

TANKEROperator

NOVEMBER/DECEMBER 2007

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Features:

- **Gib – a victim of its own success**
- **Hybrid gas tankers imminent**
- **BW technology close to approval**
- **Cleaning up the act**
- **Scrubbers favourite in Greece**
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SUBSCRIPTION

6 months (4 issues)
\$42 /Eur110 /£5
1 year (8 issues)
\$37/Eur185 /£25
2 years (16 issues)
\$98/Eur310 /£10
Subscription hotline:
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Printed by FISCHER Poligrafia
ul. Dabrowki 10
40-081 Katowice
Poland



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There are still many issues surrounding TMSA, Singapore delegates were told



Front cover photo - In the next few weeks, Inmarsat is to unveil details of its new broadband package



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Just what is going on?

As we come to the end of another year, instead of getting easier, the shipping business seems to be becoming more complex.

Today and over the next few months, there are and will be a multitude of things for a ship operator, manager and owner to think about. Safety and the environment are on everybody's lips bringing with them the seemingly unending plethora of rules, regulations and recommendations.

Towards the end of September the 'great and the good' represented by the chairmen of the round table of international shipping associations (BIMCO, ICS, INTERCARGO and INTERTANKO) met in Tokyo prior to the start of the tripartite meeting on shipbuilding issues, which is another area for concern.

We thought it was worth commenting on the discussions, in case somebody has forgotten just what was going on. In particular, the group focused on the revision of MARPOL Annex VI and the progress of the Scientific Group on Air Emissions. In addition, they expressed a desire to get more involved with the progress of Goal Based Standards and the implementation of the Ballast Water Convention.

On the ballast water issue, there was concern was expressed (see page 32 of this issue for an update) that IMO's MEPC56 meeting was unable to agree to suspend the date for implementation of the requirement for new treatment equipment.

Problems have arisen because the equipment necessary for the treatment and measurement of invasive species has not been type-approved and is not yet available to shipowners. This will lead to confusion when the convention enters into force, as some Port State Control (PSC)

authorities intend to implement this requirement retrospectively.

The group said that they were very supportive of efforts to resolve this problem at the IMO Assembly where it is being suggested that prompt ratifications should be encouraged, but a

“ The group urged the EU/EC not to act in isolation (unilaterally) and support the work being done at the IMO. ”

mechanism is being proposed to defer the date of implementation of the requirement for new treatment equipment.

A number of safety issues were discussed including the Standardisation of Instruction Manuals; the Development of Maintenance Friendly Ship Designs; the Design of 'Fit for Purpose' Ships; and the IMO Member State Audit Scheme.

EU issues

With regard to the EU regulatory issues, the group discussed a number of issues, such as the Green Paper on Ship Recycling, Class Liability, the proposals for an EU Maritime Policy (Borg Process) and the Ship Source Pollution hearing before the European Court of Justice in Luxembourg. A number of these issues were in the final stages of deliberation and it was agreed that the industry needed to pay close attention to the ensuing legislative processes.

There was detailed consideration on the current position of the Industry Working Group on the EU Green Paper on Ship Recycling, with concerns raised that the EC seemed to be determined to impose EU Waste Management Law on the international shipping industry. The group urged the EU/EC not

to act in isolation (unilaterally) and support the work being done at the IMO.

The outcome of the recent IMO Singapore Meeting on the Malacca and Singapore Straits was discussed and in particular proposals for voluntary

contributions to the Aids to Navigation Fund were reviewed. Various ways in which the shipping industry could provide support were discussed.

Profile worries

Industry profile, or lack of it, also came under the spotlight. The group said that there was a need to continue improving a positive profile for the shipping industry. It was agreed that there should be more emphasis placed on how this could be achieved. In particular the development and the expansion of the Maritime Industry Foundation was to be encouraged. At the same time it was recognised that there were many other initiatives being proposed across the industry and

that it made sense for these to be co-ordinated to maximise their effectiveness.

The next meeting of the group will be in December 2007. We await with bated breath.

Apart from ballast water management, mentioned by the group, we currently have the emissions debate, recently boiled down to a scrubber versus distillate fuel (see page 41 of this issue) argument, although there are other proposals on the table. The IMO is due to give its judgement by the end of this year.

