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Contents

Front cover

Thomas Gunn has teamed up with Reg4ships to provide a complete bridge solution for the navigator, offering Regs4ships digital maritime regulations incorporated into its streamed Voyager navigational data management system. Regs4ships delivers a vessel electronic documentation covering flag state requirements, EU legislation, ILO conventions and IMO output.

Energy and fuel efficiency top of the agenda

Fuel efficiency is on everybody's lips today. For example, at a Germanischer Lloyd presentation in November, COO Torsten Schramm said; "Fuel efficiency is top of GL's agenda."

The class society said that energy demand was forecast to rise by nearly 50% in the two decades up to 2030. The impact on shipping will lead to energy efficiency and energy distribution becoming key topics, if they are not already. They will require multiple, large R&D projects.

For their part, rivals Lloyd's Register and Det Norske Veritas recently completed an IMO-commissioned study into the impact of mandatory energy efficiency measures for shipping.

This showed that implementation of the measures will lead to significant reductions of greenhouse gas (GHG) emissions from ships, specifically reductions of carbon dioxide (CO2), resulting from enhanced fuel efficiency.

The study found that, by 2020, an average of 151.5 mill tonnes of annual CO2 reductions are estimated from the introduction of the measures, a figure that by 2030, will increase to an average of 330 mill tonnes annually. CO2 reduction measures will result in a considerable reduction in fuel consumption, leading to a significant saving in fuel costs to the shipping industry.

The study, *Assessment of IMO Mandated Energy Efficiency Measures for International Shipping,* was unveiled on 14th November ahead of the forthcoming United Nations Climate Change Conference (UNCCC), to be held in Durban, South Africa, from 28th November to 9th December, 2011.

IMO will report to UNCCC on the adoption of mandatory technical and operational measures to reduce GHG emissions from shipping. Amendments to MARPOL, Annex VI *Regulations for the prevention of air pollution from ships,* added a new chapter on *Regulations on energy efficiency for ships*. The regulations will apply to all ships of 400 gt and above and are expected to enter into force on 1st January 2013.

EEDI mandatory

This new chapter makes mandatory the Energy Efficiency Design Index (EEDI), for new ships, which, in essence, requires new ships to be designed to be more energy efficient (and thereby release less GHG). The regulations are non-prescriptive: as long as the required energy-efficiency level is attained, ship designers and builders are free to use the most cost-efficient solution, or solutions for each particular vessel.

The new regulations also make mandatory a Ship Energy Efficiency Management Plan (SEEMP) for all vessels. This is a plan which sets out, how energy savings can be made on an individual vessel. There are a variety of options to improve efficiency – speed optimisation, weather routing and hull maintenance, for example – and the best package of measures for a ship to improve efficiency differs to a great extent depending upon ship type, cargo, route and other factors. The new regulations make such a ship-specific plan mandatory thereby encouraging the shipping industry to review its practices in a systematic way to find the best balance.

Among the key findings, the report found that:

- By 2020, an average of 151.5 mill tonnes of annual CO2 reductions are estimated from the introduction of the EEDI for new ships and the SEEMP for all ships in operation, a figure that by 2030, will increase to an average of 330 mill tonnes annually.
- Compared with Business as Usual (BAU), the average annual reductions in CO2 emissions and fuel consumed are estimated between 13% and 23% by 2020 and 2030 respectively.
- CO2 reduction measures will result in a significant reduction in fuel consumption, leading to a significant saving in fuel costs to the shipping industry, although these savings require deeper investments in more efficient ships and more sophisticated technologies, as well as new practices.
- Significant reduction of CO2 emissions from ships due to EEDI and SEEMP regulations is foreseen to 2050 with emission reduction due to SEEMP likely to be realised more rapidly than that for EEDI, as the effect of EEDI will occur only as and when older, less efficient, tonnage is replaced by new, more efficient tonnage.
- The estimated reductions in CO2 emissions, for combined EEDI and SEEMP, from the world fleet translate into a significant annual fuel cost saving of about $50 bill in 2020 and about $200 bill by 2030; using fuel price increase scenarios that take into account the switch to low-sulphur fuel in 2020.
- Mandatory application of EEDI will drive more energy-efficient ship design and realise the CO2 emission reduction potential associated with technical innovation and the use of lower, or non- carbon fuels.
- The mandatory use of SEEMP based on current IMO regulations will provide a procedural framework for shipping companies to recognise the importance of the operational energy- saving activities. It will significantly boost the level of awareness and, if implemented properly, will lead to a positive cultural change.
- Investigations show that ship hydrodynamic and main engine optimisation will bring about energy-saving opportunities of up to around 10% with no significant additional cost of shipbuilding.

The IMO regulations represent the first-ever mandatory energy efficiency measures for an international transport sector and their adoption followed several years of work. Work is now progressing on market-based measures, with intensive work to review a number of different proposals, submitted by Governments and observer organisations. TO

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Trying to boost the assets

In the next few weeks, we could hear of two tanker concerns throwing in the towel - one voluntarily and the other by entering Chapter 11 protection.

The major problem facing many companies today is that their asset values do not come up to anywhere near book values.

Everyone agrees the industry has got to grin and bear it for a little while longer. At a round table discussion organised by Wärtsilä in Holland at the beginning of November, the general concensus of opinion was that there would be little market pick much up before 2014.

Gibson Research has tried to analyse the situation today in one of the brokers' weekly reports. Outlining the history of the current crisis, Gibson said that tankers took the hit a little later than the drycargo market following the crash in the autumn of 2008 and were subsequently cushioned by the temporary floating storage requirement, which provided considerable support particularly through the winter/spring 2009/10.

As the crisis unfolded, other participants including banks and shipyards were prepared to play their part, as owners searched to mitigate their exposure to the crisis. Those owners lucky enough to have little or no debt were able to draw upon cash reserves built up during the high markets prior to the 2008 crash.

So where are we at today? Are the banks losing patience with the shipowners? Virtually every day we see financial results reported, which indicate that the situation is worsening. It is not fresh news that the world economic growth is much slower than first anticipated, but the shipping markets are among the first in the firing line for the hit.

As the crisis deepens for tankers, we are seeing even the best run 'blue chip' companies being forced to sell assets at considerably less than book value. Is it any wonder that the banks and other financial institutions are extremely nervous with asset values falling almost daily?

The banks themselves have come under closer scrutiny, with top shipping banks downgraded by credit rating agencies, such as Moody's. To put it mildly, the rapid depreciation of asset values must be giving the banks a massive headache. Some of the banks are actively seeking to offload their shipping portfolios at the same time as owners are trying to refinance debt, or raise capital. Others have already fallen foul of the banks and are trying to protect themselves from creditors and possibly liquidation, which could result in more fire sales.

In October, a German bank forced the sale of a 12 year old Suezmax for a reported $24.5 mill, a tanker which had been purchased by a German KG for $86 mill just four years earlier. This is just a typical example of many recently enforced sales, Gibson said.

But what other choices do owners have? Saga Tankers decided to 'throw in the towel' completely and exit the market selling off all four of their VLCCs (one 1995 built & three 2000 built). Some other major players have decided to offload 'surplus' tonnage in order to raise cash to keep things ticking over.

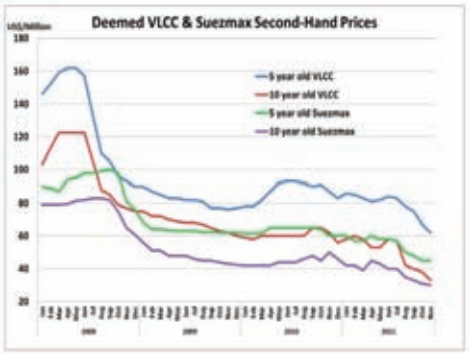
Owners will need the support of the banks more than ever during this prolonged crisis. The continual sale of assets at considerably below book value will only undermine the investment owners have made in recent years.

However, as long as the current crisis goes on, we will continue to see more arrests, enforced sales and even greater downwards pressure on asset prices, Gibson said.

Products – a bright future?

In an earlier report, Gibson said that there is one sector, which could be set for a brighter future – products, as on the back of several market developments, the MRs are now one of the most talked about in the shipping industry.

The reason for the slight optimism is that the MR market collapse in 2008/09 led to a dramatic reduction in ordering activity, as just 48 new MR tankers (25,000-55,000 dwt) were contracted in 2009 and only 36 in 2010. Although there has been a moderate increase in MR ordering between March and October this year, MR orders are still below the levels seen during 2000 to 2008.



Source - Gibson Research.

As a consequence, a more balanced orderbook has developed. Currently, new MR orders are equivalent to just 11% of the existing fleet. This is in stark contrast to the Suezmax and VLCC orderbook, which combined stands at some 25% of the trading fleet. The big attraction towards MRs is: -

- There are relatively few new tankers left for delivery;
- The single hull vessels are still being removed;
- Oil demand/trade is forecast to rise.

There are several reasons why demand for product tankers could rise, such as new export refineries in the Middle East coming onstream in a few years' time. Add to this, current newbuilding prices (at around $33 mill for a 52,000 dwt MR) are at their lowest level since the first quarter of 2004 and you get the ingredients for a feast of new orders, Gibson said.

However, with such positive signs there is always a health warning. If restraint isn't shown by owners then we are in danger of overcooking the dish (where have we heard that before – ED).

The above could lead to further increases in new investment, but it remains to be seen as to what extent banks will be there to support the industry. Too much investment may see a reversal of these market prospects and this will depend largely on the restraint of owners from continuing to jump into MRs, once it is obvious that too many tankers have been ordered, the broker concluded. TO

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Pole Star merger complete

At the end of October, the merger of Pole Star Space Applications, Absolute Software and Absolute Maritime Tracking Services was completed.

The enlarged global business now provides a combination of monitoring and security related services to more than 35,000 vessels.

It operates Long-Range Identification & Tracking (LRIT) data centres for 40 maritime administrations including Panama, Singapore, the Marshall Islands, Liberia, Australia and Canada; as well as providing LRIT conformance testing and certification for more than 90 flags.

"As a long time customer of Pole Star, we are excited by this merger and look forward to the added benefits that this will bring to us," said Capt Jude Dias, company security and safety manager of Wallem GmbH & Co, Germany. "With the combined technology expertise and reach of these two organisations, Pole Star will provide us with the advanced technological solutions that we need to manage, track and protect our fleet in line with international regulations and compliance measures."

"Our goal is to be the world's leading provider of fleet management, ship security and vessel monitoring systems to the maritime industry as a whole. This merger is a big step towards achieving that," said Colin Hook, the newly appointed Pole Star CEO.

"Both Pole Star and Absolute have complementary businesses and technologies and together we can provide extended, more advanced services and systems to our clients around the globe," Hook said.

Earlier Pole Star Space Applications launched 'industry zones', which added a new layer of safety and security functionality to its fleet management and SSAS alert products, the company claimed.

Industry zones enables Pole Star users to select from a series of pre-defined areas that carry additional environmental regulatory requirements, or security risks and apply them to their voyage management and reporting procedures. It provides automatic notification when a vessel enters and exits the pre-defined zone and can be configured to increase frequency of reporting while in the zone.

With regulatory reporting requirements increasing and maritime piracy acknowledged as a long-term problem, Pole Star's vessel tracking and reporting tools are a crucial link between ship and shore, putting voyage risk management of a complete fleet into the hands of users on a single screen, the company said.

Paul Morter, Pole Star director of sales said: "Shipowners today face both increased security threats and a greater regulatory burden, so there is a need to simplify compliance while at the same time sharpening security monitoring.

"To manage these issues effectively they need tools that bring together all the information needed for voyage planning and execution. Pole Star industry zones provides that functionality within a proven and widely-adopted system and in a single screen view, vessel by vessel, across a whole fleet," he said.

In addition to entry and exit alerts, fleet management users can receive automatically-increased frequency of reporting via email, or SMS while the ship remains in a selected zone. SSAS alert advanced users receive automatic entry and exit notification and ships can be polled on demand for latest position reports. TO

ClassNK issues first ECDIS certification training course approval

ClassNK issued its first type specific training course approval for an ECDIS training course offered by FURUNO INS Training Centre, Singapore.

The approval, which coincides with the opening of the new training centre, certifies that the course offered complies with the class society's new Standard for Maritime Education & Training

In addition to the generic ECDIS training required by the STCW Convention and Code, the governments of the UK and Ireland, as well as the Paris MOU, require masters and all deck officers on flag vessels, which make use of ECDIS as their primary means of navigation, to undergo type specific ECDIS training for the systems used on board their vessels.

In recognition of the growing demand for not only rigorous generic ECDIS training courses, but also high quality training programmes for individual ECDIS, ClassNK developed new certification standards for type specific training programmes, that it hopes will become a de-facto standard for the industry.

ClassNK Executive Vice President Koichi Fujiwara, who has directly overseen the class society's expansion into maritime training certification, said: "With the increasing level of technology used for navigation and ship operation, as well as growing regulation of seafarers, there is an incredible demand throughout the industry for higher quality seafarer training programmes.

"By developing new standards for maritime training, and working with training centres to meet these new standards, we hope to positively address these needs and contribute to a safer future for our entire industry," he said.

In addition to certification for both generic and type specific ECDIS training, ClassNK is also developing a full range of certification services for maritime education & training programmes, as well as certification and training for the instructors. TO

NAUTIS receives DNV certification

DNV has awarded VSTEP a class A certificate for its NAUTIS full mission bridge simulator.

As a result, the simulators are now qualified to operate as fully-certified maritime training simulators with any maritime training school worldwide.

VSTEP joins a handful of simulator manufactures worldwide that hold the highest level of DNV certification.

After a thorough certification process and an onsite audit by DNV's head of simulator certification Capt Aksel David Nordholm and his team, a full DNV statement of compliance to the STCW requirements was issued for the NAUTIS bridge operation simulator, with class notation for integrated simulator systems, tug and high speed craft.

NAUTIS is a training solution for the maritime industry having a full range of simulators, from desktop trainer to full mission bridge simulator, designed for nautical colleges, naval academies, maritime training centres and shipowners. TO

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Crews must be protected from piracy

The "horrors" of piracy have dominated the first year of Meridian Marine Management managing director Alastair Evitt's first year in his role as president of InterManager, the international trade association for the shipmanagement industry.

Summing up his first year representing the world's third-party and in-house ship managers, Evitt told the InterManager Annual General Meeting on 15th November that the fight against global piracy was a priority for his presidency and praised the way the shipping industry had united to fight it.

"With 273 seafarers held hostage at this time, I feel it is appropriate to acknowledge the horrors of international piracy," Evitt said. "This issue has brought the shipping industry together."

He praised industry initiatives, particularly the Save Our Seafarers (SoS) campaign and the work of the Maritime Piracy Humanitarian Response Programme and highlighted InterManager's campaign urging flag states to allow shipowners and managers the "freedom to choose" whether they wish to deploy armed guards on board during transits through piracy zones such as the Indian Ocean.

Evitt, who has completed the first year of his two-year term of office, said: "Our sea staff are the backbone of our industry and their safety and well being are a primary concern for InterManager." He also described the process of releasing pirates captured by naval forces as "appalling" and stressed the importance of "reducing the effectiveness of motherships" and of the international community putting in place credible measures to trace and criminalise the financiers of international piracy.

InterManager members gathered in Manila for the AGM, at which key shipmanagement issues, including piracy, the growth of maritime security providers, corporate social responsibility, crew manning and training, in addition to hearing updates on the industry-wide Key Performance Indicator (KPI) project, were discussed. TO

Lifeboat exchange concept expands

Wilhelmsen Ships Service's (WSS) liferaft exchange programme (LRE) was set to hit 15,000 exchanges since its launch just over two years ago.

Dave Evans, WSS product marketing manager for liferafts, explained that the global liferaft market has undergone a period of consolidation over the last 15 years, which has left the market with a small number of suppliers, with the majority of distribution handled by distributors and dealerships.

The stand-out advantage of WSS's LRE programme is that it services customers all over the world through its established global network, providing a direct capability and wide product supply scope, he claimed.

Evans said: "Since its launch, the LRE programme has quickly grown and is now being used by over 2,300 vessels globally. We are continuing to add new liferaft service stations and now have 42 stations covering 632 ports worldwide." TO

Egyptians relax Suez Canal armed guards ruling

In August this year, the Egyptian Ministry of Defence announced a prohibition on the carriage of armed guards, weapons and ammunition on vessels transiting the Suez Canal.

However, the requirements were not enforced at the time due to discussions with other Egyptian authorities regarding the possible negative impact of such regulations on the volume of shipping using the Suez Canal, according to the West of England P&I Club.

It has been advised by Egyptian Marine Insurance Consultations and Services (EMICS), Alexandria that the regulations have since been amended. Vessels are now allowed to transit the Suez Canal with armed guards, weapons and ammunition on board, provided a letter endorsed by the vessel"s flag state is submitted to the Suez Canal Authority prior to transit.

The letter, which need not be in any particular format, must contain the following information:

- The quantity and type of weapons and ammunition on board.
- The number of armed guards on board.
- Details of the armed guards' employer.
- Confirmation that the weapons will not be used while the vessel is in Egyptian territorial waters.

News courtesy of the weekly newsletter published by OCEANUSlive.org. TO

Imtech appoints MSG for ECDIS training

MSG MarineServe has won a contract from Imtech Marine to cover its ECDIS training requirements worldwide.

Imtech had already reached agreement with MSG's sister company, Safebridge, in March 2011 to develop an e-learning training platform linked to its own ECDIS software for internet delivery.

However, this new agreement now entrusts Imtech's complete equipment training obligations to MSG and its worldwide support organisation, ETC (ECDIS training consortium).

For many years, MSG has delivered ECDIS training from both fixed and mobile classrooms and can now offer, through central, server-based courseware, a standardised product for delivery through its ETC training partners in key service locations worldwide.

This approach guarantees the quality and consistency of the training while providing Imtech with the transparency required on the content. MSG will also provide course certification and trainee database services for reference by Port State Control and other authorities.

Imtech's marine SeaGuide ECDIS works as a generic system, but also includes the additional features of radar overlay, ARPA targets, AIS interface and integrated conning. TO

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Wärtsilä ramps up its service offering

Coinciding with a period when shipowners and managers are holding back on maintenance spending, Wärtsilä unveiled its €70 mill worldwide central distribution centre (CDC) on 7th November.

The huge site is located at Kampen, The Netherlands, close to Schiphol Airport, the main Dutch motorway system and on a major barge canal. The centre even has its own wharf where goods can be shipped in and out.

Despite the economic uncertainty, the overall service market outlook remains rather stable, the company said. Indeed, at the opening ceremony, Raimo Lind, Wärtsilä's executive vice president & CFO told *TANKEROperator* that the service sector accounted for 44% of the company's turnover.

Economic growth prospects in BRIC countries are still considered to be good and the service market outlook continues strongest in these countries. However, economic development and the service markets are expected to remain challenging in Europe, the company said in its 3Q11 results presentation.

In July, Wärtsilä acquired Cedervall, one of the leading manufacturers of shaft seal and bearing systems for the marine industry, for €81 mill. This acquisition strengthened Wärtsilä's position in the global service market, in line with its strategy. The combination of Wärtsilä's and Cedervall's businesses will create the market leader for oil and water lubricated seals and bearings, as well as for stern tubes, the company claimed.

Apart from the new CDC, a workshop was inaugurated in Gdansk, Poland during the second quarter of this year and during the third quarter, a new workshop facility was opened in Helsinki, Finland, which is strategically located near the main shipping routes.

The third quarter services' net sales totalled €412 mill, a decrease of 5%. The reason for the decline is mainly related to the timing of deliveries. Another factor is a further decline in global economic sentiment, which has an impact on services customers' maintenance and investment spending, Wärtsilä said. The services order book totalled €825 mill at the end of the third quarter, representing an increase of 20%.

Room for expansion. Wärtsilä's new CDC at Kampen.

The CDC is Wärtsilä's global logistics services new hub and integrates eight previously localised spare parts warehouses into one global supply chain operation. It covers the entire material flow from order confirmation until the point of delivery at the customer's doorstep. Being located in the Netherlands, it will shorten transportation distances, reduce spare parts traffic between warehouses and improve management of the entire supply chain, Wärtsilä said.

"The new centre will deliver spare parts to customers and Wärtsilä's 160 service locations around the globe. By using one global logistics centre and through the creation of a highly efficient logistics flow, Wärtsilä is better positioned to serve its customers and suppliers. Consolidating logistics and warehousing will result in faster and more efficient spare parts deliveries, 24 hours a day, 7 days a week," said Christoph Vitzthum, group vice president, Wärtsilä Services.

