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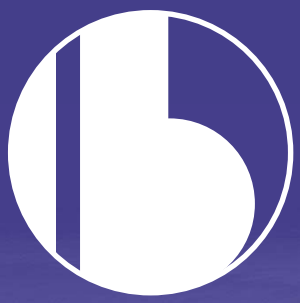

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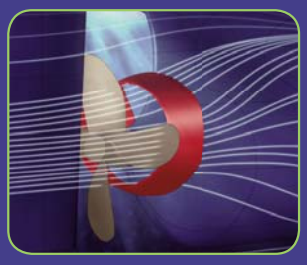

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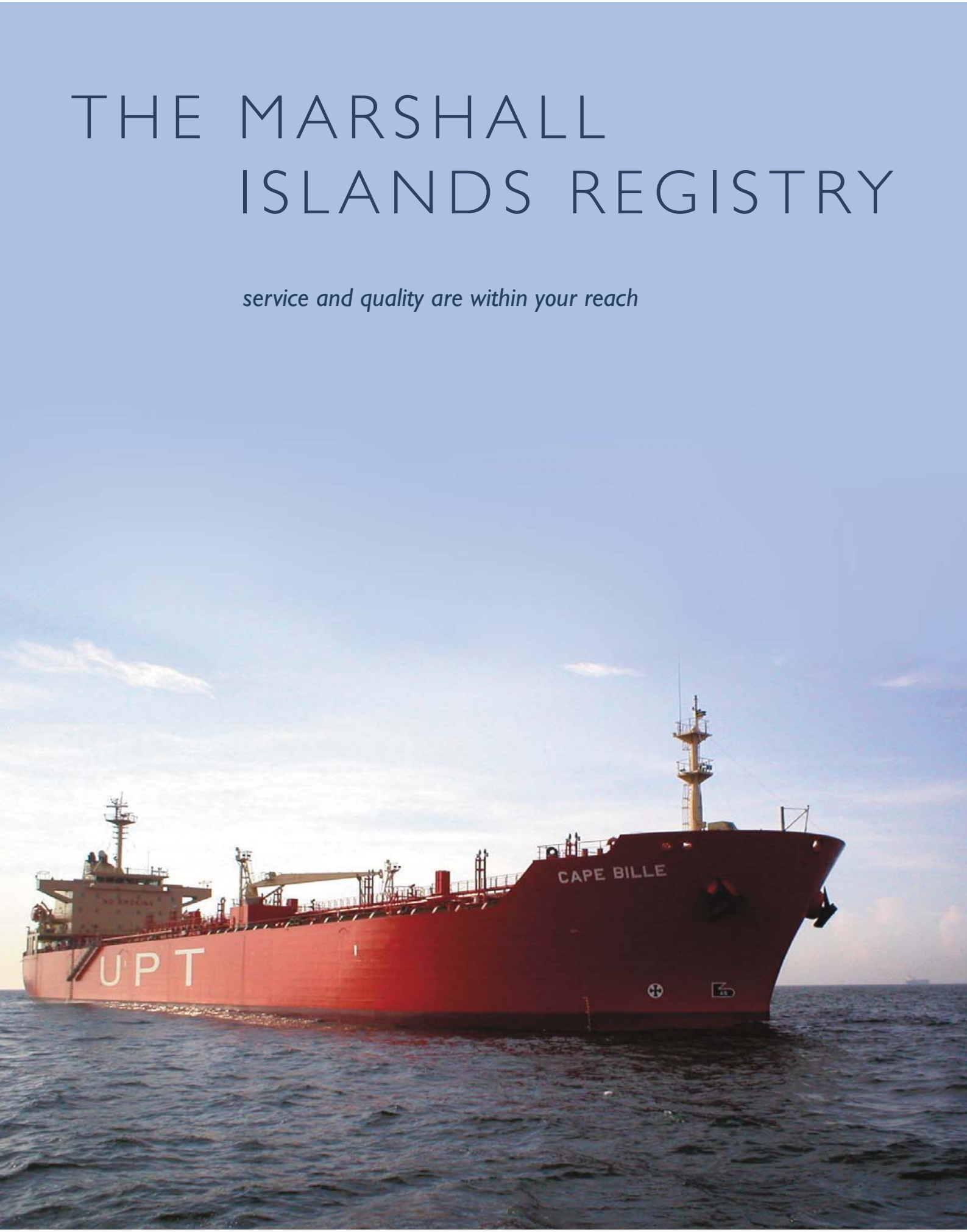

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Front cover

Efficiency and sustainability will be among the top issues at SMM 2014. With products such as the patented Becker Mewis Duct, Becker Twisted Fin and the new LNG Hybrid barge, Becker Marine Systems will be projecting cutting-edge technology.

Becker Marine Systems has already sold more than 800 Becker Mewis Ducts – the 750th duct will be displayed in gold at SMM to represent the reduction of about 880,000 tonnes of CO_2 by all of the ducts delivered by the time of the exhibition.

The million tonne CO_2 mark should be hit by the end of this year, the company said.

I've packed my bags and I am ready to go

See you there!!

I have packed my walking boots for a week in Hamburg- no not beside the Elbe, or the Alster Lakes, but inside the Messe at Dammtor.

With its 12 plus halls packed with shipping people, a visitor has to get 'match fit', or 'exhibition fit' in this case, for a few weeks prior to the event.

A visit has to be planned with military precision, but obviously most visitors will not be interested in everything. A GPS would help to home in on the relevant booths, or meeting places as there is no shortage of those in the 12 halls and their surrounds.

Every two years there seems to be a theme running through the shipping industry and this year is no exception.

The theme for this year's SMM is 'Innovation', which is a bit strange, as by and large the shipping industry has been innovative ever since it first started thousands of years ago just to survive.

Today, everybody is talking about 'Efficiency', both in technological and human terms. The drive for eco ships of all types is well and truly on. What will the fuel of the future be? Will the industry be ready in time for the new rules and regs? Will the regulators be up to speed? What will it cost me? Will hydrocarbons remain the energy source of choice?

These are just some of the many questions on a vessel owner/operator/manager's lips at present, as they enter a period of slightly firmer freight rates and optimistic noises being made about the fourth quarter of this year.

Are we not efficient already? No, not if you listen to the marketing people of leading equipment suppliers and ship designers. They have a point, as I was sceptical of claims of 6% plus savings on vessel operating costs, but have since been proved wrong, not for the first time, I hasten to add.

Cost savings of this proportion matter today, as long gone are the days of ocean liners and gas turbine powered containerships dashing across the 'pond' at 32 knots. The fuel price escalation has put paid to that.

Today in the bulk industry, both wet and dry, 12 knots is the norm and slower than that if you can still make the laycan. Even the containership fraternity has had a radical rethink on their vessels' optimum speed.

However, efficiency is not all about speed, it is being able to operate your vessel at its optimum through thorough voyage planning, by taking into account every minute detail that could affect a vessel's voyage and how the vessel will behave in certain conditions.

Here is where the seafarers come in. They are the ones at the sharp end and have to buy into the ideas put forth from head office. An efficient seafarer is the one that turns the lights out on board when they are not needed, or reduces the generator power when in port.

Common sense

Is this efficiency, or innovation? You don't have to be innovative to be efficient, it is just a matter of common sense and to some extent experience. However, experience is an argument for another day.

Maybe it is a good thing to be innovative. Down the years there have been countless innovations, many of which have not made it past the drawing board. However, some have and are in everyday use. A few innovations have been thrust upon us by the regulators- ballast water equipment, for example.

I was once to be employed by a famous container entrepreneur who used to say "...give me a hundred ideas and I'll make one work." There were some bizarre ideas floating around at the time, such as converting redundant VLCCs to ship caravans across the Atlantic, until somebody pointed out that the time taken for a large tanker to cross the 'pond' would wipe out the caravan owner's holiday entitlement.

I'm afraid it does make me smile when today I hear about sail assisted, or crewless ships, as these ideas were circulating in the 1970s and 1980s and didn't take off then.

So how many innovations are we going to see and hear about at SMM and how many will we remember in the future? Will they be just new twists on old ideas, or is there really something out there just waiting to be marketed properly?

Perhaps I'm too sceptical, as I've seen many so called innovations before in previous decades. We still can't do without the diesel engine for mainstream shipping. It is just how you adapt it in the future to give greater efficiency. We cannot reinvent the wheel, or will somebody in September prove me wrong.

Has this viewpoint proved me to be a dinosaur and should I be immediately hauled off the home of retired editors in a strait jacket? Time alone will tell. TO

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Spikes mark the first half of this year

In this issue, we look back over the markets during first six months of this year and beyond, with the help of Gibson Research.

The year saw a strong start in the crude sector following on from a buoyant end to 2013.

While VLCC TD3 earnings softened to average $35,000 per day through January and February, compared to $50,000 per day in December last year, they were higher than at the same stage in 2013.

Suezmax earnings averaged $51,000 per day on TD5 at the start of this year and went even higher to $101,000 per day on TD6, before both trades cooled significantly into February.

Aframax owners also benefited from firming rates with an average of $78,000 achieved on TD7 in January due to bad weather and delays, before falling back to $14,000 per day in February.

Despite such as strong start, rates fell away significantly as the year progressed across all the trades. However, as shown below, some firmness has crept back into the market.

First to see a benefit was the Suezmaxes followed by VLCCs who saw their average earnings rise from $5,000 per day at the beginning of June to $28,000 per day towards the end of that month.

The products tanker market in the East experienced the opposite with earnings for all clean tanker categories extremely depressed in January and February, falling to their lowest levels for six to seven months.

However, returns improved during the

Tanker Statistics

	June 2012	June 2013	June 2014
No. of vessels			
VLCCs (S-H/D-H/Total)	19/589/608	13/623/636	1/625/626
Suezmaxes	6/454/460	1/488/489	0/476/476
Aframax/LR2s	25/900/925	16/900/916	8/887/895
Panamax/LR1s	17/414/431	13/380/393	7/433/440
MRs (25,000-55,000 dwt)	124/1,694/1,818	105/1,756/1,816	71/1,772/1,843
Orderbook			
+ 25,000 dwt	501 (65.1 m dwt)	455 (49.6 m dwt)	590 (62.1 m dwt)
VLCCs on order	98	61	86
Demolition			
July to June	110 (12.37 m dwt)	96 (9.8 m dwt)	104 (12.3 m dwt)
$ Ldt price (China/Indian sub)	355/400	315/430	325/495
Vessel prices			
VLCC (Nb/10 yr)	95/37	90/29	100.5/50
Suezmax	58/28	56/26	66/34
Aframax	50/19	47/20	54.5/24

Source: E A Gibson.

Spring months and were roughly in line with the second quarter of 2013. The MR market in the Atlantic Basin deteriorated significantly in the first half of this year, due to surplus spot tonnage and lower transatlantic trades, particularly in the first few months of the year, Gibson said.

Inevitably, with sentiment in the crude market running high in 1Q14, interest in new and secondhand tonnage was firm. Following on from the 45 VLCC orders placed last year, a further 24 were ordered in 1Q14, but just six in the second quarter as firmer newbuilding prices and weaker earnings deterred further investment.

For example, VLCC newbuilding prices had risen to $101.5 mill by June, a 13% year-on-year increase. The MR price rose by 12% year-on-year to $38 mill.

Suezmaxes were one of the few sectors to see limited investment in recent years. However, ordering activity increased this year with 12 orders placed up to the end of June, equalling the combined total for the previous two years.

Investment in new Handy/MR tonnage saw a significant decline with just 30 orders placed during the first half of this year, compared with 232 in 2013.

Overall the tanker orderbook climbed 25% year-on-year to 62.1 mill dwt, Gibson reported.

Weak earnings, a large orderbook and new regulations entering force next year, plus firm scrap prices, have all conspired to encourage recycling. However, activity this year has remained low.

With the Indian scrap price at $495 per ldt - some $65 per tonne higher than at the same time time last year - the scrap value of a VLCC stood at $20 mill at the end of June, just $1 mill lower than a 15-year old vessel. Despite this, only six VLCCs were scrapped in the first half of 2014.

As usual, it is political issues that continue to shape the market. While Iran has benefited from a temporary sanctions relief, Libya, Ukraine and Iraq have all suffered from instability.

Ukraine's impact has been limited and Iraqi exports appeared stable at the time of writing. However, the continued unrest in Libya has kept production down to around 240,000 barrels per day for the three months up to the end of June, down from 1.15 mill barrels per day at the same time in 2013.

European buyers have turned to West Africa to offset the lack of Libyan crude and to mitigate against falling US imports. The US has not been exempt from politics as the debate has turned to the possibility of crude oil exports.

Reports have indicated that the US will allow condensate exports providing the product has been processed in a stabiliser to remove volatile hydrocarbons. This could open the door for more US product exports.

Tonnage influx

Looking back in the years 2009-2012, some 172 Suezmaxes and 219 VLCCs were ordered, which was described as a "massive influx of tonnage" by the broker. As a result, it was no great surprise that the market struggled to absorb this new tonnage.

It would be a brave call to say the market had turned thus far this year, despite the increasing number of spikes seen in the spot market. The current fleet, which is mainly slow steaming, is more than sufficient for the market's current demands. However, the increasing development of long haul trades is creating more opportunities.

During the downturn, the Suezmax segment was virtually written off as a lost cause, enduring some tough times. However, 2014 could be the year that the market takes a turn for the better. For example,

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Suezmaxes have enjoyed a number of spikes this year, which has had the knock on effect of firming timecharter rates.

For some time, Suezmax charterers have been able to cover their positions easily on the spot, or short term timecharter market of around six months, option six months, or 12 month periods. Gibson said that it had noted an increase in fixture volumes this year coupled with more resistance from owners to accept the historically low timecharter rates.

There has been much focus on the VLCC segment since November, 2013 with 52 newbuildings mostly for delivery in 2016. Surprisingly, only a handful of the newbuildings had Chinese connections, Gibson said. The Suezmax orderbook is much more constrained with just 12 due for delivery in 2016.

From the start of this year until the end of 2016, there are 38 Suezmaxes and 94 VLCCs earmarked for delivery. Next year should be a quiet year for deliveries with just eight Suezmaxes and 19 VLCCs scheduled for delivery, which should be a positive factor for owners.

The considerable expansion of the Suezmax and VLCC fleet between 2009 and 2012 means that caution is required in both segments, as there is now a modern predominantly eco fleet.

In the VLCC segment, by the end of this year, over 270 vessels will be less than six years of age, representing around 43% of the total. A similar story has unfolded for Suezmaxes with some 210 vessels expected to be less that six years old by the end of this year.

However, these figures do not take into account vessel demolition that might occur up to the end of 2014. Next year, around 90 Suezmaxes and 115 VLCCs will be 15 years of age, or older.

Thus far this year, both segments have benefited from good spikes. For example, in the first half of 2013, TD3 averaged $11,300 per day, compared to $21,500 per day for the same period this year. TD5 improved from $13,200 per day to $20,900 per day.

It will be interesting to see what the rest of this year has in store, Gibson concluded

Refinery expansion

The global refining capital expenditure (CAPEX) is forecast to reach around $333 bill between 2014 and 2020, representing an annual average of almost $48 bill and 1.6 mill barrels per day, said a new report from research and consulting firm GlobalData.

The report said that the aggregate expenditures in Asia will amount to 46% of the world's total, with China at 17%, India at 12% and other Asian areas at 17%. This is down to national oil companies (NOCs) increasing capacity levels in China, India, Vietnam, Indonesia, Malaysia and Pakistan.

The Middle East's expenditure will account for 23% of capital spending by the end of 2020, with NOCs building capacity in Saudi Arabia, Kuwait, Iraq, Iran and the United Arab Emirates (UAE) to meet their growing demands for refined product exports.

Carmine Rositano, GlobalData's managing analyst covering downstream oil & gas, said: "Thanks to the planned construction of efficient, large and complex grass-root refineries, such as cracking and coking facilities, along with various expansion projects, refining expenditures in the Middle East and Asia are forecast to represent a combined 70% share of the world's total spending.

"Elsewhere, the CAPEX for Latin America (including Mexico), Africa, the Former Soviet Union and the US is forecast at 18%, 8%, 4% and 1% of the global total, respectively," Rositano said.

China will be the largest single market with 17% of global CAPEX, correlating with 22% of all capacity additions up to 2020. GlobalData attributed the country's reasonable project costs to less expensive labour and the construction of large efficient refineries in areas with significant existing infrastructure, such as docks, pipelines and storage terminals.

By contrast, Africa will experience significantly higher production costs for its own new grass-root projects, which are planned in Nigeria, Angola and Gabon. These countries have a lack of highly-skilled workforces and minimal infrastructures, meaning that most, if not all, equipment, materials and labour will need to be imported.

Rositano continued: "Further costs for this region will also result from the financial and geopolitical risks associated with the construction of onshore refining facilities in African countries, such as Algeria and Uganda. These factors will push Africa's refining CAPEX to almost $28 bill by the end of 2020."