Then there are coatings concerns, both external and internal and perhaps of most immediate importance - where is the desperately needed new officer intake going to come from to cope with the newbuilding deliveries?

Training issues, lack of drydock availability, fuel and lubeoil, increased vetting procedures and many other concerns have all been raised at various times during the year.

If this was not enough, the beleaguered tanker owner is going through a phase of softening rates across the board, some of which had reached below operating cost level. However, as in the past, there was not an awful amount of sympathy expressed for the poor old shipowner.

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Growth in chemical tanker cargoes seen

The reclassification of products and chemicals carried on board tankers from 1st January this year has led to a huge increase in trade in cargoes under MARPOL Annex II, a leading consultant said.

According to Fred Doll of Doll Shipping Consultancy speaking at a recent conference, the cargo carried in hulls under the new regime increased to 145 mill tonnes, up from 55 mill tonnes in 2005. The major changes included vegetable oils up to 50 mill tonnes, methanol to 18 mill tonnes and ethylene glycol rising to 8 mill tonnes.

The forecast for the seaborne trade of vegetable oils, chemicals and related cargoes this year is 164 mill tonnes with organic cargoes making up the highest rating at 48%, vegetable oils in second place at 32%, with inorganic and other cargoes totalling 10% each.

Under the new regime, vegetable oils now account for about 32% of all the chemical tanker trades. Historically, the more traditional uses have fuelled the strongest growth. These include food and oleochemicals growth, which is driven by a rising population and income resulting in related improvements to diet and consumer products consumption.

Recently, biofuels usage is also growing backed by strong governmental support and higher petroleum prices. However, the higher vegetable oil costs are also hurting the economics as more capacity comes on stream. Strong demand is driving the high prices which in turn could affect future demand.

This year around 56 mill tonnes of vegetable oils are forecast to be shipped, compared with 33 mill tonnes in 2000.

Palm oil still accounts for the largest sector of vegetable oils

with about 29.5 mill tonnes of seaborne trade forecast for this year, Doll said. This compares with just 13 mill tonnes shipped in 2000. Soybean oils has grown to a projected 10 mill tonnes from 7 mill tonnes in 2000.

The rapeseed (canola) oil trade decreased from 2 mill tonnes in 2000 to 1 mill tonnes in 2003 and then grew to 2.1 mill tonnes in 2006 and 2007 on the back of biofuels demand, while other vegetable oil cargoes are forecast to be around 17 mill tonnes this year, up from 11 mill tonnes in 2000.

The 23 mill tonnes growth predicted in the seaborne trade of vegetable oils is led by palm oil which is forecast to grow by 16 mill tonnes. The soybean growth forecast of 3 mill tonnes on the back of key trades utilising longer steaming distances and the potential for transshipment. The growth in sunflower oil comes in at 2 mill tonnes is backed by increased Black Sea export trades and the key small tanker trades.

Handysize

Doll calculated that there were 2,527 handysize tankers in the 10,000-59,999 dwt range totalling 78.8 mill dwt. In addition there were a further 1,153 tankers of 38 mill dwt on order, which equates to 48% of the existing fleet. The delivery profile of the orderbook is 5.9 mill dwt this year, 11.9 mill dwt in 2008 and 20.2 mill dwt in 2009 onward.

As for chemical tankers certificated to ship IMO 1, II or III type cargoes, these totalled 1,553 vessels of 45.4 mill dwt. Broken down into capacities, IMO 1 types totalled 0.4 mill tonnes, IMO II

types were 19 mill tonnes in total, while IMO type III tankers amounted to 26 mill tonnes. The totals included 7.9 mill tonnes of stainless steel capacity.

The orderbook for these types amounted to 763 vessels of 20.8 mill dwt, some 46% of the existing fleet. The majority at 10.6 mill dwt were due for delivery from 2009 onward. Here, the IMO II capacity seemed to be favourite at 11.6 mill dwt, followed by IMO III at 9.2 mill dwt. The stainless steel types were 2.7 mill dwt.

Doll said that double hull IMO III were the key area of overlap among the chemical, edible oil, and clean product trades. At present, they represent around 28% of the handysize trading fleet and 44% of the orderbook.