Wärtsilä's €70 mill new distribution centre began operations in December 2010 and will be fully operational before the end of this year. The facility covers an area of 37,000 sq m. When in full operation there will be around 140 people employed on site.

The CDC was designed and implemented by Swisslog, a logistics solutions provider. CEVA Logistics, a supply chain management company, was responsible for the shipments and operational warehouse handling.

Services is one of Wärtsilä's three business divisions alongside Ship Power and Power Plants. The division offers services to both the global marine and energy markets and operates the most extensive service network in the industry, the company claimed.

Its services portfolio includes spare parts and field services, as well as the servicing of engines, propulsion systems, electrical and automation systems and boilers. It also covers environmental services and solutions,

UK P&I CLUB

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CDC fact sheet

- Built-up area of 37,000 sq m with room to expand.
- Total investment around € 70 mill.
- Warehouse for all parts from very small to extremely large, including engine parts of over 50,000 kg.
- Partly automatic and partly manually operated.
- Over 60,000 pallet locations and over 60,000 totes in mini-load.
- Wärtsilä has its own quay at Zuiderzeehaven, with sea transport possibilities.
- Adjacent to N50 highway and the river Ijssel, for waterway transport option.
- Good logistics connections to Rotterdam, Hamburg and to Schiphol (Amsterdam) airport.
- Location will reduce emissions from transportation.

upgrades and conversions, long-term agreements for engine and propulsion systems, as well as training services. In total, Wärtsilä Services operates some 70 fully owned workshops and employs over 11,000 services professionals.

Through acquisitions and mergers, in the Netherlands, Wärtsilä is represented by all the three business units, as well as research and development. The company has more than 1,000 employees in seven locations - Drunen, Schiedam, Harlingen, Kruiningen, Kampen, Waalwijk and Zwolle.

Tanker sector

As for the tanker market, a Wärtsilä spokesman said that reliability is King – flexibility is a must. "These few words comprise part of our main focus for when serving the tanker market. Given the fact that tanker schedules changes frequently makes the attendance by service crews in specific locations difficult. This underlines the need for having skilled service engineers available in strategic important locations," he said.

In an optimum world, all technical equipment will operate and perform according to the desired level, as defined in the maintenance and operators manuals. However, sometimes the reality proves different. In such cases it is mandatory that any system, or component can be fixed by the vessel's crew to ensure that vessel can be brought to safe waters for a planned repair.

"Realising that such 'should-not-happen' failures never occur conveniently (vessel not reachable from shore, tight schedule, chain of failures, exhausted crew etc) has guided us to introduce advanced and easy usable emergency repair instructions," he explained.

In the tanker sector, in Wärtsilä's efforts to extend the 'time between overhaul' (TBO) to five years and beyond, the tanker segment can leverage on the experience from the container market where extensive product development and testing/validation have taken place for a long period. In the tanker sector there are limitations in maintenance philosophy, which do not exist in other sectors. Wärtsilä explained that today, unique to the tanker sector, all critical components/parts must prove a minimum of 2.5 years safe operation and extensions must offer at least additional 2.5 years safe operation due to the docking schedules.

"We only introduce validated concepts for extending the TBO on tankers and we offer precise and on-time information on actual performance via our dynamic maintenance panning (DMP). With the use of DMP the operator does not only get a clear picture of actual equipment performance but also simultaneously the system can also forecast performance behaviour or time-to-repair," he said.

Wärtsilä's advice to tanker owners/managers is always have the right level of spares available on board and stick to the planned maintenance. That's the easy advice – but very difficult to live with, the company said. "Therefore, we recommend a maintaining of a frequent communication on performance behaviour between the vessel's crew and operational management."

He explained that Wärtsilä can offer a solution where the communication and system performance are handled by the company. "We have more than 100 installations running under a close monitoring programme and our records clearly show an improved engine availability for these installations. It is implicit that the total costs of ownership (TCO) becomes more attractive and further, not only TCO but also total value of ownership increases (less costs, better planning, stress-less working environment etc)," Wärtsilä's spokesman concluded. TO

NSA warns of problems ahead

The Norwegian Shipowners Association (NSA) has expressed concern over the implementation of emissions market based measures (MBM).

The NSA was concerned that little attention in the work on defining a regulatory scheme for international shipping has been devoted to the design of implementation schemes and impact on the industry and how the different marked based mechanisms discussed meet the nine success criteria defined by the IMO.

At the recent International Chamber of Shipping (ICS) conference, NSA director general Sturla Henriksen warned the administrators and regulators not to interfere with the shipping industry too much.

Henriksen claimed that shipping already had a good emissions record when compared with other industries.

An agreement has already been reached on EEDI (technical) and SEEMP (operational). However, the market based measures (MBM), which were developed on top of the operational and technical measures to enhance commercial incentives to attain energy efficiency, was causing the NSA some concern, he explained.

Henriksen said that little attention had been devoted to the design implementation schemes and their impact of the industry. He also expressed concern as to how the different MBMs meet the IMO's nine criteria.

Thus far, the discussions on MBMs were based on "ideological" preferences for an emissions trading scheme (ETS) whereby the perception was that ETS is the only mechanism to cap emissions. "Shipping must apply the same mechanism as other industries," he said.

NSA's Sturla Henriksen.

Norwegian controlled tanker fleet in operation as at 1/1/11

	NOR	NIS	Foreign	Total
Gas tankers	-	48	68	116
Chemical tankers	-	128	156	284
Shuttle/storage	3	8	38	49
Other tankers	-	44	33	77

Norwegian controlled tanker fleet on order as at 1/1/11

	Norwegian	Foreign	Total
Gas tankers	-	6	6
Chemical tankers	8	8	16
Shuttle tankers	1	7	8
Oil tankers	10	-	10

Source: NSA

Earlier this year, the NSA commissioned a report from PricewaterhouseCoopers (PwC) to analyse the future impact of carbon regulations on the environment and industry.

The main findings were that both an ETS and a levy system can be designed to ensure the required emissions' reduction and that the differences in efficiency and cost will be decided by the design of the implementation scheme.

In addition, PwC said that the sulphur regulations will drive fuels costs to a level that would dwarf the impact of carbon policies. The incremental increase in carbon price will drive energy efficiency to a level where currently available technical abatement measures would have been exhausted.

PwC warned that beyond this point, additional costs put on shipping may cause modal backshifts and reduce shipping's capacity resulting in –

- Increased overall GHG emissions.
- Reduced global economic growth.
- Competitive distortions to land-based industries.

The ICS has expressed a clear preference for a levy-based system – a fuel linked CO2 compensation system.

Henriksen explained that an impact assessment by the Nordic Legal defence Club came out in favour of a levy system.

The assessment said that a levy system was better suited to meet the IMO criteria, was less bureaucratic and easier to administer, more transparent and simpler and it also allows for costs to be passed on.

He then outlined what the NSA thought was the way forward for MBM. It should be a single global system within the IMO based on stated criteria. It should also ensure a level playing field within the shipping sector and with land-based transportation modes.

In addition, the revenues generated should be directed back to the industry to spur innovation, while there was also a need for further in-depth impact assessments on alternative implementation schemes.

Lifelong learning

Earlier this year, the NSA flagged up a new scheme aimed at top Norwegian shipping executives.

Called the MarEx programme, it is due to start in February 2012 and will last about 12 months. Four modules will be developed in Norway, US, London and Shanghai, while the whole programme will be run in co-operation with one of the world's leading business schools.

"Our main objective is to maintain Norway as a leading knowledge-based maritime superpower," explained Tore Forsmo, NSA's director of competence and education, speaking at the launch.

With the launch of MarEx, the NSA now offers learning in a lifelong perspective, such as educating cadets in the Philippines, young professionals in the maritime trainee programme and soon to be launched senior management in MarEx.

As of 1st January this year, the Norwegian controlled fleet stood at 1,769 vessels of all types totalling 38.5 mill dwt. These included 569 vessels in NIS and 974 under foreign flags. The remainder were in the Norwegian Registry.

Out of the overall total, 116 were gas tankers, 284 chemical tankers, 49 shuttle/storage tankers and 77 other tankers.

Vessels on order, or under construction at the beginning of this year for Norwegian interests included six gas tankers, 16 chemical tankers, eight shuttle tankers and 10 other oil tankers. TO

Trying to weather the storm

While large crude carriers, such as VLCCs, have taken a hit, product and chemical carriers are thus far holding their own, albeit their earnings are close to their operating costs.

As with many other shipping centres worldwide, the quoted companies are faring worse than the more traditional family run concerns, who by and large, are able to make quick decisions.

Getting individuals and finance houses to invest in shipping funds has proved problematic since the financial crisis started a meltdown a few years ago. Those companies that have borrowed against their vessels, or who have newbuildings and recent deliveries with high financing attached, are and will struggle to make ends meet.

Highlighting the problem, leading Bergen-based player Odfjell said that during the first nine months of this year, the Oslo Stock Exchange benchmark index fell by 20.8%, the marine index by 35.4% and the transportation index by 36.8%.

A prime example of what is happening today is the case of Oslo Bors quoted company Saga Tankers, which is to be wound up next year, once the last VLCC is sold. Earlier this year, a proposed sale to DHT fell down, as the share vote in favour of the sale did not come up to the percentage required to complete the transaction.

Norway is still at the forefront of tanker activity, especially in the chemical tanker market.

Illustrating the parlous state of the company was the net loss reported for the third quarter of this year. This was a staggering $104.3 mill. The company reported that net loss adjusted for impairment charges, loss on vessel sales and amortised borrowing costs was $2.3 mill. These were non-cash items.

For shareholders, earnings per share (EPS) for the third quarter were minus $1.20. EPS adjusted for the impairment charges, loss on sale of fixed assets and amortised borrowing costs was minus $0.03 per share.

Average TCE obtained on all of the company's four VLCCs was $18,750 per day during the quarter. Out of the four tankers, three were trading on the spot market and averaged only $13,031 per day.

Saga Tankers managed to keep average daily operating costs down to $12,027 in the third quarter, while the OPEX year-to-date averaged $11,408.

At an extraordinary general meeting, the board will seek permission from the shareholders to wind Saga Tankers up.

The problem is that the fleet was valued at way below the amount needed to satisfy its lenders, illustrated by the recent sale of two VLCCs for only $30.5 mill each. The proceeds are being used to de-leverage the company.

In the specialist chemical/parcel tanker sector, Bergen-based terminal and tanker owner/operator Odfjell reported that the third quarter 2011 net result was $261 mill, which includes a $270 mill capital gain related to sale of minority shareholding in terminals. This compares with a loss of $11 mill during the same period last year.

The first nine months of this year revealed a consolidated net result after tax of $277 mill, which included a $294 mill capital gain made on a terminal transaction and the sale of ships. This compares to a loss of $79 mill in the first nine months 2010, of which $42 mill was non-recurring tax costs.

Somewhat significantly, the company's taxes for the first nine months of 2011 were only $5 mill, compared to $45 mill during the first nine months 2010. This was due to the adoption of the new Norwegian tonnage tax system in 2010, Odfjell said.

As for the terminal transaction mentioned earlier, this was a sale of 49% shareholding in the terminals in Rotterdam, Houston and Charleston to Lindsay Goldberg.

In the chemical tanker sector, EBITDA for the first nine months of this year was higher at $46 mill, compared to $39 mill in 2010.

> Getting individuals and finance houses to invest in shipping funds has proved problematic since the financial crisis started a meltdown a few years ago

Another plus point was that the operating result (EBIT) ended at zero for the period, compared to a loss of $47 mill last year.

Odfjell Tankers said that the disappointing trading result was mainly down to higher bunkers costs, which were not fully recoverable by the current freight market. However, the timecharter result expressed in US dollars per day increased by about 9% compared to same period last year and by 0.2% from the second to third quarter this year.

In August, Odfjell and Crystal Pool announced the establishment of a joint venture, which now operates a fleet of 14 stainless steel tankers previously separately run by the two companies in the European shortsea market.

Recently Odfjell entered into an agreement to purchase the *Holly Galaxy,* a 19,975 dwt fully stainless steel chemical tanker built 2006 in Japan. The vessel was acquired as part of a fleet renewal programme in the South American region, with long-term financing secured. She will be delivered in December 2011.

In another S&P transaction, Odfjell's Brazilian subsidiary Flumar sold the *Araucaria* (10,259 dwt, built 1984). The vessel will be delivered to the new owner in the next few weeks. The sale price is close to book value, the company claimed.

In addition, Odfjell has timechartered the *Stream Mia* (19,702 dwt, built 2008, fully stainless steel) and *Stream Luna* (19,998 dwt, built 2010, fully stainless steel), plus the *SG Pegasus* (13,086 dwt, built 2011, fully stainless steel) during October.

These latest additions bring Odfjell's operated fleet up to around 100 chemical tankers.

The company said that the outlook for world economic growth has been adjusted downwards in view of the European debt crisis and lacklustre growth prospects in the US. This is the principal driver for the industry, Odfjell said.

This being the backdrop, most operators suffered losses and unsustainable returns, a situation which is likely to continue, as more newbuildings come on stream, albeit at a slower pace. Going forward, a stagnation in the supply of chemical tankers is likely, but it is uncertain when this will translate into improved earnings, Odfjell said.

Despite the economic turmoil, the company said that it expected to see a moderate growth of volumes and activity, which should generate a continued slight improvement in the fourth quarter results.

However, the results will continue to be challenged by bunker prices and other rising costs. In addition, competition remained vigorous, adding to inefficiencies in overall fleet utilisation, Odfjell concluded. TO

Major service centre continues to attract tonnage

For example, the total amount of bunkers supplied from Gibraltar between January and June this year was almost 2.1 mill tonnes, compared with nearly 2 mill tonnes in the same period a year earlier. Last month, on one day during Tanker Operators' visit, there were 12 vessels in the dedicated anchorage slots and another 12 waiting off the eastern anchorage for a slot to become available.

A plus point for the area is that the opening up of North European and Baltic ECAs has had the effect of vessels calling at Gibraltar to take on low sulphur fuel before continuing towards the zones, which have had low sulphur fuel limits imposed.

To facilitate further expansion of bunker services, various plans are being discussed to increase the number of slots available to bunkers only callers in and around Gibraltar. One problem is that taking up three of the slots are the large bunker storage tankers- *Aeolos, Vemabaltic* and the *Jacques Jacob.* The latter recently replaced a single hull storage tanker, which was sold for recycling. She arrived during the middle of March this year.

The boom in bunker supply off Gibraltar and Algeciras is continuing and looks likely to continue for some time to come.

The storage tankers feed the bunker tankers/barges after taking on product from handysize and MR type product tankers in a ship-to-ship (STS) transfer operation at their dedicated slots.

The plans under discussion include moving the storage vessels to the Eastern Anchorage on the other side of the Rock and/or building land side storage facilities. An environmental feasibility study is currently underway on the possibility of opening up the Eastern Anchorage to bunkering operations. This study should be completed by the end of this year/beginning of next.

Gibraltar's Government has also called upon local companies to submit plans based around the development of the detached mole as a bunker storage facility. At present, the mole is used by laid up vessels and those under arrest. However, the plan to install storage facilities on the mole is still at the

concept stage, acting Gibraltar Port Authority (GPA) head Capt Rob Cumbes told *TANKEROperator*.

Another idea floated a few years ago to rebuild the large elderly storage tanks inside in Rock, formerly used by the UK Ministry of Defence, was described as a non-starter, due to the cost of renovating the old storage tanks and their connecting lines. "It is better to have the storage facility placed near the port," Capt Cumbes explained.

There are currently question marks over the future of World Fuels' storage tanks located near the cruise terminal, as some of this facility is to be redeveloped to cater for larger cruise vessels. The old Ice Box building is to be demolished and an area formerly used by MH Bland is to be extended to cater for a new cruise terminal.

The current bunker slots in the Western Anchorage are well protected from the prevailing winds and swell conditions. However, the Eastern Anchorage is subject to the easterly 'Levante' winds, which means that the weather will have to be taken into consideration before a bunker operation commences.

Given that the average time a vessel remains at anchor in a slot is eight hours, during the past decade, or so, Gibraltar has built up a business in crew changes, mail deliveries, spare parts, supplies and other services that can be offered during a vessel's stay. There are no restrictions at Gibraltar airport for crew in transit to and from a vessel, providing the paperwork is in place, which is taken care of by the local agents.

Problems can exist, if for some reason, such as inclement weather, the airport is closed, resulting in flights being diverted to Spain. Here the authorities will not allow transits and often the crew are sent back to the UK to wait for another flight to Gibraltar, or elsewhere.

Traffic control system

To monitor the more than 10,000 vessels annually that call in and around the Rock, a VTS was due to be officially handed over to the GPA by Transas at the end of October. It is already up and running from a control centre in the GPA building.

The need for vessel traffic control has been highlighted recently by recent collisions and groundings in and around the busy bay. Vessels entering or leaving Algeciras, La Linea, or Gibraltar, do so by either passing close to Tarifa, or Europa Point, which mark the western and eastern entrances, respectively, of the large bay in which many vessels are berthed at the ports, or anchored.

Last year, the GPA registered 11,134 calls in the area under its control, which was a record. The significant growth is illustrated by the figures for 2000, which were 4,489 calls. Of the 2010 calls, 6,724 were for bunkers (3,694 in 2000), 128 for repairs (80 in 2000), while there were 505 other calls.

The number of vessels using services off-limits has also nearly trebled since 2000. In 2010, there were 1,365 vessels stopping, or slowing down off-limits, compared with only 480 in 2000. This area is used by vessels that slow steam past the Rock to pick up crew, stores, spares etc from a launch without stopping in either anchorage, or at Algeciras. The advantage is that the whole operation can take less than 20 minutes.

Gibraltar's new VTS includes radar, VHF, direction finding, CCTV (with PTZ and thermal imaging), weather monitors, AIS, digital selective calling and a full replay capability, which is used in the case of an incident investigation. It is able to playback vessel movements, which can be used by the local agents and others to learn lessons following incidents. About 12 months of playbacks is possible.

The communications room in the GPA building is also used as a crisis management centre with immediate links to the town (the Gibraltar Maritime Authority (GMA)) and the site.

Radar coverage extends for about 40 miles from the Rock – depending on the vessel's size – while the AIS has a range of around 150 miles to the East and 60 miles to the West. Both the AIS and radar systems are integrated, which means that a vessel heading for Gibraltar can have her visit planned several hours prior to arrival.

As well as arrivals and sailings, when inside the Bay, some vessels move from one anchorage to another, for example, taking on bunkers at Gibraltar, before moving across the Bay to Algeciras for spares and/or stores.

Gibraltar suffered its worst storm in living memory in October 2008, which resulted in the loss of the Panamax bulker *Fedra* off Europa Point. This partly led to the installation of comprehensive weather monitoring equipment near Europa Point and also in the harbour area. Capt Cumbes told *TANKEROperator* that the authority was also exploring the possibility of installing a wave/current monitoring system on the Los Picos buoy, located off Europa Point, in the near future.

By integrating VTS and the weather monitoring service, the GPA offers information and operates a traffic organisation service from the east to the west of the Rock, which is aimed at reducing the risks of incidents.

Capt Cumbes asserted that despite the political problems that exist between the UK and Spain over Gibraltar, on a day-to-day basis, the GPA enjoys a good relationship with its counterparts in Algeciras and Tarifa. Both SAR services are in constant contact. However, at the time of publication, both Spain and Gibraltar were to hold elections, which could affect the political agenda one way, or another.

Tarifa also has a VTS system controlling the 100,000 or so vessels transiting the

Gibraltar Straits annually, including the criss-crossing ferries, which serve Spain (Algeciras and Tarifa), Morocco and Ceuta. A vessel separation scheme is operated in the Straits with vessels heading west passing just a few miles from Europa Point, giving Gibraltar and Algeciras a distinct advantage in offering services, as deviation is less than an hour's sailing time.

All of the bunkering activities are performed under strict controls, as laid down by a Code of Practice. This is overseen by a full time bunker superintendent employed by the GPA. Capt Cumbes explained that each bunker tanker/barge operating out of Gibraltar is regularly vetted and such is the volume of bunkers now handled, the GPA was considering employing a second superintendent.

In addition, surveyors from the GMA carry out Port State Control inspections on all domestic vessels and audit the safety certificates on local vessels, including the bunker barges.

Capt Cumbes explained that there are three main objectives within the GPA for the Gibraltar area- increasing safety, looking after the environment and increasing operational efficiency to ensure vessels calling in the area are not delayed. "We don't want a queue of vessels waiting outside," he said.