In another report, GlobalData claimed that additions to global crude distillation capacity will reach nearly 12 mill barrels per day by 2020, which will increase pressure on refining margins.

The Middle East will be the largest contributor to the world's total capacity increase, accounting for about 27%.

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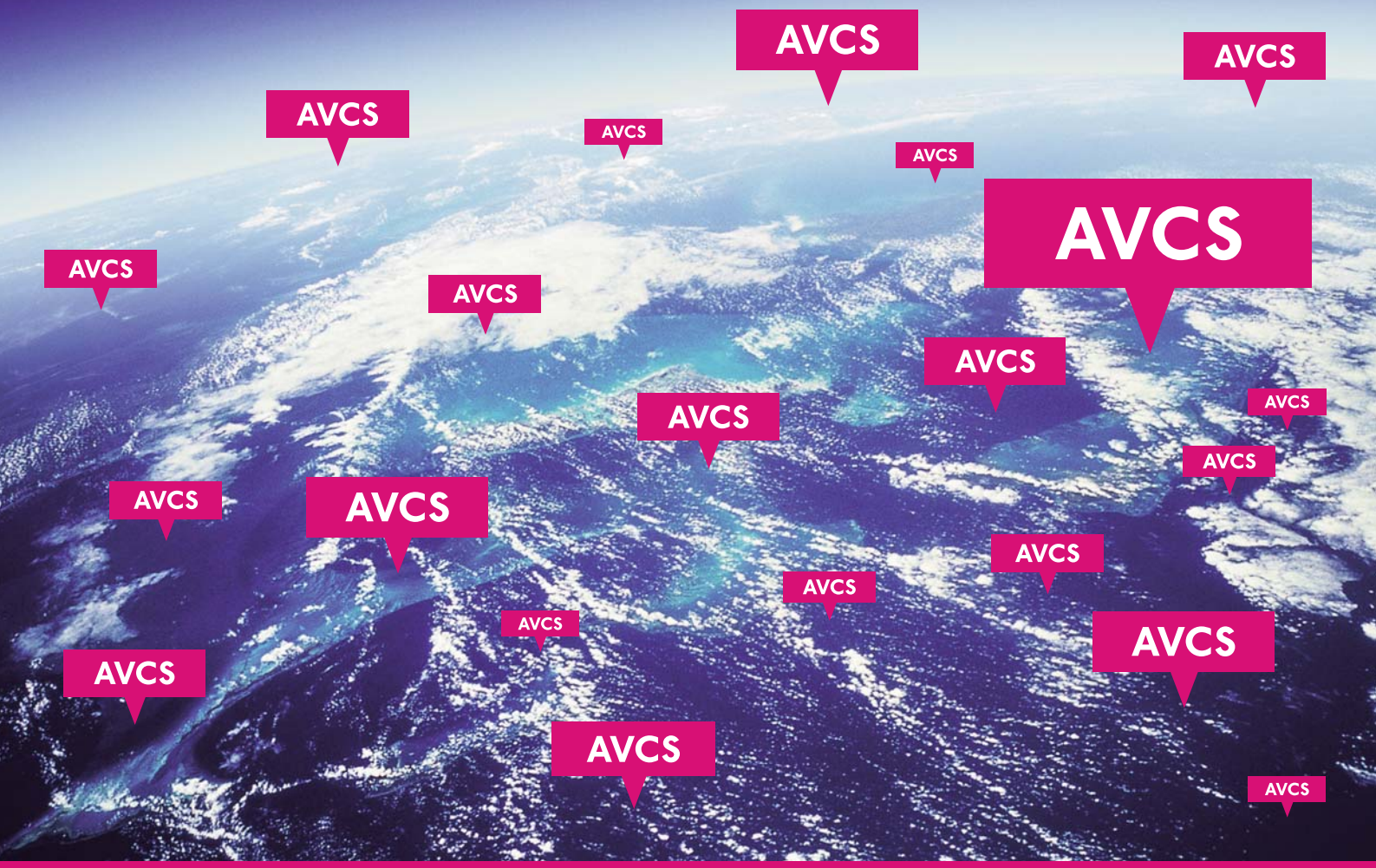

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Taking a cautious view of the future

Despite its financial problems, Germany remains one of the world's largest shipowning countries, with Hamburg housing the largest number of owners, managers and operators in the country.

According to figures released by the German Shipowners' Association (VDR) and compiled by IHS Fairplay, Germany lies in third place behind Japan and Greece in terms of the percentage of vessels of owners domiciled in a country.

Hamburg has the largest concentration of German companies totalling 119 owning, managing, or operating 1,621 vessels of all types.

Germany sits in sixth place in the world's tanker league with almost 450 vessels of just under 23 mill dwt, amounting to 3.7% of the total. It sits behind Greece, Japan, China, US and Norway., according to VDR's figures

The total is roughly split between 250 plus crude oil vessels, 90 chemical and other liquid tankers and around 55 gas tankers, plus a few bunker barges.

During the shipping recession, the German shipping industry suffered more than most due to its dependence on the container sector and the use of the KG tax deferment scheme, which today is all but dead.

However, a recent market survey conducted by HSH Nordbank among its clients found that confidence among shipping companies continued to grow, as this year, a clear majority expected increased turnover and more than 40% of companies surveyed forecast higher profits in comparison to the previous year.

The report, 'Shipping companies 2014 – Fit for the future?' was based on a survey of HSH Nordbank customers. Some 51 German and international shipping companies participated in the survey, which was conducted during the second quarter of 2014.

In some cases, the views of German and international shipping companies regarding markets diverged significantly, the survey found. Expectations concerning profits also differed.

German companies took a far more cautious view than their international competitors. Only around 20% of German companies predicted increased profits in 2014 while, in contrast, 57% of the international companies expected increased profits.

Despite the current surplus capacity, shipping companies were focusing on further expansion of their fleets – "Almost 70% of respondents stated that they want to increase the size of their fleet in the next three years," said Christian Nieswandt, global head shipping domestic clients/global liner & container finance at HSH Nordbank. The majority of international (63%) and German (47%) shipping companies were striving to achieve growth, especially in the bulk carrier segment.

Ralf Nagel, VDR CEO.

Respondents estimated that charter rates for bulk carriers will develop positively. "Almost 70% of the companies expect increasing rates for the bulk carrier segment by the end of the year," said Nieswandt. In contrast at least half of the shipping companies participating in the survey expected container vessel charter rates

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to remain at their present low level. A third of companies, nevertheless, believed that a general increase in charter rates to the pre-crisis level was possible. The majority of respondents (63%) did not, however, believe that charter rates would return to the high pre-crisis level, meaning that certain projects were no longer viable in the mid-term.

Increased private equity

Bank loans remained the most important source of financing, while interest in private equity increased, the survey found.

However, general attitudes to the various forms of financing had been revised; while the German KG business model was the third most important source of financing prior to the crisis, this option is rarely used to finance ships today. Instead the volume of private equity has increased significantly in comparison to the pre-crisis era. Around 14% of respondents were already financing their ships with the assistance of, among other sources, private equity. This figure was only 2% prior to the crisis.

"In this context, German shipping companies view the influence of private equity in the shipping industry in a far more negative light than international shipping companies," explained Nieswandt.

As for mergers and acquisitions; "Two thirds of the companies expect a wave of consolidation, particularly in the container shipping segment," said Nieswandt. The objectives were to create larger companies, for example via mergers, thus facilitating more competitive corporate structures.

To this end, some 40% of respondents have already held meetings to discuss possible mergers & acquisitions taking the role of the acquiring company. Around 47% of German shipping companies were undergoing talks, significantly more than among international companies at 37%.

In order to meet the future challenges facing the shipping industry, just under half of international companies were focusing on retrofitting to achieve greater energy efficiency and meet present environmental standards.

However, this topic was of far less importance to German companies overall, as they viewed the forming of alliances and mergers as a more promising strategy for the future.

Both German and international shipping companies were in agreement that the optimisation of business processes and investment in new vessels meeting eco-standards should be given priority if future challenges were to be met, the survey found.

Competitiveness waning

Meanwhile, the VDR has expressed a fear that German competitiveness in shipping was being eroded faster today than in the past.

"In the sixth year of the global maritime shipping crisis, the competitiveness of Germany as a maritime location is more endangered than ever before," said Ralf Nagel, VDR CEO at a presentation of a shipping study by the auditing firm PricewaterhouseCoopers (PwC). "The capacity utilisation of vessels remains completely unsatisfactory. The earnings situation continues to be extremely difficult, especially in the container shipping segment. For this reason, the companies need to exploit all potential cost reductions possible in order to stay in the market."

As the PwC study showed, this also includes selling ships and investing in new, more reasonably priced and more efficient vessels, the VDR said. However, the outsourcing of corporate activities abroad needs to be taken into account by an increasing number of companies, due to the immense cost pressure of being located in Germany.

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What is particularly impacted by relocation abroad is the personnel deployed, the need to organise cargo for the vessels and maintenance work on the fleet.

"All these are sensitive areas for employment in Germany," explained Nagel. "They are in danger of disappearing from their present location. We now need to do a lot more – as has already been the case in other European countries – to give the industry better support. The central issue is to even out the cost disparity between employing German and foreign seafarers."

Claus Brandt, PwC head of the competence centre for the maritime sector, had previously said that the promotion and support of shipping in Germany in the past had not been sufficient to offset the disadvantages when compared with European competition.

LNG question

The VDR, together with the VSM (German Ship Construction and Marine Technology Association) and VDMA (German Mechanical and Plant Engineering Association) recently hosted a 'parliamentary evening' in Berlin, entitled 'LNG- clean energy for the maritime shipping sector.'

The meeting was told that the shipping industry relies on environmentally compatible ship propulsion. Shipping companies, shipyards and component suppliers are increasingly relying on environmentally friendly ship drive systems, the associations said.

A key component of this is LNG. To establish LNG as an alternative to heavy fuel oil, the associations have called for internationally uniform legal regulations to introduce binding ship safety standards, the improvement of financing terms for innovative pilot projects for shipping companies and shipyards, as well as the establishment of an adequate LNG supply infrastructure.

"A key prerequisite for ship operators is that the installation and use of LNG technology is supported by effective promotional and subsidisation programmes for maritime shipping," explained Michael Behrendt, VDR president and chairman of Hapag-Lloyd.

European states, such as Finland and France, already support pilot projects within the scope of co-financing arrangements. Behrendt said that a programme of this kind was lacking in Germany, thus far.

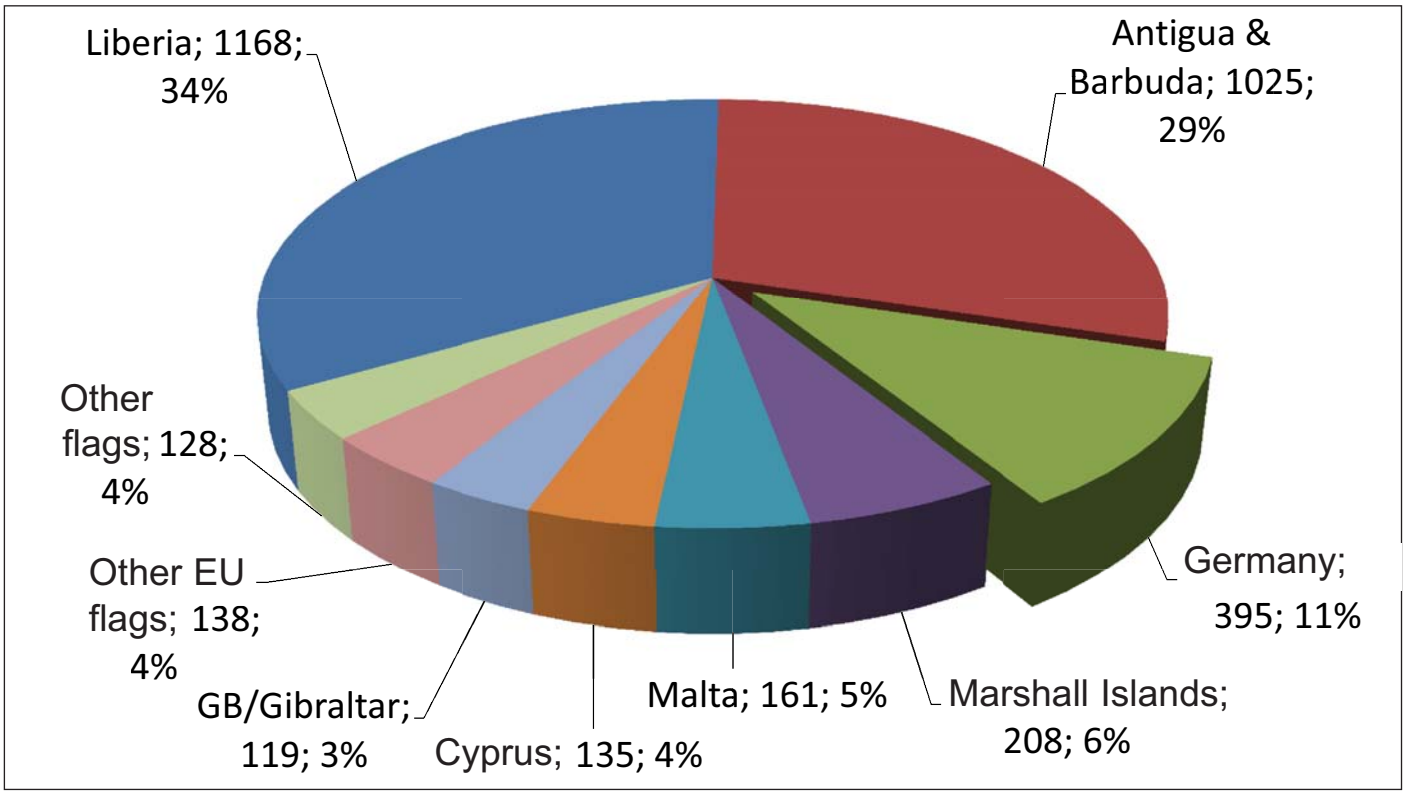
Bernard Meyer, managing director of shipyard Meyer Werft in Papenburg, stressed the necessity from the shipyard's perspective to provide effective hedges against technical and economic risks of pilot projects and thus overcome the immense investment obstacles involved: "Promotional and subsidisation programmes, as well as market economy-based incentive systems for implementation of high environmental standards, are suitable instruments for establishing innovative propulsion and energy supply systems on the market."

For the equipment suppliers, the primary focus is on the legal questions involved. "The manufacturers are making enormous advance efforts with their research and development activities," said Dr Haidinger, management board member of Rolls-Royce Power Systems and representative of the engine manufacturers organised under the umbrella of the VDMA. "Accordingly, our industry is dependent on a reliable, international legal framework. Only in this way will it be possible to successfully market 'high tech made in Germany' on a global scale."

Harald Fassmer, VSM chairman, summed matters up by saying that the maritime industry backed the statements made by the associations in favour of alternative propulsion systems and fuels. He indicated that there was a wide consensus of opinion that a technological led effort to produce more ecologically compatible vessels could secure jobs within shipping companies, equipment suppliers and shipyards.

The three associations that hosted the event represented the lion's share of the German maritime shipping sector, with their members employing over 200,000 based in the country. TO

German fleet flag structure*



Source - VDR- IHS Fairplay. *Figures compiled at the end of 2013.

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- FURUNO type specific ECDIS training. The FURUNO type specific ECDIS training is available at INSTC Denmark, INSTC Singapore and through the NavSkills network of training centers:
- FURUNO Deutschland GmbH (Germany), Thesi Consulting (Italy), GMC Maritime Training Center (Greece), OCEAN TRAINING CENTER (Turkey), Odessa Maritime Training Center (Ukraine), A.S. Moloobhoy & Sons (India), FURUNO Shanghai (China), COMPASS Training Center (Philippines), VERITAS Maritime Training Center (Philippines) and PIVOT Maritime Intl. (Australia).

Please contact INSTC Denmark at **instc-denmark@furuno.com** for further details.

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SMM - a sell out again

September's 12 SMM exhibition halls have been sold out for months, the organisers have claimed.

With 90,000 sq m of exhibition space, more than 2,000 exhibitors and over 50,000 visitors expected, SMM remains the leading trade fair of the maritime industry. The motto of this year's event, to be held from 9th to 12th September, will be 'Innovation'.

"Once again we will welcome the who's who from all segments of the global maritime industry this year. At SMM they will highlight current trends and developments, offering fascinating insights into the future of the industry. We have been fully booked for months," said Bernd Aufderheide, CEO Hamburg Messe und Congress.

SMM will again be covering the entire space available at Hamburg's exhibition site - 11 exhibition halls (B1 to B7 and A1 to A4), plus a new hall called B8.

Each hall will be dedicated to one particular sector of the maritime industry. For example, Hall A1 will feature ship operation equipment, environmental technologies, as well as deck equipment and cargo handling systems.

