountered on board a vessel to the experts on shore, allowing issues to be resolved more quickly and helping to reduce third-party costs.

In addition, the use of predictive analytics also helps address a global skill shortage, as few vessel operators have access to sufficient qualified engineers to be able to deploy experts in every system on board every vessel.

Being able to resolve issues from the shore can significantly enhance operations and reduce the number of engineers needed without sacrificing safety or operational performance.

There will be many large employers that risk losing 50 - 80% of their retirement-eligible population in the next five years. However, the use of analytic tools allows knowledge and insights to be stored, capturing and retaining some of the experience that would otherwise be lost when personnel retire.

It enables good practices to be repeated and scaled across the fleet - again, a key contributor to bridge the skill gap.

GE's Marine Solutions is helping marine companies enhance efficiency, cut carbon emissions, increase productivity and enable smarter operations through use of digital technologies.

**This article was taken from a recent paper written by GE Marine Solutions.*

EU's MRV explained

Lloyd's Register (LR) recently gave a presentation highlighting the EU's forthcoming ship-specific monitoring, reporting and verification (MRV) plans.

Owners and managers will have their plans approved by independent accredited verifiers and in place by August, 2017 ready for implementation from January, 2018.

Although approval of the ship-specific plans in a one-off exercise, compliance will have to be validated on an annual basis.

Lloyd Register's (LR) Environmental Manager, Katharine Palmer, said that up to 15,000 ships of 5,000 gt and over may be affected by the regulations. But, she warned that few owners had started to make the necessary preparations. These vessels represent about 55% of those calling at EU ports regularly, according to LR estimates.

The EU has taken a unilateral stance ahead of the IMO, which is preparing its own set of similar emission monitoring requirements.

Although much the same information on fuel usage and cargo carried will be required by both organisations, the EU requires ships to have a document of compliance (doc) issued by an accredited verifier, while the IMO regulations will be flag state-driven. For a certain period, there is likely to be an unavoidable period of overlap,

Palmer believed.

The situation is further complicated by the fact that EU regulators have not yet approved any accredited verifiers, as the relevant criteria have not been defined. The criteria, Palmer said, are currently being drawn up by the EU but are unlikely to be in place before the end of this year.

This will leave just a few months in which ship operators can prepare ship-specific MRV plans, get them approved and submitted in time for the August, 2017 deadline, she warned.

Valid doc

Ships without a doc will only be allowed to call in EU ports once from January, 2018, but on subsequent port calls, they will be required to have valid documentation in place.

LR has carried out pilot projects with some ship operators, including Tsakos Columbia Shipmanagement (TCM), which is believed to be the first company to have a sign-off from the class society.

The pilot study focused on the reliability of data reported from the vessel, the accuracy of calculations made by the company's personnel

ashore, and the risks relating to the MRV process.

"This project is an example of the company's commitment to ensuring proactive implementation of upcoming legal and industry requirements," Sokratis Dimakopoulos, deputy managing director, TCM, said

Mike Servos, TCM's Environmental and Energy Manager, explained; "Our objective was to assess and verify the effectiveness and accuracy of our CO2 monitoring plan and receive impartial, third party expert advice on how well we have integrated forthcoming regulatory requirements on carbon emissions with our existing management systems."

In summary, TCM benefited from an assessment of the monitoring options available, including a review of the ship-specific monitoring plan and the verification of a ship-specific emissions report.

TCM also benefited from an assurance on the reliability of the data and an understanding of the verification risks.

LR has published Guidelines on EU MRV and MRV explained, which takes the form of a training course.

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Striving for that little bit extra

The current newbuilding downturn has opened up new opportunities for coatings manufacturers by way of maintenance and upgrades or the replacement of existing antifoulings to a more environmental friendly and cost effective coating.

Claes Skat-Rørdam, fouling control marketing manager at Hempel, said that coatings repair and maintenance and replacements/upgrades were focus areas for the company given the downturn in newbuildings.

Despite the global marine industry suffering a downturn, Hempel's Marine business continues to grow its share of the market thanks to the 100% customer-focus and the quality and performance of the company's products, he said.

"When discussing coatings, and with the shipping industry's focus on fuel savings and emissions, it is normally 'you get what you pay for'. Quality and price go hand-in-hand," he said.



Claes Skat-Rørdam.

Hempel has recommended customers to upgrade to the fouling defence coating Hempaguard, because of its fuel saving (by up to 8%) qualities and its continued performance when the vessel is idle. "This provides shipowners with enhanced trading flexibility," Skat-Rørdam claimed.