He also revealed that as well as a bunker Code of Practice, others were in draft form, including for the supply of lubricants and waste liquids operations/transfers.

As for the Gibraltar Registry, administered by the GMA, the latest figures reported up to April 2010 show that 312 vessels were registered in Gibraltar, totalling 2.3 mill gt. This figure included 168 vessels on full registration, 136 under bareboat terms and a further eight vessels under construction.

Ten years ago, this figure stood at just 39 vessels administered by a staff of two. Last year, the number of staff had reached 13. While admitting that the registry doesn't have the tonnage of its counterparts in the Red Ensign Group, the flag has seen some success in the relatively smaller tonnage sector.

For example, the average gross tonnage entered into the Gibraltar registry stood at 6,400. This is a mixed fleet that includes tankers, many of which are German controlled. These include units of the Carl Buttner fleet. In the 2009-2010 Annual Report, it was stated that the registry had seen a high number of oil and chemical tankers join the fleet recently.

The GMA's policy is to conduct ISM audits and ISPS verifications, as well as ILO inspection work by using exclusive surveyors employed by the flag state. Much of the other statutory survey and inspection work undertaken in accordance with international conventions, is delegated to one of seven class societies recognised by the GMA – ABS, BV, DNV, GL, LR, ClassNK, or RINA. The majority of the Gibraltar registered fleet is classed by GL, which is a recognised organisation (RO).

Each class society is regularly monitored by the GMA in conjunction with the UK MCA and other REG group members. A year or so ago, the Izmit office of BV was audited by the GMA in connection with the delivery of the first newbuilding to enter the Gibraltar registry from the TVK shipyard in Turkey.

It is also a GMA policy to inspect a Gibraltar flag vessel at least once every 30 months using a flag state surveyor. This inspection is aimed to coincide with ISM initial, renewal and intermediate verification requirements in line with IMO guidelines. Wherever possible, these coincide with ISPS verification work.

To address the problem of maritime training, which was normally undertaken in the UK proving a costly exercise, the Gibraltar Government now offers a sponsored officer cadet training programme.

This is undertaken with the assistance of Aegean Bunkering (Gibraltar), Bunkers (Gibraltar), Cepsa (Gibraltar), Marine Service Shipping (Gibraltar) and Vemaoil. A fund has been established by which Gibraltar students are able to attend an UK college for three years and attain a UK MCA Certificate of Competency as an Officer-in-Charge of watch.

The initial plan was that a minimum of two students from Gibraltar would enter the scheme annually. Last year, there were three students in the scheme at various levels. In 2011, the standard of all the applicants was sufficiently high for four students to be selected for the course, the GMA said. TO

Transas' VTS being upgraded

Following the successful delivery of a VTS system to Gibraltar Port Authority in 2010, Transas is now in the process of upgrading the system.

Meeting recent GPA needs, the upgrade includes a web-access portal to the Transas VTS database. Vessel information is now automatically updated, the company explained.

This upgrade will make the system function as a full-featured Port Management Information System (PMIS), improving the port's efficiency and optimising vessel operations, Transas explained.

The company has also installed the latest version of Safe Sea Net (SSN v2), as the introduction of EMSA's new notifications PortPlus made this upgrade necessary.

The original decision by the GPA to install a VTS system saw a mutual agreement signed whereby Transas would facilitate the supply, development and commissioning of a VTS system, which included all necessary hardware, software, sensors, communication systems, training and support, the company said early last year.

GPA's VTS system allows operators to visualise and interact with all marine traffic within the Area of Responsibility (AoR) by bringing together sub-systems, including Radar, AIS, electro optical (or CCTV), VHF communications (including radio direction finding and digital selective calling), hydro meteorological data, port information system (a database including vessels, visits, operations, weather log and electronic logbook) and track/audio recording and playback.

All of these services were fully integrated through a set of VTS system servers, which was handed over to the operators in a new dual workplace control room located in the GPA offices situated on the North Mole within the port of Gibraltar.

The VTS system selected by the GPA was originally based upon Transas Navi-Harbour VTMIS solution – one of the most popular VTMIS systems on the market, the company claimed.

The GPA oversees all operations within the port, including responsibility for Search and Rescue (SAR) and coastguard operations within British Gibraltar Territorial limits.

The most important functions are safety of navigation, counter pollution, security and monitoring of all marine activities, the GPA said. ■

Looking to increase bunker volumes

Illustrating the growth of the bunker supply industry in Gibraltar, last year a total of 6,724 vessels called for bunkers. In the year 2000, there were 3,694 bunkers only calls.

However, both Algeciras and Ceuta are building up market share in bunkering with activities also picking up in Tangiers, since the opening up of the Tanger-Med terminal.

Both Vitol and Vopak are building land-based storage facilities in Algeciras. In addition, bunker tankers now visit various ports around the Straits on demand and if and when Gibraltar's Eastern Anchorage opens up for bunker operations, this will boost supply possibilities considerably.

Most Gibraltar shipping people contacted by *TANKEROperator* thought that this increase in supply would be met by demand, as the area is the last major bunkering point before reaching an ECA. Indeed, low sulphur fuel makes up a large proportion of bunker stems.

Bunkering is the mainstay of the Gibraltar shipping economy together with cruise vessel calls.

Bunkering in the Gibraltar area is conducted by modern double-hull bunker tankers, 24 hours a day/seven days a week. One local service concern, Aegean Bunkering Gibraltar, provides technical and logistics support to the operations and can also arrange for the provision of agency services to clients' vessels at competitive rates, the company claimed.

In Gibraltar, Aegean operates an 84,000 dwt double-hull floating storage tanker - *Aeolos*. The vessel's pumping capacities are given as 300-800 tonnes per hour. She has a storage capacity of 72,000 tonnes of IFO and 11,500 tonnes of MGO.

Last August, Aegean Marine Petroleum Network announced that it had taken delivery of the *Halki*, a 6,270 dwt double-hull bunkering tanker newbuilding from Qingdao Hyundai Shipyard in China.

The vessel is now deployed in the company's fleet located at Gibraltar, increasing the number of vessels serving Gibraltar and Tangiers to six.

Aegean president, E Nikolas Tavlarios said at the time of her delivery; "With the delivery of the *Halki*, Aegean continues to execute its fully funded newbuild programme. Our high-quality logistics infrastructure provides a distinct commercial advantage, positioning

Aegean well to increase utilisation and drive future earnings as we enter new and attractive markets, including Panama.

"Going forward, we expect to take delivery of two remaining double-hull bunkering tanker newbuilds by the end of 2011," he said in a statement.

Similar to the other suppliers, Aegean can supply all grades of marine fuel, from 30 to 380 Cst and MGO. All products supplied meet ISO 8217/2005 standards and are in compliance with Marpol 73/78 Annex VI, the company claimed.

Claiming to have the largest percentage of bunker deliveries in and around Gibraltar is Vemaoil, part of the Queensway Navigation and Macoil International grouping.

Last year, Vemaoil supplied some 31% of the bunkers delivered out of the total of about 4 mill tonnes.

Vemaoil operates about five bunker tankers ranging in dwt from 4,792 to 9,570. In addition, the company operates the 107,544 dwt, 1986-built double hull storage tanker *Vemabaltic*.

Relative newcomer Bunkers Gibraltar, now part of the Bominflot group, operates the *Europa Supplier* 1 (6,200 dwt, 400 cu m/h pumping capacity), plus the floating storage tanker 71,345 dwt, 2000-built *Jacques Jacob*. The company has also chartered in another tanker, believed to be the 2009-built 4,125 dwt *Besiktas Orient.*

Giving the reasons why Bunkers Gibraltar set up shop in Gibraltar, the company said that of the four supply points for fuel oil in the Straits, Gibraltar has by far the lowest calling costs, both in port entry and pilotage, together with the most safe anchorage positions and superior maritime infrastructure.

The company also saw that due to the phenomenal growth in bunkering, there was room for another physical supplier on the Rock. Market studies had shown that Gibraltar Bay was undersupplied with fuel oil for passing tonnage, often leading to vessel delays, therefore it was decided to invest and add another operation to support the existing suppliers, the company explained on its website.

A few years ago, the company invested in a jet mix blending process with viscosity trimming and fitted it on board a supply tanker. Developed by Jiskoot, it is widely used in the shore-based petrochemical industry. This helps to ensure that the fuel is supplied as per the customers' specific requirements, the company said.

Aegean's new bunker tanker *Halki* seen hard at work in the Western Anchorage.

Highly accurate metering equipment is incorporated in the blender package, which compensates for fuel in the supply hose, to be drained down to the supply vessel and not air blown into the receiving vessel, eliminating the frothing of tanks and resulting erroneous tank ullages.

The complete bunkering operation is tamper free and eliminates human error and is monitored with a sophisticated computer system, which generates the Bunker Delivery Receipt together with the invoice and a copy of the complete bunkering process giving fuel temperature, pressure and viscosity parameters together with loading rates, the company claimed.

A flow proportional sampler is installed within the blender, which captures droplets of fuel at the rate of one per second. The total sample is mechanically homogenised before dividing into commercial samples for the supplier and receiver and MARPOL samples as per Annex VI of the convention.

This sampler gives a truer representative sample than the more commonly used drip sampler, which is used on the vessels manifold, the company said. The computer systems automatically generate the Marpol Annex VI compliant Bunker Delivery Note.

As mentioned on page 18, an environmental impact assessment (EIA) study is underway by the Gibraltar Government to ascertain the risks involved of bunker in the more exposed Eastern Anchorage.

This move, together with the possibility of moving the large storage vessels, is aimed at alleviating the current congestion being experienced at the Western Anchorage bunker slots.

As also mentioned, rival neighbouring ports of Algeciras and Ceuta are stepping up their bunker activity. For example, last year Vopak started to build a new storage terminal for oil products in Algeciras following the 80% acquisition of Spanish company Alpetrol from Novaro Invest.

The attraction for Vopak was that Alpetrol held a concession to build and operate a bulk liquid storage terminal in Algeciras.

Together with its partner Vilma Oil, which owns 20% of Alpetrol, Vopak is constructing an independent storage terminal with a capacity of 403,000 cu m. Vilma Oil is a Spanish company that provides oil related logistical and technical services.

The terminal, which will be named Vopak Terminal Algeciras, is the first to offer independent bunker storage services in Algeciras and is expected to be commissioned in mid-2012.

It was also thought that Vitol had plans to operate a storage terminal in Algeciras. TO

Aegean bunker tankers stationed at Gibraltar

Name	IFO capacity (t)	MGO capacity (t)	pumping rates (t/h)	Dwt
Kassos	5,200	900	700	6,256
Zakynthos	5,200	900	700	6,303
Nisyros	5,200	900	700	6,312
Aegean Princess	6,500	850	250-300	7,030
Halki	5,200	900	700	6,256

Electronics repair - a growth sector

Sandvik Marine Electronics has recently received approval from Italian class society RINA.

This is the latest IACS class society to recognise the Gibraltar and Algeciras-based marine electronics installer and repairer, following DNV, LR, GL and ABS. Sandvik has two workshops, one in Spain and the other in Gibraltar.

In addition, Sandvik has been appointed agents for Samsung for VDRs and automation systems repair and services, plus VDR annual surveys.

The company services and fits Kongsberg and Maris ECDIS and VDR systems and is the official agent for the two companies for Iberia - Spain, Portugal and Gibraltar. Sandvik is also the only official Sperry agent in Gibraltar.

Sandvik's John King told *TANKEROperator* that the increasing interest in VSAT communication systems if keeping the company busy. "We have constantly got to look at new channels," King explained.

Communications equipment can be checked from the office via online diagnostics. For example, a leading third party shipmanagement company's vessels are serviced from Norway. Thus far, the company has about 50 vessels signed up for its shore-based maintenance services, which includes the issuing of the relevant certificates.

In the marine electronics service and repair sector, there are two registered companies on the Rock, including Sandvik, plus others in Algeciras.

Airtime is another area being developed by the company, but this particular niche is very competitive at present, King said.

Sandvik has also endorsed the relative new initiative of supply and exchange, primarily with EPIRBS. "It is just as cheap to exchange a beacon, where the old one can be serviced and given to an agent fully certified," King explained. EPIRBS retail for about $1,000, including the bracket and with full certification.

In addition, exchanging smaller components, such as radar transceivers, saves time, King explained.

Another string to Sandvik's bow is being an official agent for China-based Headway Technology's VDRs in West Africa. Countries involved thus far include Angola, Gabon, Mauritania and Nigeria.

However, one drawback in this particular sector of marine electronics is the lack of availability of good technicians, King confirmed.

Imtech moves in

In Algeciras, local electronics concern Aage Hempel now has a serious rival, as on 17th October, Imtech Marine opened a new office in the Spanish town.

From the new office Imtech Marine said that it aimed to provide 24/7 maintenance services to both locally operated vessels and international shipping concerns. Imtech will be offering services in various Spanish ports, such as Algeciras, Barcelona, Cádiz and Valencia, as well as the nearby ports of Gibraltar and Tangier.

Mike Bauwens, managing director of Imtech Marine Southern Europe & Africa, said: "The new office in Spain fits in our new strategy up to 2015. The strategy includes our intentions to expand our global service network, with new offices planned in Asia/Pacific, India, South America and the Mediterranean. Our strategy is clear: we want to be where our customers are and serve them on the spot. This is why we intend to keep expanding our global network."

Algeciras and Barcelona are among the largest 50 ports of the world with Algeciras being a top 10 port. Nearby locations, such as Gibraltar and Tangier are also top 50 ports. Imtech said that it expected a growing business in Spain and the surrounding region. The new office will be staffed by experienced technicians, to guarantee 24/7 service and effective and quick response to service requests, the company said.

In addition, Imtech has acquired Etudes Techniques et Nouvelles Applications (ETNA), which gives the company a foothold in Tangier, as well as Le Havre, St Nazaire and Marseilles.

The close relationship between France and Morocco led ETNA to open an office in Tangier a number of years ago. In addition, ETNA is active on project work in Tunisia and occasionally in other countries in North Africa.

Local agencies beef up operations

Lloyd's Agency in Gibraltar is handled by shipping agency Smith Imossi, who represents both operators (charterers) and owners as agents.

Director Paul Imossi explained that part of the agency work involves companies offering ship-to-ship (STS) transfer services in the Straits, including SPT, SafeSTS, Fendercare and Fenmar. Fendercare has received the go ahead to undertake LPG STS and already has the hoses in place, he said.

Imossi also confirmed that in addition to rules governing oil product transfers in Gibraltar waters, which were overseen by the Gibraltar Port Authority (GPA), new rules covering both lubricants and waste disposal by STS were currently in draft form.

He also explained that during periods of bad weather only one STS transfer of product was allowed off Gibraltar. For all STS operations, there is a designated STS mooring master approved by the GPA who has overall control. Imossi said that alongside bunkering in Gibraltar was "not on the radar at present."

Similar to other agencies, Smith Imossi was now regarding the Straits ports as an area, rather than just concentrating on Gibraltar. For example, the agency regularly handles vessels calling at Gibraltar for bunkers, which then sail across to Algeciras to load spares and/or stores. The agency will also service vessels calling at Ceuta.

Several vessels also call at the two Anchorages either side of the Rock. The Western Anchorage is used for bunker operations, while the Eastern side is regularly used for loading spares, stores and/or undertaking crew changes, plus 'warm' layups of vessels awaiting orders.

Imossi also confirmed that the Eastern side could not be used for the transfer of bunkers, lubricants, or for STS operations at present. The prevailing wind is easterly and the Eastern Anchorage is now strictly monitored, resulting in vessels sometimes being told to weigh anchor and drift when the weather becomes inclement.

He urged the local Gibraltar shipping service providers to keep pushing the authorities to allow bunkering on the Eastern side of the Rock and also for land storage facilities to be erected for product storage. The one major problem facing the service providers today is congestion, he said.

Due to the different political agendas between the UK and Spain, Imossi claimed that the selling point for appointing an agent

Gibraltar has a store of Yokohama fenders, ideal for STS operations.

on the Rock was local knowledge on how to get around any problems that might crop up. For example, the border between Gibraltar and Spain closes to truck traffic at around 1400 every Friday and does not reopen again until Monday morning.

Another source of revenue for Smith Imossi is acting as agents for vessel arrests. In Gibraltar it is relatively easy to attach a vessel and the Rock even has its own Admiralty Marshall. Imossi explained that the vessels were not dumped by unscrupulous, or bankrupt owners, but were arrested by banks, or were laid up as their operators/charterers were experiencing financial problems, or had gone out of business.

Most of the vessels under arrest were crewed and under care and maintenance, which was in the main paid for by the finance houses/banks, or whoever had taken possession of the vessel in the hope of concluding a quick sale, or charter.

During *TANKEROperator's* visit, Ocean Tankers' operated 19,831 dwt product tanker *Berengaria* was alongside the detached mole awaiting her fate. Shipbrokers were in constant contact with Smith Imossi in an attempt to market the vessel for sale. It was later reported that she had been sold to unknown interests.

Product tanker *Berengaria* seen under arrest alongside the detached mole.

There were also two cruise vessels in Gibraltar during *TANKEROperator's* visit whose charterers had pulled the plug on cruise operations, leaving their owners to try to find alternative employment. They have since both sailed to London's Tilbury Docks for 'warm' layup. TO

Three ports – one agency fee

Wilhelmsen Ships Service (WSS) has launched a new integrated service solution for vessels passing through the Straits of Gibraltar.

Known as 'Your Straits Solution', the new initiative will enable customers to utilise the company's services in Algeciras, Ceuta and Gibraltar from one location and under one banner.

A centralised agency for the three ports was established in July at Gibraltar, which enables WSS to offer a 'one-stop-shop' for owners and operators using Algeciras, Ceuta and/or Gibraltar with just one agency fee charged for calls at any, or all of the three ports.

Several vessels call at both Gibraltar and Algeciras anchorages while the number of vessels calling at Ceuta has increased recently, as the port has become more competitive.

"The Straits of Gibraltar is an important strategic location for many shipowners and operators as their vessels transit through the area. It is widely used to conduct a range of services for the vessel and crew where a speedy cost-effective turnaround is looked for," said Simon Hutt, area director Southern Europe, North & West Africa.

The WSS office in Gibraltar will act as the main point of contact, but WSS products and services will still be offered at all three ports in the region, including liferaft exchange, safety equipment, gas cylinders and extinguisher refill services.

WSS recently gained a license to operate in the Spanish enclave of Ceuta, which is easily accessible by fast ferry, or helicopter from Algeciras. The latter only takes about 10 minutes to cross the Straits, while the fast ferry takes around 45 minutes and can transport trucks.

Gibraltar-based WSS operations manager Keith Blackshaw told *TANKEROperator*, "We are confident that this new development will enable us to make operations quicker and more efficient. The Straits Solutions allows vessels that need to make two, or more port calls - for example, taking on bunkers at Gibraltar and liferaft exchange services, at Algeciras - to pay just one agency fee."

Trialed

The new system has been trialed by reefer operator Seatrade, a regular caller at the three ports and will be marketed heavily to owners and operators from next year. Boarding agents will be arranged in two teams – one of which co-ordinates the operation, while the other team will visit the vessels at any of the three ports.

Algeciras is a key WSS service centre, covering most of southern Spain. The area is strong for Unitor products and a liferaft exchange service is offered from the Spanish port with a warehouse for refurbishing liferafts built a couple of years ago. A dedicated Unitor warehouse has been erected in Gibraltar and the liferafts can also be stocked in Gibraltar on demand.

A fixed price is offered for the exchange service, which kicks in when a liferaft is due to be serviced. The old one is taken to be refurbished and is immediately replaced by a fully certificated liferaft. The liferaft survey and replacement dates are logged on WSS' computer and the vessel and manager is alerted when a survey, or replacement date approaches.

With modern communications, inquiries and orders can be processed faster and decisions can be made on what to supply where, Blackshaw explained to *TANKEROperator* during a visit to the Gibraltar office.

Only one point of contact and one email address is needed, which helps WSS improve the operational response to an inquiry, or order, thus saving valuable time for the operations department, he said.

In addition, only one disbursement account is issued for any multiple port calls in the Straits and only one all inclusive agency fee is charged, which is claimed to be transparent, thus saving costs, Blackshaw claimed. He reiterated that by offering this service, time can be saved and administration costs cut, such as bank payments, which can be transferred in Euros, or pounds.

Blackshaw explained that WSS was always investigating ways of offering fast solutions for more efficient and quicker vessel turnarounds. The liferaft initiative is one solution towards avoiding vessel delays, as a certificated liferaft is exchanged for another that is due for a survey, or refurbishment/ replacement, while a vessel is at anchor off Gibraltar/Algeciras, or alongside in Ceuta.