He found that many IMO II and IMO III vessels have been built for owners who have little or no history of operating in the chemicals and edible oil markets. A coated IMO chemical class tanker can be an inexpensive vessel to order new relative to product tankers, Doll claimed, due to;

- 1) Many standard designs can be upgraded at low cost.
- 2) Standard one deepwell pump per tank with sump design can meet stripping standards.
- 3) Smaller vessels, of say under 35,000 dwt, can meet IMO II class 3,000 cu m limits with a standard tank configuration.

He warned that if the specialist tanker rate differentials become too high against those of CPP tankers, more product tanker operators will be tempted to enter the relatively easy 'adjacent' sectors, for example - easychems.

We are also seeing evolving trading patterns, Doll said. Many IMO class tankers are being delivered from Asian shipyards and need to reposition to Europe. But, there are few cargoes moving in that direction.

However, there is growth in the Straits of Malacca/Europe palm oil trade which has led to time chartering by agribusinesses. For example, palm oil traders could time charter a 38,000 dwt - 51,000 dwt IMO III double hull tanker straight from the yard, the vessel then ballasts to the Malacca Straits to load palm oil for Europe, mainly for the major northern European ports, or the Mediterranean, including Turkey and the Black Sea. In both cases, the vessel will often discharge at more than one port.

When looking ahead, several key factors have to be taken into account. These include;

- Around 60 vessels either converted, or earmarked for conversion, to double hull amounting to about 1.7 mill dwt of tonnage, averaging 30,000 dwt per vessel.
- A large orderbook in both the chemical and product carrier sectors.
- The current clean tanker spot market is averaging around \$19,000 per day, compared with \$27,000 per day last year.

To sum up, Doll described the fundamental changes that have already taken place in the vegoil market. These include - increasing freight rates and the switch to IMO II or double hull IMO III chemical tankers resulting in the vegoil trades becoming part of a broader tanker market.

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BMT looks to the future

BMT SeaTech, a subsidiary of the BMT Group, is ramping up its safety, security and environmental services.

Part of this initiative has involved the appointment of Robert Hellrand as marine safety and compliance group manager. One of the ideas is to change the whole area of risk to a proactive rather than a reactive regime.

This can be done by analysing the risks that are evident on board a vessel and their consequences.

One area is stress monitoring - BMT was one of the forerunners in this area and has developed a great deal of expertise down the years. The consultancy has found that over a long period, a lot of data has been collected and is advising on how to make the best use of this data, both on board the vessel and ashore.

Further analysis using the stress monitoring software could for instance enhance safety, vessel maintenance and even for design purposes by combining stress monitoring with physical inspections.

Hellrand said that BMT SeaTech was attempting to develop this area and open up an industry debate on the subject. He said that there was a potential for class societies to enhance their rules by analysing the data provided.

He gave an example of the LNGC where the impact of dynamic loads were becoming a problem with increasing sizes and speeds. "Class needs to look at the rules and look at the data", Hellrand said. "There is work to be done."

BMT SeaTech is split into two departments - vessel performance and safety & compliance. However, there will obviously be synergies and overlaps, especially in the field of emissions control.

As for the environment, Hellrand said that as an example, LNGCs were becoming more of a problem as they become larger.

"The more hull resistance encountered, the more power is needed, the larger the emissions and the carbon footprint," he said.

The consultancy is currently testing a new suite of software, which will take data from many different sources on board simultaneously and collate it. One of the advantages will be that an owner/operator/manager and the officers on board will be able to see where they are able to save fuel during a voyage by analysing the vessel's performance, such as fuel consumption versus speed. If the trials are successful, the software will be launched later this year.

This is part of BMT SeaTech's ongoing data collating process as vessel operational issues connected to the environment are expected to become more problematic, while the price of fuels and lubes are also expected to remain on the high side for many years to come.

Hellrand saw the data collected being useful in structural analysis, such as investigations into structural failures and in design support.

BMT SeaTech's hull stress monitoring software has now been fitted on 150 installations, including around 50% on tankers, many of which are VLCCs.

Another software tool for the safe operation of gas tankers is PC Rembrandt. Initially developed for the cruise ship sector, the software is currently being used by the LNGC industry and training academies worldwide.

Hellrand said this marketing effort was also in the wake of increasing gas tanker sizes where close quarter manoeuvring becomes a problem. By simulating the manoeuvre, the on board navigation team is better prepared for all eventualities and it could also be useful at the vessel and/or terminal design stage.