Used as a full coating, Hempaguard has been applied to more than 500 ships, which has far exceeded the company's expectations in the short time since its launch.

Saving fuel and cutting emissions go hand-in-hand. If you save fuel, then you cut emissions.

"I believe it is better to offer incentives than to impose rules. A key incentive for a shipowner is to save fuel and therefore money, and this motivates the industry to do what is necessary. On the other hand, in the current low bunker price environment there is less incentive for owners to save fuel and therefore rules can become necessary to continuously reduce emissions," he said.

Hull cleaning very much depends on the type of coating applied. Skat-Rørdam explained that at Hempel, the aim is to develop coatings that do not need to be underwater cleaned or hull polished.

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developed products with innovative patented technology that do not require underwater cleaning. This saves money and limits any environmental impact that underwater cleaning causes,” he said.

Earlier this year, Hempel participated in a research project sponsored by EEA Grants that will increase the use of renewable raw materials in antifouling formulations.

One of the best ways to reduce vessel emissions is the use of advanced antifouling hull coatings. These improve the vessel’s hydrodynamics and so reduce both fuel consumption and associated emissions.

The project is being run by Hempel’s Antifouling Centre of Excellence in Polinya, Spain, and is sponsored by EEA Grants.

Also in May, the company announced that following a 45-month patch test using Hempaguard, leading tanker owner Euronav decided to apply Hempaguard to four more vessels. Euronav agreed to test Hempaguard in 2011.

Hempaguard combines the two mechanisms, silicone-hydrogel and advanced biocide control, in a single coating. This unique formulation delivers average fuel savings of 6% across the entire docking interval – significantly higher than conventional self-polishing antifouling hull coatings – even if the vessel changes trading routes and speeds or is idle

for extended periods.

As a result, vessels with a Hempaguard hull coating can switch trading patterns between drydockings without losing antifouling performance, Hempel claimed.

Euronav applied Hempaguard to a 300 sq m test patch on the VLCC ‘Famenne’ in 2011. She mainly trades in fouling aggressive warm waters in Asia and the Middle East, but over the 45-month test period she covered most of the world and experienced many idle days.

Theodore Mavraidis, Fleet Technical Manager at Euronav Ship Management (Hellas), said: “A diving inspection after 23 months in service and after 45 months in service confirmed and documented by video mapping that Hempaguard is still showing a smooth and fouling-free performance.”

Following the positive results of the test and the fuel savings that Hempaguard can deliver, Euronav decided to switch a number of vessels to Hempaguard in 2015, including the Suezmax ‘Devon’ and the VLCCs ‘Hakone’ and ‘Hirado’.

Maintenance focus

AkzoNobel’s marine coatings business, International’s, Michael Hindmarsh, Project Lead for Intertrac Vision, told *Tanker Operator*; “We have

always maintained a commitment to both the newbuild and the maintenance market. Given the challenges of the global economy and downturn in newbuildings, we are seeing a focus from our customers on the maintenance of the fleet, which in turn has lead to an increased demand for new services, products and upgrades for existing vessels.

“ The company’s focus is to provide customers with a comprehensive choice of products and services. For example, he claimed that the recently launched consultancy tool Intertrac Vision, which predicts the performance of coatings prior to application, has helped to facilitate this, building closer customer relationships based on providing them with products that meet the precise needs of their business and operations, trading routes and commitment to sustainability.

“A key change for manufacturers is being able to provide ‘solutions and services’ – as well as products – that help customers meet the increasing challenges that they face. This is why we launched our carbon credits initiative, which incentivises shipowners to upgrade to more sustainable hull coatings, where they benefit not just from the increased operational efficiencies, but also commercially in being able to sell the carbon credits for cash, or use them to offset



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TECHNOLOGY - COATINGS

emissions in other parts of their organisation,” Hindmarsh claimed.

Improving operational and environmental efficiencies has become increasingly important for shipowners and operators. First, because charterers are demanding more sustainability within their supply chains, and second, because impending environmental MARPOL Annex VI regulations, which will see the content in fuel reduced to below 0.5%, will require owners to burn more expensive distillate fuels.

He said that using clean technologies, such as premium hull coatings, that improve efficiencies and reduce fuel consumption and associated costs and emissions is therefore becoming a significant factor. Whether this is driven by a primary commitment to

the same for the shipowner, as well as the wider industry.