Another advantage of this 'one stop shop' approach is that at each port, WSS will no longer be fighting for the same business.

WSS' agency side of the business handles around 100 vessels per month in the Straits from the Gibraltar office, which moved to new larger premises recently. The local company has five boarding agents – three for Algeciras/Ceuta and two for Gibraltar, plus six ships agency supervisors, one disbursement account controller, four document processors and two office managers. The office is manned 24/7. It is ISO 9001 certified and is audited every year by DNV, due to the large vessel turnaround.

"We see the operation as three terminals, rather than three ports," Blackshaw concluded. He also revealed that WSS' target was to serve around 4,000 vessels in the three 'terminals' in four or five year's time. TO

> "The Straits Solutions allows vessels that need to make two or more port calls ... to pay just one agency fee."
>
> **Keith Blackshaw, operations manager, Wilhelmsen Ships Service**

Shiprepair concerns weather the storm

The area boasts two major shiprepair complexes – Gibdock in Gibraltar and Astilleros Cernaval, near La Linea, Spain.

Gibdock has had many changes of ownership down the years since the UK Ministry of Defence pulled out of Gibraltar several years ago. Despite finding it difficult to turn a profit in the current shipping markets, Gibdock has remained busy with several notable repair jobs undertaken.

At the time of *TANKEROperator's* visit to the Rock, there were no tanker contracts stemmed, but the yard had won recent orders for the drydocking of cruise vessels and also had some success in the offshore sector.

Indeed, the yard has benefited from a strong relationship with local Spanish owners, who have stemmed Algeciras-operated ferries and Boluda-controlled tugs at the yard for repair, as well as Pullmantur-managed cruise vessels.

Gibdock boasts three drydocks, ranging in length from 154 m to 272 m. The latter is able to handle up to Panamax-dimensioned vessels. In addition, what is called the Main Wharf is 300 m in length and the mole is 435 m long. Both are used for afloat repairs and 'warm' layups.

The repairer has operated an apprentice scheme since 1998. It is run in co-operation with the Gibraltar Government, which provides three full time instructors at the yard. The yard usually takes in around 18-20 apprentices annually who all come from the Rock. The others find employment with the Government, or other local employers.

Writing in the Summer 2011 edition of Gibdock's house magazine, CEO Joe Corvelli said; "This is a vital programme for Gibdock, as like other shipyards, we find it hard to attract young people into this kind of work. If we didn't act proactively through the apprenticeship scheme, then the skill sets we need wouldn't be there in a few years time."

Last year, the yard invested in an ENVIROBOT ultra high pressure robotic system supplied by Chariot Robotics. This system is operated by just one person and can sweep, or full blast forwards and backwards across a vessel's flat bottom, vertical sides, bow and stern shapes equally using patented magnetic air gap technology.

Cernaval

As for Astilleros Cernaval, this yard can handle larger vessels than its Gibraltar-based rival. The yard near La Linea has a floating dock of 176 x 26 m with a lifting capacity of 15,000 tonnes. In addition, there is a large drydock measuring 400 x 50 m, which can dock vessels of up to Aframax, or Capesize dimensions.

Three quays are also available for afloat repairs totalling 731 m in length with a water depth of 15.5 m.

At the time of *TANKEROperator's* visit to the Gibraltar area, Hellespont's 105,535 dwt Aframax *Hellespont Tatina* had entered Cernaval's large drydock, while Chemikalien's 73,869 dwt tanker *London Star* berthed alongside the quay for a couple of days.

This repair complex is located adjacent to Cepsa's La Linea refinery, which has several load and discharge jetties, plus an SBM located in the Bay at which was Teekay Spain's 149,999 dwt tanker *Algeciras Spirit.* Knutsen's 141,720 dwt *Catherine Knutsen* was also anchored close by in ballast.

Cernaval also has another yard at Malaga, which has a floating dock. This subsequently arrived in tow at the La Linea yard for lengthening during *TANKEROperator's* visit to the area. TO

***Hellespont Tatina* and *London Star* seen at Cernaval.**

First purpose-built lightering support vessel delivered

Tanker owner/operator and US Gulf lightering specialist AET has taken delivery of what is claimed to be the world's first purpose-built lightering support vessel (LSV).

The new craft, designed by Elliott Bay Design Group of Seattle and built by Louisiana-based Leevac Industries, was formally named *AET Innovator* at AET Offshore Service's headquarters in Galveston, Texas on 6th October.

AET Innovator was designed and built to streamline ship-to-ship (STS) transfers in the US Gulf and was the first of four sister craft to be built and delivered into the AET Offshore fleet.

Leading the project for AET, general manager of AET Offshore, Bill Merritt said: "Lightering has been conducted in the US Gulf since the 1980s but, until now, support has been provided by converted offshore supply vessels.

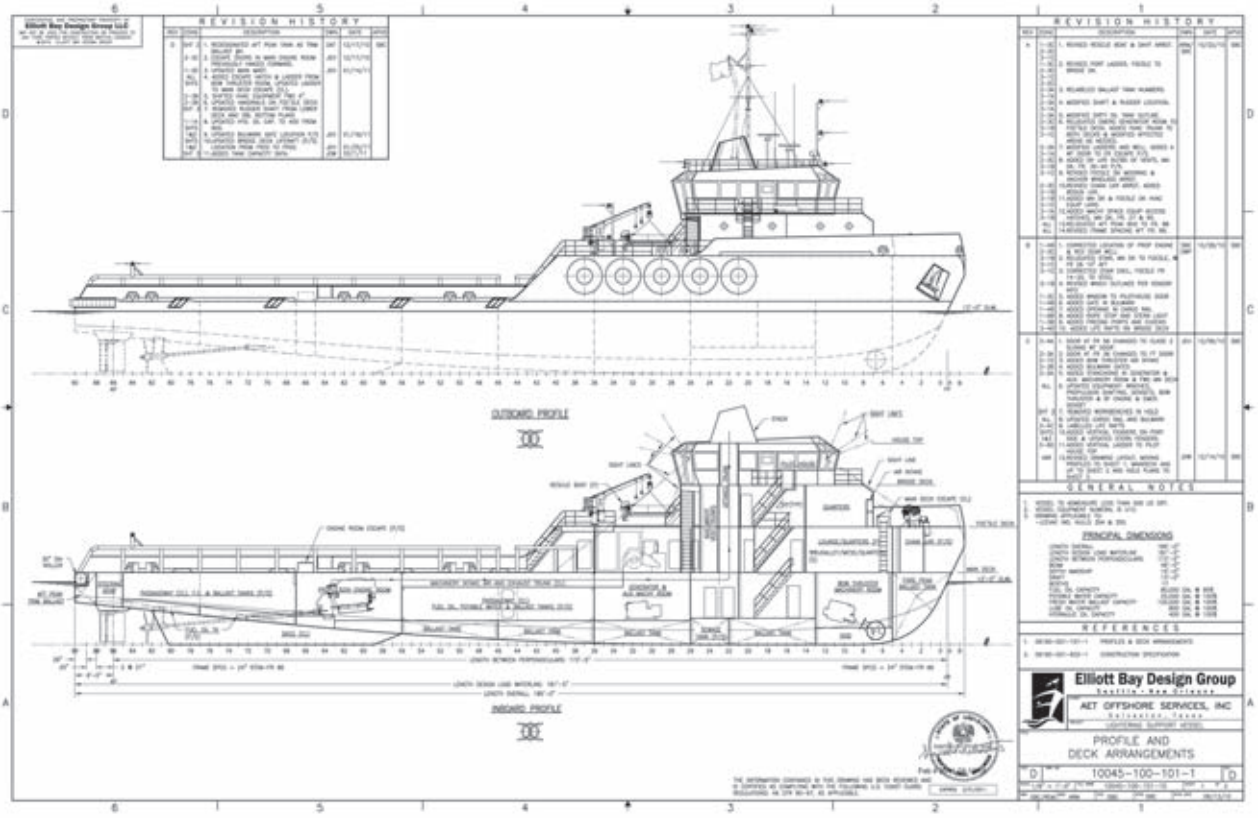
"Three years ago, AET decided to introduce a major improvement to the industry and began work on a new fleet of specialty lightering support vessels. These new ships provide a more stable and effective working platform for our lightering crews and are more manoeuvrable and able to handle less favourable weather conditions.

"This means that our lightering operations will become safer, more efficient and more flexible – which is good for our crews and good for our customers. It also means that we can provide a more comfortable life for our teams who spend 28 days on board during a normal shift," he said.

The LSVs measure 185 ft x 46 ft x 15 ft with an estimated lightship weight of 1,670 tonnes. For improved manoeuvrability and speed, each new boat is fitted with a Schottel STT 170 bow thruster, powered by a Caterpillar C-18 engine.

They were designed to be easily built and easily operated, featuring less piping, ballast and cargo tankage and with the incorporation of high-lift rudders to improve steering. The vessels' bow design features minimal flare and an inward-canted side shell (tumblehome) to optimise close-quarter manoeuvring and for ease and safety when working close-aboard tankers offshore.

They were also designed to carry more hoses and fenders and to stay out at sea longer. The vessels feature improved crew accommodation and have the ability



General arrangement drawing. Note large open aft deck space.

to carry additional supplies.

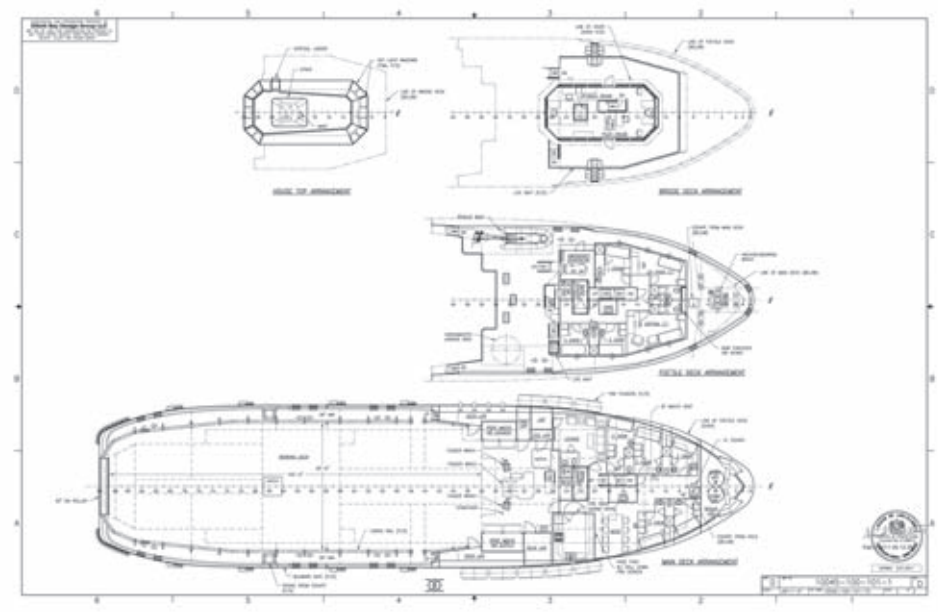
Presiding over the naming ceremony for *AET Innovator*, AET president & CEO, Hor Weng Yew said: "AET began its lightering operations in the US Gulf in the early 1990s and, today, we are proud to occupy a market leading position. We take our responsibilities extremely seriously and strive to provide the safest and most efficient lightering activities possible. That is why we took the decision to invest in this new fleet of purpose-built support vessels.

"They represent a step-change in how lightering is conducted in this region and will further our aim of delivering high quality, safe transfers with minimal impact on the natural environment," he concluded.

In addition to the naming ceremony, a new 7,600 sq ft shore facility was commissioned providing offices, training facilities, workshops and storage for the Galveston-based AET Offshore operation.

The company said that the newbuilding and support vessels represented renewed commitment to the US Gulf lightering industry and also to the local community. AET Offshore continues to increase its workforce and currently employs around 125 people, the majority of whom hail from the Galveston and Houston area.

Today, AET operates a fleet of 88 tankers, comprising 13 VLCCs, 61 Aframaxes, one Panamax and 13 clean petroleum products tankers. A further 11 vessels are on order. AET is a wholly-owned subsidiary of Malaysian energy logistics group, MISC Berhad. TO



Accommodation block and aft deck space.

***AET Innovator* seen following her launch.**

Principal Particulars - *AET Innovator*

Class - ABS +A1,+ AMS, Circle E, Unrestricted Ocean Service, SOLAS

Length	187 ft
Breadth	46 ft
Working draft at stern	13 ft
Crew	7
Hull	Steel monohull
Gross tonnage	under 500 USGT
Speed	12 knots (cruising)
	12.5 knots (max)
Endurance	30 days

Propulsion:
2 x CAT 3512C @ 1,400 bhp each

Propellers:
2 x 80" dia. X 75" pitch, 0.75 DAR

Rudders: 2 x Becker high-lift

Bow thruster:
Schottel STT170 @ 479 bhp

Generators:
2 x CAT C9 @ 250kW, 480v, 60HZ
1 x CAT C44 emergency genset @ 99kW, 480v, 60HZ

CAPACITIES:

Deck area	105 ft x 36 ft 6 in
Deck load rating	540 lb/sq ft
Freshwater	120,000 gal
Fuel	80,000 gal
Potable water	25,000 gal

FENDERING OPERATIONS:

4 x baby fenders and either 2 x 4 regular fenders, or 4 jumbo fenders
1 x Oil States 1844 – DPS-60Te fender winch, diesel drive, 70,000 lb line pull
2 x Oil States Skagit SMATCO HT-50-30 hydraulic tugger winches
Stern roller 18 ft x 30 inch diameter

ELECTRONICS:

Furuno per GMDSS, SOLAS

ACCOMMODATION:

3 x single staterooms
7 x two-person staterooms

How to manage the seafarer career development cycle

One of the most critical issues a shipping company faces today did not exist 20 years ago, that is not enough competent talent to fill all the necessary positions.

Thus, it is crucial that the industry continuously renews its focus on how to recruit, train, assess, promote and retain talented individuals.

Training specialist Seagull said that it had put its experience to work on the challenges its customers face. Shipping company crewing departments, plus those using crewing agencies, often have to manage thousands of seafarers' careers with fewer office staff, less control and little first-hand knowledge of the talent operating on board their vessels. This challenge requires solutions that are not only affordable, but also comprehensive in confirming and validating the abilities of the people on board.

"Rather than selling individual HR products, we provide a package of processes that work within one over-arching system," said Capt Bjarke Jakobsen, Seagull training content director.

"No one else in the industry can do this. Our offering has an integrated set of tools that cover the entire process -- from recruitment through all the stages of the seafarer's career. This is of great value to the crewing departments who can find everything they need for managing the career cycle in one single, comprehensive system," he claimed.

In order to understand the implications, it is important to look at what a seafarer career cycle looks like.

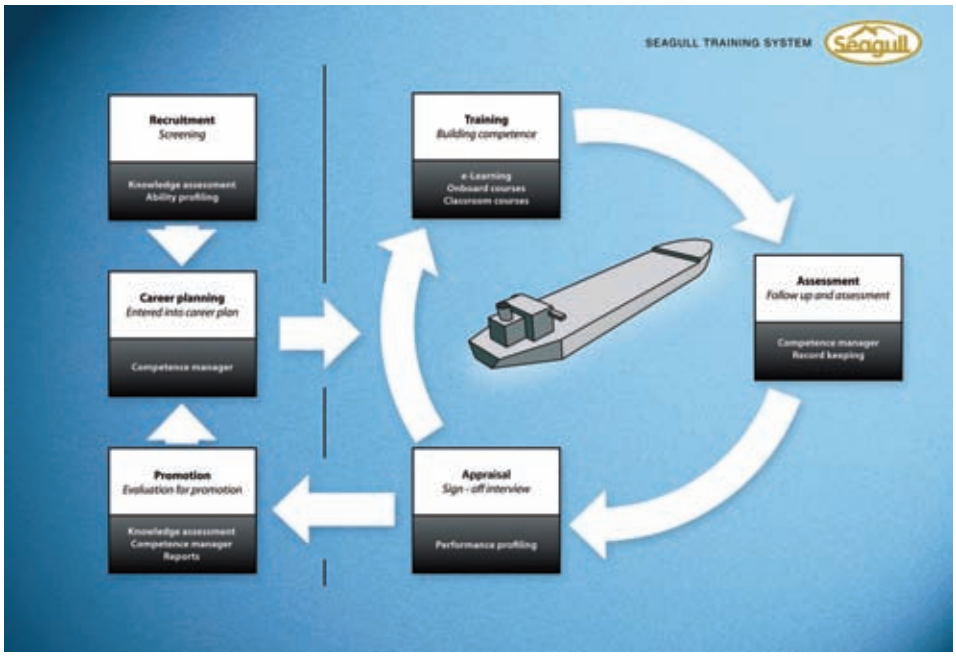
Cycle example

Personnel and crewing professional Capt Ashok works for large shipping company in Singapore. Part of his responsibility is to recruit and screen applicants from crewing agencies in Mumbai and the Philippines. He knows his fleet will expand over the next two years and anticipates that more than 20 full crews need to be recruited. With all the applicants to consider, he needs a selection tool to ensure that only candidates with suitable abilities will be screened to continue in the recruitment process.

For this reason Capt Ashok uses the online version of Seagull's ability profiling tool (APRO) for all the officers. While psychometric testing has been widely used for many years in other industries, Seagull has worked with Prof Roald Bjorklund of the University of Oslo and DNV to upgrade a test tool especially for the maritime industry and has it made available online. By using APRO as part of the recruitment process, Capt Ashok can predict the candidate's ability and performance early, the company claimed.

Seagull training content director Capt Bjarke Jakobsen.

Capt Jakobsen said: "APRO is a very valuable recruitment screening tool and is



Schematic of Seagull's Seafarer Career Cycle.

designed to help select seafarers who can act in the right way when safety is a critical factor. Shipping has turned into a very knowledge-based industry with procedures and instructions of all kinds However, we still fail to assess the ability of our seafarers to read, understand and act upon this very important documentation"

Although the number of candidates has been narrowed down considerably, Capt Ashok still faces a huge task ahead and will have little time to spend with each candidate. In front of him, he now has the interview report from the manning agency for junior officer Amado Reyes. His experience history, license documents, work references and costs look promising, but Capt Ashok cannot be sure since the interview report has raised the question: "What does this person really know?"

To be sure, Capt Ashok uses the Seagull Training System's crew evaluation system (CES) to evaluate whether Reyes has the basic knowledge for the position in question. He arranges the test from his office in Singapore as CES is on the web and hence Reyes can log in and take the test at the manning office in Manila.

The CES knowledge database has more than 5,000 multiple choice questions, which are specific to the STCW categories of management, operations and support. These questions can also be customised to the company's own specific needs by using the CES test editor tool, which Capt Ashok has already asked the company's marine superintendents to do, since they know the particular proficiencies needed for the operations across the fleet. Reyes satisfactorily completes the test, which confirms his basic knowledge and his history of experience on board.

Note that CES maintains the integrity of the system with a question randomisation feature within pre-defined test types. The system can be accessed online from any of the company's offices worldwide and no special software is required. Test results are stored in a company-specific central training database and test certificates and reports can be printed from within the CES system.

Reyes is hired by the company as a junior officer. Now Seagull's competence manager comes into play as Capt Ashok helps Reyes to develop an on board career plan. This is particularly important now he is in the company, as the future expansion of the fleet will lead to upcoming opportunities – furthermore time is not only valuable but also critical to the company.

Competence manager contains a complete profile for every position on board. Simple to use and effective, the tool gives Reyes what he needs to know about the proficiencies of his current and future positions. Seagull has developed a series of competency definitions for various ship types that can be used as the basis for a shipping company's competency and career management system. These have been developed together with a number of different shipping companies to ensure they meet the specific needs of particular vessel types.

Capt Jakobsen explained: "With competence manager, an officer can quickly and easily see what he has to do to achieve certain career goals. All of these tasks can, when completed, be recorded and stored in the database enabling the ship's Master and the shore-based training manager to see how the officer progresses in the career development process."

Operating within the overall system, competence manager not only defines the various competency profiles and manages training and assessment activities for individual seafarers; it will also follow Reyes and other seafarers as they move from ship to ship.

TOTS agreement

Seagull has an agreement with Intertanko to provide the Tanker Officer Training Standards (TOTS) system electronically. Using e-TOTS, the individual officer's training record book is held in an electronic format in Seagull's competence manager database.