TO

US policy makers slammed

The energy community in New York gathered in early October to hear Lucio "Lou" Noto, the former ceo of Mobil Oil Corp prior to its 1999 merger with Exxon. Among them were TANKEROperator's correspondent Barry Parker.

He kicked off with the problem in the US oil business is that "we are not acting like buyers."

Noto, who remained with the merged entity until 2001, is now an active energy investor through his Midstream Capital Partners. The wide ranging talk, arranged by New York brokers Poten & Partners, jointly with Bloomberg, presented views on issues touching varied aspects of markets for crude, product and LNG vessels.

A major trend is an ongoing shift that may be in the offing - the advent of a structural change in markets. Noto called them "virtual pipelines" - really bilateral deals where a supplier and receiver contract for a specific crude stream, "...much like the LNG model." One example cited was the Chinese investment in dedicated crude oil sources in Central Asia. He added: "It's different from the way that the present market is working and it could introduce a certain amount of instability into supply patterns." At the present time, Noto felt that current energy prices reflected a high uncertainty premium, having been also been boosted by commodity investors.

Noto's virtual pipelines, with modern refineries optimised for a particular blend of crude, are not going to be connecting to the US anytime soon. Indeed, the lack of fresh refining capacity on US shores was a recurring theme in Noto's talk. He contrasted the modern and environmentally friendly refinery at Yanbu, which he built while at the helm of Mobil Oil, with old and

inefficient "hodge-podge" refineries in the US such as Exxon Mobil's 1950's vintage facility at Beaumont, Texas.

In talking about refinery spreads and potential patterns of trade, he offered: "You are much better off importing crude oil in big ships, from a very fungible market, and moving it to where you are, and making the products that you want." This was contrasted with the current situation "...of scurrying around the market, trying to find the right grades, which you import in more expensive smaller ships. In the process, you are exporting jobs and tax revenues"

Noto said that the US; "will never be energy-independent, that's an impossible dream" but added, "we don't act like buyers...we don't have an onshore port that can take a VLCC...at some point there will be a pipeline bottleneck." He went on to recount the ongoing difficulties with a planned VLCC terminal in Long Beach, California as well as with an LNG facility in Massachusetts (spearheaded by Poten and Hess). "We've been knocking our heads for five years...we still can't get it done..."

Throughout his talk, Noto lambasted US policy-makers on several points. Noting the huge subsidies to US farmers keeping Brazilian material out of the US, he called ethanol "a boondoggle". Paramount among criticisms has been the failure of US leaders to implement a coherent energy policy, even under ex oilman George W Bush. He chided the US government for not backing American companies in their contractual disputes with sovereign nations (Venezuela is one example), and for continued impediments on the refining issue where the last US investment occurred in the late 1970s - "From a policy standpoint...the regulatory review process is completely inane," he said.

TO

Braemar shows its strength

Shipping service group Braemar Shipping Services has announced unaudited half-year results for the six months ended 31st August 2007.

The highlights for the group include;

- Revenue £68.7mill (2006: £50.5 mill), a rise of 36%.
- Pre-tax profit £7.1 mill (2006: £4.1 mill), up 75% (up 42% if the impairment charge in 2006 is excluded).
- Basic EPS 23.66p (2006: 12.03p), up 97% (up 40% if the impairment charge in 2006 is excluded).
- Increased interim dividend declared 8p per share (2006: 6.75p).
- Net cash £11.1 mill (31 August 2006: £8.1 mill, February 2007: £14.6 mill).
- Falconer Bryan acquired and performing well.

Following a review of the bunker business, the group ceased activity in bunker trading in September 2007, although these results included the activity for the whole of the period.

Chief executive Alan Marsh talking specifically about the tanker broking sector said that Braemar's deep-sea tanker chartering desk increased the number of transactions concluded though rates generally softened over the course of the half as newbuildings entered the market.

The steady rise of crude oil prices since the beginning of the year has adversely affected refining margins and in turn the product trades and this combined with new tonnage coming on stream has served to reduce the product carrier rates.