As for underwater cleaning, Hindmarsh explained that propeller polishing is commonly undertaken by vessel owners, around every six months to remove fouling. However, it is not common to clean the hull every six months, as good quality fouling control coatings are designed to perform for a full in-service period provided the vessel is operated under normal expected operational conditions.

“The cleaning and polishing of the propellers will have a positive effect on the vessel performance. Propellers are generally uncoated, as traditional biocidal antifouling would polish away too quickly. Some owners have used foul release products such as International’s Intersleek range, as they do not

rewarded its first customer with credits.

Launched in 2014 in conjunction with The Gold Standard Foundation and Fremco Group, the scheme is based on shipowners converting existing vessels from a biocidal antifouling system to a premium, biocide-free hull coating such as Intersleek.

Greek tanker and bulk carrier owner Neda Maritime Agency became the world’s first shipowner to be awarded carbon credits.

A total of 13,375 carbon credits, potentially worth around \$60,000, were presented to Neda Maritime.

The carbon credits were accrued by the VLCC ‘Argenta’, which was converted from a biocidal antifouling system to a biocide-free hull coating from AkzoNobel’s Intersleek range

At the time of the award earlier this year, Costas Mitropoulos, Neda Maritime technical director, said: “We are proud to be the world’s first shipowner to receive carbon credits from AkzoNobel’s carbon credits initiative. As the shipping industry faces more pressure to improve its sustainability, we continue our commitment to further increase our environmental performance standards. To that respect we see a great potential in AkzoNobel’s pioneering carbon credits initiative as part of our strategy to deliver sustainable and successful business.”

Hindmarsh confirmed that the name of a second shipowner will be announced shortly.



The Hempaguard test patch on the ‘Famenne’ after 45 months. While the test patch was still smooth and fouling free, the standard SPC antifouling coating on the rest of the hull showed heavy fouling, mainly because the vessel experienced relatively long idle periods during the test.

Corporate Social Responsibility, or due to cost cutting measures is irrespective, as the end-benefit is

work via a polishing mechanism,” he said.

AkzoNobel’s carbon credits initiative recently

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New performance standard nears publication

ISO 19030 is finally nearing publication, in a move that has the potential to save the shipping industry as much as \$30 bill in annual fuel costs, Norwegian coatings manufacturer Jotun claimed.

It has taken 12,000 hours of development work, involving 53 expert stakeholders, across more than three years.

In response Jotun said that it had adapted its Hull Performance Solutions (HPS) guarantee to ensure it is fully ISO/DIS-19030-2 compliant.



The standard, which prescribes practical methods for measuring changes in ship-specific hull and propeller performance, has now been approved by the ISO's Draft International Standard (DIS) ballot, with 93% of country representatives voting in its favour.

This approval rate paves the way for its final publication. It is expected to be publically available at the end of third quarter of this year.

Geir Axel Oftedahl, Jotun's Business Development Director - Hull Performance Solutions, managed the project on behalf of the ISO. "Poor hull and propeller performance is estimated to account for around 10% of the world fleet's energy costs (\$30 bill)," he said. "There are very effective solutions for improving performance but, until now, no globally recognised and standardised way for measuring this and providing return on investment for shipowners. ISO 19030 satisfies that demand, prescribing measurement methodology and defining performance

indicators for hull and propeller maintenance, repair and retrofit activities.

"We believe this will provide much needed transparency for both buyers and sellers of fuel saving technologies and solutions, and, in doing so, enable the industry to operate with genuinely enhanced efficiency and environmental performance," he explained.

Oftedahl has managed the project since 2013, which involved the 53 experts in an ISO working group convened by Svend Søylund of Nordic Energy Research in a bid to develop a standard that is comprehensive, accurate and workable worldwide. This group consisted of shipowners, shipbuilders, class societies, paint manufacturers, performance monitoring companies and research institutions.

"The standard gives customers peace of mind and we're acknowledging that by refining our HPS high performance guarantee," he said. "Previously we used our own methodology as the basis for the guarantee, promising to refund customers the cost of the HPS upgrade if their vessel hulls failed to meet performance targets.

"However, now that a universal standard is so close to publication, we will use it as the foundation for the guarantee, effectively leading the industry with the first ISO/DIS 19030 compliant performance promise," he claimed.

Euronav contract

Last month, Jotun reported that Euronav had chosen Jotun's Hull Performance Solutions (HPS) for two of its Suezmaxes.