Halls A3 and A4 will include exhibitors from the prime movers and propulsion systems sector and lubrication, including manufacturers such as Caterpillar, Rolls-Royce and MDT. "We are looking forward to this great industry gathering in Hamburg. For MAN Diesel & Turbo (MDT), SMM is the most important fair and our visitors can expect fascinating exhibits and ground breaking technologies at our new stand," said Dr Jan-Dietrich Müller, head of corporate communications & marketing.

In view of the recent passing of the IMO Tier III emission control regulation, efficient use of energy resources will be a key topic for MDT this year, he said.

Halls B2 to B8 will feature exhibitors from the shipbuilding, production equipment, ship outfitting, safety equipment, navigation and communication, maritime security and defence and other segments.

SMM will be again accompanied by a diverse conference programme revolving around the expo's five featured topics, each assigned to one specific day of the fair. They are - Finance (SMM Ship Finance Forum), environmental protection (GMEC, global maritime environmental congress), security and defence (MS&D, international conference on maritime security and defence), offshore (SMM Offshore Dialogue) and recruiting (Maritime Career Market).

In addition, a comprehensive special-events programme will be put together involving more than 150 individual events (workshops, symposia, etc).

Bernd Aufderheide, CEO Hamburg Messe and Congress. **Photo credit - Michael Zapf.**

Finance- a new beginning

The Ship Finance Forum 2014 will take place on the day before SMM officially opens.

In spite of low newbuilding prices, the total number of ship orders is declining around the world. Financing difficulties are part of the problem and new concepts are in demand to revitalise the market.

"In ship finance we have to address two separate issues: On the one hand, we need to put the fleet in service on a more solid financial basis. After a five-year double crisis – one affecting the financial, the other the shipping markets – that may be a tall order. On the other hand, we need to finance new tonnage to be commissioned over the next few years. In the wake of the crisis, this often calls for new partners and new conditions," said Dr Max Johns, managing director of the German Shipowners Association (Verband Deutscher Reeder, VDR) and member of SMM's Advisory Board.

Under the motto, 'A New Beginning', the Ship Finance Forum 2014, will address global financing issues facing the shipbuilding and shipping industries. "The Ship Finance Forum has become an essential event in the maritime calendar. Through its close affiliation with SMM, it enjoys excellent visibility as Hamburg assumes its role as the undisputed world capital of shipping," said Johns who also teaches ship finance at the Hamburg School of Business Administration (HSBA).

"SMM is a major technology trend-setter for the shipping industry: We are dealing with enormous challenges, such as the emission control areas and the ballast water convention. SMM will surely offer inspiring insight on both topics," Johns added. Both of these challenges are associated with substantial capital investments.

The SMM Ship Finance Forum will focus on three major topics. The first debate will look at current developments in the German market. US investors are entering the German market in increasing numbers, primarily seeking to invest in newbuilding projects. Yet, conventional bank financing schemes continue to be in demand. For example, a Norwegian-German group of investors recently established a new ship finance bank.

The second debate, entitled 'Shipyards:

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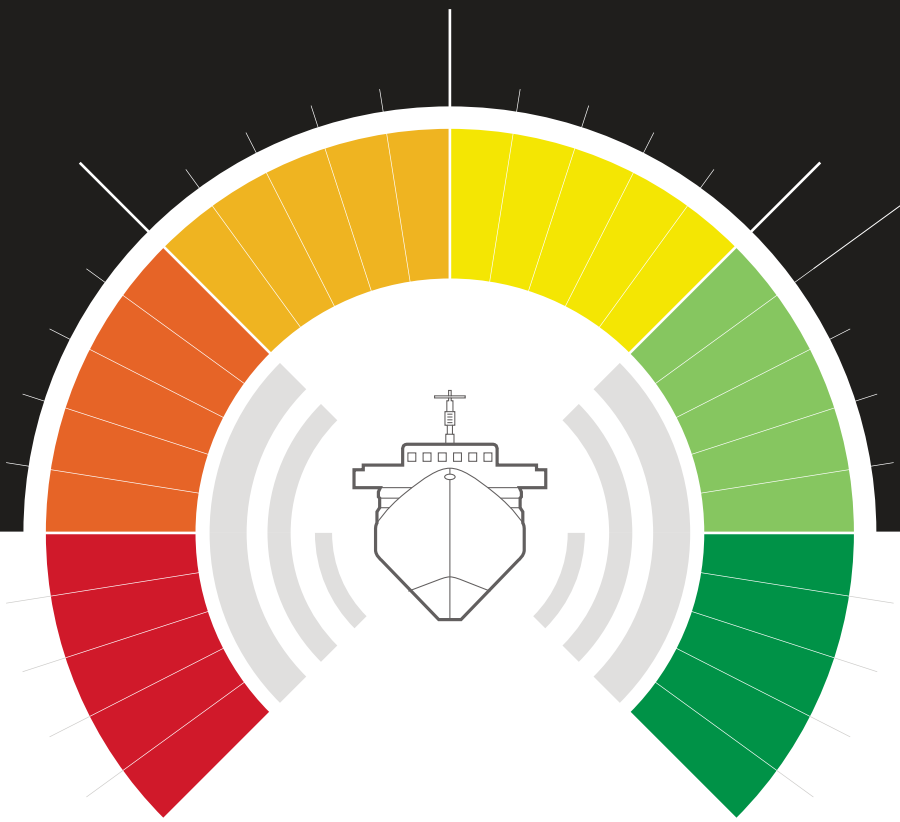

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Financing Shipbuilding, Financing Exports' will examine the efforts of many shipyards to finance exports, while part three (Global Financing Trends – Bonds, Leasing, IPOs) will highlight alternative financing models in the market, which compete with traditional schemes.

The forum will also address the protection of the maritime environment. SMM, as the leading global maritime trade fair, has adopted the logo of the German Federal Government's initiative 'The Sea, Our Blue Wonder'.

In 2014, Germany will host the annual European Maritime Day (EMD) for the first time, providing an opportunity to encourage the public discussion of maritime policy, biological diversity and the complexity of maritime ecosystems and their interaction with human civilisation. This topic will figure prominently in both, the finance forum and in SMM itself. "I am convinced we will see innovative technologies and surprises at the fair once again which will bring about further advances in ship efficiency and environment protection," said Johns.

Max Johns, VDR managing director and member of SMM's Advisory Board.

Security strategies

Piracy will also be high on the agenda of MS&D, the international conference on maritime security and defence, scheduled for 10th September as part of SMM's 'Security and Defence' theme day.

"To date pirates have never succeeded in boarding or hijacking a ship that had an armed security team on board," said Michael Behrendt, president of VDR.

However, the problem is far from solved, as a new piracy-prone region has emerged off the West African coast.

"We will again study new options for protecting sea routes and ports this year. The strong interest proves that the MS&D conference has firmly established itself as a meeting place and a source of inspiration for the industry," said Aufderheide.

As in the past, HMC is organising this conference jointly with its partner, DVV/Griephan, and Deutsches Maritimes Institut (DMI).

There will be two panel discussions. The first one is entitled, 'Maritime Challenges of Globalisation', while the second one will focus on 'Future Maritime Capabilities'. The keynote speaker will be Sarah Kenny, managing director, QinetiQ Maritime, who will discuss 'The future development of maritime security and defence'.

"At this year's SMM we will once again welcome top-level delegations from navies and coast guards around the world," said Aufderheide. Today the duties of naval forces are no longer limited to defending national and allied interests or enforcing embargoes; increasingly, they must also secure coast lines, escort aid convoys, or combat terrorism and piracy.

"This conference is an ideal platform for the maritime industry and naval leaders to share views and information," said retired Vice Admiral Hans-Joachim Stricker, the former commander-in-chief of the German navy. Stricker is co-chairman of MS&D and president of DMI.

Recruitment

Companies need experts, and qualified applicants are looking for attractive employment opportunities. To this end, on 12th September 'Recruiting Day' will be held at SMM.

This job exchange and professional training platform is an invitation to both HR leaders from hiring companies and interested applicants to meet up.

"The Shipbuilding and the offshore supply industries are in need of committed, highly qualified staff. The SMM Recruiting Day will provide an ideal backdrop for a fruitful dialogue with students and graduates," said Dr Jörg Mutschler of VDMA, the German engineering industry association.

He believed it is never too early to begin interacting. "The concurrent ThinkING campaign is an excellent opportunity to engage secondary school students and open their minds for a career in fascinating technologies," Mutschler said.

A company's ability to compete largely depends on its employee base.

To remain visible, successful and attractive in the market place, employers must invest in the development of their employees and hire highly qualified new staff and the maritime industry is no exception.

To give an example - according to a recent survey conducted by the German Naval Architecture and Ocean Engineering Association (VSM), the German maritime industry needs around 140 new shipbuilding engineers per year.

However, Germany's six maritime engineering schools produce no more than 90 graduates annually. The current demographic change is another challenge for this industry. "This year for the first time, SMM will include a 'Recruiting Day'," said SMM's Aufderheide.

"As an innovative company we are looking for well-trained, committed, highly motivated professionals from the shipbuilding and shipping fields who are willing to contribute to the future success of MDT," said Jürgen Zahnweh, head of HR engines and power at MAN Diesel & Turbo. His ongoing search for young candidates who fit the bill will continue at SMM.

Another company that will be looking for qualified young staff at the Hamburg fair is Lürssen Werft shipyard. "Our participation in the Recruiting Day activities at this year's SMM is in line with our strategy to attract highly qualified young professionals to our shipbuilding company at an early time, and integrate them into our teams," said Friedrich Lürßen, managing partner of Fr. Lürssen Werft. At SMM, his company will set up a major booth. "Recruiting Day is an optimal platform for our recruiting efforts as it presents us with the unique opportunity to speak directly and openly with potential applicants and show them who we really are: A modern, globally renowned, family-owned company offering excellent professional prospects to young, highly motivated people who share our passion for building ships of

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singular quality and beauty," said Lürßen.

Qualified engineers can have successful careers at shipyards, or in the shipbuilding supply chain and with classification societies, ship model testing facilities, or shipowning companies.

Apart from a solid technical and scientific background, employers are increasingly looking for skills such as foreign languages, project management and logistics expertise. In addition, the so-called soft skills are more important than ever in this globalised industry, such as communication and presentation skills, mobility and an inter-cultural mindset.

At SMM, educational institutes such as universities and technical academies will showcase their degree and advanced training programmes, which can help employers and their employees be prepared and ready for the challenges of the future.

"Good shipbuilders are always in demand. Right now the industry is especially interested in highly qualified young experts with specialised knowledge. This demand will increase over the coming years," said Wolfgang Fricke, a professor at the Hamburg-Harburg Technical University's Institute for Ship Design and Structural Integrity.

He believed that the shipbuilding profession is experiencing significant change. As more innovative technical components are introduced and the market increasingly focuses on specialised ships, the qualification profiles required today differ vastly from those of past. "Compared to a conventional job interview, the Maritime Career Market provides both sides with a relaxed setting allowing for a more extensive exchange of views," he said.

Admission will be free for students during the Recruitment Day.

Exhibitors

The following is a brief look at a few of the leading exhibitors highlighted in alphabetical order.

Visitors to **Alfa Laval**'s stand at SMM will see new ways to reduce environmental impact and fuel use.

Under the theme 'Count on Alfa Laval', the company's SMM stand will quantify the company's role as the reliable partner for reducing costs, meeting legislation and optimising installed equipment over the long term.

Among the equipment to be shown will be several within the 'Pure Thinking' environmental portfolio. Alfa Laval PureNOx, PureSOx, PureDry and PureBallast will be featured, either physically, or digitally, with the focus on new technical developments and the impact these products are having as the industry rushes to meet legislation.

Alfa Laval will also showcase a systematic approach that is saving both energy and money on board. Along with adaptive developments in the company's fuel line offering, there will be a look into the Alfa Laval Test & Training Centre and a focus on its waste heat recovery expertise – exemplified physically through a full-size waste heat recovery boiler.

In addition, there will be an opportunity to explore Alfa Laval's multi-fuel solutions. As emission limits grow stricter, Alfa Laval claims to be overcoming technical challenges to pave the way for low-flash point fuels and a more widespread use of LNG.

Alfa Laval also places a great deal of focus on service, which is an integral part of any marine solution. Anywhere in the world and at any time, Alfa Laval Service is ready to extend equipment performance. The service team's knowledge and offerings will take pride of place in a dedicated area of the stand, where among other things an S separator bowl will facilitate hands-on discussions.

Alfa Laval 's experts will be present to discuss key systems and products, from separators and boilers to plate heat exchangers, freshwater generators and inert gas systems. During a number of topical events to be held on the stand, they will be joined by industry representatives, who will present their perspectives on Alfa Laval solutions and the company's approach to industry challenges.

Becker Marine Systems' managing director Dirk Lehmann said; "For our company SMM is the most important trade fair. Our customers from both the shipyard and shipowning sectors use this fair to keep themselves up-to-date on innovative trends and to network."

This year the company's exhibits will focus on energy-saving concepts, including its rudder optimisation solutions, such as the cross over rudder and the energy saving devices Becker Mewis Duct and Becker Twisted Fin. Furthermore, Becker will showcase its LNG hybrid business line, including the bunkering barge earmarked for Hamburg harbour.

CODie software products are tailor-made solutions for the various sectors of the maritime industry.

In particular, the new patented CODieBOARD maritime management centre will be presented. This is a new software suite developed for the particular needs in the management of shipping companies, fleets and vessels. Also third-party companies and service agents - such as crewing agencies, local port agencies - can be integrated into the overall system.

The existing products have been extended and will be available for presentation at the exhibition booth.

The CODieBOARD supervision centre can forward damage reports into a new insurance module, which will manage and co-ordinate the entire claims processing with the insurance company.

The CODieBOARD support centre now has

a ship version, which can be used to enter requests, inquiries and operational problems/defects, directly on board a vessel.

Also the CODie ISMAN product line with its TIQUAM and ShipShop add-ons, now available in Version 18, have been extended by adding many new functions and features. All the product developments are undertaken in co-operation with selected customers and several classification societies have already approved the systems, the company said.

FURUNO' s presentation focus at SMM 2014 will be the new bridge system, INS VOYAGER, consisting of solid state radar and ECDIS; the company's training scheme and the automatic chart update system - Gate-1.

The company will also present its ice/oil detection radar systems, VDR, satellite speed log, navigational echo sounder and GPS navigator.

INS VOYAGER has been designed by using the company's decades of expertise in sensor devices, network integration and software development, FURUNO said. The INS offers multifunction workstations with seamless display of radar/chart radar, ECDIS, conning and alert management system data.

It has been developed with intuitive user interface and in strict accordance with the most up-to-date safety and navigation standards, the company said.

The FAR-3000 series of radar systems includes the S-band solid state radars - FAR-3230S-SSD and FAR-3330S-SSD. This solid state radar technology generates clear radar echo images of the targets, which allows users to obtain clear pictures of what are around the vessel, including weak targets from smaller craft.

In addition, solid state radar requires lower maintenance cost and service hours, compared with conventional magnetron radar, which leads to reduced long-term running cost.

The FMD-3200/3300 is FURUNO's latest ECDIS with intelligently arranged graphic user interface elements that deliver task-based operation scheme to give the operator direct access to necessary operational procedure. Also, the ECDIS utilises a new chart-drawing system that delivers instantaneous chart redraw with easy zooming and panning, hence making the ECDIS operation stress-free, the company claimed.

FURUNO will also introduce the new ECDIS FMD-3100. This ECDIS, with 24 inch wide LCD, offers full HD resolution of 1,920 x 1,080 pixels and delivers the user interface identical to the FMD-3200/3300.

Fully complying with the performance standard of ECDIS stipulated in IMO resolution MSC.232(82), this new ECDIS will be suitable for new installations, as well as retrofitting projects, to fulfil ECDIS mandatory carriage that started with a phased-in time frame from July 2012 onward.

FURUNO's first INS training centre (INSTC), INSTC Denmark, was established in March 2005.

Originally, INSTC was formed to educate crew members on board vessels carrying the FURUNO bridge system VOYAGER. Today, the training centres are the company's primary facilities for educating navigators to achieve proficiency in the operation of various kinds of navigation and communication equipment.

Requests for ECDIS training courses has increased rapidly over the past few years. In order to meet the growing demand for

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training, INSTC Singapore was established in November 2011.

FURUNO has since expanded its training provision by introducing NavSkills, which is a network of training centres consisting of selected training providers around the world, which have become accredited by FURUNO to conduct its ECDIS familiarisation training to meet the highest standards.

FURUNO ECDIS familiarisation training for models FEA-2107/2807 and FMD-3200/3300 is now available in Denmark, Germany, Italy, Greece, Turkey, UAE, Ukraine, India, Singapore, China, Philippines and Australia and the NavSkills network will continue to grow in the years to come, the company said.

Meanwhile, Gate-1 provides ECDIS on board with the up-to-date UKHO and PRIMAR chart data and permit file. All chart material content is checked on a weekly basis and the data is uploaded to FURUNO distribution servers around the world. The ships will automatically download the new data from the closest server when they need the updated charts.