In addition to Intertanko's TOTS, competence manager uses competency definitions derived from the ISF training record books for cadets and the SIGTTO competence standard for officers serving on LNG and LPG carriers. Seagull is now looking to work with other sectors of the shipping industry to develop equivalent systems for use on board bulk carriers (e-BOTS) and containerships (e-COTS).

Reyes now has clear expectations from the company and a clear career training path customised to maximise his progress and track and confirm his progress. All this can be accessed on the web, including a comprehensive computer-based e-learning training library, maritime training films, flag state approved and IMO standard on board training courses, and STCW classroom courses. The results of both on board and shore-based training are stored in the same central database, so all training is recorded in one place and can be easily retrieved on demand.

"This means that seafarers can even complete their training sessions ashore, which adds to the training they have already completed on board. We have received feedback from crews that this flexibility is greatly appreciated," said Capt Jakobsen.

During his on board career, Reyes will be assessed for promotion not only with the tools that helped the company put him there (CES, APRO and competence manager), but also using the input registered in Seagull's performance profiling programme (PPRO).

PPRO allows on board management to put staff appraisals directly into these online forms. The personnel team may also enter previous appraisals for a seamless look at the individual's career performance. Access is restricted to authorised personnel and is held in a central database and available online. Security is ensured by locked files and encryption, as it transfers electronically from on board to the home office.

"While some individual products have been available for years, we believe the accessibility and ease of a system that manages the entire career cycle, offers it online, allows customisation for individual company needs and provides an avenue for other communication and regulatory needs, is a great leap forward. This is particularly true - as we hear from our customers - in a time of shrinking personnel and crewing staffs and a worldwide experience shortage," Capt Jakobsen concluded. TO

ECDIS training - the past, the present and the future

Since the rolling time frame for ECDIS implementation has already started, shipping companies and crewing agencies have to prepare their nautical personnel*.

ECDIS training requires two components: generic training and equipment-specific training, generally described as type-specific training.

Training requirements are nothing new, as in 2000 the IMO introduced its IMO Model Course 1.27 for the "Operational Use of Electronic Chart Display and Information Systems". This 40-hour generic ECDIS training course was designed to be held in a classroom environment. A new edition of this course is currently under review as STW43/3/1 by the IMO.

Following the introduction of the first model course, the IMO then published the 'Interim Guidance on Training and Assessment in the Operational Use of the Electronic Chart Display and Information System (ECDIS) Simulators' (STCW.7/Circ.10, June 2001).

In spite of these initiatives, ECDIS training was not included in the STCW Convention and Code for a long time. This led to inconsistencies in the regulations from the various flag states: for the Isle of Man and UK registered ships, for example, it was mandatory for the navigation officers to attend a flag state accepted IMO Model Course 1.27 or an MCA approved generic ECDIS course.

Other flag states, such as Germany, did not require any kind of ECDIS training and therefore did not certify the courses; and some flag states, including Cyprus, certified the IMO Model Course 1.27 for Greek training institutes but with the certificates expiring after a period of five years.

With the changes to the STCW Convention and Code (also known as the Manila Amendments), ECDIS training will become an integral part of the nautical officers training scheme, starting January 2012. Within the next five years every officer serving on an ECDIS equipped vessel must have attended a generic ECDIS training, which is accepted by his, or her home country and the flag state of the vessel in which he/she is serving.

Right direction

This is certainly a step in the right direction, since the quality of the ECDIS training provided worldwide varies from a three-day, classroom course up to a five-day, 45-hour course. In some cases seafarers receive on board training with an IMO Model Course 1.27 certificate but have never before touched an ECDIS.

Looking at the various training providers, you will find excellently equipped facilities like the US Merchant Marine Academy with ECDIS classrooms and individual simulators for each student but other training providers teach up to 30 students in a beamer equipped classroom with only one ECDIS, reading the manufacturer's manual page-by-page. Manufacturer approved, high quality, training providers like Transas' GET-Net Partner, Promarcindo in Jakarta, or ETC's training partner, Novikontas in Riga, are hard to find in those parts of the world.

The training equipment and method used, however, is just one step on the way to a successful ECDIS training. Much also depends on the knowledge and teaching skills of the instructor and the quality of the course work in use. Some shipowners have experienced problems with well-equipped training centres because the instructors are either too old and have therefore never sailed with ECDIS before, or are young officers lacking training experience, due to the fact that they are only filling in during their shore time.

Accidents involving vessels, like the *CFL Performer, Cosco Busan, LT Cortesia* and the *Pride of Canterbury,* show the pressing need to not only invest in the right equipment and paper work, but also to make sure that the crew really has solid knowledge of the equipment in use. This is not, however, only about accidents: it is also about safe administration. Keeping all charts updated, loading new charts and applying T&P notices needs to be learned in order to avoid a deficiency that can be noted by vetting or Port State Control. In a recent study, Germanischer Lloyd pinpointed that most of the deficiencies reported were due to a lack of knowledge in the field of navigation.

Some of this knowledge can be acquired by attending an equipment specific training course. In the past, this was a non-regulated obligation for the shipowner, implicitly mentioned in the ISM Code, the Paris MOU and required by vetting.

The content of the equipment familiarisation was not described and certificates could be issued by anybody (there was a situation some years ago, when a distance learning provider with no manufacturer course training issued type-specific training certificates even though no tutoring was provided and based solely on an exercise sheet completed using the ship's equipment). Much of the knowledge was, in fact, simply acquired through trickle-down training from one officer to another with the event being recorded by a note in the ship's logbook.

In 2011, however, the MPA issued circular No 3 of 2011, which was followed by the MCA's MIN 405. Both documents place much of the responsibility for training on the ECDIS manufacturer. The MCA requires, for ECDIS ship-specific equipment training, that "it should build on an approved generic training course and be delivered by the manufacturer, the manufacturer's approved agent or a trainer who has attended such a programme."

> "Accidents involving vessels, like the *CFL Performer, Cosco Busan, LT Cortesia* and the *Pride of Canterbury,* show the pressing need to not only invest in the right equipment and paper work, but also to make sure that the crew really has solid knowledge of the equipment in use."

MPA also requires an approved generic course and in addition points out that "the navigating officers should be provided with training on the specific make and model installed on their ships. This equipment-specific training can be supplied by the shipping company itself as part of ship familiarisation, using the services of trainers appointed by the manufacturer, or the manufacturer's agent".

Since the new STCW Convention and Code implicitly requires a lot of practical knowhow from the navigator, it is very likely that more and more flag states will issue similar national regulations in order to ensure a certain minimum quality in the equipment-specific training. As on many occasions in the past, the MCA has already set a high standard by requiring the following topics to be covered during such equipment-specific training:

- Familiarisation with available functions.
- Familiarisation with the menu structure.
- Display setup.
- Setting of safety values.
- Recognition of alarms and malfunction indicators and the actions to be taken.
- Route planning.
- Route monitoring.
- Changing over to backup systems.
- Loading charts and licenses.
- Updating of software.

Taking these topics into account, it becomes obvious that the training has to be done on a live, running, system and that it is therefore very necessary to invest two full training days.

In the past, selling the equipment and conducting maritime training was generally split between the manufacturer and independent training providers. Certainly, every ECDIS manufacturer should be able to offer equipment specific training, however, not all of them became seriously involved in flag state approved generic ECDIS training.

Increased complexity

With increased system complexity on board modern vessels and the lack of standardisation, however, the transfer of knowhow from the ECDIS manufacturer to the navigation officer on board becomes more and more critical. While smaller ECDIS brands tend toward outsourcing the equipment-specific training, some ECDIS manufacturers, like Transas, or Furuno, and training providers like ECDIS Ltd or MSG MarineServe GmbH have already responded to these challenges.

In early 2010, Transas started its Global ECDIS training network, GET-Net: a partnership between an ECDIS and maritime simulation manufacturer and a number of independent ECDIS training providers designed to provide a standardised, high quality, training with worldwide availability.

In order to ensure this quality, Transas created a flag state and GL approved generic ECDIS training, which already includes the type-specific elements required by the MCA for Transas' own equipment. In addition to providing the complete course work, every GET-Net instructor has to attend a Transas train-the-trainer course and is audited several times in order to ensure the training quality. To keep the knowledge up-to-date, Transas supports its customers with a computer based training program, free of charge ECDIS demo and a self-training ECDIS workbook.

Furuno, with its professional INS training centre in Copenhagen, is an example of an equipment-manufacturer owned training facility. In November 2005, Furuno was awarded the Certificate of Approval by DNV SeaSkill for the IMO Model Course 1.27 and has since continued to develop a broader range of training courses. Today, the company is also able to offer those courses, which were traditionally offered by independent training providers like Bridge Team Management, or Bridge Resource Management, whereas companies like Kongsberg, or Transas leave these courses to their simulation customers.

The example of Furuno brings us to another problem: the limited availability of its training facilities around the world. Furuno has already recognised this disadvantage and is now selling ECDIS training, including ECDIS training course work and instructor courses, to the shipping companies direct and has started to utilise its own local offices for training. Other manufacturers solve this challenge by partnering with local independent training providers. This certainly saves travel costs for the crews and leads to a situation where the manufacturer with the most training facilities gains a competitive advantage.

In discussing training providers, it is worth taking a closer look at UK based ECDIS Ltd and MSG MarineServe GmbH from Germany. These two companies offer far more than just a conventional ECDIS course.

With a well-chosen name and excellent marketing, ECDIS Ltd offers its training on a wide range of different ECDIS brands with full manufacturer approval. Given that the MCA still insists on the use of original hardware, ECDIS Ltd has set out to offer the customer the possibility of receiving training on a wide range of manufacturer's equipment in one of the largest, fixed location, training facilities worldwide.

MSG MarineServe GmbH has taken a different approach and is able to provide ECDIS training using a laptop-computer based classroom that is fully mobile, allowing the company to conduct training in Hamburg, on-site, or wherever the customer wants. In order to ensure the quality and to comply with MPA and MCA requirements for official manufacturer approval, MSG has signed official partnership agreements with all its offered brands.

ECDIS Ltd also addressed the DoE issue and together with the Nautical Institute invented an accreditation for type-specific ECDIS training. MSG is following a similar path with BSH in Germany. Today, experienced training providers are trying to deliver the best possible support to their clients providing ECDIS consulting and giving post-course advice. The challenge in the immediate future will be the multiplicity of equipment and interfaces, the demand for training and the costs that this combination will generate.

MSG MarineServe GmbH, as an independent provider, has tackled this problem by broadening the Transas GET-Net concept of a manufacturer approved, standardised, high quality training by extending the range of manufacturers covered. Using a modular course structure, the company offers a standardised generic component that can be individually combined with a type-specific component for the different ECDIS brands offered.

To make this available worldwide, MSG has launched ETC (ECDIS Training Consortium) in which all partnering training institutes receive a detailed instructor course and are regularly audited to ensure the quality and work to the one set of course material.

This modular approach is very interesting, as it generates the consistency of a single learning platform. It is built up on the concept of the German-based, online training company, Safebridge (Safebridge.net), which provides training on the live, running, OEM software and requires the single platform to permit delivery using a web-based solution. Unlike any other computer based training, Safebridge's offering is 'the real thing'. Most major ECDIS equipment can be offered using a free play, or a guided training mode, which is followed by candidate assessment leading to certification.

To cover the certification requirements, all test results, feedback forms and copies of each certificate are kept in a centralised database. The authenticity of each certificate can be checked via an automated system using a smart phone camera and a 3D barcode, which eases the work of a vetting or Port State Control inspector.

The seafarer can familiarise himself, or herself at home before joining the vessel and training institutes only need to invest in one ECDIS classroom, which allows them to provide ECDIS generic and type specific training for a much wider range of manufacturers than would otherwise be the case.

From the point of view of the individual seafarer, the owner, or the crewing agency, this saves a lot of travel time and money. On the other hand, from the point of view of the training institutes, this enables them to offer ECDIS training for a wider variety of ECDIS manufacturers without incurring the investment costs that this would normally entail.

ECDIS training is changing today: in the age of electronic communications and games, the teaching methods need to move with the skill set of those coming into the industry. In the end, it will certainly become more professional and the officer on board will feel more confident using ECDIS to its full potential. TO

**** This article was written by Björn Röhlich, MSG managing director. Röhlich was formerly global training manager of Transas Marine having previously served as an officer with the German Navy. He holds a business degree in Marketing and International Human Resources.***

Björn Röhlich

Keeping ahead of a challenging environment

Interesting times are ahead for the navigation industry. With massive oversupply in some sectors of the market, a push to replace older tonnage with newbuildings and mandatory ECDIS reshaping the bridge environment, the challenge to keep ahead of the game is enormous.

In response to this, Thomas Gunn is building a reputation for providing individual, tailored solutions for clients – but unlike most bespoke products they actually cost the ship operator less than off-the-shelf products.

"As the shipping industry becomes an increasingly complex and regulated environment, ship operators are looking to choose business partners they can rely upon," said Thomas Gunn, managing director and founder of Thomas Gunn Navigation Services. "The folios we send out are increasingly aligned with ENC purchases and Voyager solutions. However the market for electronic charts is still immature and sadly, frequently, we find the industry poorly advised.

"To offer the best solution we will sit with a superintendent and look at the plans for their vessel, voyage by voyage. We will then create a unique package of folios and individual ENCs, which reflect the vessel's route or trading area – bringing an end to vessels holding stocks of expensive - and unnecessary – folios," Gunn said.

Thomas Gunn claimed to be making the most of the opportunities that the newbuild market offers. "The future is looking bright. We are seeing a lot of business out there and have put some attractive offers out to industry," said Gunn. "We are currently outfitting around five newbuild vessels a week."

For newbuildings, Thomas Gunn can provide computerised indices, prepared in geographical or numerical sequence for any new vessels. If a completely new outfit is required, the company can provide its own specialised indices, which includes all the ports capable of handling the size and type of vessel in question. These standard outfits can be tailored to suit the requirements of a particular ship, or fleet of vessels as necessary and with the digital solutions now available, these are fully incorporated into the service.

Outfit management

Thomas Gunn currently has 3,500 vessels plus under management contracts, several of which are part of large fleets. When these vessels are in service a complete chart and publication inventory covering both paper and digital aspects is sent to Thomas Gunn, from which it will produce a chart and publication index relevant to the specific vessel. This is entered into a specialised computer database where the dedicated index is created, enabling any out of date items, or items where new editions have been issued, to be identified and notified to the customer before supply.

The system is controlled by the company's proprietary software, which currently monitors and controls supplies for several thousand ships and office libraries. It has been recently updated and builds upon the experience gained in running the service for many years and recent advances in new technology, the company said.

A major advantage of upgrading the system is improved operational efficiency and the ability to offer web-based access to the data held within the company's internal database, to the Ship Managers, aiding transparency in the service provided to the Customers.

Move to ECDIS

While the talk is all about electronic navigation, Gunn has seen growth too in unexpected areas. "It's been a record year for paper charts," he said. "With the UKHO publishing 700 new editions of paper charts this year, we have seen a 20% increase in turnover in this area.

Thomas Gunn

"Paper charts are still the norm, but ships are beginning to use technology and go for ENCs, ECDIS and digital solutions, so our customer base has significantly increased in this area. However, these are often still not used as the primary source of information but are used to start the familiarisation process and help get people to use electronic navigation to improve their situational awareness," Gunn said.

He is concerned about the lack of training, however. "It's a fairly complete concept change from paper folio coverage to ECDIS and we provide training to our customers to ease the process. As the legal deadlines loom ever closer, chart suppliers will play a fundamental role in assisting shipping companies to get to grips with a new method of navigation, which some seafarers have yet

Voyager software is installed on a Windows PC.

to experience. The team at Thomas Gunn is well placed to respond to the specific demands of the market – most have a background in shipping and know the industry well, " he explained.

One issue that the industry as a whole is encountering is that many vessels being delivered now, were ordered in 2006-2007 with just one ECDIS, as part of a manufacturer's integrated bridge system (IBS). Since then, the owner/manager will have had to consider retrofitting a second ECDIS.

This decision and requirement can impact upon ECDIS training requirements throughout a fleet of vessels, as a navigator will probably move around a fleet and be faced with a different system from that he or she undertook type specific training, on his previous assignment. If an owner/manager has a large diverse fleet, a navigator could be facing six or seven different systems in the course of his employment with that company. "This could incur several thousand dollars in training costs alone," Gunn warned.

The scale of the problem can be seen by the fact that there are about 35 type approved ECDIS on the market with another 25, or so still to come, mainly originating in the Asia/Pacific

Digital chart management

Of course, the move to ECDIS demands better broadband and email connectivity between the ship and shore to deliver digital chart updates quickly and efficiently. Thomas Gunn's Voyager chart management system uses these advances to simplify the complex and increasingly regulated bridge environment providing a well- established and strong alternative to supplying paper charts alone. Processes are improving as more and more ships become connected. Voyager now receives information directly from the UKHO to the company's server and its software in turn converts that paper document into digital data so it can be sent directly to the ship.

"Compare this with the problems of supplying paper charts to a vessel - it is like hitting a moving target," said Gunn. "The ship may have only a short port berth time window and you have to connect with the agent to get the charts delivered on board the ship. If a vessel has been on a long passage and has not received any navigation data from the chart agent for three to four weeks, then it could be in trouble when it comes to an inspection by port state control."

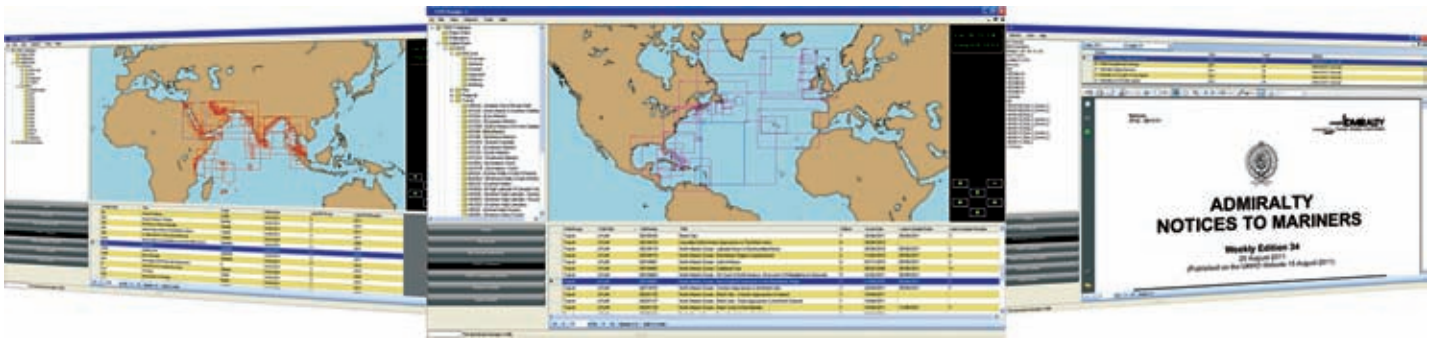
Voyager provides a complete bridge solution for the navigator and now offers Regs4ships digital maritime regulations incorporated into its streamed navigational data management system. Tested and approved by the UK Maritime and Coastguard Agency (MCA) and UKHO and with approvals from a number of flag states, it gives the mariner a personalised database of publications, charts and the applicable notices to mariners (NTM) within a clear folio system. Weekly updates are provided through email or internet. Data is sent to the service user via weekly updates and an emphasis on reducing file sizes is key as file compression is used and only files of relevance to the vessel's chart outfit are supplied. Nearly 2,000 vessels are currently subscribed to the Voyager service worldwide.

Worldwide approach

Thomas Gunn claimed to have gone a long way in spreading the message across the globe by providing expertise and information to the industry on a face to face basis. The process of setting up a new Singapore office has begun and this has provided it with access to completely new markets in China, South Korea, Taiwan and Indonesia. A newbuilding in China or South Korea can be outfitted from Aberdeen in about four days using airfreight, the company claimed.

However, the company said that it wasn't complacent – competition is strong in this area and it's important to stay ahead of the game. With investments in IT development, training and creation of a solutions based approach Thomas Gunn said that it understood what vessel Masters are looking for, what the shipmanager is looking for and what potential areas need to be explored.

"Vessels are still coming out of shipyards and the race is on to scrap old tonnage and replace with new," said Gunn. "The market is changing rapidly and with the mandation period ongoing it's an exciting time. We have the people and we have the products but ultimately we know that our strength lies in the value of the service can offer during these interesting times," he concluded. TO



Weekly Admiralty Notices to Mariners contains a a list of new editions of charts and hydrographic books.