This agreement will see Samsung-built sisterships 'Cap Guillaume' and 'Cap Philippe' coated with Jotun's SeaQuantum X200 antifouling, alongside full suites of measurement sensors applied to their hulls.

The applications will be undertaken at the vessels' upcoming drydockings at the Keppel

Shipyards in Singapore. The coatings will increase vessel efficiency, cut fuel costs and reduce CO2 emissions substantially, compared to standard market alternatives, Jotun claimed.

Speaking of the decision to choose Jotun HPS, Theodore Mavraidis, Euronav's fleet technical manager, explained: "Optimising hull performance delivers clear environmental and business benefits, cutting emissions while enabling reduced fuel use and bunkering costs. This helps us provide the best performance and value for all our stakeholders.

"Jotun's HPS has been assessed as a very promising choice. Not only because of its coating technology, but also due to the team's expertise in determining hull performance and providing documented proof of effectiveness. This gives us complete insight into return on investment. We're looking forward to experiencing the long-term benefits of HPS over the coming months and years," he said.

George Vranakis, Jotun Hellas' marine manager, said that the unique HPS guarantee provided another compelling argument for Euronav to choose Jotun.

He said: "We work closely with our customers to monitor performance in accordance with the recently established ISO 19030 methodology. Our technology gives them an in-depth and real-time insight into hull performance, demonstrating the efficacy of our silyl methacrylate coating when it comes to keeping hulls clean and reducing speed loss.

"We also offer customers our High Performance Guarantee, whereby if we don't hit set performance targets, we reimburse the cost of the HPS upgrade. That shows our total confidence in this solution, while giving shipowners complete peace of mind. In a market where cost control and accountability are increasingly important, it's a key point of difference," he concluded.

Corrosion damage repair product unveiled

Subsea Industries recently launched a new product for filling and building up a corroded and pitted steel surface to its original form prior to recoating with Ecoshield.

The patented Ecofix is claimed to be as tough as the steel itself, machinable, and can be used to repair most pitting or corrosion damage on rudders, stabiliser fins, thrusters and other underwater gear.

Ecofix is used in combination with rudder protection coating Ecoshield. When a rudder or other underwater equipment has not been properly protected, the surface will become corroded. Cavitation damage can cause severe pitting.

The steel needs to be restored to its original shape with a smooth surface prior to recoating. This is where Ecofix comes in, Subsea Industries said. Because it uses the same basic resin as Ecoshield, the coating can be applied just one hour after the filler.

This is the effective alternative to metal facing or very expensive alternative fillers. And as it is part of the Ecospeed/Ecoshield family, it is fully compatible with the coating.

Ecoshield is claimed to give permanent protection against cavitation damage for rudders. The glassflake reinforced coating protects the rudder for the service life of the ship without need for recoating or major

repair and comes with a 10-year guarantee. With the launch of Ecofix, the repair work needed on the underlying steel can be undertaken effectively and economically prior to the Ecoshield application, the company said.

Ecoshield and Ecofix are also suitable for stabiliser fins, thrusters, nozzles and other underwater equipment, which needs special protection from corrosion. This equipment can also be repaired prior to recoating where other, less effective coatings have allowed corrosion and cavitation damage to occur.

With the launch of the new product, Subsea Industries said that it now offers a



Ecofix application on rudder of LPG tanker.

full package; Ecofix restores the surface of the rudder or other underwater gear and Ecoshield will protect the area from ever suffering corrosion and cavitation damage again.