FURUNO's new VDR model - VR-7000 - complies with the revised IMO performance standards of VDR MSC.333 (90), which was applied to equipment installed on, or after, 1st July this year.

FAR-3000/FCR-2xx9 series and ECDIS FMD-3100/3200/3300 can be interfaced through Ethernet.

The satellite speed log -GS-100 - is the company's solution to fulfil the revised carriage requirement for speed log MSC334(90). The measurement capability at dead slow speed is vital for precise docking of large ships. The GS-100 offers speed accuracy of ±0.02 kn, which is claimed to be of great help during berthing operations.

The navigational echo sounder FE-800 displays the clearance below the ship in the dual frequency operation (50/200 kHz), when interfaced with two transducers. The depth at the fore and aft positions can be displayed simultaneously.

FURUNO's GPS navigator - GP-170- is claimed to be an ideal position sensor for radar, AIS, ECDIS, autopilot, echo sounder and other navigation, plus communications equipment. Newly designed GPS chip and antenna unit deliver enhanced stability and position fixing precision, the company claimed.

All of these new products meet the specific requirements for alerts and interconnection with Bridge Alert Management (BAM) in IMO MSC.302 (87), FURUNO said.

L-3 Marine Systems International (L-3 MSI) will showcase new-generation systems for ship-specific operations, including automation, communications, navigation, dynamic positioning, propulsion, energy generation and distribution, as well as entertainment systems.

"Our success is based on our broad product portfolio and our ability to develop custom solutions that provide the highest level of integration for our customers," said Ulrich Weinreuter, president of L-3 MSI. "L-3's systems are designed to ensure safe and efficient operation throughout a vessel's entire lifetime. We also focus on eco-friendly and emissions-reduced solutions, and we are extremely proud to present our latest 'green' capabilities at the world's most important shipbuilding exhibition, SMM 2014."

L-3 highlights will include live demonstrations of the NACOS Platinum series, complemented by a bridge simulator with three large screens for navigation. Also featured as an integral part of the demonstrations will be an L-3 Valmarine multifunctional VALMATIC Platinum automation assembly and an integrated DP Platinum system, developed by L-3 Dynamic Positioning & Control Systems.

These systems provide fully integrated functionality for vessels of all types and sizes and support shore-based fleet control operations and remote maintenance, the company said.

Other key technologies to be featured at SMM 2014 include L-3 SAM Electronics' established energy and drive capabilities, including advanced shaft alternator technology and diesel-electric propulsion assemblies with power ratings extending up to 28 MW.

In addition, L-3's new innovative web-based open ticket request system (OTRS) for managing service requests will be demonstrated. The system creates a fully transparent, well-co-ordinated and interpersonal workplace and includes a database with the complete service history of a vessel.

L-3 MSI will also present customer training options, focusing on ECDIS, for system users and field engineers worldwide, as well as fully accredited induction and advanced dynamic positioning operator training available in key locations.

Headquartered in Hamburg, L-3 MSI is part of L-3's Electronic Systems business segment.

Netherlands Maritime Technology was formed on 8th May this year.

The new organisation brings together several separate concerns under the former Maritime by Holland brand under one umbrella organisation.

The new name creates clarity, leads to further synergy and better reflects the technological and innovative character of the network members, the organisation claimed.

It was launched in the presence of 230 members and associates at Damen Shipyards.

Netherlands Maritime Technology replaced Scheepsbouw Nederland, Holland Shipbuilding Association, Holland Marine Equipment Association, VNSI, HME BV, HME Singapore and CMTI.

It now comprises a network of shipyards, suppliers and service providers and will provide professional project support and carry out independent research, as necessary.

There will be a particular focus on issues linked to trade, innovation and human capital.

The official international launch will take place during SMM where the Holland pavilion in Hall B7 will cover 950 sq m and will host 45 Dutch exhibitors.

In addition, the Royal Dutch Navy frigate *HMNS Evertsen* will visit Hamburg and will host a seminar about how technology from the Netherlands can help shipowners reduce operational expenditure.

First time exhibitor

The UK-based independant supplier of marine safety equipment, **Ocean Safety**, is to exhibit at SMM for the first time, the company said.

It will use SMM as an opportunity not only to strengthen the company's commercial business, but also to promote the brand to a wider audience as a quality British manufacturer and distributor.

Mark Hart, Ocean Safety sales director, said; "We believe that this show will be a great step forward in showcasing our products to a global audience, in particular our recent expansion into the manufacture and sale of commercial lifejackets. The show is the hub for shipbuilders, owners and suppliers to convene, so we look forward to discussing prospective opportunities within the wind and offshore sectors."

Ocean Safety will be presenting products from its brands, including K2 lifejackets, immersion suits and Aquaspec lifejacket lights.

The company's new commercial twin chamber lifejacket range, the K2 275N, will be making its SMM debut. This jacket is compact and easy to wear, yet fully functional for demanding maritime conditions, Ocean Safety claimed.

K2 already includes a powerful AQ40L light as standard and now has the optional addition of the Kannad R10 AIS survivor recovery system (SRS).

The new twin chamber lifejacket range is approved to SOLAS MED Ship's Wheel and is manufactured under the accredited Lloyd's Register ISO 9001 quality system. It is designed to be extremely compact and unobtrusive and is available with, or without, a sprayhood.

The pre-fitted SOLAS-approved low-profile AQ40L light is water activated and emits more than 40 hours of continuous light, five times the SOLAS minimum standard. It is also three times brighter, beaming a powerful 2.5 cd of light, the company said.

K2 comes as standard with the Kannad R10 AIS SRS fitting point but at SMM Ocean Safety will be presenting the lifejacket with the R10 fitted to demonstrate its capability as a high performance lifejacket for extreme conditions.

The Kannad R10 uses AIS to send an alert message, GPS position and a special identity code, which will be picked up by AIS receivers on the crew member's vessel and other vessels within a four mile radius.

The German navigation system manufacturer Raytheon Anschütz will exhibit advanced navigation systems.

Raytheon Anschütz will presents heading sensors, as well as newly developed radar transceivers. Hands-on demonstrations are offered for the INS-certified Synapsis INS and the ShipGuard security system solution.

To offer customers and visitors an up-to-date information platform in advance and during the trade fair, the company has launched a dedicated micro web page, which is accessible under smm.raytheon-anschuetz.com

Apart from offering all the key information about the product highlights, an overview of the planned booth design, booth infrastructure and opening hours, as well as the location at the exhibition site, is included on the web page.

A 'hot news' section is included to deliver customers and visitors the latest news and information on planned events and demonstrations, from now on until the end of SMM 2014.

SKF/Blohm+Voss Industries said that it will set up an large stand in the exhibition area.

"This year we will present an entire array of new products and innovative technology for the shipping industry, including several new solutions from SKF/Blohm+Voss Industries which will help our customers improve the performance of their ships, while reducing their lifecycle costs.

"We will also introduce new engineering concepts addressing the need to comply with the requirements of the Vessel General Permit 2013 as issued by the US Environmental Protection Agency (EPA)," said Martin Johannsmann, managing director of SKF/Blohm+Voss Industries.

Raytheon's new radar transceiver.

Sustainable goals should be identified

Having sustainable goals are the key to reducing emissions in the shipping industry, a leading shipmanagement concern stressed.*

Across all industries, there is increasing pressure and a concentrated focus on emission control, improvement of efficiency and reduction of operating costs.

Greenhouse gases and global warming are the buzzwords that are amplifying the social awareness to reduce emissions. It maybe recalled that not so long ago - a rather famous person said "he didn't inhale". It has now almost come to a point where we are telling our ships "don't exhale", but then all ships have to breathe out.

There are many broad-based initiatives within the shipping fraternity but what it really comes down to is that energy conservation starts with each of our own individual actions, or non-actions.

Most of our office colleagues worldwide have partial control on energy expenditure being bound by structural constraints and local regulations. However, the use of available energy resources on board our ships is almost entirely within the control of our seafaring colleagues.

Across the fleet, as a sustainable goal, we should work together to save 250 litres of bunkers per day per ship – this is little more than one drum. With the efforts of our sailors and support from our shore-based staff, this should certainly be achievable.

Thome has set out to review and explore the various operational measures that can be implemented on board ship without the installation of any equipment, or additional software. It must also be appreciated that reduction of waste also contributes to such savings.

Operational matters that can be undertaken today:

- As far as practical, have only one auxiliary engine in operation.
- Optimise machinery usage as much as possible without compromising safety.
- Deck hydraulic power - power packs to be kept in operation only when required.
- Deck air to be supplied only as and when required.
- If a long port stay is anticipated, consider changing over to MGO/MDO operation; shut down the main engine plant and auxiliaries. Boilers to be on banked fire. This will reduce power requirements and therefore consumption
- Accommodation temperature to be set to between 22-24 deg C.
- Lighting in common areas to be turned off, or minimised when not in use.
- Crew to be encouraged to turn off lights in cabins when not in use.
- Galley hot plates to be turned on only when required.
- Limit size of microwave units supplied to the vessel to 25 litres.
- Pantry hot water dispensers to be turned on only during meal times.
- Optimise usage of laundry machines and driers.

These are just a few of the initiatives that have been identified - there are many more.

In the larger perspective, each measure implemented contributes to the energy available for the future. TO

**This article was originally printed in 'Thome Group News' and was written by Sandy Kumaran, senior manager, fleet services at the Thome Group.*

Pilotage issues addressed

The International Maritime Pilots' Association (IMPA) has put together a guide for pilots, Masters and seafarers.*

Pilots sometime come under fire when casualty reports are analysed. Incidents of collisions, groundings, etc, are still being recorded worldwide, despite the presence of a pilot on board in some cases.

Over 30 pilots and industry experts contributed to the guide, which commences with a brief history of marine pilotage, followed by an overview of the legislation governing pilotage and more importantly, pilot liability.

The practical aspects of pilotage are examined in detail, including Master/pilot exchange, pilot transfer, shiphandling, vessel characteristics and interaction, fatigue management and training and certification.

In the legal and statutory section, IMO and national instruments, liability and criminalisation, pilot immunity and exemptions are discussed.

The section on conducting pilotage contains a pilot's passage plan, Master pilot exchange, communications and underkeel clearance, including ship squat.

This section also looks at pilotage in different locations, such as canals (Panama and Kiel), straits, rivers and deepsea, plus the problems that can be encountered during severe winter periods, such as found on the St Lawrence River.

Shiphandling merits its own section in the book, covering various aspects including propulsion, steerage and power, vessel blackouts, shaft generators, CP propellers navigational technology and equipment, high sided vessels, azimuthing controlling devices, tug use and the handling of speciality vessels.

Perhaps of equal importance is the section on requirements, training and certification. This starts with an overview, followed by requirements needed in France and the US, continuing professional development, mentoring training, simulator training, scaled manned model training and bridge resource management for pilots, which training academies have said is of increasing importance.

Fatigue is covered as pilots can sometimes be expected to work for long hours, as is the question of pilot transfer systems, including ladders, pilot boats, pilot vessels and helicopters.

In the Appendix, IMPA gives its stance on pilotage competition and this section also includes a guide for members on the use of ECDIS, plus IMPA's position statement of the IMO's E-navigation strategy.

Finally, IMPA's guidelines on the design and use of portable pilot units are outlined.

By and large each section and its relevant chapters are written by different IMPA members who have particular expertise in the subject being covered, although there is a certain amount of overlap. TO

**IMPA on Pilotage is published by Witherby Publishing Group, price £75, pp 256, 4-colour, diagrams, ISBN: 978-1-85609-635-5.*

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Vessel safety comes a step closer

Inmarsat has announced details of its forthcoming Maritime Safety Data Service (MSDS) for FleetBroadband.

MSDS will continue to offer all the Inmarsat C safety services, such as distress alerting, priority messaging and SafetyNET safety information broadcasts, Inmarsat stressed at a recent presentation.

However, in addition it will offer what it claims are content-rich applications; chart updates; the ability to co-ordinate rescue operations by e-mail, as well as voice calls; telemedicine; distress chat, an instantaneous chatroom function between multiple vessels and maritime rescue co-ordination centres and a new style maritime safety terminal (MST).

MSDS will be operational over the Inmarsat-4 satellite network, used by FleetBroadband and also including the Alphasat satellite launched last year.

"We are currently working closely with the IMO to bring our new service to market with the aim of eventually gaining SOLAS approval for both FleetBroadband data and voice Global Maritime Distress and Safety System (GMDSS) services," said Peter Blackhurst, recently retired head of Maritime Safety Services at Inmarsat.

Papers are due to be lodged with the IMO later this year with the aim of discussing the new service at the second Navigation, Communications and Search and Rescue (NCSR) sub-committee meeting in March, 2015. NCSR is a new IMO sub-committee, formed by merging the NAV and COMSAR sub-committees this year.

MSDS additional capabilities have been developed by data software company, Eixo Digital, which will also be designing a generic maritime safety terminal (MST) in conjunction with GateHouse, a software solutions provider. A prototype is expected to be available later this year and a ready-to-market terminal is planned for the second quarter of 2015.

This initiative has received funding from the European Space Agency (ESA), which has also awarded a contract to Inmarsat partner Cobham SATCOM to develop an MST delivering the MSDS service, which is expected next year.

Inmarsat said that all information accessed over MSDS and Inmarsat C will now be housed on two new maritime safety servers located in London, UK, and Burum, the Netherlands, which will be the core to the whole safety operation.

They are connected to all BGAN networks for both voice and data transfer and can reach all Inmarsat C fitted vessels and have the ability to expand. They are the network operations centres for ongoing distress calls, which will also be sent to the relevant rescue co-ordination centres (RCCs).

MSDS will build upon FleetBroadband's two non-SOLAS voice safety services: the free 505 Emergency Calling facility, and Voice Distress.

The launch date for MSDS is subject to the IMO approval process for SOLAS ships but Inmarsat anticipated that non-SOLAS versions will be available well in advance.

"Everything comes to its life's end and, while the Inmarsat C service is still very competent and it will continue well into the 2020s and beyond, despite being over 20 years old, (we) would ultimately like to see MSDS accepted as the natural successor to deliver SafetyNET," said Blackhurst.

At the same presentation, Cobham outlined its user terminal (UT) development for the FleetBroadband MSDS.

Tests were undertaken on the MST ad UT both for non-SOLAS and for SOLAS vessels. They were carried out on an office PC and a Sailor FB 500 UT was upgraded to support the MSDS protocols. The project was completed in August 2013.

For SOLAS MST and UT, the solution will be based on existing commercial products, Cobham said, using proven hardware for the maritime environment with environment, safety and national approvals available.

The MST application will be developed to operate on the already Wheelmark approved messaging terminal.

For the MSDS, MST and UT testing has been completed. For SOLAS vessels, this depends on the MSDS' IMO approval being given. The RAN upgrade to support MSDS has also been completed, while the maritime safety server has been delivered and deployed.

GateHouse said commercially off-the-shelf prototype software would be ready by the fourth quarter of this year, which will plug into a GateHouse enabled UT for both SOLAS and non-SOLAS vessels.

Explaining the use of Eixo Digital's MST, the company said that it had a deep understanding of the MSDS service and had developed the ground infrastructure, which is MST type approved.

The hardware was developed quickly and the time taken to deliver it to market was also claimed to be fast and at an affordable price with very attractive conditions available for early adopters.

Maritime Safety Data Service (MSDS) timeline

- 2010-2011- ESA feasibility studies and design activity.
- 2012 -End-to-end system development.
  ESA contract award to Inmarsat as prime contractor with Cobham (Denmark), Eixo Digital (Portugal) and Gatehouse (Denmark) as sub-contractors.
  MSDS Server - Inmarsat contract award to Cobham (Denmark) with Eixo Digital (Portugal) as sub-contractor.
- 2013 - Network availability and first prototype terminal.
- 2014 End-to-end over the air demonstration.
  First BGAN MSDS terminals expected.

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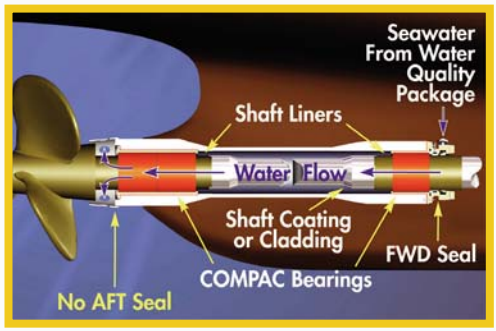

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With Alphabus, Europe now has the opportunity to offer satellites meeting global high power telecommunications needs and to boost Inmarsat's overall network capacity. The satellite concern is claimed to be an example of a successful private/public partnership between ESA and a leading operator.

The next phase of MSDS development includes- enhanced security (LRIT, AIS), e-navigation, while future applications will include anti-piracy and border control functions.

All of the new services are based on BGAN technology.