Training systems round up

Below, we have listed a few of the many marine training initiatives offered by companies worldwide. These take many forms from OEMs to specialist academies.

Hamworthy Academy formed

Marine and offshore fluid handling specialist Hamworthy has launched a new learning initiative aimed at offering tailor-made training packages for its end users.

This service, Hamworthy Academy, includes a range of courses, which are designed to provide training for the company's equipment and comprise e-based learning packages backed up by a significant investment in hands-on facilities.

Hands-on training is currently available from Hamworthy's Norway-based facilities in Moss, which includes performance testing of its largest inert gas systems. The company has also developed crew training simulators for its LPG cargo handling system, LNG reliquefaction system and VOC recovery system. Simulator-based training can be arranged in training centres around the world.

Hamworthy's inert gas training.

OAA wins DNV approval

Oxford Aviation Academy's (OAA) maritime crew resource management learning programme (MCRM) has been certified by DNV with reference to the STCW Manila 2010 amendments mandating leadership and management training for vessels' crew.

The certification was awarded by DNV after its recent audit of an OAA delivered MCRM course for Chevron Shipping. It also covers the requirements for bridge resource management (BRM) and engine resource management (ERM) at the operational level.

Thomas Jacobsen, DNV SeaSkill production manager for course certification said; "In our experience OAA delivers well above the criteria set for their STCW Manila 2010 accreditation for leadership and management training".

Transas installs bridge simulators

Transas Hellas has installed a bridge simulator type NTPRO 5000 with two desktop bridges at CMI Maritime Services (Manila) owned by Crew and Ships Management Hellas.

CMI has established the Argo Navis training centre in which the navigational simulators are intended for training in watchkeeping and operations with ECDIS: radar/ARPA operations, familiarisation with all the details of electronic chart operation, including route planning and monitoring and the principles of displaying various types of information.

In addition, Transas Hellas has agreed with Michaelmar Shipping Services (Piraeus) to supply a multi-purpose simulator facility to its Manila branch, Global Gateway Crewing Services.

Transas will provide its Navi-Trainer Professional 5000 (NTPRO 5000). It will include a multi-task shiphandling simulator, capable of reproducing the entire bridge requirements, including mooring and manoeuvring in restricted waterways.

Russian tanker training

Gazprom Marketing & Trading (GM&T) and Admiral Makarov State Maritime Academy in St Petersburg (AMSMA) opened of a new tanker operations classroom on 16th September 2011.

The opening of the classroom was claimed to be an important milestone in the creation and development of a training of specialists in high-quality and safety operations in a modern tanker fleet necessary to meet the growing exports of liquid cargoes, including LNG and LPG.

The relationship between GM&T and AMSMA first blossomed in 2010 when GM&T provided marine cadets for foreign company vessels long-term chartered to Gazprom.

New projects will inevitably require a large number of Russian seafarers with expertise in LNG, offshore operations and ice/winter navigation and engineering.

USCG approves upgraded MITAGS ECDIS course

The Maritime Institute of Technology and Graduate Studies (MITAGS) has received US Coast Guard approval of updates to its ECDIS MITAGS-179 course.

It is part of the advanced navigation course and this approval now aligns the course with the latest revisions of the STCW code, as amended in 2010.

"Any applicant who has successfully completes the ECDIS course at MITAGS will now be considered to have successfully demonstrated the competencies of the amended STCW code of 2010," said Eric Friend, MITAGS' director of training MITAGS.

Videotel addresses MLC

Videotel Marine has launched an online Videotel Academy MLC 2006 tutor assisted distance learning course, incorporating computer based training (CBT).

This is claimed to be the first programme of its kind in the industry and the only course of its kind to offer real time online tutoring worldwide.

Nigel Cleave, Videotel CEO. "We feel that the extensive training needed should be conducted in real time by a senior course tutor with significant experience in the field. However the range of roles and responsibilities held by course participants also demands that the training be flexible and available on demand."

The course is online and tutor supported and follows a structured learning programme lasting 12 weeks. The course tutor is David Dearsley who has over 45 years of experience in the shipping industry at sea and ashore, some 25 years of which was working as ISF deputy secretary general where he was responsible for co-ordinating the global shipowners position on initiating, reaching agreement on and then drafting and developing the text for the MLC.

Human factor courses offered

WrightWay Training is to conduct a new series of open human factor courses next year.

The human factor courses use ship bridge and engine room simulators and have been conducted for 15 years.

Since the publication of the amendments to STCW, WrightWay has received a significant number of enquiries from individual officers and smaller companies wishing to attend and participate in the course.

The five-day course has a hands-on, interactive approach using state-of-the-art simulators. It pays attention to the attitude and behaviour of individuals and their consequential impact on safety. It also provides the opportunity for people to examine their own behaviour and make individual decisions on how to improve their teamwork.

Human factor training originated in aviation and is now a vital element of training for all safety critical industries, the company said. TO

Kelvin Hughes addresses all things navigation

In October, Kelvin Hughes (KH) presented the first in its series of 'Safe Ships, Safer Seas' seminars to an audience in Athens consisting of 100 Greek shipowners, operators and senior executives.

The event went ahead despite national strike action across Greece and was well attended. The keynote address was given by George Gourdomichalis, president and managing director of G Bros Maritime and president of Piraeus Marine Club.

Safe Ships, Safer Seas focussed specifically on three industry topics: maritime security and piracy, ECDIS mandation and eNavigation plus future bridge technology.

The morning session included experts from KH who were joined by guest speakers from across Greek and international shipping, including George Tsavliris from Tsavliris Salvage, William Frain-Bell from Maritime Risk International and Paulo Saranga from FLIR.

All of the speakers talked of the increasing risks of piracy attacks with one describing modern pirates as 'men of business' operating a multi-million dollar industry.

Bruce Santos, marketing manager for KH showcased the organisation's newly developed radar solutions, which utilise state-of-the-art technology to provide high level threat detection to combat piracy across commercial shipping operations.

The seminar on maritime security could not have been more timely, as KH's CEO Russell Gould said: "The news this weekend that UK PM David Cameron has agreed to allow armed guards on board British-flagged vessels travelling off the coast of Somalia demonstrates how piracy has quickly become an issue not only for the maritime community, but for the wider global economy."

He continued: "The aim of the seminar was to discuss maritime security close up and to look at the implications it has on day to day ship operations. Many of our speakers are specialists in the sector and were able to offer advice and expertise on security solutions as well as speak to the audience about their personal experiences."

The second session focussed on ECDIS and future bridge technology and included Alasdair Ireland from V Ships and eNavigation expert Dan Pillich together with KH speakers.

Topics ranged from the difficulties of implementing ECDIS fleet-wide to the use of the latest multifunction display technology to reduce costs and simplify navigator training.

Closing the event, KH's director of marine systems, Spike Hughes, took a look into the future with the spotlight on future bridge technology and an eBridge concept which will be multi-functional, flexible, and owner configurable.

Following the seminar, delegates were able to take part in demonstrations of KH's MantaDigital ECDIS and radar and its latest electronic navigation technology for threat detection, including integration with the latest thermal imaging camera equipment from its partner organisation, FLIR.

The company said that it planned to follow up the Athens seminar with further seminars in 2012.

ECDIS upgraded

In September, the company announced the launch of a fourth-generation ECDIS, which is claimed to be easy to operate and update, features built-in familiarisation and carries a three-year warranty.

ECDIS^4 is the latest member of the MantaDigital multi-function workstation family, allowing one display to function as an ECDIS, a radar, or a conning display. The

KH has introduced the fourth generation of its ECDIS range.

company said that it built on the experience gained since its first ECDIS received type approval in 1999.

"We believe that this is the easiest ECDIS to operate and with its standard three-year warranty it offers the market the most cost-effective ECDIS solution available," said Bruce Santos, KH head of sales and marketing.

"When supplied as part of an ECDIS^{plus} bundle – which includes chart data, updates and training – chart updating is reduced to a single mouse click," he claimed.

Built-in scenarios allow operators to familiarise themselves with the system in route planning and route monitoring operational modes. The user interface is common to all modes, is very straightforward to use and simplifies crew training, KH said.

ECDIS^4 is also available as a software package, which allows full operation of the MantaDigital system in all its modes and can be run on any suitable laptop computer for training or product familiarisation.

"Multifunctionality is the key to the MantaDigital product range and, where administrations allow, this will reduce the number of displays that are needed on the bridge to meet the carriage requirements, as any display can provide ECDIS backup functionality," Santos said.

Dr Steve Tucker, KH's product development manager, said: "ECDIS^4 is the culmination of over 20 man-years of development and testing. We have ensured the highest functional and operational quality for ECDIS^4 through 20,000 hours of thorough, hands-on operational testing at sea, responding to feedback from the bridge teams on board."

MantaDigital ECDIS^4 is available with desk, pedestal, flush and bridge wing mounting options and 20 in and 26 in screen sizes, making it suitable for all vessel types and sizes. Latest features include the ability to show other manufacturers' radar as an overlay and a full screen chart mode together with sophisticated facilities to manage chart data and updates.

"Just fitting ECDIS equipment on its own is not a solution to the IMO ECDIS mandation requirements," Santos warned. "There are also significant steps that ship operators need to take to implement an appropriate infrastructure for ECDIS on their vessels to ensure compliance.

"Kelvin Hughes is the only company that can provide a one-stop-shop solution that includes equipment, paper and electronic chart data, chart management and update, training, global installation and support. Our service is totally flexible and will meet the requirements of shipowners and operators both for paperless operations and for paper charts migrating to ECDIS with a paper back-up.

"An important part of Kelvin Hughes' package is advice on the data to be used in the ECDIS. The costs of buying data from different sources is dependent on the vessel's operating area; this makes advice on the choice essential if a cost effective solution is to be achieved.

As part of ECDIS^{plus}, Kelvin Hughes' outfit management service (OMS) combines initial supply of data with ongoing monitoring of vessel movements and changes to ENC coverage to ensure that chart data is always up-to-date and safe. It also ensures operators and owners are invoiced purely for what their vessels need – and no more," he concluded. TO

P&I club raises concerns over ECDIS

The UK P&I Club recently completed a a series of three short articles, which provide a user friendly guide to the mystery surrounding an ECDIS.

These have now been consolidated into a 16-page booklet *ECDIS – Navigational and claims issues* that is available in hard copy from the Club, or as a pdf file from the club's website.

While the booklet is not really intended for navigators, it should, the Club believes, be of great value to anyone in shipping who needs to be aware of what ECDIS is and the implications of any ECDIS-associated errors and oversights.

All three articles can be downloaded individually, or in the 16-page combined format from the loss prevention (LP) section of the UK P&I Club website http://www.ukpandi.com/loss-prevention/lp-reports.

With the amendments to SOLAS Chapter V Regulation 19 governing the statutory introduction of ECDIS now being adopted from 1st January 2011, the 'ticking time bomb' associated with the ECDIS mandating process has now taken on a level of greater urgency with the shipping fraternity ultimately coming to the end of its breath holding exercise.

As with the introduction of previous mandatory requirements to fit equipment, such as Radar, VDR or AIS systems on board commercially operated vessels, many technical managers will now be faced with the task of acquiring full compliance with the ECDIS carriage regulations at the lowest possible capital expenditure.

For many owners' fleets, this will be quite complicated since not only is there is a lot of training that still needs to be undertaken, this training needs to be type-specific. Within a fleet, there will probably be ECDIS systems from more than one manufacturer and this will have various implications, not the least of which will be a restriction on which deck officers can serve on which ships.

The first LP news in this series was an all-encompassing introduction to ECDIS and dealt with the fundamentals such as 'what is (and isn't) ECDIS?', the general training obligations relating to the use of ECDIS, as laid out under the provisions of the STCW 95 and ISM codes, the implementation dates by ship type and size and the attitudes of flag states and Port State Control. It concluded with a guide to the acronyms associated with ECDIS.

Asset or a liability?

The second article in the series brings LP news and the UK P&I Club onto home territory, as it considered the operational aspects of ECDIS and the intrinsic function that electronic chart and navigation systems have to play in the commercially operated ship of the future.

As Karl Lumbers, a director of Thomas Miller P&I, managers of the UK P&I Club, explained, the mandatory requirement and introduction of ECDIS is seen by the regulatory bodies guiding the shipping industry as a major step forward in safe ship operation and protection of the environment.

However, Lumbers pointed out that the transition to electronic navigation and the operation of a paperless bridge is being viewed differently by a significant part of the shipping community, which sees it meaning increased operational costs of new equipment and additional training requirements.

More worryingly, Lumbers said; "It is also becoming increasingly evident that far from reducing risk, ineffective operation of complex ECDIS systems resulting from poor management practices, or training can actually increase the risk of incidents, such as collision and grounding with the interface between computers extenuating the so called 'human element' reported as causative in almost every marine casualty.

"Automation of traditional manual navigational tasks has been observed as delaying the opportunity for error detection and recovery, allowing a navigational single point failure to develop undetected into a single point catastrophic failure, ultimately resulting in an incident," he said.

Given these facts, Lumbers believed that it is important to highlight and publicise the importance of establishing sound and effective ECDIS practices: "Only by establishing such practices can an owner expect to reap the potential benefits of ECDIS, namely the reduction of both management costs and navigational risks," he said.

UK P&I Club's loss prevention expert Karl Lumbers.

The article then goes into much more detail than the first did. Section headings include: 'The modern ECDIS system', which describes the various types such as retrofits – basically standalone PCs – and integrated bridge systems (IBS) now commonly found on newbuilds. 'Electronic charts', which addresses the confusion that surrounds the various types of chart available and the differences between them.

In addition, 'Generic training' and 'Type specific training', look at the issues surrounding effective training and what is required to meet the mandatory requirements.

Meeting the type specific requirements is proving a logistical nightmare for those owners with different manufacturers' products on different ships but who want their crews to be interchangeable. Reference is made to changes in bridge management systems with

some companies adopting an airline-style 'navigator/co-navigator' arrangement. 'Passage planning' reveals the need to adopt different procedures when using ECDIS.

Finally the article comes to the question of 'Risk Analysis' where the UK P&I Club noted that given the increased technology available to the modern navigator, one of the conundrums must be why increased computerisation and automation has not removed and perhaps not even reduced, the potential for failure. It added that instead of making things safer, new pathways to failure seemed to have developed, centered on an initial miscommunication between man and machinery, resulting in a misalignment in the reality of where the navigator thinks he, or she is and where the automated system has actually taken him, or her.

Research has shown that humans are poor monitors of automated systems and tend to rely more on system alarms than manual checks, especially in relation to those systems which have proven themselves as highly reliable. In several casualty investigations it has been determined that automation has resulted in the navigator developing an 'operational bias' relying on the automated systems, rather than the salient cues provided visually through the bridge window.

Lumbers concluded: "An extensive risk assessment of ECDIS operation combined with a clear requirement of manual system checks of critical automated operations must be established within the company Safety Management System, effectively identifying operational risk and introducing control measures to reduce the effect of single point failures."

According to Lumbers, the main areas of risk when considering ECDIS operation can be identified under three main categories:

1) The equipment itself may suffer from failure (both hardware and software) including power outages, sensor input failure and potential virus infection.
2) The charts are operated under permit, which may expire, charts in use not corrected up-to-date, updates not correctly applied, ENC chart coverage unavailable, requiring the system to be used in RCDS mode without the appropriate paper chart folio being available.
3) The operation of the ECDIS system on board carried out by poorly trained crew following poor navigational practices and operational procedures, such as excessive zooming, or operating the chart for navigation with base information only displayed.

Effective risk assessment as a critical function of implementation of electronic navigation is rarely emphasised when the transfer from paper to digital navigation is considered.

Legal implications

The third article in the series, released last June, was entitled 'Legal implications' and considered the legal effect of failure to meet the statutory ECDIS requirements and the effect on claims where levels of operation, or knowledge of ECDIS are considered to be a factor or fundamental link in the chain of causation leading to an incident.

Since it drills down into legal and insurance details, reproducing it here is not practical, especially since the article is itself quite concise despite running to over 2,400 words.

However, one all important fact should be noted above all others, said Lumbers: "We believe that the use of ECDIS and the management of systems associated with ECDIS will come in for great scrutiny both by Port State Control and other regulatory bodies. Shipowners and their crews will not only have to do things right, they must be in a position to show that they are doing it right. Otherwise the threat of detention will never be far away.

"Furthermore, casualty investigators will have yet another source of information when seeking causes for incidents, such as groundings, or collisions and woe betide any poor owner who can't produce it," he warned.

Legal disputes are always likely to arise especially when large sums are involved. The principle aim of the commercially minded shipowner, charterer and cargo owner is of course to settle any disputes quickly and cheaply. If however, a dispute cannot be resolved between the parties then the matter may be referred to arbitration, or the courts for determination.

Spy on the bridge

In hearing disputes between two parties, arbitrators and judges rely upon the evidence presented to them to establish the facts of the case. This evidence traditionally presented by the parties in the form of both oral and written statements of witnesses and contemporary log entries and documentation has in the past provided the basis on which to decisions have been made.

This evidence sometimes requires the courts to determine conflicting statements on a particular issue in dispute. To establish the facts of the case in such situations, the judge or arbitrator has tended to rely heavily on contemporaneous evidence, such as photographic, video or electronic information.

In this respect, electronic equipment designed with a recording facility, such as ECDIS, voyage data recorders, AIS data and even GPS, have become a crucial part of legal proceedings often used to determine disputed facts. With literally hundreds of different types of electronic systems with recording facilities operating different generations of software, the recovery of this information can, however be a difficult task in itself.

As this critical and at times complex procedure of electronic data recovery has been identified, it may be questioned why many shipmanagers, owners and operators have failed to provide clear instructions relating to the preservation of such data in the event of an incident.

Critical information may be lost due to lack of knowledge in relation to the storage space or memory of the equipment in question, or by the data being simply overwritten if action has not been taken for its preservation. With this in mind, it seems sensible for the shipmanager, or owner to establish not only what electronic equipment installed on board each vessel has recording facilities, but also provide clear instructions to the master regarding the actions required to download the data and safeguard this critical evidence. Failure to preserve evidence may be viewed with suspicion and adverse inferences drawn.

It is important to understand that ECDIS systems are capable of recording not only the log of events but also the parameters of operation set up by the operator at the time of the incident. This electronic data may play a crucial part in the litigation process especially during the transition period from paper to electronic navigation where questions relating to the effective operation of ECDIS systems may be raised.

This will mean that in the case of a collision for example where vector charts are selected and overlaid on radars having a primary collision avoidance designation, it may be possible for the officer charged with the navigation duties to reach information overload especially if layers in excess of chart base levels are selected.

In this effectively ultimately resulted in a collision, the failure of the navigator to act in accordance with the Collision Regulations in this mode of operation may not only result in criminal charges and civil negligence actions, but may render the vessel unseaworthy with questions as to the exercise of due diligence on the part of those responsible for the management of the ship raised by cargo interests or insurers.

TO

IBS demand strong

Hamburg-based SAM Electronics said that it had witnessed continued strong demand for its latest series of NACOS Platinum integrated bridge systems (IBS).

More that 130 IBS have already been sold worldwide for installation on ships of all types and sizes, the company said.

Current tanker orders include 10 systems for a series of 45,000 dwt chemical carriers presently being delivered by SLS Shipbuilding of South Korea to Dubai-based United Arab Chemical Carriers (UACC) between this year and next.

Elsewhere, the six 260 m long Neo-Panamax LPG carriers being completed for Hartmann Reederei by the Chinese yard, Dajiang Shipbuilding of Wuhu are being equipped with similar Platinum navigation systems, comprising a complete range of proprietary navaid and communication sensors.

These include SAM Radarpilots, Ecdispilots, Trackpilots and Multipilots for combined IP radar and ECDIS operations together with positioning aids, echosounders, speedlogs, AIS and VDR facilities and GMDSS communications.

The last of the vessels are due for delivery this year.

Jointly developed by SAM Electronics and its associate L-3 companies, Lyngsø Marine of Denmark and L-3 Valmarine of Norway, the NACOS Platinum series of LAN-based IBS is based on identical components and a common network to provide all navigation functions, as well as those for alarm, monitoring and control, propulsion control and power management in addition to automation capabilities.

A combination of networked architecture and modular components provides optional levels of scalability so that solutions can extend from a small alarm-type system or a stand-alone ECDIS assembly to larger more complex configurations.

For tanker operations, standardised navigation assemblies are available. These typically provide for wing control, including conning and propulsion control, chart updates for ECDIS and automated functions for online diagnostics and remote maintenance.