Tanker coatings

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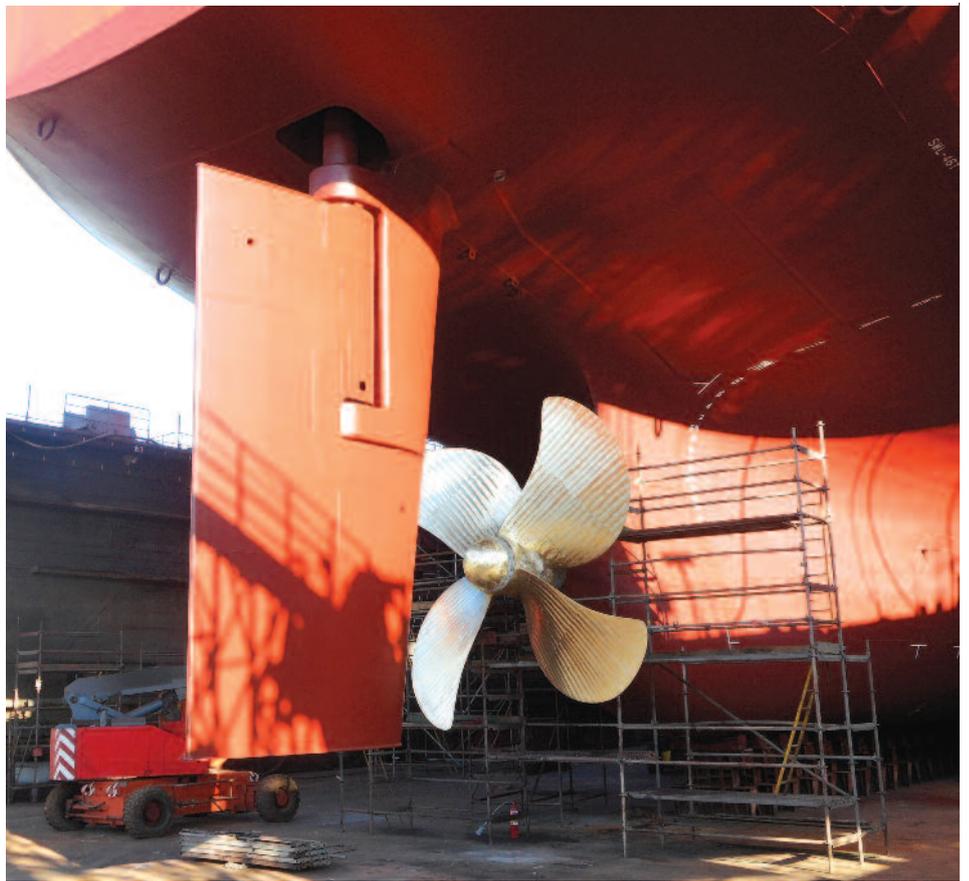
nozzles of 10 tankers owned by Pleiades Shipping Agents have been coated with Ecoshield. Several of the vessels have since drydocked again without needing of a recoat on these areas.

At the end of 2013, Pleiades coated the rudder of the Panamax crude oil tanker 'Evrotas' with Ecoshield, which was followed by coatings on other vessels in the fleet. At the same time, seven ships also had the coating applied on their nozzles, two more had the nozzles coated when they came in for a scheduled docking last year after operating with Ecoshield on their rudders for two years.

No Ecoshield repaint was needed on these vessels, nor will it be during future dockings, the company claimed. At the most, quick and easy touch-ups amounting to less than 1% of the surface area will be required.

Pleiades' technical director, Miltos Synefias, said that the decision to apply the coating on the first vessel was not an easy one, but that the results seen made the choice to extend the coating to the other vessels obvious.

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Foreship shows the way on ballast water

Naval architecture and marine engineering consultancy, Foreship has been providing shipowners with an independent assessment of their ballast water management system (BWMS) retrofit options.

This year, owners are taking matters into their own hands in the run up to the convention's ratification, in the firm belief that technical answers are urgently needed on optimal BWMS performance for existing ships, the company claimed.

Foreship has recently been providing detailed advice on retrofit options, with feasibility studies covering single ships, including tankers.

The consultancy has assessed technical solutions and similar technologies from different suppliers for a range of vessel types and ages, and evaluating overall installation work, installation locations, and temporary and permanent structural modifications.

Olli Somerkallio, Foreship's head of machinery department, explained that while choosing between systems will certainly be guided by cost, comparisons can be less than straightforward. "We have focused on the technical aspects of the installation, meaning space for equipment, piping connections and electrical compatibility. Expertise in naval architecture, marine engineering and ship behaviour are all needed to yield meaningful results," he said.

BWMS installations based on UV technology are not practicable for larger flow rates required by the main ballast water systems on board large ships, such as tankers and bulk carriers. Here, electro-chlorination (EC) has emerged as the preferred solution.

EC produces chlorine-based disinfectants by running direct electrical current through

water to cause a reaction with Sodium Chloride. The resulting free chlorine kills bacteria and other microbes in the ballast tanks. At the de-ballasting stage, chlorine content is measured and a neutralising agent introduced as necessary.

Owners should be aware that the additional piping, related fittings and valves required by a BWMS, and the equipment itself, are all sources for pressure losses, Somerkallio advised, which ballast pumps must have enough head pressure to address.