Activity levels in the specialised chemical chartering market were quite variable during



Alan Marsh.

the first quarter of the year as the market came to terms with new regulations, but since then rates have stabilised. Freight rates, particularly for the more sophisticated vessels, were relatively strong and this is not expected to change significantly over the forthcoming months, but the introduction of new tonnage means that an increase in

volumes will be required to maintain current rates.

Rates in the LPG chartering market have been strengthening since the beginning of the year due to increasing volumes being moved. Ethylene carried in LPG vessels from the Middle East to Southeast Asia for the production of plastics has been particularly active.

LNG chartering has increased recently and voyage rates have risen from the low levels seen at the beginning of the year. The winter months may create further demand and again improve trading conditions.

Looking ahead, many of the delayed LNG facilities projects are now under construction and completion dates are becoming more visible, which should absorb the newbuilding tonnage delivering on schedule. Braemar is building a dedicated presence in LNG.

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MaK power US tanker series

Caterpillar Marine Power Systems has won an order to deliver the generating sets for prime movers to be fitted on board a trio of US Jones Act 49,000 dwt tankers.

Each propulsion unit will be diesel-electric utilising three MaK 12M32C generating sets connected to Siemens alternators. Each set will weigh about 120 tonnes and provide 5,760 kW at 720 rev/min.

The tankers were ordered by

AHL Shipping Company, San Antonio, Texas, following a charter agreement with Shell Trading (US) of Houston, to transport crude oil, chemicals and products within US domestic trades upon their delivery in 2009/2010.

These 188 m long, 32 m wide and 11 m loaded draught tankers are the first of this size to be built in the US using modular construction, involving, among others- Atlantic Marine Alabama - for hull construction and final

assembly.

In total, Caterpillar will deliver nine MaK generating sets from its medium-speed engine facility in Rostock, Germany. Specifications were finalised during a recent customer visit to Caterpillar Motoren in Kiel.

Shipment of the first set of engines is scheduled for August 2008, with the second and third set due in July 2009 and January 2010 respectively. There is also an option to power three more tankers with the same engine

configuration.

Gary Aucoin, MaK business unit manager at Louisiana Machinery Company, the Caterpillar dealer for the US Gulf Coast, said: "We have placed this project as a key to our future success. The tanker business is new to Louisiana Machinery, and the experience gathered will open up future opportunities. We are committed to building a first-class MaK dealership, to complement the already successful Caterpillar dealership."

Berlian Laju Tanker on ratings watch

Standard & Poor's Ratings Services said it has cut its ratings on Indonesia-based PT Berlian Laju Tanker to 'B+' from 'BB-' and placed it on negative watch, after the company said it plans to buy chemical tanker company Chembulk for \$850 mill.

The acquisition will be primarily funded by new debt, significantly increasing BLT's \$856 mill debt as at the end of September, S&P said according to Thomson Financial.

The expected pro-forma credit measures are not in line with a 'BB-' rated entity, the ratings firm said.

Also, although the acquisition of Chembulk Tankers will provide new trading routes and customers, increasing the company's presence in Europe and the Americas, it will not really take BLT's regional concentration away from Asia, S&P said.

The 'B+' rating takes into account improvements in BLT's business profile that arise from the entry in new market segments and an improved fleet profile.

The watch placement will be resolved after a detailed review of the terms of the different funding phases and their execution, including the company's intention to partially reduce debt through a potential equity injection, S&P said.

Earlier, BLT confirmed it was to take over Chembulk Tankers in an \$850 mill deal. Chembulk operates in various countries with its headquarters in the Marshall Islands.

"The value of the acquisition reached \$850 mill based upon calculations from Chembulk. The fund for the purchase will be taken from the company's cash fund and bank loans which had already been secured from several foreign banks," BLT finance director Kevin Wong said when confirming the acquisition.

He also said the company would seek \$750 mill worth of loans from four foreign banks namely Fortis, DNB (Denmark), ING (the Netherlands) and NIB (Norway).

Following the acquisition of Chembulk, BLTA will be the third largest shipping company in the world in terms of the number of vessels and loading capacity, Wong claimed, adding that "total loading capacity of the company's tankers will reach 820,600 dwt and its international market share reached 10%."

He said that following the acquisition the company hoped its net profit this year would rise significantly from \$70 mill to \$120 mill.

To ease the debt burden, Wong said that the company would sell four of its tankers at an estimated \$480 mill. "The sales proceeds

are expected to reduce the company's debt which will improve its operations," he said.