EU Flagship Project

As a leading participant in the recently completed EU part-funded Flagship project aimed at improving shipmanagement on board systems and procedures, SAM Electronics headed the project's 'Bridge Support' venture involving development of advanced functions for further integration of nautical data.

By integrating NAVTEX messages, radar and AIS targets into a single coherent display, quicker hazard analysis and improved tracking accuracy can significantly reduce duty officer workloads. As a result, NAVTEX (Notices to Mariners) integration is now possible while AIS target merging will be available as an integral part of NACOS Platinum systems later this year; at the same time, a portable conning unit will also be available as a Tablet PC. TO

SAM Electronics has experienced strong demand for its IBS.

Can bunker purchase be a partnership?

If you ask any given shipowner, or operator around the world how to define the relationship between him, or her and the party providing bunkers to the fleet, you are obviously bound to get different definitions.

However, you are most likely to hear definitions like "bunker trader", or maybe "bunker supplier", which of course also covers how the provider prices the product and what is supplied.

At Trumf Bunker, a bunker supplier, located in Vejle, Denmark, the company likes to think of itself as more than just a bunker trader. The supplier prides itself by thinking of the clients more as partners rather than clients and more importantly, Trumf Bunkers likes its clients to think of the company as partners instead of traders. So how is this partnership between owners/operators and bunker supplier established? The answers are many.

For one, the 'bunker management' idea, as Trumf Bunker has named its latest concept, is eminent. "The definition – or content – of our bunker management product is entirely up to the client. The partner (client) will set up the bunker purchase process, and we will aim to deliver according to that" said Nicolai Baden, bunker supplier at Trumf Bunker.

"We have different clients with different needs and we customise our solutions in order to meet our partners' different needs," he continued.

Different is absolutely also a mantra when looking at the background of the bunker suppliers employed at Trumf Bunker. "Diversity is a part of our strategy as well as one of our values in the company. In order to think differently we have to be different, subsequently our supplier team is a mix of people with different mindsets and different expertise," explained managing director Henrik Ladekjaer.

"All our employees in our supplier team have different backgrounds and our staff counts from an employee like Nicolai with a background as vessel operation manager to an employee, who has spent more than 25 years with physical supply," Ladekjaer said, who started his own career as a shipping clerk and stevedore, before spending seven years as a bunker trader in one of the traditional big Danish trading houses.

One would think that there are enough challenges in the volatile bunker market with an increasing number of bunker suppliers, that is increased competition, not to mention the fact that decreasing freight rates take their toll on owners and operators, subsequently putting more pressure on suppliers in order to risk evaluate clients and getting paid on time.

However, Trumf Bunker likes to be challenged; "We want our partners (clients) to challenge us, and we also want to challenge ourselves, as well as our clients. In order for us to add value to our partners, and evidently also to our stockholders, we like to think innovatory to create quality bunker solutions," Ladekjaer said.

He added; "For us it is all about finding solutions that suit our partners' needs by combining our partners' operational situation with our bunker market knowledge, enabling us to optimise our partners' bunker purchase, everything taken into account. This can only be done based on mutual and deep trust between our partners and us."

In addition, when it comes to advice offered to owners/operators on how to avoid the pitfalls when bunkering, Trumf Bunker has a different angle. "As bunkers today represent up to 80% of a ship's OPEX figure, we find it remarkable, that some owners/operators sometimes prefer to place their bunker stems through a local agent often to save only a few dollars," Ladekjaer said.

"Seen from the perspective that bunkers are often included in the freight calculation of which owners/operators usually pay 1.25 up to 5% commission to the chartering broker, who has no legal or commercial responsibility at all, it makes only little sense to take a much bigger risk on the bunker purchase dealing with non-bunker companies to make a saving, which is often less than 0.5%," Baden pointed out.

"We always recommend owners/operators to minimise their risks by dealing with first class bunker suppliers only, who also have legal obligations and responsibilities towards their contract partners. At the end of the day, we of course hope the operators appreciate Trumf Bunker as their preferred partner," Baden concluded. TO

"Extended mutual trust between the vessel operator and us as supplier can result in optimised bunker purchases," said Trumf Bunker's managing director Henrik Ladekjaer.

OW Bunker looks into its crystal ball

The following are highlights of OW Bunker's latest analysis into the impact of impending low sulphur regulation on the supply and demand for bunker fuels outlined at the recent Bunker Asia Singapore conference.

Starting with ECA zones, OW Bunker believes that, despite attempts by various lobby groups, the 0.1% ECA regulation will go ahead as planned in Europe, US and Tokyo Bay in 2015. The current lack of take up of scrubbers and the embryonic nature of LNG, means that distillates will be the main source of compliancy mitigation.

"While we can sympathise with the position of shipowners/operators, the industry is under such environmental scrutiny from legislators, environmental interest groups and consumers, that any regulatory amendment would be seen as an unacceptable u-turn on behalf of an industry that is perceived by external forces to be unwilling to change or adapt. When this position is supported by the likes of the Danish Shipowners' Association, the European Commission and many other environmental lobby groups, it is hard to see how the 2015 deadline can be avoided," said Søren Christian Meyer, OW Bunker global sales director speaking at the Bunker Asia 2011 conference in Singapore.

The bunker supplier and trader noted that there were also changes occurring in refinery trends.

Local, often state controlled, or owned oil companies are investing in refineries while the global oil majors are divesting, with new specialist refiners continuing to rise. For example:

- Shell is divesting its activities downstream, selling off refineries, stores, tank stations in order to focus on its core upstream business.
- Statoil is divesting its bunkering business to focus on core businesses.
- ConocoPhillips (world's fifth largest refiner) splits refinery from downstream business into two separate public trade companies.

It is unlikely that low sulphur MGO will become a standard product at many refineries, due to the logistical challenges of middle distillates and the fact that land-based diesel products will always be seen as more commercially attractive over marine-based ones:

- Introducing low sulphur MGO on a wider basis would require refineries to configure their set up to produce this middle distillate and also ensure that there are the appropriate storage facilities to accomplish this.
- A key issue for the refiners is that they cannot just sell 'normal' diesel to the marine industry. They need to validate that the diesel complies with the standards for marine fuel, which has a different flash point (60 deg C versus 55 deg C) from land-based middle distillates.

The future refinery capacity is mainly increasing in the Middle East and Asia/Pacific. OW Bunker's analysis of total demand compared to the future capacity forecast shows that there will be enough middle distillates refinery capacity globally, but there will potentially be shortages in Europe and APAC:

- During the next 10 years (2011 – 2020) over 150 refineries have been identified as investing in building capacity. Over 50% of these are in the Middle East and APAC
- The fuel desulphurisation process involves high capital and operating costs for both the installation and the price of catalysts respectively. This will naturally have an impact on price levels as refiners look to maintain margins.

Shipowners and operators are facing such significant issues and challenges, that they are looking for more from their fuel suppliers than just a cheap deal," said Søren Christian Meyer, global sales director, OW Bunker

> Shipowners and operators are facing such significant issues and challenges, that they are looking for more from their fuel suppliers than just a cheap deal.
>
> **Søren Christian Meyer, global sales director, OW Bunker**

- The demand for distillates is also unpredictable and unclear, which is making it hard for refiners to justify the conversion expenditure.

"Refiners are currently unwilling to invest in highly costly desulphurisation processes to produce more distillates, due to the uncertain demand structure. And where they are upgrading refineries they are not doing it in bunker supply ports for ECAs. This means that products will need to be shipped to Northern Europe to meet the demand, which will significantly impact on prices," Meyer said.

Supply and demand

OW Bunker believes that there will be enough supply for low sulphur middle distillates, which will be available on ECA zone strategic fuel ports. However, they would need to be shipped into these strategic supply locations, which would add to the overall increase in price for the product:

- World bunker fuel production is expected to increase from circa 340 mill tonnes to 410 mill tonnes between 2011 and 2020. The Middle East and Asia/Pacific regions will predominantly drive the increase.
- Middle distillate capacity will be sufficient for the 2015 regulation, however the demand/capacity gap will reduce to a minimum by 2020.
- Due to the limited number of ECA zones, residual fuels will form the bulk of demand during this period.
- Forecasted future sales also suggests that there will be a significant demand for heavy fuel oil post 2020, which suggests that the industry is widely anticipating a 'grace period' on the global 2020, 0.5% sulphur regulation, or a significant uptake in scrubbers.

Short sea shipping is driving demand for distillates, whereas the impact from deepsea is marginal.

"Based on our analysis of historical prices, the future demand for distillates and the cost of producing them, we expect the future price differential from 3.5% HFO to 0.1% MGO to be in the region of $300 to $400 per tonne," Meyer said.

OW Bunker also said that it believed that the reduction of the global sulphur limit to 0.5% from 2020 will have a significant impact on the nature of deep sea fuel demand. Low sulphur fuel, which has a negligible demand currently, would constitute about 90% of total bunker demand among the deepsea fleet by 2020, ie 270 mill tonnes distillate/30 mill tonnes residual.

Catch 22 situation

There is a general belief in the shipping industry, that the IMO's implementation of 0.5% sulphur limit on exhaust will be delayed to 2025. This is mainly because of limited refinery investments in increasing middle distillate production capacity by 2020, which would be insufficient to meet growing bunker middle distillate demand. As a consequence, residual fuel is assumed to remain the major constituent of the bunker fuel supply until 2020.

Most refiners are currently apprehensive about outlaying large investments for middle distillate capacity addition. This is attributed to minimal knowledge on bunker distillate demand in the future, which is provoked by uncertainty in the levels of popularity/acceptance that LNG propulsion and scrubber technology would achieve by 2020 and the anticipated delay on the 2020 regulation.

However, if we assume that the current IMO deadlines stand, there will be a significant increase in middle distillate demand and a subsequent shortage in supply. Low sulphur fuel usage is anticipated to remain the most preferred compliance option. LNG propulsion and scrubber technology will witness limited (but increased) acceptance by 2020. As a consequence, the shipping fleet will look to ensure compatibility of machinery to different fuel grades and frequent fuel switching.

Demand for distillate bunker fuels is expected to outpace supply by 2015. The addition of multiple new ECA zones in the period 2015-20 will add to this increased demand. As low sulphur fuels are anticipated to be the most preferred compliance option in the future, demand is expected to outgrow supply of certain grades in certain regions (based on the current supply perspective and the simulated demand).

Ultra fine fuels will become particularly critical, as the sulphur emission limit drops. By 2020, the market will be extremely pressured if the forecast proves valid, which could potentially mean a shortage in supply and rising prices.

"The lack of regulatory clarity is creating significant issues and uncertainty throughout the whole supply chain. Refiners are unwilling to invest in the costly process of upgrading their operations to produce distillates, and shipowners are ambiguous over investing in 'unproven' scrubbing technology and an embryonic clean fuels market.

"It is important that shipowners and operators have a complete understanding of the regulations, their potential impact and the full range of solutions that could be implemented to ensure compliancy at the minimum financial and operational cost. Fuel suppliers have a 360 deg view of this situation and the knowledge to impart. It is vital that the bunker industry steps up to the mark and provides the necessary advice and insight that will help the right decisions to be made," Meyer concluded.

Singapore position

Turning to Singapore, OW Bunker warned that the Lion City must continue to focus on driving up bunkering standards, as a means of maintaining its position as the world's largest bunkering port. With the ensuing threat and competition from China, Singapore must position itself as a champion for professionalism to keep ahead.

Meyer said: "As well as striving to be as competitive as possible on price, Singapore must focus on building a reputation for being the world's bunkering capital of excellence, a region known for quality and value-added services."

Speaking on the trends, threats and opportunities of supply and demand in Singapore, Meyer continued: "While bunker prices in China are currently higher, this could well change. There is real expansion in the development of storage facilities and terminals, as well as bunker barges. And the main bunkering players have so much financial resource that they can simply drop their prices to become competitive."

Meyer believed that the seismic transformation of the shipping industry and the impending changes to fuel supply on the back of environmental regulations, compounded by the global economic crisis, is serving to change the mindset of many within the shipping industry.

"Shipowners and operators are facing such significant issues and challenges, that they are looking for more from their fuel suppliers than just a cheap deal. While price is obviously important, they need counsel just as much as quality products. Suppliers have an opportunity to differentiate themselves, and build close relationships with their customers, working with them to implement fuel procurement strategies that increase operational performance, environmental efficiency and profitability," Meyer said.

Meyer also stressed that Singapore must continue the strides it is making in improving standards and infrastructure to become the symbol for progression within the bunkering industry. This will help to alleviate the threat to supply and demand from China.

"The MPA has made significant investments in improving standards beyond regulation, not just in bunkering, but also in innovation and development schemes that will tackle the challenges that the shipping industry faces. Continued commitment to such initiatives and setting new benchmarks for excellence by which we should all be measured will create the foundation that will enable Singapore to retain its number one status within the global shipping industry," he said.

A good example is the development of mass flow metering, which has been an area of focus for SPRING Singapore, and a concept that has been pioneered by OW Bunker:

"Ensuring product quantity is one of the biggest issues for shipowners and operators. OW Bunker championed the installation of mass flow meters over five years ago and we now have over a third of the vessels in our global fleet now using them, the latest being in our new physical locations in Panama, Montevideo and Gothenburg.

"Not only do they guarantee quantity, mass flow meters significantly increase efficiencies into the bunkering process, which must ultimately be one of the key drivers and incentives for improving standards," he said.

Meyer also said that while there are more suppliers entering the Singapore market, this will lead to further consolidation among the smaller operators, who will struggle to survive in a cash-starved supply chain or to effectively compete in selling a value proposition to ship owners and operators.

"There is real pressure on cash within the supply chain, which is increasing the need to manage risk and control, in particular counter party risk. It is vital to have a sustainable and robust business model with long-term financing, which many smaller operators do not have.

"They also do not have the financial muscle to invest in infrastructure development to ensure product quality and quantity, which is so vital for customers. And finally they cannot offer an all-encompassing proposition that goes beyond product to provide strategic counsel, technical analysis, risk management, advice of managing energy efficiency and so forth.

"I fear that as the global economic pressures continue, we will enter a period of corporate Darwinism, where there will be continued consolidation among suppliers that do not have the resources, infrastructure and scale to compete and survive," he concluded. TO

Am I Cured?

This article is another in the series examining the rigours of tank cleaning, written by a leading consultant. This time, the question of curing is addressed, which is the subject of an ongoing project.*

There are many challenges facing the owners, charterers and operators of tankers, but a number of questions relating to the cargo tank coatings have seemingly vexed the same for decades.

These are -

1) Is my tank coating properly applied?
2) Is it properly cured?
3) How do I know?
4) How can I check it?

A recent project undertaken by MarinSpec Associates (MAL) has shown that an analytical tool may now be available, which will diagnose the state of cure of a cargo tank coating before it enters into operation.

The significance of this is clear. If the cargo tank coating is properly applied and cured in the first instance, then the prognosis for design performance is good.

Cargo tank coating technology has evolved quite considerably since it was first established in the early to mid 1960's. The surface preparation and application of cargo tank coatings has reached new levels with increasing rigour and control being built into specifications.

In those early days, cargo tank coatings were designed for application and curing at a minimum temperature of +10 deg C up to 20 – 25 deg C, with the final chemical resistance and expected performance being based on achieving those temperatures. It was also recognised that the performance of all cargo tank coatings could be improved by an element of 'post curing', whereby the coatings were exposed to elevated temperatures, for example during the carriage of such cargoes as heated vegetable oils and mineral oils.

Post Curing of cargo tank coatings became an implicit contractual requirement with the introduction of epoxy phenolic/novolac coatings in the late 1970's and early 1980's and indeed post curing is now considered a necessity for many types of highly chemical resistant organic coatings.

Many methods have been advocated for post curing of coatings, but typically the most common ones are as follows, each with their own advantages, disadvantages and limitations:

- Recirculation of hot fresh water through the coated tanks.
- Recirculation of hot sea water through the coated tanks.
- Recirculation/stowage of a suitable heated cargo.
- Recirculation of hot air through the coated tanks.

All of these processes can be monitored by the use of equipment such as thermocouples and data loggers, but in the final analysis it is the condition of the coating at the end of the specified post curing period, which is the most important.

Hence the question posed in this article - Am I Cured?

And this is where the problem lies, because visually there is no difference between the 'un' cured coating and the 'post' cured coating, so for an owner/charterer/operator of a tanker, there is no way of knowing whether the coating is actually cured or not, just by looking at it.

Project ongoing

At the outset, it should be noted that this work is still on going, because the results generated to date have shown sufficient potential to warrant further investigation.

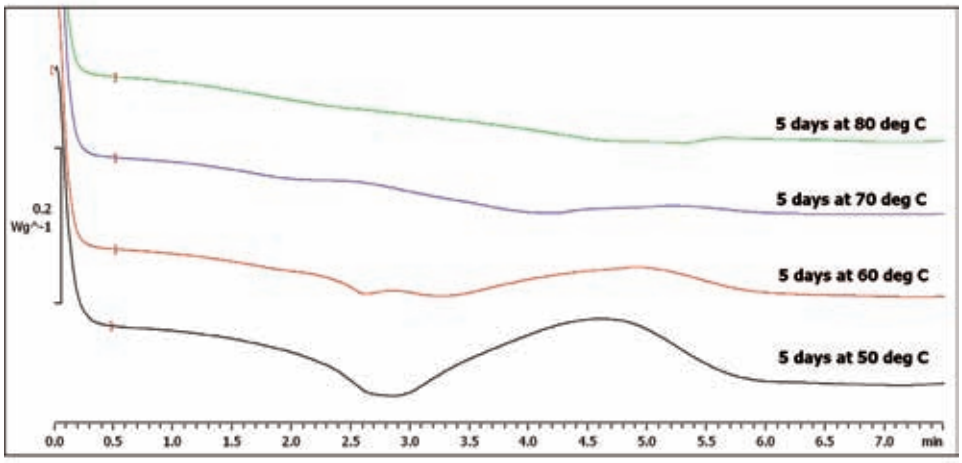
As noted above, there are four common methods of post curing of coatings, but the factor of greatest influence in any post curing operation is temperature and this was the focus of the initial work.

An industry standard phenolic epoxy coating was exposed to many different post curing regimes under controlled laboratory conditions. Samples of the coating from each regime were then analysed using Differential Scanning Calorimetry (DSC), which is a widely used analytical technique for the study of thermosetting coatings. The objective was to interrogate the DSC data to provide some quantification of the state of cure of each coating sample, which could then be related back to the known post curing conditions.

DSC is used to monitor the events or transitions that occur within the sample of paint film as it is heated. Those events are indicated by changes in the shape of the graph. One of these events is the glass transition temperature (Tg), but this is only one event of many, which may occur in the same region of the scanning process.

The Tg can, therefore, be surrounded by other events and as a consequence, it may be, difficult to interpret consistently and may be somewhat subjective, depending on the sophistication of the equipment software.

There is no doubt, however, that accurate and consistent determination of the Tg can be a good indicator of the state of cure of a coating – but it is not the only indicator! Interpretation of some of the other data may provide more useful information from which the state of cure may be more reliably and



Temperature is the greatest influence in any post curing operation.

accurately quantified.

Any thermosetting paint film will always contain an amount of un-reacted, partially reacted, or low molecular weight material, depending on the conditions of curing. Such paint films are not 'ideal' and will never achieve 100% conversion (cure). By closely examining the events occurring during DSC scans (as indicated by the shape of the graph), it is possible to make comparisons between coating samples that are known to be well cured and those that are known to be less well cured.

Results

The graph on page 48 shows DSC scans for samples of the same coating that were post cured respectively for five days at 50 deg C, 60 deg C, 70 deg C and 80 deg C.

Although the Tg is not marked on these traces, it can be calculated by identifying where the traces first start to dip. Indications on these traces are that Tg increases as the post curing temperature increases, which is expected. But the concern is that the Tg is not clearly discernable and the resulting fact that different interpretations of the same trace by different individuals may generate different (and inconsistent) Tg results.

Of perhaps far more relevance is the overall shape of the traces in the graph and the clear evidence of a greater amount of activity remaining in those samples post cured at lower temperatures. As the post curing temperature is increased we would expect to see a corresponding reduction in residual activity. Indeed, as the post curing temperature increases, the traces on the graph are tending towards a straight line, indicating a very limited degree of activity.

Comparing those traces to those cured at lower post curing temperature, we can immediately see a greater amount of residual activity in those samples post cured at lower temperatures.

At the lower post curing temperature, where it is known that the coating sample is less cured, the DSC traces show a far greater degree of activity, which indicates far more residual reactivity within the coating samples. This is most likely due to the presence of a greater proportion of un-reacted materials in those paint samples.