Foreship includes pressure loss analysis as part of its feasibility study, as upgrades are sometimes needed to the pump impellers or electrical motors. "In the worst case, the entire pumps might have to be replaced," he said.

Special consideration must be given to tankers, said Somerkallio, where ballast water operations occur both fore and aft. Aft ballast tanks are often over three quarters full - and so critical for unobstructed vessel operation. Here, the main ballast system pumps are located in the cargo pump room (hazardous area) and so cannot be used to pump water to the aft peak tank, which is in safe area. The aft pumps cannot be connected directly to the main BWMS.

A typical MR could have main ballast system flow rate requirements of 2,000 cu m per hour, split across port and starboard ballast tanks. This could be dealt with by two BWMS each with 1,000 cu m per hour capacity or a single BWMS where both pumps are connected to the same treatment

system. Separate aft tank ballast water needs would be handled through the general service pumps, connected to a smaller BWMS with, for example, flow rates of 250-300 cu m per hour.

A recent Foreship feasibility study assessed two EC solutions from competing manufacturers in detail: one featured EC in the mainstream; in the other, EC occurs in a sidestream, with the 'chemical' introduced to the ballast tanks.

Practically speaking, Somerkallio said, the mainstream system is less complex, lighter, smaller, and draws roughly 25% less electrical power than its sidestream counterpart. However, attributes related to installation, performance and safety can be persuasive in favour of a sidestream solution, he added.

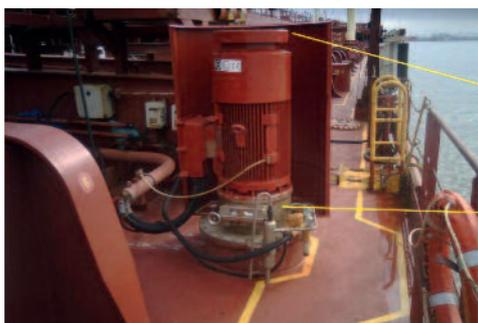
"For example, according to one manufacturer, its mainstream EC system can operate in extremely low salinities, due to special electrode design and materials, but operation in practically zero salinity waters, such as the Great Lakes is not possible. No such restrictions apply to the sidestream system; if salinity is below 15 PSU, stored seawater can be used," he explained.

The sidestream system is also better able to operate in colder water than its mainstream counterpart.

Spacing options

However, the sidestream system could be twice the volume of its mainstream counterpart, also weighing 60% more, but Somerkallio pointed out it is more significant to ask where the additional BWMS is taking up space. He explained that a mainstream system forward requires a larger additional deckhouse for two EC units and two filters, while the smaller sidestream deckhouse solution brings greater positioning freedom for the EC unit and other auxiliaries.

In terms of footprint, a mainstream solution could require two thirds the area



Starboard ballast water pump location.





Proposed location of BWMS components on maindeck.

needed by a sidestream solution but, if a single sidestream system worked across two pumps, the difference would become almost negligible.

Similarly, the separation of the EC process required by the sidestream system demands twice as much piping as its mainstream counterpart. However, the majority of the extra pipes are of small diameter (DN20, DN40).

pump system separation between the main and aft systems was assured. In the latter case, the 'chemical' produced in the safe area would be distributed separately to the aft peak tank system.

He noted that EC systems of all types produce Hydrogen gas as a by-product, adding that here the sidestream option is definitely more risk averse: hydrogen can be extracted from the chlorine buffer tank

Somerkallio said that these variables confirm the need to take each case separately, although he added some general observations regarding tanker installations. Whatever solution is needed for the main system, the aft peak tanks need a different arrangement. A separate UV or EC system could be considered aft, but so could a shipwide EC solution providing a

with forced ventilation to trip the BWMS in case of ventilation failure.

Operators prioritising maintenance should consider that, while the mainstream system is less complex in principle, implying fewer components, two separate BWMS may be required: overall, the number of components will be higher. Furthermore, Foreship indicated that the mainstream systems it has assessed are in general more prone to deterioration over time than their sidestream counterparts.

Conversely, both systems require periodic filter replacement, but the sidestream's pump and blower need attention after 2,500 hours. While much of this work could be done by the crew, Somerkallio said that a full assessment of this maintenance aspect is still pending.

As owners face up to the realities of retrofitting the technology, he suggested that Foreship's detailed feasibility studies are revealing that any beauty in BWMS may be very firmly in the eye of the beholder.

TO



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