Guy Sear, Inmarsat Maritime's vice president business development said that the organisation was looking for other stakeholders in the industry, such as weather routing concerns. With the latest IP technology, Inmarsat can take it to the next level by integration with interests, such as charterers and cargo owners, etc, he explained.

It is just a matter of understanding and managing what is available, he said. He gave further examples of dealing with supply chains and for functions, such as route planning, dealing with pollution and obtaining piracy activity information. Other sectors, such as insurers, P&I Clubs can be instantly informed, as and when necessary. Master and crew information can also be made available.

Iridium GMDSS

Meanwhile, Iridium Communications said that its application to IMO to provide GMDSS mobile satellite communications has been reviewed by the NCSR sub-committee and the application will now proceed to the Maritime Safety Committee (MSC) at its next meeting in November, before advancing to a group of experts for comprehensive technical and operational evaluation.

At NCSR, delegates gave support for the US position to advance Iridium's application to the next stage for evaluation. Final approval will be up to the MSC, following review of the experts' report by NCSR, which is expected by mid-2016.

"This is a victory for Iridium and the maritime industry," said Matt Desch, CEO, Iridium. "The overwhelming support for our application to provide the industry an alternative and equally capable option for GMDSS services is a testament to the value and benefit the Iridium network can provide to maritime safety."

This is particularly important for coverage of Polar regions, where the incumbent GMDSS provider is not able to provide a service, the company said, without naming Inmarsat.

Iridium's constellation of 66 low-Earth orbit, inter-connected satellites operates as a fully-meshed network and provides coverage worldwide - including Polar regions - where demand for reliable voice and data communications is on the rise, the company said.

Iridium will begin deploying its second generation constellation (Iridium NEXT), in 2015, offering greater capacity, bandwidth and data speeds, as well as backwards compatibility for existing products and services in the market.

In anticipation of IMO recognition, Iridium said that it was working with maritime communications equipment manufacturers for the production and certification of GMDSS terminals that use its network, along with maritime RCCs and service providers for the provision of maritime safety communications.

Once approved, the shipboard terminals will meet both the GMDSS and operational communications needs of a vessel, giving the industry the option of a single, affordable communications terminal to satisfy both safety and business communications, wherever they operate.

Expected to be available before the end of 2015, GMDSS terminals using the Iridium network are designed to have an operational longevity of nearly 20 years, eliminating the need for vessel owners and operators to purchase new equipment every few years, the company claimed. TO

ECDIS' tanker mandation getting closer

In the IMO's staggered ECDIS ship type mandation scheme, all existing tankers of 3,000 gt and above will be required to carry ECDIS from their first survey after 1st July, 2015.

Tanker Operator spoke with Jason Scholey, UKHO senior product manager - charts, about the build up to the implementation dates, especially for tankers.

He explained that since 2011, the UKHO ECDIS seminars have provided free, clear and impartial guidance to professionals involved with the shipping industry in all sectors, including managers, owners, ship personnel, regulators and auditors.

By the end of this year, the seminars are projected to exceed a total of 3,400 delegates in 55 locations.

"Each seminar will be tailored to answer any questions and address real-world challenges that those in the room are currently facing whilst adopting ECDIS. If someone were to have a question specific to their sector or job role, such as the Master, or navigator on a tanker, they can submit it when registering, or have it answered on the day.

"The seminars running at SMM are the 11th of 23 key locations that will be visited throughout 2014. The full list and registration links can be found at www.admiralty.co.uk," Scholey explained.

"As well as an intensive programme of product development, such as making sure ADMIRALTY Vector Chart Service (AVCS)

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operates on all ECDIS makes, we have been working very closely with our 24/7 customer service team and distributors to ensure they are able to support customers as they adopt ECDIS.

"One of our initiatives has been the publication of ADMIRALTY Guide to ECDIS Implementation, Policy and Procedures (NP232). NP232 provides an on board reference to support company procedures developed for the operation of ECDIS, which will assist in preparation for audits and inspections and provide clarification on existing ECDIS policies and procedures.

"NP232 was borne from the ECDIS seminars with feedback from seminar delegates over previous years ensuring that NP232 provides the guidance to ensure informed decision-making by any individual or organisation responsible for ECDIS on board ship.

"With thousands of copies sold, it already plays a key role in helping serving bridge officers, fleet superintendents, P&I clubs, flag and port state authorities, surveyors and classification societies navigate the adoption of ECDIS," he said.

Talking of a companys/managers preparedness, Scholey said: "Everyone is at different stages for different reasons. I would say that the majority are aware that ECDIS will need to be adopted but it's difficult to know whether they appreciate the time scale for its adoption.

"One thing is for sure; any ship that needs an ECDIS should have a plan by now. As a general rule, Capt Paul Hailwood – who delivers the UKHO ECDIS seminars – recommends 18 months as a minimum to adopt ECDIS across a fleet."

Turning to criticisms of too much information being displayed which can confuse the user, Scholey warned; "It is vitally important that the ECDIS display remains clear during navigation and that its users are adequately trained to understand how to configure the display to their needs.

"To ensure that users fully understand the ENC information that they see on their ECDIS display, we published the ADMIRALTY Guide to ENC Symbols used in ECDIS (NP5012) and the ADMIRALTY Guide to the Practical Use of ENCs (NP231) in 2012.

"Much of the additional information that the users of ECDIS require is used in the planning process, which is a key element of safe navigation. For instance, we would expect the ADMIRALTY Information Overlay, which overlays on ENCs ADMIRALTY T&P NMs and navigationally significant differences between ENCs and ADMIRALTY paper charts, to be used during passage planning. Items of significance would then be marked on the ECDIS using Mariner's Information Objects," he said.

Satcom downloads

With the advent of FleetBroadband and VSAT satcoms systems, it would appear to be easy to download the latest information directly by satellite. However, this is sometimes not the case as Scholey pointed out.

"Our customers make use of a range of methods for delivering AVCS data to their vessels. An increasing number are able to regularly download updates over satellite Internet connections, or receive them via email. However, a significant number continue to prefer to receive the data using our single DVD service, or on CD. A number of our distributors also offer AVCS on USB media for their customers.

"Users of satellite services often download only those updates that they need for their next passage to reduce the bandwidth required. This means that some of the ENCs that they hold may become out of date and will need to be

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updated before they are next used. Good procedures are needed to ensure that this happens and download services are often used in conjunction with physical media," he said.

Speaking about the rise of ECDIS type specific training centres worldwide, he said; "Navigation using ECDIS provides the mariner with much faster access to information, greater situational awareness and helps deliver improved safety and efficiency.

"However, the key to delivering these benefits is not simply in the technology itself. Its success relies on training, supplemented by rigorous strategic planning, highly focussed and competent operational execution of new processes and bridge officers who are not just trained but competent and confident in the use of the ECDIS technology and the information at their disposal.

"For many years, training institutes and the UKHO have enjoyed mutually beneficial working relationships. We have gained valuable feedback on the user experience, to improve the range of ADMIRALTY nautical products & services. We have provided training workshops, advice and information to supplement training institute courses.

"Every year the UKHO supplies maritime training institutes around the world with hundreds of training licences for AVCS alone and many hundreds more licences to our other digital services; including ADMIRALTY Raster Chart Service (ARCS), ADMIRALTY Digital List of Lights (ADLL), ADMIRALTY Digital Radio Signals (ADRS) and ADMIRALTY TotalTide (ATT).

"The UKHO is firmly committed to helping our customers to meet their SOLAS obligations and will continue to strengthen our relationships with well respected training academies. Jointly we will continue to prepare navigators for the challenges of electronic navigation, ensuring confidence and competence with the products and services that are instantly recognisable on bridges of most ships trading internationally today," he stressed.

With the growing interest in the Northern Sea Route across the Arctic, especially for tankers and LNG carriers, Scholey said; "Basic ice information such as ice limits and areas are already included in ENCs, which current ECDIS can display.

"In addition, by agreement with data distributors, some ECDIS manufacturers may offer ice overlay functionality within their systems. Currently, there is no mandated requirement for ships to have such an overlay capability, or for ECDIS to be type approved against them.

UKHO's Jason Scholey.

"For several years an International Ice charting working group has met to develop a detailed catalogue of different ice types, coverage and real and climactic boundaries. It reports to IHO working groups and is composed of member states with an interest in the region.

"Some IHO member states distribute test data and real data and have a variety of ice information services. While there are still a number of different formats, we would expect a standardised ECDIS interface to develop over time using harmonised international standards, given the interest in Arctic navigation and renewed efforts to survey the region by member states," he concluded. TO

Freezing injunctions and pollution claims

The Commercial Court has granted insurance and P&I service provider Gard a freezing order over the assets of the 1971 International Oil Pollution Compensation (IOPC) Fund.*

This freezing order was awarded in support of a claim brought by the Club against the Fund in England. Following changes to the compensation regime in the early 1990s, many states ceased to be parties to the 1971 Convention, which set up the fund. The Convention ceased to be in force on 24th May, 2002.

The Fund is to be wound up, but it is still obliged under the Convention to pay compensation for spills, which occurred before 2002.

Glafki (Hellas) managed 86,400 dwt tanker *Nissos Amorgos* was one of five outstanding oil pollution compensation cases involving the 1971 fund. The vessel grounded in Venezuela's Maracaibo channel in 1997, while loaded with about 75,000 tonnes of crude, spilling 3,600 tonnes of oil.

The owners and its P&I Club, Gard, established a limitation fund in Venezuela and paid around $6.5 mill to settle claims until December 2000, when the fund took over. This reflected the usual practice between P&I Clubs and the fund, to facilitate a quick settlement.

Once all claims have been agreed, or determined, there is usually a balancing payment from the club to the fund, or vice versa, so that each has contributed up to its prorated liability.

Venezuela obtained a judgement against the owner and Gard for $60.25 mill, plus interest and costs. The fund intervened in the proceedings, but was not a defendant.

It is common ground between the fund and Gard that Venezuela's claims are inadmissible and time barred. However, the Venezuelan Court did not agree.

Consequently, Gard brought proceedings in Venezuela and in England against the fund, seeking -among other things- an indemnity from the fund in respect of any liability it has to Venezuela in excess of the CLC limit. Meanwhile, the process of winding up the Fund continued.

At a meeting between Gard, the International Group of P&I Clubs and the fund on 18th March, 2014, the fund's director advised of his intention to recommend at the fund's next meeting, to be held on 6th-9th May, 2014, that the money left in the fund (about £4.6 mill) should be returned to the contributors.

Court application

This prompted Gard to apply to the English High Court for a freezing order. This application was heard before Mr Justice Hamblen on 1st May and judgement was handed down on 7th May, 2014.

The fund argued that the Court lacked jurisdiction because:

A) The fund had immunity from the grant of freezing order relief.

B) The fund had immunity from Gard's claims (i) in England and (ii) in Venezuela.

The Headquarters Agreement between the fund and the UK and IOPC Fund (Immunities and Privileges) Order 1979 set out immunities on which the fund can rely in the UK.

The order contains a specific exception to immunity in respect of 'a loan or other transaction for the provision of finance'.

The Judge held that Gard had a good arguable case that the practice of payment between the clubs and the fund fell under this head. Consequently, he ruled that the Court did have jurisdiction to decide the application.

He also found that Gard had met the legal test for a freezing order by establishing a good arguable case that they were entitled to an indemnity because of this practice and demonstrating a real risk that the fund would dissipate its assets by returning the funds to the contributors.

Accordingly, the Judge granted a freezing order in respect of the claims in the English proceedings. However, he did not accept that Gard had a good arguable case that the fund did not have immunity in Venezuela.

There is not enough left in the fund to settle this, or the other four outstanding compensation cases. The fund has applied to the High Court to set the claim in England aside and the case could progress to an appeal and ultimately the Supreme Court, which could prevent the winding up of the fund for some time.

If the 1971 monies are depleted, this raises the question of whether the fund could levy further contributions under a convention which is no longer in force.

Nissos Amorgos was subsequently converted to an FPSO and renamed BW Joko Tole and is still in service. TO

**This article was taken from Holman Fenwick and Willan's (HFW) bulletin and was written by associate Helen McCormick.*

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New IACS chairman outlines workload

The International Association of Classification Societies (IACS) updated its forward strategy and work plan at its 69th Council meeting held in Santa Margherita, Italy earlier this year.

The meeting was chaired by Roberto Cazzulo, chairman of RINA Services and outgoing IACS chairman.

Following his year in office, Cazzulo was replaced by Philippe Donche-Gay, executive vice president and head of the marine & offshore division, Bureau Veritas, who took over the reins on 1st July, 2014.

During the three days, meetings were held with the IMO secretary general and industry representatives, who also participated at relevant sessions of the Council meeting.

The secretary general set out a number of current IMO initiatives including the effective implementation of IMO instruments on which IACS is advising.

Among the key topics discussed and agreed at Council were - the continued work programme in order to meet the schedule for the entry into force of the IACS Common Structural Rules (CSR) for oil tankers and bulk carriers on 1st July, 2015 and relevant IMO verification of compliance with the IMO Goal Based Standards (GBS) for new ships' design and construction.

Donche-Gay said, "The great scope of IACS's work goes on out of sight, focusing on the technical detail which helps keep shipping and shipbuilding safe and efficient. All 12 members are contributing resources in the form of 350 engineers who work on IACS work groups. The detailed plans show the very wide scope of the work of IACS and just how vital it is to shipping."

At a presentation in London following his election, he further outlined the progress so far and the future work to be undertaken at IACS.

Regarding the CSR, the harmonised version has been published and the date of its entry into force remains as 1st July 2015. Some individual class societies had released their own software onto the market and joint development projects had been started. A knowledge centre was also in place.

IACS presented its Common Package 2 (CP2) to the IMO on 20th June this year while the organisation has initiated audits. CP2 represented the IACS adoption of the new harmonised CSR, which was presented to the IMO for GBS verification.

At the June Council meeting, the IMO said that it planned to enhance the maritime casualties and incidents module within the Global Integrated Shipping Information System (GISIS).

Donche-Gay said that the result should be a risk-based analysis. The industry needed incident and casualty information. Collecting data was not a definitive art, as yet, he said.

Turning to EEDI, the industry guidelines should include explanatory notes and the procedure for EEDI verification. A joint working group has been formed, which includes representatives of IACS, BIMCO, CANSI, CESA, CESS, ICS, Intercargo, Intertanko, ITTC, KOSHIPA, OCIMF, SAJ and WSC.

There is still an ongoing debate on the minimum power question with the Greeks opting for minimum speed not power to be taken into account when calculating an EEDI.

IACS chairman BV's Phillippe Donche-Gay.

Working groups

Within IACS' technical body are small working groups, panels, etc, while the association also belongs to various joint working and expert groups. However, Donche-Gay pointed out that IACS' core business was still safety at sea.

However, the environment could not be ignored, such as the use of alternative fuels. IACS will continue to contribute to solutions

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for the relevant regulatory bodies, he stressed.

For example, on the theme of LNG bunkering, Donche-Gay thought that the industry could be far better served by having integrated guidelines, noting that SIGTTO had just published its guidelines, as had some individual class societies, plus some recommended practices.

Work is due to start in September on a combined effort to develop common procedures for LNG bunkering facilitated by IACS. He noted that the IMO's forthcoming IGF Code was meant to cover safety on board vessels and this would probably enter into force in 2016-2017.

He said that the aim was to produce high level guidelines, based on existing documentation taking in truck-to-ship, ship-to-ship and terminal-to-ship simultaneous operations in co-operation with the industry.

IACS is also trying to address the plethora of software systems available for shipboard use. Donche-Gay said that so many different systems could compromise vessel safety. He cited the case of LNGCs with different loading and discharge systems. A malfunction could affect the safety of the vessel, he warned.

There is a clear trend for even more on board systems, which will increase the complexity, generating end-to-end integration issues, as well as man-machine interface concerns.

Some of these complex systems support essential functions, which can be key to safety and require more and more specific expert knowledge for their operation. TO

RS boosted by increase in ice class and sea/river tankers

The Russian Maritime Register of Shipping (RS) has seen an increasing demand for Ice Class LNGCs, supply ships and icebreakers to operate in Russian Arctic sector close to the large gas peninsula projects.

"The main goal for us is to provide the client with tailor-made solutions, which cover the ice classification at the newbuilding stage, operational aspects (such as safe speed in ice) and enhanced survey requirements. These three elements together form the foundation for our main research initiatives," said the head of RS Research Department -Maxim Boyko. "From our point of view it would be the best solution to minimise the risk associated with Arctic navigation and keep the ships economically effective."

One of RS' key areas of interest are tankers designed to operate in ice conditions. As of July 2014, tankers comprised 13 % of RS-classed fleet, of which 506 are ice classed and 25 ice class tankers are currently under construction to RS class.