BLT operates a large fleet of

crude oil, chemical and LPG carriers, while Chembulk operates a fleet of around 19 chemical tankers, including newbuildings. **TO**

EUROPORT 2007

TANKEROperator's Editor Ian Cochran will be out and about and in and around Rotterdam's Ahoy Centre during the forthcoming Europort exhibition.

He can be contacted on cell phone; +44 77 48144265.

Copies of the latest edition of TANKEROperator will be available on Stand No 1801 and at the distribution centres.



Dutch tax concessions stimulate growth

Similar to many areas in Europe, since the mid 1990s, the Dutch government has targeted the maritime cluster as an area for growth.

With the growth of Rotterdam and to a lesser extent Amsterdam as major world ports, a huge service industry has grown up in Holland. The Dutch were large shipowners until the advent of the high European cost regime in the 1960s and 1970s, which led to a move away to more 'accommodating' countries.

While the Netherlands retained its strength in coastal and inland shipping, it lost most of its

deepsea fleet. However, several companies now have operations and management divisions in Holland, including Stolt Nielsen, Odfjell plus others.

This is mainly because most of their fleets call regularly at Dutch ports, so can easily be accessed by the shore staff. Holland is also the home to the Paris MOU Port State Control organisation and much of Shell and Unilever, apart from having one of the world's largest ports.

According to official statistics

there are 11,800 maritime related companies in Holland creating Eur10.6 bill in added value. They in turn support nearly 200,000 jobs.

The Dutch register has undergone something of a resurgence, since the new shipping policy came into effect in 1996.

The revamped Dutch tax system has many features that make the Netherlands an attractive location for businesses. Important elements include the

treatment of profits, the participation exemption, the absence of withholding taxes on outgoing royalties and interest, and the large number of bilateral tax conventions that the Netherlands concluded with other countries.

Corporation tax on business profits is 34.5% (29% on the first Eur22,689 of taxable profits). The profits must be determined according to sound business practice and consistent accounting methods. The

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INTERNATIONAL TANKER MANAGEMENT

- BEYOND COMPLIANCE -

government claimed that this system allowed for a profit determination that is best fitted to a company's circumstances.

The Dutch tax system is unusual in that advance agreements can be made with the tax inspector with regard to the determination of taxable profits. The tax authorities are also usually willing to issue advance opinions on the application of Dutch tax law on other matters than taxable profits.

For example, among them is the question of the valuation of assets to be transferred to the Netherlands. Business people therefore know where they stand even before commitments are made, the government said.

One of the pillars of the Dutch Corporation Tax Act is the 'participation exemption'. This exemption was prompted by the desire to protect companies from double taxation in the event that a subsidiary channels its profits back to the parent company.

To prevent double taxation on other sources (income from labour, net wealth, inheritance and gifts or on profits) in case the participation exemption does not apply, the Netherlands concluded bilateral conventions for the avoidance of double taxation with some 60 countries.

The double taxation conventions apply both to residents of the Netherlands and to those countries bound by the treaty.

Maritime tax climate

Until some years ago the Netherlands was regarded as being expensive in a world where taxation for maritime activities was low, resulting in many shipping companies deciding to set up their business elsewhere.

In order to reverse this trend, and to make the Netherlands more attractive, competitive and profitable for shipping companies, a number of important changes in the fiscal laws were introduced on 1st January 1996.

“The Dutch tax system is unusual in that advance agreements can be made with the tax inspector with regard to the determination of taxable profits.”

Since then tax on profits from shipping activities under Dutch fiscal law now offers shipping companies a choice between either the regular system of taxation on the basis of actual profits made, or a lump sum taxation based on the net tonnage of the ships operated by the shipping company, regardless of the actual profits made. The flag under which the ships sail is also immaterial. However, once made, the choice cannot be changed for a period of 10 years

If the regular system is chosen, the shipping company can make use of an accelerated depreciation of 20% per year for sea-going vessels. The condition is that taxable profits from the exploitation of sea-going vessels can compensate the accelerated depreciation.

On the question of seafarer wages, the tax concessions over and above the corporate tax option offered to the owners offer another bonus, which can yield considerable savings to shipowners in wage costs irrespective of the crew's nationality.