The potential is far reaching. By comparing samples of coating taken from a cargo tank that has recently been post cured, against laboratory post cured samples of the very same batches of paint, it will be immediately apparent whether the coating from the cargo tank is properly post cured, or not. Thus, all parties, including the owner, operator, charterer, paint supplier, shipyard, applicator (and their insurers) can have much more confidence in the performance of the tank coating.

If the results of samples from the post cured cargo tank differ significantly from those post cured in the laboratory, it should be expected that the coating is not post cured in accordance with the manufacturers' requirements and the owner/operator of the vessel would be advised to seek advice from the coating supplier on additional post curing.

As noted, this project is still ongoing and MAL is continuing to investigate the diagnosis of state of cure of cargo tank coatings by looking at different coatings, different post curing regimes and the influence that cargoes may have on that diagnosis.

Any parties wishing to learn more are invited to contact Marinspec Associates. TO

**This article was written by Bill Woods and Guy Johnson of MarinSpec Associates. Contact mail@marinspec.co.uk*

UK Club tackles tanker cargo claims

A new publication issued by the UK P&I Club focuses on cargo contamination, one of the major sources of cargo-related claims in the tanker sector.

The Club stressed that loading and discharging of a cargo is a joint operation between the tanker's crew and the terminal staff. Therefore, it is essential that the Chief Officer should strive to establish a good working relationship with the key terminal personnel, so as to reduce the risk of subsequent problems. Contamination, for example, can occur both on board the vessel and in the lines and tanks ashore.

The 'Tanker Contamination Claims Checklist' identifies the main causes of cargo contamination arising from both on board and shoreside and lists the key points to consider in seven sections running from the pre-loading phase through to discharge and sampling.

The checklist begins by considering whether the ship is suitable for the cargo(es) to be loaded. Points to be considered include:

- Can the different grades of cargo be arranged to maintain the degree of separation required? (All chemicals must be separated by positive segregation)
- Can the ship maintain the required cargo carriage and discharge temperature(s)?
- Is the tank coating suitable for the nominated cargo? (Some cargoes can permanently damage certain coatings, others make coatings soft for a while, during which time the range of cargoes they can tolerate is restricted)
- If applicable, is the cargo tank coating in good condition?
- Have the cargo tanks and lines been suitably prepared to load the nominated cargo(es)? If applicable, have previous

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> "...the Club also reminds crews that it is essential to ensure beforehand that enclosed spaces are safe to enter; awareness of this risk is now high, but still it is a major cause of deaths at sea."

cargo vapours been reduced to less than 2% by volume, so that potential flashpoint contamination of nominated cargoes is eliminated?

- With reference to the quality of multiple oil products loaded, can two-valve segregation on the liquid side be maintained throughout the voyage? (Again, chemicals must be carried under positive segregation)
- Can the vapour side of each oil product parcel (inert gas and vapour relief systems) be segregated throughout the entire voyage?

Thorough checks also need to be taken when preparing the cargo plan and checking the systems.

Preparing the cargo plan is primarily concerned with avoiding contamination in tanks, pipelines, pumps and valves and includes issues created by vapours and heat sources.

Checking systems is ensuring that tanks and pipelines are clean, noting that with some cargoes, even water can be a contaminant, ensuring that coatings are sound and fit for purpose, plus the testing of gaskets and glands for leaks. The importance of regular maintenance and the training of crew, enabling this to be undertaken correctly and safely cannot be understated.

Naturally, the Club also reminds crews that it is essential to ensure beforehand that enclosed spaces are safe to enter; awareness of this risk is now high, but still it is a major cause of deaths at sea.

The checklist then deals with discharge and loading and especially with the relationship between vessel and terminal to ensure that both parties fully understand each other in terms of procedures covering not only normal operations but also emergencies.

A section entitled 'Working with the cargo inspector' is highly detailed with regard to the process of taking and keeping samples and this theme continues in a section entitled 'General Comments', which commences with the Club noting that a leading firm of cargo surveyors had reported that approximately 40% of alleged shipboard contamination problems are, on investigation, found to be shore related.

When defending cargo contamination claims, often samples are the only hard evidence that the shipowner can present. Ensuring good practice when taking and keeping samples might not sound a big deal to the officer involved, but if things go wrong, large sums of money can depend on the contents of those little bottles.

The checklist complements the Club's "Tanker Matters" video published previously, which reviews the most frequent causes of tanker cargo claims and how to avoid them. TO

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Vetting Status Report

The clock's ticking. Is it time to change your lifeboat release and retrieval system?

New regulations concerning the upgrading and maintenance of lifeboat release mechanisms have been approved by the Maritime Safety Committee (MSC) of the IMO. This legislation, contained under SOLAS regulation III/1.5, is likely to have a major impact on the offshore sector. It is likely that thousands of vessels will need to upgrade their lifeboat release systems in order to comply with the directive, which will come into force at the beginning of 2014 and must be adhered to by July 2019.

The IMO is at the forefront of the changes in legislation, though there has been some criticism regarding the length of time it has taken to get to this stage. Indeed, there are incidents every year, some including fatalities, which occur as a direct result of lifeboat release mechanisms being operated incorrectly, are of poor 'unstable' design, or which are simply beyond their usable life.

Survival Craft Inspectorate has claimed to have already addressed this issue and the solution is the company's Safelaunch offload/onload, lifeboat release and retrieval system. This system has been designed for all types of vessels, including tankers, the company told *TANKEROperator*.

Designed and manufactured by Survival Craft, which is based at Findon in the North East of Scotland, the company enjoys a global outreach, with offices as far away as Malaysia and Australia.

The Safelaunch lifeboat release and retrieval system is built to cope with the harshest of marine environments, the company said. It addresses the problems commonly associated with incidents, such as corrosion, the mishandling of the apparatus due to an overly complex release mechanism and lack of stability within the design.

Survival Craft said that it achieved this by simplifying the mechanism, making it easy to use and more durable by using marine grade stainless steel in its manufacture.

Any lifeboat

The company developed its approved lifeboat release and retrieval system to enable replacement in any lifeboat. In the many hundreds of installations carried out thus far, the company claims not to have encountered a lifeboat that can't accommodate Safelaunch.

Paul Watkins, Survival Craft project manager explained: "We looked at producing a launch mechanism that prevented accidental release, through the use of a locking pins system and one which could by installed into any existing lifeboat on a retrofit basis."

"We strongly advise that, although it is at the discretion of the ship's master of course, the locking pin is used during drills and maintenance only and then removed from the release gear to allow for immediate evacuation of the vessel, if so required.

"We re-engineered the cam and the hook interface so that there are no critical tolerances or critical gap requirements to be concerned about. You are able to easily observe the safe status of the release gear without having to enter the lifeboat at all, so you can rapidly judge whether that lifeboat is safe to board before even opening the hatch," he added.

The company has also released an upgrade to the Safelaunch system. Watkins said: "It has a secondary locking system on, which adds another layer of security to Safelaunch. The locking pin can be compared to the harbour pin on a davit system which, when used in port, stops the davits luffing out.

"It is a very simple solution, but one that is well tested, proven to work and is of a type supported by some of the industry groups at the IMO. They are very keen on the simple technology of a locking pin as when used, the release and retrieval system cannot accidentally release," he said.

The product, which complies with the SOLAS and the LSA's regulations, has already been popular with the industry and will continue to be in demand, as a result of the change in legislation, the company said.

However, for the company, and others like it, the next few years will provide a daunting challenge.

Watkins outlined this challenge: "There are with certainty, existing types of release gear systems in lifeboats that ought to be replaced at the soonest possible moment – there is no doubt about that – and the industry will definitely support that viewpoint. The output of the IMO has now produced the 'vehicle' for that to occur.

"What will be unfortunate is that some owners may well drag that decision out until the last possible moment of 30th June 2019. However, in the five year preceding period, we expect that there will be many thousands of lifeboats fitted with the approved, Safelaunch lifeboat release and retrieval systems," he concluded. TO

OceanSaver names interim CEO

OceanSaver, a leading global provider of class-approved, high capacity ballast water treatment (BWT) systems, has appointed Houtan Houshangi as interim CEO, effective immediately. Houshangi replaced Stein Foss who successfully developed and commercialised OceanSaver BWT system technology since the company's inception in 2003.

Foss will still be associated with OceanSaver and will together with the interim CEO focus on ensuring a smooth transition of leadership and the search for and hiring of his replacement.

"Foss has played a critical role in OceanSaver. He has demonstrated a keen ability to develop a world-class BWT company, delivering high-performing filtration technology for critical ballast water treatment applications. The company has an impressive depth of talent, technology and capabilities, a very strong client base, and is well-equipped to serve a wide-open BWT market for retrofit and newbuild projects," said Houshangi.

With increasing competition in the market place and the IMO convention getting closer to meeting its ratification criteria, OceanSaver has entered into a new phase of expanding and industrialising the business to ensure global competiveness. The development of key initiatives to accelerate the company's technology, focusing on optimising performance, quality and cost of its current and future BWT systems is paramount.

"Until a permanent successor to Foss is found, Houshangi will manage OceanSaver's next stage of growth and further execute the company's strategic plan while seizing new opportunities," said Reidar Langmo, OceanSaver chairman.

Houshangi brings over 10 years of executive leadership experience in high-growth, technology and consulting companies, responsible for business strategy, global product development and operational improvement programs. TO

Schat-Harding develops systems for IMO-compliant hooks

Leading lifeboat manufacturer and service provider Schat-Harding has completed all tests required by IMO to ensure that its SeaCure lifeboat release and retrieval systems meet the new guidelines for existing and new lifeboats.

In addition, reacting to industry requests, Schat-Harding has also developed a Secondary Safety System (SSS) for the SeaCure hook. Although not required by IMO guidelines, or SOLAS regulations, the SSS is recommended by many shipping industry groups.

Birger Grathen, CEO, Schat-Harding Service, said, "IMO has issued mandatory guidelines for lifeboat release and retrieval systems under MSC.1/Circ.1392. These are unusual because they are retrospective and require owners to test and in some cases replace existing equipment. Manufacturers have also had to apply rigid new tests to all their equipment.

"The rules apply to new boats from 1st July 2014, but there are also tests to be applied to existing hooks and these will have to be upgraded at the first drydock after 1st July 2014 if they do not meet the set standards.

"However, IMO's guidelines do not call for a Secondary Safety System. We are happy to announce that our SeaCure lifeboat release and retrieval systems meet, or exceed all the IMO standards, have passed all relevant tests and are now available for shipowners to refit to existing conventional lifeboats. And we have worked with industry groups and our customers to develop a simple but safe optional Secondary Safety System for the SeaCure range.

"The hook and the SSS meet all industry needs, are approved by flag state and class, are available now and are backed by our global service network, which is ready to advise owners, assess existing equipment and to fit the new equipment if required," he said.

All shipowners are obliged to arrange an evaluation of existing on-load hooks on their vessels. Hooks which don't meet the new standards need to be replaced no later than the next scheduled drydock after the 1st July, 2014 and no later than the 1st July, 2019.

If found to be compliant, then an overhaul examination should be executed no later than the next scheduled drydock after the 1st July, 2014. The one-time follow-up overhaul examination by the manufacturer, or authorised representative should be in accordance with MSC.1/Circ.1206Rev1.

Grathen explained; "The new IMO requirements are complex and are unusual in that they are retrospective. But we are convinced they will make lifeboat release and retrieval systems safer to use and we are committed to helping shipowners to improve safety at sea.

"We have been doing that since 1928, and we are right at the forefront of safety with this new equipment, but more than that, we are leading with our global network and our willingness to help owners. There are literally hundreds of types of lifeboat on-load hook system in service, there are thousands of lifeboats which need upgrading and owners need help to understand and implement the rules.

"I urge them to ask us, we will help, we want to help, we want seafarers to feel confident that their lifeboats are safe," he said.

Over 100 shipowners have already re-hooked their lifeboats using Schat-Harding service engineers and hooks. Grathen added, "We have the trained and authorised engineers and we have the equipment, but we do urge owners to come forward as soon as possible to evaluate their equipment and needs. First, because that way it is safer for their crews, who get the new standards in place quicker and second because they could face business interruption if they leave this until the last minute rush to comply by the due date.

SeaCure lifeboat release and retrieval system.

"These SeaCure hooks can be retrofitted to most types of (life)boat now in service, not just Schat-Harding boats, so we can offer all owners and seafarers the safety of the new IMO-compliant hooks and the security of an engineering team who can assess any hooks now in service and fit the new equipment safely and without service interruption," he concluded. TO

Kongsberg opens up in Greece

Kongsberg Maritime has opened a new office in Piraeus to serve the Greek shipping community.

Kongsberg Maritime Hellas (KM Hellas) was established as a customer support & sales office to meet the procurement and service requirements of Greek shipowners and vessels fitted with Kongsberg Maritime systems sailing in southern Europe.

The Greek office with 14 staff offers services in the local area and in southern Europe, covering the majority of Kongsberg Maritime's automation and navigation systems.

Recent investment in the LNG and shuttle tanker markets by Greek owners will also see the team supporting specialist systems including K-Pos dynamic positioning, custody transfer systems and the K-Chief 700 automation system for offshore applications.

General Manager Terje Dyhre, said: "There are around 700 shipping companies in the Athens and Piraeus area so it was important for Kongsberg to establish presence in Greece to better support our many clients in the country and region." TO

Online elearning courses for type-specific ECDIS training and certification up and running

Safebridge, an elearning company specialising in Internet-based training solutions for the maritime industry has unveiled the first release of its new online courseware for type-specific ECDIS training.

The online courses will be commercially available by the end of this year, according to Ulf Steden, Safebridge managing director. The company has co-operative agreements to develop type-specific training packages built around ECDIS products from Sperry Marine, Imtech, Transas, Raytheon Anschütz and JRC and expects to develop similar programs for other ECDIS suppliers in 2012.

"As the new IMO ECDIS carriage requirements come into effect in 2012, Internet-based elearning provides a cost-effective training tool to meet the type-specific training requirements mandated under STCW, ISM, Port State Control and flag state regulations," said Steden.

"While many ECDIS suppliers offer their own type-specific training courses, it is impractical and expensive for an officer to attend these one- or two- day courses for multiple ECDIS vendors. With the Safebridge solution, they now have the convenience of doing it all online with self-paced guided courseware. It also makes it easy for officers to retrain on new equipment when moving to a ship using a different ECDIS system and enables convenient re-certification, as suppliers roll out new versions of their ECDIS software," he said.

The Safebridge training software platform combines an e-learning component with OEM software and electronic charts (ENC). The learning process is controlled by learning management software (LMS) to provide an interactive simulator that is true to the actual ECDIS brand being studied.

"Safebridge overcomes the inherent limitations of conventional computer-based training programs by taking an interactive 'learning-by-doing' approach to training," said Steden.

"The best way to gain confidence on any complex piece of equipment is to play around with the system as it operates in the real world, so we have included a free-play component. This is the Safebridge training philosophy.

"Users can log on to the Safebridge server via the Internet to access a range of elearning modes, including a guided tutorial, self testing with feedback and the free play on the live system. Students are taken step by step through a number of modules as if they were using the actual technology and are shown how to use each feature in various simulated scenarios.

"Upon successful completion of the course, the student's online examination is graded by a qualified instructor and the student receives a certificate of competence," he explained.

Steden noted that Internet-based training is a very efficient use of training resources, since it can support a scalable number of students simultaneously. TO

Primar to distribute Navtor ENCs

Newly-established enavigation company, Navtor has signed a distribution agreement with PRIMAR for the supply of official electronic charts (ENC).

Navtor is a part of the Stavanger-based concern, Smedvig.

As carriage requirements for ENCs move towards an official IMO mandate, Smedvig saw the opportunity to establish an enavigation company to provide electronic navigation services for the distribution and updating of electronic charts and related maritime information.

In Egersund, a coastal town south of Stavanger well known for its maritime electronic industry, Smedvig established Navtor together with experienced personnel from the maritime industry, all with extensive experience in electronic chart production and distribution.

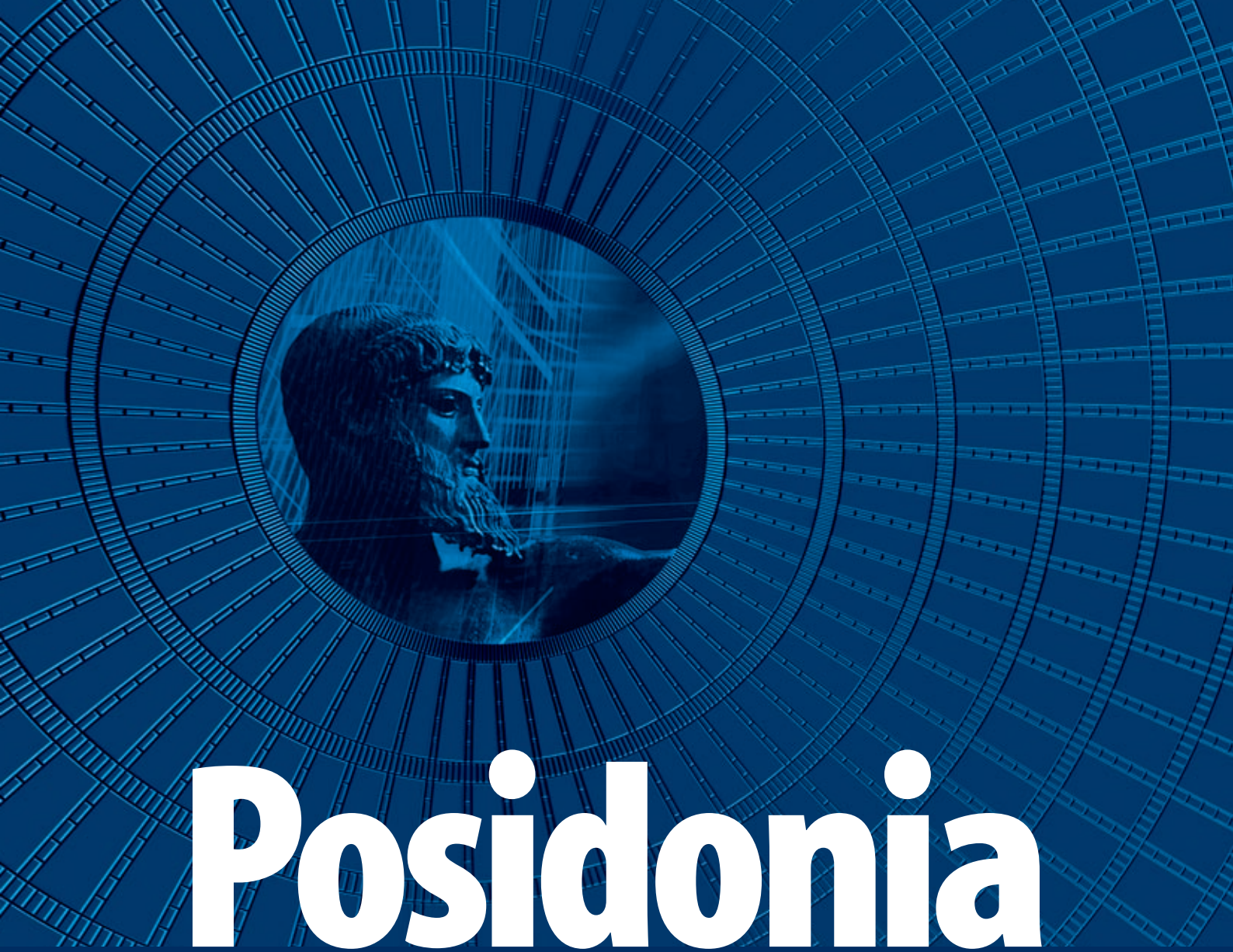
"NAVTOR employees have extensive experience in serving the maritime market with electronic charts and understand that, in future, ENCs will be the only option for the shipping industry to meet the requirement of using authorised electronic charts," said Navtor marketing and communications manager, Willy Zeiler.

He continued: "A distribution agreement of official ENCs was our prime goal when Navtor was set up, so we are delighted to have signed an ENC distributor agreement with PRIMAR."

He concluded: "When we launch our innovative ENC service in the first quarter of 2012, I am sure it will be a major contribution to simplify ordering, licensing, updating and, importantly, administration of the ENC chart portfolio.

"Up to now, the market has been slow to begin using ENC, primarily due to today's cumbersome solutions. However, when it's all made easy for the navigator, I believe we will experience a swift uptake in this service.

Once the mandatory use of ENC comes into force, I am sure that Navtor´s ENC service will be a valuable solution for navigators on the bridge". TO



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