"As you know, IACS common structural rules do not cover ice conditions. In this respect, the class society is provided with the opportunity to offer to the client ice classification according to its own ice class rules," explained Boyko. "Therefore, we put a lot of effort into maintaining the ice class requirements at high standards because tanker operations in ice conditions is connected with pollution risks that should be minimised. Arctic regions are very sensitive and fragile. Of course, this goes alongside our full participation in IACS common structural rules development, harmonisation projects and software development."

Sea/river tankers

Another major segment in which RS is involved is sea/river shipping, as Russian inland waterways stretch for more than 100,000 km.

The length of the rivers and waterways are second only to China. As Russia is bounded by 13 seas, many of the inland vessels also operate in the sea areas. Therefore, RS rules contain special requirements for sea/river ship types with restricted areas of navigation, specifying allowable distance between the places of refuge and the wave height.

Sea/river tanker types make up a significant share of all the tankers with RS class. A number of designs, developed in co-operation with RS, have been acknowledged by the Royal Institution of Naval Architects (RINA) and included into its 'Significant Ships' list.

These include the tanker *Zengezur* (built 2008, project 19619), *VF Tanker-1* (built 2012, project RST 27), tanker *Almetyevsk* (built 2013, project RST 25). *Zengezur* is the largest type of oil tanker that can operate in the Caspian Sea, while *VF Tanker-1* features ECO-S class.

A recent agreement for the construction of a new tanker series - project RST 22M - was signed by RS with Armada Shipyard (Turkey) in April 2014. The ships will be constructed for the Palmali Group.

The RST 22M design complies with Volga-Don Ship Canal and the Volga-Baltic Waterway size restrictions and the tankers will be able to operate both in river/sea conditions and in the Caspian, Black, Mediterranean, Baltic and North Seas, including European voyages, plus also the Irish Sea in winter.

The ships have been designed to carry crude and fuel oil, diesel oil, oil products and vegetable oils. They will be capable of carrying three types of cargo simultaneously.

The RS class notation for these vessels is KM(*) Ice1 R2 AUT1-ICS VCS ECO-S BWM OMBO Oil tanker (ESP). TO

ClassNK expands on all fronts

For many years, Tokyo-based ClassNK was synonymous with Japanese-owned tonnage.

However, a few years ago, the class society decided to expands its horizons by opening offices outside Japan, buying companies and marketing its services to owners with vessels classed by other societies.

These moves have met with some success as ClassNK now claims to be the fastest growing class society. "Our success has been defined by continuous, organic growth as a result of our global expansion and commitment to service," Yasushi Nakamura, ClassNK executive vice president said at a recent presentation in London.

Over the past five years, the ClassNK register has grown by more than 1,000 vessels and 50 mill gt to 8,666 vessels, totalling more than 225 mill gt. The register continues to grow by roughly 1 mill gt per month, the class society claimed.

Today, ClassNK claimed around 20-21% market share and aims to reach 25%, which it considered was a stable base with which to work.

Much of this growth has been driven by an increase in the transfers of vessels from other class societies to the NK register, which has more than tripled since 2010. Today, transfers account for nearly one third of all vessels added to the register.

ClassNK reinvests a large portion of its revenue each year into maritime research and development. For example, last year, ClassNK invested more than $50 mill in maritime R&D, just under 20% of the annual turnover.

Founded in 2009, the ClassNK Joint R&D for Industry Programme, which was formed to support R&D projects carried out with industry partners to address key industry challenges, has grown to become the class society's largest R&D item. To date, more than 250 R&D projects have been carried as part of this programme worldwide.

Today, about half of ClassNK's total of 1,600 plus employees are non-Japanese. About 72% are naval architects, or marine engineers and 67% are employed as ship surveyors, or auditors. There are only five executives, made up of the Chairman and four executive vice presidents.

Nakamura explained that the small number

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of executives streamlined the decision making process, while a large degree of autonomy is given to individual offices and subsidiary companies.

There are now around 130 offices worldwide and this figure is growing by four to five offices per year. One of the latest is in Hamburg, Germany as Nakamura explained that it was thought that there was a void left by the merger of DNV and GL.

Tankers are being targeted and at present ClassNK lies in second place behind DNV GL in classing oil, chemical and gas tankers with 18% of the market. For example in June, the LR2 *Al Dasma* was delivered by DSME to Kuwait Oil Tanker Co (KOTC).

She was built under ClassNK rules and regulations. During the construction, the class society provided extensive professional and technical services for the successful completion of the vessel, it said.

Simulator classification

More recently, ClassNK and Transas Marine have signed a Memorandum of Understanding regarding the classification of maritime simulators.

According to the agreement, ClassNK and Transas will jointly develop new standards, rules, procedures and guidelines related to simulator classification. New requirements will address the need for improved quality of both traditional and specialist areas of training, such as offshore, LNG, tug and VTS operations.

Software companies acquisitions are high on ClassNK's agenda, illustrated by the purchase of Victoria, BC- based Helm Operations. Founded in 1999, Helm Operations has grown to become a major provider of manning, maintenance, dispatch, and HSQE software to the workboat and offshore industries.

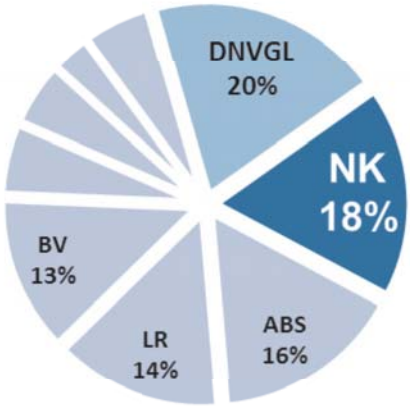
Nakamura said of the acquisition: "At ClassNK our mission has always been to ensure that global innovation is put to use for the benefit of the entire maritime industry. Commencing with the acquisition of NAPA earlier this year, and the acquisition of Helm now, we are bringing together a team of leading software companies from around the world in order to help achieve that goal."

The acquisition of Finnish software concern NAPA was announced in March.

ClassNK said that it had worked with NAPA for nearly 10 years and this acquisition gave the class society an opportunity to expand and improve the wide range of services it offers to shipowners and shipyards, while also providing NAPA with the support to accelerate expansion of existing operations and access new markets.

NAPA's software is utilised by shipyards, which are designing over 90% of the world's newbuildings and is also used by major shipowners. The company said that the deal was a reflection of the growing importance of software technology in improving ship design and operational efficiency. TO

Tankers (Oil, Gas, Chem)



Source: ClassNK.

Direct damage stability for tankers discussed

The IMO has adopted guidelines and applicable IMO Code amendments for the mandatory carriage of damage stability verification instruments on board new and existing tankers.*

The entry into force date is 1st January, 2016 with existing ships having to comply by the first renewal survey after this date and no later than 1st January, 2021.

In a White paper, Herbert-ABS discussed the options open to tanker owners/managers and operators.

In April this year, IMO/MEPC 66 adopted the guidelines for demonstrating compliance with the requirements for damage stability. Amendments to MARPOL Annex I, BCH Code, IBC Code and to the Survey Guidelines under HSSC to mandate the provision of a computer program capable of calculating the applicable damage stability requirements, were agreed.

The approval generally applies to the software, but may include hardware, for example, when the instrument receives input from sensors for the contents of tanks. Similar revisions for gas tankers and the IGC Code were adopted by MSC 93 in May 2014.

All tankers on international voyages must meet the IMO requirements for damage stability. These regulations are contained in the MARPOL Convention for general purpose tankers, the IBC and BCH Codes for bulk chemical carriers and the GC and IGC for gas carriers.

In 2005, several port states, led primarily by the UK's Maritime and Coast Guard Agency (MCA), recognised that many tankers had on board documentation to demonstrate compliance with these damage stability requirements only when the ships were loaded in accordance with the ships standard loading conditions in the approved Stability Booklet.

However, during actual operations many tankers are loaded to conditions, which significantly differ from these standard loading conditions. A survey by the MCA indicated that 'more than 50% of vessels are operating to conditions, which are not in the approved Stability Information Booklet'.

It is generally understood that since most tankers use computer programs to evaluate stability and strength for any loading condition, there is no longer a practical incentive to stay with the standard loading conditions. It is also generally recognised that modern double hull tankers are generally more vulnerable to damage stability scenarios and the new regulations, including bottom raking damage, are more onerous then past damage stability regulations.

Compliance options

There are four possible options for operators to demonstrate compliance with the IMO requirements for damage stability:

Load the ship only in strict accordance with the standard approved loading conditions from the Stability Booklet, which have been approved for both intact and damage stability.

Obtain specific approval for a loading condition which has a significant variation from these standard loading conditions.

Load the ship in accordance with a limiting KG, or required GM, envelope curve (or curves), which have been developed in accordance with the damage stability requirements.

Use an approved computer program to verify that the non-standard loading condition complies with the damage stability requirements, as well as the intact stability requirement.

The administration should take into account the guidelines for the approval of stability instruments (MSC.1/Circ.1229) when reviewing stability instruments. An approved on board stability instrument would not replace the approved Stability Booklet. Stability software should be approved, but the same should not apply to the hardware which could be covered by national standards.

Herbert-ABS' Hendrik Bruhns.

The intent is written to apply to all vessels with provisions for the administration to provide waivers to existing tankers with any of the following conditions:

- Tankers with stability instruments already installed on board capable of verifying intact and damage stability.
- Tankers operating on a dedicated service with a limited number of loading permutations.
- Tankers where stability verification is made remotely by means approved by the administration.
- Tankers loaded within an approved range of loading conditions.
- Tankers provided with approved limited KG/GM curves that verify compliance with all applicable intact and damage stability requirements.

It should be noted that the UK MCA defines significant variation as 'a deviation in mass in cargo or ballast tanks exceeding 1%, or a deviation in the centre of gravity exceeding 0.02 m'.

The author of this paper commented on the compliance options set out above, thus -

Option 1 – meets the current regulations, but it is not a practical operational restriction for many, if not most, tankers.

Option 2 – meets the current regulations, but the practical reliance on gaining these voyage specific approvals on a timely basis may be a burden to both the operator and to national administration and may limit operational flexibility.

Option 3 – meets the current regulations and many ships are currently operating effectively and safely using this method. For this type of system, the limiting KG (or required GM) curves versus draft are pre-developed and pre-approved and typically would be added to both the Stability Booklet and the loading computer. This would insure compliance with both the damage stability and intact stability requirements.

However, in practice these curves are complicated and expensive to produce and also have other application and enforcement concerns as noted in MSC 82/18/2, 'because of the need to consider all possible loading and damage combinations and any associated limiting provisions such as tank filling ratios. The resulting stability books may be complex and not easily applied by ships' officers and port state control inspectors'.

For these reasons Herbert-ABS said that in general, it did not recommend this approach.

Option 4 - The only practical solution is to fit an approved damage stability computer program on all tankers.

Herbert-ABS said that it agreed and believed that Option 4 provided a solution that will make it easy to demonstrate compliance with the damage stability requirements to the Port State authorities for any cargo, or ballast distribution.

With Option 4, the use of an approved computer program to verify that the non-standard loading condition, complies with the damage stability requirements, can be readily applied to new ship loading computers, or implemented as an upgrade to existing loading computer programs.

Loading computer programs with this feature are generally referred to as 'IACS Type 3 Loading Instruments', as specified in IACS URL 5 (applicable for newbuildings since July 2005), which define Type 3 as 'software calculating intact stability and damage stability by direct application of preprogrammed damage cases for each loading condition'.

Herbert-ABS's CargoMax loading computer with the direct damage stability (DDS) module fully meets the requirements of IACS URL 5, Type 3, for any type of tanker. It can demonstrate compliance with the damage stability requirements for any of the relevant regulations from IMO and national administration for any type of loading, or ballast loading. And it can also be used to demonstrate this compliance to Port State inspectors or vetting surveyors.

The company has had approved CargoMax systems with the DDS option fitted on board ships since 1996. This feature has been approved by class societies ABS, DNV, LR, GL, NK and BV.

Herbert-ABS claimed to have to the first ABS Class approved IACS Type 3 system, the first LR Class type approval for a IACS Type 3 System and a type approval from DNV GL. TO

**This article was taken from a White paper on direct damage stability, published by Herbert-ABS Software Solutions.*

Supporting the needs of Germany's tanker owners

ABS relocated its centre of Northern European regional marine operations from London to Hamburg in 2013.*

This move reflected a concerted effort by the class society to expand its presence in a region of strategic importance to the marine industry.

With over 40 offices in its network, the Northern European marine operations centre provides service support to client operations in 24 countries across the region. Of these, the German maritime sector represents a growing client base for ABS. Its clients include owners across all shipping sectors and increasingly in the offshore market.

ABS provides classification services to 28.1% of the German-owned tanker fleet with well-known clients in this sector including Ernst Jacob, V Ships, Hellespont and Columbia Shipmanagement. ABS employs 26 surveyors in Germany with stations in Haan and Augsburg in addition to the Hamburg office.

The Hamburg office allows convenient access to ABS' global resources, including its growing number of researchers and operational and environmental performance professionals.

Together with the broader industry, ABS is moving from a rule development process that was traditionally prescriptive to one where we are able to collaborate with industry and the regulators themselves. The application of a more risk-based approach to rule-making enables us to assess novel concepts and have fundamental methodologies in place to make an assessment and facilitate the approval of that concept.

Our core classification efforts are backed up by a programme of research and development on a global basis, driven from the ABS Corporate Technology department in Houston. This 'ecosystem of innovation' spans Brazil, Canada, South Korea, Singapore and China, enabling us to engage with industry and academia on joint development projects that anticipate future needs and developments.

Local tanker owners are increasingly looking to the Hamburg regional office as the gateway to vessel optimisation and performance verification services provided by the ABS Asset Performance Management (APM) group.

The APM Group, which combines the operational and environmental performance (OEP) team, the asset integrity performance (AIP) team and ABS Nautical Systems works across newbuilding and existing vessels, developing the concepts, tools and practices needed by clients to improve their vessels' operational efficiency, simplify regulatory compliance and improve safety.

ABS' Wolfgang Buttgereit.

ABS is also providing support to owners during the implementation of ballast water management systems. Whether seeking to comply with incoming global, or US Coast Guard rules, the ABS Environmental Solutions Group provides expert advice on the latest regulatory developments, as well as resources, to assist owners in selecting the equipment and systems that best fit their needs.

*This article was written by Wolfgang Buttgereit, Vice President, Northern European Region, ABS.

A Smart way to tanker efficiency

In this article, Peter Mantel, managing director of BMT SMART, a subsidiary of BMT Group, discusses the drivers that are pushing fuel efficiency to the top of the agenda in the tanker market and explains how fleet and vessel performance management systems can deliver on their promises.

Tanker owners, operators and charterers are currently facing unprecedented legislative and commercial pressures. In recent years, oil demand growth has been more than offset by high levels of fleet growth, with the global tanker fleet growing by a net 70.8 mill dwt, or 16.3%, from the start of 2010 until January 2014.

Moderate oil demand growth, combined with high tanker fleet growth resulted in a significant decline in crude tanker spot rates and secondhand tanker values from 2010 to the fourth quarter of 2013.

This price-softening and lack of demand in the market, mainly as a result of the economic recession, led to large numbers of vessels being laid-up in hot, or cold mode. Working tankers need to be operating as efficiently as possible, to ensure they deliver the optimum level of profitability. In reality, this equates to reducing operational costs wherever practicable.

The three major costs in tanker operation are crew, bunker fuel and drydocking for maintenance[1]. As crew numbers are governed by best practice and legislation, key savings must be made by ensuring that fuel usage is as economical as possible and timing drydocking for maintenance when most beneficial, in terms of performance and reliability.

Bunker fuel costs often account for up to 60% of total operating costs, so the assessment of fuel consumption is quickly becoming an integral part of tanker owners, operators and charterers operational strategies - having an understanding of overall fuel efficiency should be high on the agenda.

The introduction of the IMO Energy Efficiency Design Index (EEDI) and Ship Energy Efficiency Management Plan (SEEMP) guidelines were driven by a desire to reduce CO_2 emissions, but greater efficiency should also lead to cost savings. But how is vessel efficiency to be calculated with the degree of accuracy required to make it more than just a best guess?

Smart data

The key to understanding vessel efficiency is the ability to collect smart data by accurately measuring all the different parameters relating to energy efficiency. Parameters that influence a tanker's energy consumption include; technical efficiency, state of maintenance, prevailing weather and sea conditions and operational factors, such as load and trim conditions.

Using SMARTSERVICES, data from existing vessel systems is collected on board and combined with external environmental data including wind, waves and current, and further processed using the system's unique coefficients and derived values to analyse many different performance parameters. SMARTSERVICES automatically monitors vessel performance and visualises key indicators and trends using intuitive, interlinked on board and onshore applications. All parameters are measured through sensors installed during the initial fit-out or retro-fitted during routine maintenance.

Vessel performance monitoring equipment can also assist in compliance with emissions regulations. In the mid-1990's, estimates indicated that the shipping industry's share of global CO_2 emissions could increase 20-30% by 2050. In response, the IMO introduced a raft of new regulations including the ship pollution rules contained in MARPOL 73/78. Since October 2013, every ship visiting French shores must report its CO_2 emissions for their particular voyage.

Stringent requirements

Emission Control Areas (ECA) for the US Caribbean, including Puerto Rico and the US Virgin Islands come into force this year. Worldwide, it is likely that increased regulatory requirements to reduce CO_2, NOx, SOx and other effluents, as well as the general environmental impact of ships, will lead to even

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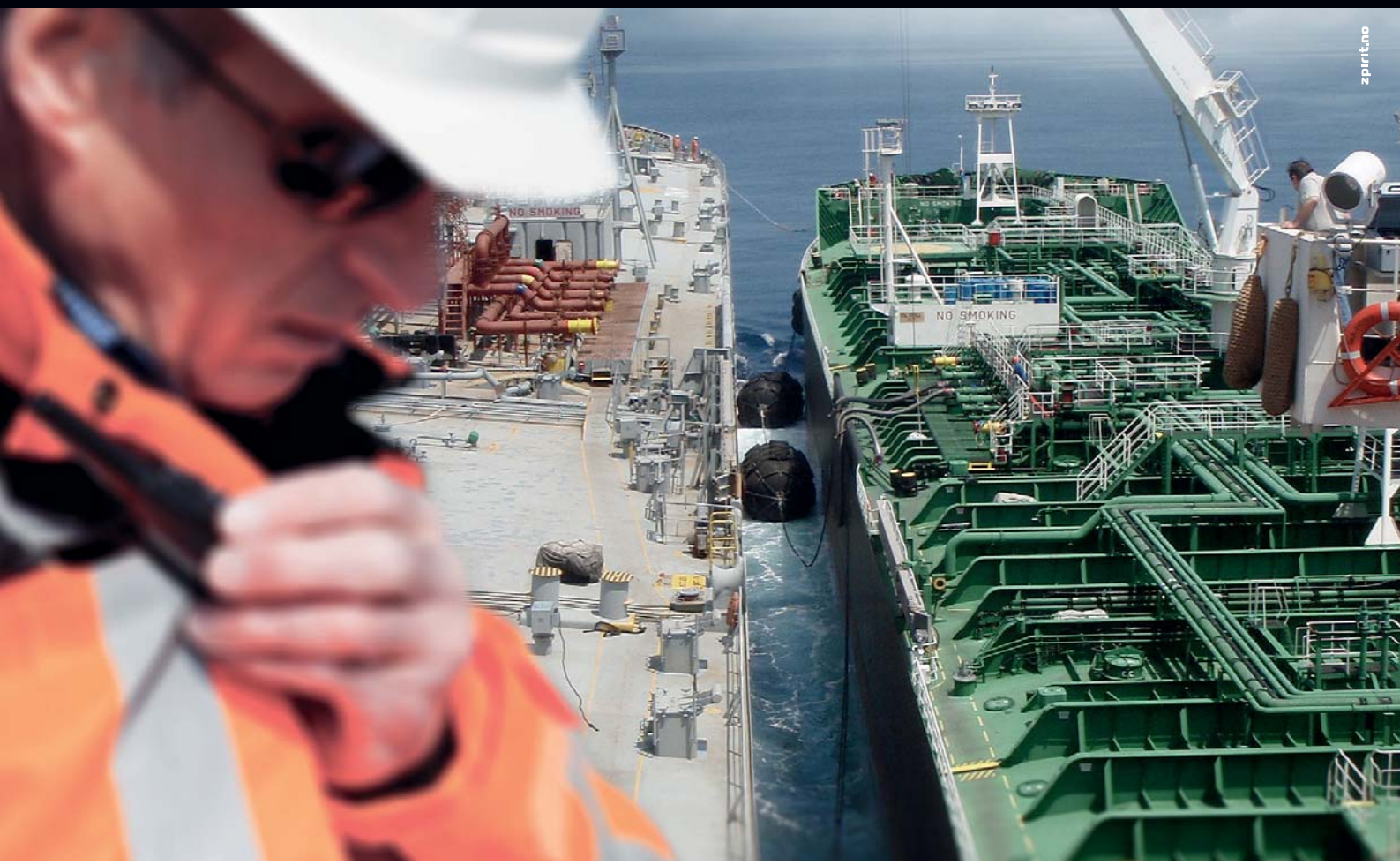

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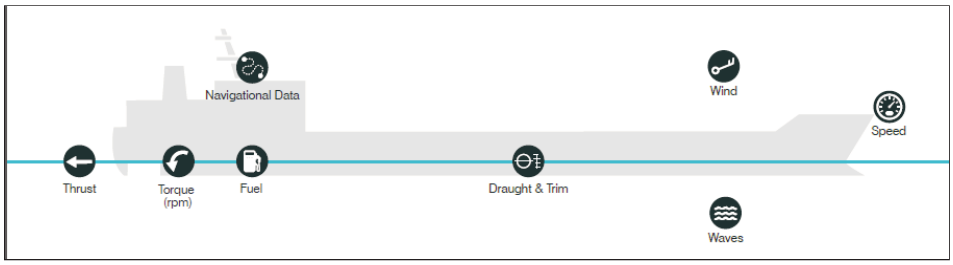

Parameters that influence a tanker's energy consumption include; technical efficiency, state of maintenance, prevailing weather and sea conditions and operational factors, such as load and trim conditions.

more stringent recording and reporting requirements.

Measuring and recording tools, such as SMARTSERVICES not only help address compliance issues, but also help tanker owners, operators and charterers to manage the restrictions on CO_2, NOx and SOx production, within the context of the bigger commercial picture.

The importance of deploying an independently validated system cannot be overstated. When measuring, validating and benchmarking vessel performance, there are a wide range of stakeholders within the supply chain, each with their own vested interests. It's far too easy for a vested interest to become a conflict of interest.

The most effective way of dealing with this eventuality is to ring-fence the measurement and validation process, keeping it completely separate from any other consultancy, or equipment supply arrangement.

Demand for fleet and vessel performance management (FVPM) is increasing, as growing numbers of tanker owners and contractors realise the benefits. The multitude of pressures on the global maritime industry means that tanker owners and contractors can no longer afford to ignore the performance of their fleet. However, there is still scepticism within certain elements of the shipping community and some tanker owners, operators and charterers are still wary of the value a monitoring system can deliver.

Perhaps this is understandable having been used to an environment where Chief Engineers produced miracles on a regular basis, armed only with the data from dials in their engine rooms.

However, the industry is changing and there is a growing need to deliver stakeholder transparency on top of commercial and regulatory considerations. Cargo owners, charter companies, banks, investors and insurance companies are all increasingly demanding evidence of environmental and operational efficiency commitments when making contract decisions. Tanker owners, operators and charterers must be able to provide independently validated performance results to satisfy their stakeholders.

Arguably, the greatest value that performance monitoring tools such as SMARTSERVICES can deliver becomes clear when one looks beyond the benefit to a single tanker on a single voyage. Once multiple data-sets become available from multiple vessels over a period of time, the information can be used to benchmark performance and drive improvements across a fleet. Key indicators and trends that could lead to a positive change for future voyages can be leveraged, while single parameters causing a drop in efficiency can be identified and addressed. Drydocking for maintenance and renewal of antifouling can be timed to take place just before any rapid drop-off in vessel performance, highlighted by historical efficiency data.

Looking to the future, it is not unrealistic to envisage a time when all merchant vessels are equipped with a fully integrated bridge where performance parameters and emissions data is displayed alongside navigation systems and thruster controls.

Voyage planning can already be checked against efficiency and emissions requirements to identify the most appropriate routing, while performance management reports can be

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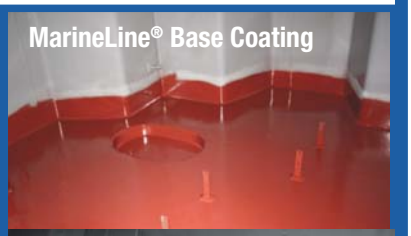
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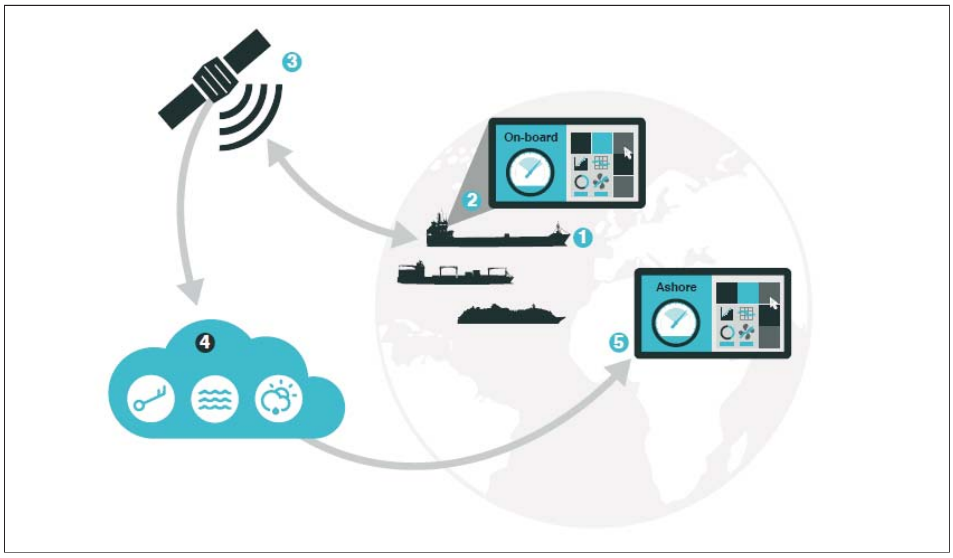

All parameters are measured through sensors installed during the initial fit-out or retro-fitted during routine maintenance.

Demand for fleet and vessel performance management (FVPM) is increasing.

produced automatically. Such reports cover everything from environmental impact, hull and propeller efficiency and bunkering factors through to crew data, scheduled maintenance results, economic modelling and SEEMP/legislation.

The combination of more rigorous legislation and harder economic conditions has led to tanker owners and operators needing to have easy access to the emissions and performance data for their vessels. Yes there is still scepticism, but the tide is turning. The overall decline in tanker freight rates, both in the crude and product tanker markets, coupled with high bunker prices, should encourage shipowners to reduce their operating costs considerably and in particular, bunker consumption.

This is expected to continue into the future, on the one hand due to new energy efficiency regulations and on the other hand due to the fact that tanker companies traditionally maintain very high technical and operational standards for their vessels.

It is therefore expected that the tanker market will drive the shipping industry's move towards increased energy efficiency. The benefits of being able to use real-time data to dynamically manage the performance of a fleet of vessels, or choose to analyse and review data over a period of time thus making informed operational and maintenance decisions, are hard to ignore. TO

Footnote-
1 - Moore Stephens OpCost 2013.

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Shorter bulb for operational speed and draught

Sea waves have a significant impact on the vessels' fuel consumption and are therefore one of the ship designers' biggest challenges.*

When a vessel is sailing, waves are generated around the vessel due to its speed. This affects fuel consumption, as the vessel uses energy on generating the waves and because the waves increase the propulsion resistance of the vessel.

Not even the most skilled ship designers can prevent wave generation. But by altering the vessel's design and further optimising it, it is possible to minimise the braking effect of wave generation against the vessel.

NORDEN's two new Handysize product tankers, *Nord Geranium* and *Nord Gardenia* built by Guangzhou Shipyard International (GSI) in China, both have an optimised design with regard to counteracting the effect of wave generation.

Compared to the eight Handysize product tankers, which the southern Chinese yard delivered to NORDEN between 2006-2009, the latest two are both fitted with a 3-4 m shorter nose, or bulb. Not because there was something wrong with the design when the original vessels were constructed, but ship designers keep getting better at optimising vessel design.

The bulb plays a central role when it comes to counteracting the effect of the vessel's wave generation as the bulb generates its own wave system around the vessel.

Wave systems offset each other "The observant reader will probably now think that if one wave system creates resistance, then two wave systems must create double as much resistance. But because the bulb's wave system is generated suitably far in front of the hull, the bulb's wave system with its crest and trough will be in opposition to the hull's wave system.

"This means that the trough in the bulb's wave system comes where the crest in the hull's wave system is generated. Thereby, the two wave systems offset each other – more or less. At any rate, the bulb's wave system reduces the braking effect of the hull's wave system significantly. The extent of the reducing effect of the the bulb's wave system depends on how well the design of the bulb fits the vessel's actual speed and draught," explained NORDEN's senior newbuilding manager, Alex Hjortnæs.

Right steaming

In recent years, vessels – drycargo, tanker and container vessels – have slowed down for commercial reasons. NORDEN calls this right steaming and it means that the bulb has to be shorter than before to be able to create a wave system, which is in opposition to that generated by the hull. With a bulb of the same length as earlier, the trough of the bulb's wave system will come too far ahead to meet the crest of the vessel's wave system when right steaming.

When GIS built NORDEN's eight Handysize product tankers, it was very common that the bulb's length and design in general was optimised in accordance with the service speed and design draught – ie the speed and draught which the yard's designers considered most likely.

But it is one thing what the yard designers consider to be likely speed and draught once the vessels are in operation and another thing is the actual speed and draught of the vessels in operation.

"In realisation that many vessels only rarely sail with exactly the speed and exactly the draught which the yards' designers have determined – typically the vessels sail at lower speed and less draught – the yards have started to optimise the bulb and the hull in general to a so-called operating profile.

"It is a combination of the speed and draught, etc representative of the market in which the vessel will be operating in and which in contrast to the old service speed and design draught, reflects practice and thus the real world," said Hjortnæs.

Nord Geranium is in operation and *Nord Gardenia* will follow shortly. "We are now looking forward to being able to measure the effect of the shortened bulb on the vessels' fuel consumption," Hjortnæs concluded. TO

**This article was taken from NORDEN News.*

> "It is a combination of the speed and draught, etc representative of the market.....design draught, reflects practice and thus the real world,"

Alex Hjortnæs, Senior Newbuilding Manager, NORDEN

Integrating energy savings and engine protection

Though fuel-saving practices such as slow steaming are widespread, energy efficiency continues to be a pressing concern. Vessel fuel bills remain high – and will likely become even higher for those sailing in ECAs after January, 2015.

Catastrophic engine damage due to cat fines is also on the rise, along with safety worries related to multi-fuel operation. Yet in the face of these complex and interrelated issues, the Alfa Laval adaptive fuel line offers new levels of savings and protection, the company claimed.

Fuel costs, emission legislation and cat fine difficulties are all deeply intertwined. With HFO already at a premium, everything possible is being done to enable slower steaming and reduce fuel consumption. Meanwhile, emission legislation is forcing the use of even more expensive distillates, as well as the use of low-sulphur HFO. The fact that the latter has a higher average cat fine content can be tied to a growing number of cat fine attacks, which have increased despite the revision of ISO fuel specification 8217 to a 60 mg/kg Al+Si limit.

"Part of what we're seeing is a consequence of the effort to curb emissions, which is making traditional fuel cleaning even more demanding," said Niclas Dahl, Alfa Laval market unit manager, marine energy. He referred to a recent study by Man Diesel & Turbo's PrimeServ, in which cat fines had a proven role in 84% of 226 investigated cases of poor engine cylinder condition. "These cat fine attacks are an energy issue, as well as a safety concern, because the wear deteriorates engine efficiency even if it doesn't lead to catastrophic failure."

"When it comes to the fuel line, energy efficiency and protection are often two sides of the same coin," said Dahl. "Our R&D has therefore focused on using the synergies that exist. Through a combination of new thinking and new technology, we've created a truly adaptive fuel line that saves energy as well as the engine."

Alfa Laval's Niclas Dahl.

There is much that can be done to optimise individual fuel line components, such as choosing separators with Alcap functionality. Much can also be done with the fuel line construction to prevent cat fine attacks, such as ensuring that tank floors are slanted and that return pipes extend from the tank bottom rather than the top. According to Dahl, however, "Finding large-scale energy benefits and really maximising protection requires looking further than traditional component roles."

Alfa Laval's recently launched FCM One booster, Dahl said, is an excellent example of such thinking. "The FCM One goes beyond traditional booster capabilities, including those of our original fuel conditioning module," he explained. "It works with multiple fuels, reacts to multiple parameters and handles multiple levels of information, which gives it a much broader influence on the fuel line as a whole."

The Alfa Laval adaptive fuel line saves

energy and improves protection by four distinct means- feed optimisation, system supervision, multi-fuel management and waste fuel recovery.

Since the adoption of slow steaming, most vessels spend little time at full engine load. Nonetheless, fuel lines are constructed and operated as if full load were the norm. "This is an opportunity missed and not only because feed pumps and separators that run on full consume unnecessary energy," said Dahl. "Decreasing the flow rate through the separator increases the time the fuel spends within it, which improves the removal of particles."

This is the principle utilised by FlowMate, a new Alfa Laval system that adjusts the flow of fuel to match the engine load. "By using automatic control and variable frequency drives to reduce the flow at partial load, we make use of the available synergy," Dahl said. "The principle is obvious. Why use more energy for fuel cleaning when using less energy will mean even better cat fine removal?"

In addition to FlowMate, the Alfa Laval adaptive fuel line has dedicated heater control that keeps the fuel's temperature at the recommended 98 deg ± 2 deg C. "This parameter is surprisingly overlooked on board," said Dahl. "Without proper control, the fuel temperature can easily drop to 85 deg C, which necessitates a 40% flow reduction to maintain separation efficiency."

Even when the flow is optimised and separation efficiency is high, spikes in cat fine

Alfa Laval's adaptive fuel line.

levels are impossible to rule out. In rare cases they may be caused by off-spec fuels, though they are more likely to occur when latent cat fines in the tanks are stirred up by rough seas. Preventing such attacks from damaging engine cylinders is essential, because damaged surfaces reduce combustion efficiency and may eventually result in engine failure.

To keep cat fines from entering the engine, another new system is incorporated into the Alfa Laval adaptive fuel line - Catguard. This measures cat fine levels at several pre-engine sampling points, warning of any elevation. Such real-time measurement enables crews to take immediate countermeasures, as well as to trace the root causes of the problem.

A similar function is provided by the FCM One, whose engine-specific monitoring of fuel consumption takes into account the pulsations of the fuel injection system. "While not a measurement of engine efficiency per se, the monitoring of fuel consumption quickly indicates when efficiency losses occur," said Dahl. "Like Catguard, it allows immediate action to be taken and root causes to be traced."

The FCM One has yet another important role in the adaptive fuel line, especially for vessels that will sail in ECAs. When multiple fuels are used on board, it safeguards fuel changeover and enables automatic blending for an economical match of a given sulphur target.

"Multi-fuel operation creates difficulty for operators, since residual and distillate fuels have very different characteristics," said Dahl. "The changeover between fuels must be well controlled, especially when it comes to viscosity, or there will be alarms and delays that result in more burning of expensive distillate."

One System

Sophisticated automation and temperature control are central to an energy-efficient changeover. The FCM One uses one controller, a single algorithm and integrated cooling to keep viscosity within a tight range – even when changing between different fuel blends. "The FCM One puts everything into one system, including the option of an electronic fuel record book to prove ECA compliance," said Dahl. " That means uninterrupted transitions where less distillate is consumed, even when there are changes in engine load."

Feed optimisation, system supervision and multi-fuel management – combined with individually optimised components – create a fuel line that truly adapts to changing conditions. This in itself saves a great deal of energy, even as it provides better protection for the engine.

What remains is to recoup the small losses that occur at various points in the system, which account for 0.5 to 2% of a vessel's total fuel consumption. In this respect, PureDry is the crown jewel of the Alfa Laval adaptive fuel line, as it allows virtually all of this oil to be recovered with ISO 8217 quality. At present, PureDry is claimed to be the only equipment capable of recovering the HFO fraction of waste fuel oil in accordance with MEPC.1/Circ.642.

"PureDry is a unique and long-awaited opportunity for shipowners and operators, since it lets them get the maximum amount of energy from the fuel they bunker," said Dahl. "All that remains is bilge-quality water and a tiny fraction of super-dry solids, because everything else is returned as reusable fuel." TO

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Keeping it simple

The past few decades have seen many technical advances in marine tank gauging technology aimed at delivering greater efficiency and safety.

Solutions range from single transmitters to more complex radar-based measurement systems, which can require a substantial outlay upfront. When it comes to cargo measurement - however, it is possible to take a simpler approach and still meet critical needs, claimed Mark Jones of PSM.

As marine specialists, PSM works with ship designers, owners and operators, maintenance and repair companies to deliver the best possible technical solution to specific tank level measurement needs using the latest instrumentation, software and communications technologies.

Modern tank gauging systems are designed to be flexible, capable of handling a range of fluid types from fuel oil and lubricants to hydraulic fluid and bilge, or ballast water and applications – to include both process control and inventory management.

Specialists such as PSM have been influential in moving the industry away from historical methods, such as bubbler systems that are inaccurate with low reliability and high maintenance costs.

Suppliers have developed a range of alternatives to manage individual aspects of inventory management from custody transfer to leak control and reconciliation. These modern systems use the latest instrumentation, software and communications technologies to deliver the high degree of reliability and accuracy required.

The complexity of the system required will depend on the specific process involved. Where custody transfers are involved, there may be specific legal certification requirements that need to be met and installed systems will require official approval as being fit for purpose. Absolute accuracy is also paramount in the correct assessment of taxes, duties or royalties for fiscal billing purposes.

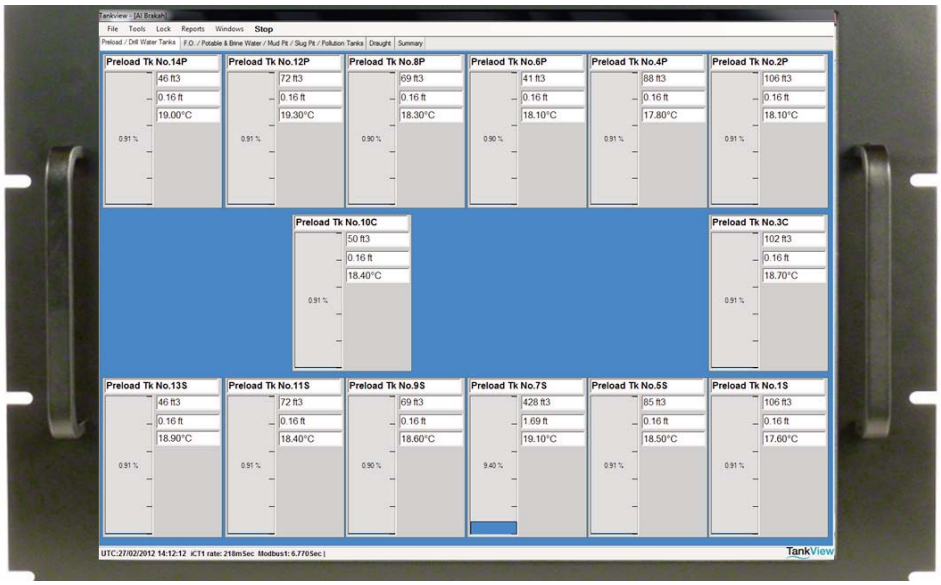
Many of the systems currently available for marine tank gauging focus on this higher end of the market, with specifications typically including complex combinations of radar level transmitters, temperature profiling probes and advanced calculation software.

As specialists with over 30 years' of global marine experience, PSM became aware of a need in the marketplace for a simplified system to handle general inventory control requirements, which while capable of delivering a high degree of accuracy and reliability to enable the recording of cargo movements, was simpler to operate and cheaper to install.

Once such installation was a major shipyard in Turkey, which turned to PSM for assistance in sourcing a simplified option for its newbuild 600 dwt lubeoil barge. PSM designed and specified a system based on its TankView measurement and display software in conjunction with ICT 1000 hydrostatic level transmitters to deliver the required degree of accuracy, while reducing the initial cost of supply and installation.

The ICT 1000 is a smart liquid level transmitter, programmable for measurement range, functionality and diagnostics via RS-485

A Windows PC runs the PSM TankView software to provide the display and control unit.



TV SS panel mount PC.

modem and supplied software configuration tool. Manufactured from 316 stainless steel to withstand the toughest operating conditions, it is fully supported and protected against overload and shock pressure conditions.

The ICT 1000 transmitters were fitted to 12 tanks. These were connected to the display and control unit using PSM RFM connection modules to form a Modbus communication loop. This digital architecture provided 0.1% measurement accuracy while at the same time reducing cable and installation complexity.

These factors were important drivers in reducing overall installation and commissioning costs, as well as ensuring build deadlines were met.

One level and one temperature transmitter were installed per tank, plus two additional level transmitters for heel and trim measurement to correct the tank level measurement for vessel orientation and draught.

A Windows PC running the PSM TankView software package provided the display and control unit. This was factory configured prior to installation to suit the specific application by defining the geometry of the tanks as well as the density/temperature characteristics of the products via API tables.

Each cargo type is available to the crew in a library of product choices, providing inventory readings in temperature corrected volume and mass units.

In additional, low and high level alarm points were designated for each tank within the system which also provides historical records of cargo level movement using its integral data logging ability.

The availability of a simplified solution that is easy to install, whether newbuild, or during retrofitting, should see a significant increase in the number of shipbuilders and operators opting to move up from more basic systems of measurement to a more technologically-driven approach driving up the benchmark for systems performance and helping to improve profitability and visibility.

Application scope for vibrating fork level switch expanded

Emerson Process Management has expanded the application scope for its patented Rosemount 2120 range of vibrating fork point liquid level switches.

This level switch is now certified for SIL 2 functional safety with SIL 3 capability enabling the device to meet the most demanding safety application requirements.

The 2120 range is now approved for marine applications by ABS and Emerson has also added an expanded choice of process connections for greater installation flexibility.

For safety critical applications, SIL 2 certification is now available for the 2120 with NAMUR and 8/16mA electronic outputs. There are five plug-in electronic outputs available providing a choice of switching functions. The SIL 2 certification extends the time between proof tests and allows users to avoid extra shutdowns for safety testing.

The 2120 also offers an expanded choice of process connections. In addition to the new 2 inch NPT process connection, the switch is now available with Mobrey A and G flanges enabling compatibility with mechanical float switch process connections.

For marine applications, such as oil and ballast control and HFO blending, the 2120 is now approved by ABS – expanding on the existing GL approval.

The simplicity, ease of use and reliability of the Rosemount 2120 vibrating fork switch makes it a popular choice for high and low level alarm and pump control duties in wide range of process and marine applications, the company claimed. TO

Rosemount 2120 vibrating fork point liquid level switch.

Commercial pressure is strangling the chemical tanker market

I have been amazed at the level of support I receive from those owners/operators who are clearly struggling to meet the ever increasing standards being asked of them.*

However, when questioned, the response from the charterers/shippers is always the same and that is the "quality needs of the customers", which is quite clearly the driving force behind the increasing stringency of the pre-loading inspection specifications.

It is accepted that the quality of the shipped product has to be the primary objective. But when wall wash inspection specifications are now routinely stricter than the quality of the loaded cargo, or when the wall wash inspection is carried out with an aggressive, penetrating, water soluble solvent prior to loading a non-aggressive, non-penetrating, water insoluble cargo, one has to question the suitability of the process and whether it is relevant to the quality of the loaded cargo.

Passing the wall wash does not guarantee that the loaded cargo will meet any predetermined quality specifications but until this is understood, commercial pressure will continue to squeeze the vessels to clean to higher and higher standards, which costs money and negatively impacts the environment.

Ten years ago, there were only a handful of cargoes that demanded a wall wash inspection, but today the list is out of control. Just recently, I was involved with a vessel loading a cargo of Banole, an Annex I cargo, group 33 in the USCG list, ('Miscellaneous Hydrocarbon Mixtures'); indeed MILBROS calls the product a lubricating oil, which I agree with, based on the chemical properties.

When asked, the charterers said that the cargo tanks would be wall washed with the Banole cargo itself and tested for flash point, to meet a minimum standard of 80 deg C. This is absolutely ludicrous, for too many reasons to list, not least, did the charterers honestly believe that non-specific volatile residues on the surface of the cargo tank bulkheads would still be present when the cargo tanks were cleaned and gas freed, let alone in a sufficient amount to depress the flash point of a lubricating oil cargo?

General view aft towards bulkhead.

This astonishing lack of understanding sadly highlights the future of the tanker business and the reality that tanker owners/operators will have to consistently and unnecessarily clean cargo tanks to a level of cleanliness that is just not required to load the vast majority of cargoes, with the consequences not only being felt by the owners/operators but also the environment.

In the last article I wrote for *Tanker Operator*, it was noted that each hour of boiler operation on a chemical tanker consumes approximately 0.75 tonnes of HFO, which in turn produces about 2.5 tonnes of CO2 to the atmosphere. Similarly, each drum of cleaning chemical consumed is ultimately discharged to sea, which is perfectly legal and acceptable, assuming the cleaning chemical is IMO approved, but if using cleaning chemicals does not guarantee that the next cargo can be loaded on specification, why should the vessel use cleaning chemicals in the first place? This is less of a cost issue compared to the long term environmental impact.

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If we are talking about the increased number and frequency of irrelevant wall wash inspections prior to loading chemical and oil cargoes (another recently encountered example, cleaning to hydrocarbon free methanol wall wash prior to loading fuel grade ethanol containing between 2-5% gasoline as a denaturant) and reluctantly accepting that the process is unlikely to change without a more thorough understanding of the process itself, the following facts should perhaps be considered.

The wall wash is a random inspection process and can only be carried out from accessible areas, typically the lower sloping bulkheads as marked in the picture on page 50. Consider the relevance of the wall wash areas to the fully loaded tank.

Furthermore and perhaps one of the most over-looked parts of the wall wash inspection, is the volume of solvent used and the area of the cargo tank that is washed. Industry standards and practices dictate that one square metre of the cargo tank should be washed using 500 ml of solvent, but very often neither the volume of solvent nor the surface area are measured, but this has a massive impact on the final wall wash results.

If it is assumed that there is a fixed concentration of contamination in any given square metre of the cargo tank, for the sake of this discussion we can call it 10 mg, it follows that if this area is wall washed with 1 litre of wall wash solvent, the concentration of contamination in the wall sample will be 10 mg/L.

However, if the volume of solvent recovered is 500 ml, the concentration of contamination increases to 10 mg/500 ml or 20 mg/L. Similarly, if the volume of solvent recovered is 250 ml (which is very common), the concentration of the contamination in the wall wash sample will increase to 40 mg/L.

Fundamental error

Which answer is right? The difference could be the difference between the vessel being accepted and the vessel being rejected, but actually the concentration of the contamination on the surface of the cargo tank does not change. This is fundamentally wrong.

If we now assume that a 1,000 cu m cargo tank has a surface area of 1,000 sq m, we can easily calculate that if each square metre of the cargo tank was wall washed with 500 ml of solvent, the total volume of solvent recovered would be 0.5 cu m. All the contamination in this sample would then be diluted into 1,000 cu m giving an overall dilution effect of 2,000 times. In other words, the wall wash sample will be diluted 2,000 times in the fully loaded cargo tank.

With all of this in mind, how can it be reasonably justified that the quality of a wall wash sample should be stricter than the quality of the fully loaded cargo? At best the wall wash inspection is an indicator for cargo tank suitability - at worst, it is strangling tanker operations with no positive benefit.

There are now viable alternatives to the wall wash inspection, for example the analysis of washing water, which is a method that has been used by BP as a replacement for the wall wash inspection for a number of years now with good success.

The author is also currently working on a number of different projects with owners/operators looking at the feasibility and suitability of washing water analysis as a means of replacing the wall wash inspection. The initial findings are extremely positive. TO

**This article was written by Guy Johnson, director, L&I Maritime (UK); Email: guy.johnson@limaritime.com*

> "Why should the vessel use cleaning chemicals in the first place?"

COATINGS

Silicone curative introduced for top coats

SiVance, LLC, a subsidiary of Milliken & Co, has introduced the patented SiVance C1008 curative, a new silicone curative that is claimed to significantly improve the durable flexibility of epoxy polysiloxane protective top coats in marine and other applications, without sacrificing weather durability.

The development of this new curative technology solves a major challenge common to epoxy polysiloxanes: brittleness and cracking that can develop over time as the coating cures, the company said.

"Our new C1008 curative is a much-needed solution for increasing the performance and toughness of protective epoxy polysiloxane topcoats used in highly corrosive environments," said Jeff Jones, SiVance business development director. "Regular maintenance on marine applications and infrastructure can be very time consuming and costly, but protective coatings made with SiVance's C1008 Curative help to combat this challenge."

In addition to demanding marine top coat applications where resistance to seawater, ultraviolet light and chemicals is critical, SiVance's new technology is designed for coatings for other applications. It utilises a proprietary molecular structure that provides enhanced compatibility in epoxy systems.

The product is fully miscible with hydrogenated bisphenol-A epoxy resins. Its compatibility with other epoxy resins is possible with the use of solvents (methyl ethyl ketone (MEK), xylenes, etc), or reactive dilutents.

It is available globally in commercial quantities and is currently registered under the Toxic Substances Control Act (TSCA) and the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) regulation, with other global approvals in progress.

The company told *Tanker Operator* that epoxy polysiloxane coatings containing C1008 could be applicable to the tanker sector, as currently, epoxy polysiloxane coatings are already being used in this application.

In particular, these epoxy polysiloxane coatings are alternatives to polyurethane top coats – so anywhere that polyurethane top coats are used today could be target applications (basically any exterior coating above the water line - where resistance to UV and weathering is important).

At present, shipping companies are evaluating the product, SiVance said. TO

TANKEROperator

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

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about meeting oil major requirements
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