In order to apply for this tax concession the crew must be signed up to a ship sailing under the Dutch flag and the shipowner must be obliged to withhold Dutch wage tax and/or social security premiums on the salaries paid to the crew (PAYE). The advantages offered by this concession do not affect the wages received by the crew, and the entire benefits accrue to the company.

It works like this - The shipowner or employer still transfers the PAYE tax to the Dutch treasury, but this amount is reduced by 40% of the fiscal income of the master, the officers

and the ratings who are liable to Dutch wage tax.

The government gave an example, but said that the actual figures depend on the specific circumstances of the personnel involved.

A seafarer resident in the Netherlands earns Eur45,378 gross, over which about Eur15,882 PAYE tax would normally be due. The employer (shipowner) withholds this sum. The reduction to which he is entitled in this instance is 40% of Eur45,378 (Eur18,151).

Since the reduction may not be greater than the tax assessment itself, the actual reduction is Eur15,882. In other words, the shipowner is not liable for any PAYE tax for this employee at all. The 'remaining' Eur2,269 of tax reduction can be used to lower the PAYE tax of other personnel liable within the same company to Dutch wage tax and/or social security premiums.

Labour costs

As a result, the labour costs for seafarers resident in the Netherlands are reduced by about 30%. For seafarers that are only liable to Dutch social security premiums (thus not for wage tax), 10% of the fiscal income can be deducted from the PAYE tax bill. This applies to seafarers who are not domiciled in the Netherlands and the applicable social security treaty stipulates that Dutch social security premiums have to be paid.

The total deduction may not exceed the total amount of wage tax and/or social security premiums that should be withheld by the shipowner for all his employees (including shore staff) in the Netherlands.

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Stand no. 2H42 in Hall 2

Belgians make a come back

Along with its neighbour, the Netherlands, Belgium has seen something of an upsurge in shipping, not least the domestic flag.

For example, 51% of the domestically-controlled fleet now flies the Belgian flag and

Antwerp Maritime Academy expected a 20% increase in student intake by the end of this year.

Boosting the Belgian flag fleet are the large tankers managed by Euronav, which include two of the four 442,000 dwt ULCCs - *TI Asia* and *TI Europe*. This pair, together with at least three modern VLCCs, also flying the Belgian flag, operate in the Tankers International pool, which is managed by Euronav.

Currently, the Belgian maritime

IMO member states fleets in terms of gross tonnage, while the Belgian-controlled fleet is in the top 20.

The Belgian administration controls ship safety and working conditions for domestic seafarers. A number of measures taken by the authorities within the framework of the EU State Aid Guidelines have enabled the flag state to become more competitive, the registry claimed.

shipowners are exempt from the employers' part of social security charges, as well as from part of the employees' social security charges. If special conditions are met, social social security charges of non-EU residents may be paid in the country of origin.

3) For seafarers employed on board EU-registered vessels, the shipowners are exempt from paying the withholding

operations, including chartering.

Transpetrol controls five MR product tankers, two panamax tankers, three LR product tankers and one aframax/LR2 tankers. The newbuildings include another two aframax/LR2 types for delivery 2009-2010 and two LPG carriers for delivery in 2009.

Euronav

The largest Belgian tanker owner and manager is Euronav. As of the middle of this year, the company owned 17 VLCCs/ ULCCs, including two part owned and two under construction. Out of this total, the 305,688 dwt *Flandre* remained on long term charter to Total. The rest were operating in the Tankers International (TI) pool on the voyage market.

By the end of this year, the number of vessels in the TI pool will number 46. Euronav has chartered another nine VLCCs, including the two 50% owned. TI's Euronav partners include Essar, OSG, Petronas, Reederei "NORD" Klaus E Oldendorff, Sanko and Shinyo.

As well as the large tankers, Euronav also manages 14 suezmaxes, plus another four on order. Another two aframax are bareboat chartered. Many of the suezmaxes are ice class, some of which are operating to the Quebec oil terminal on the St Lawrence River all year round.

All the owned vessels are managed in-house from Antwerp, Euronav's major shareholders (over 48%) are listed as Saverco (the Saverys family) and Tanklog, whose assets were acquired in 2005.

Exmar

Exmar's main expertise lies in the management and operation of gas carriers, including LNGs, LPGs,



One of Euronav's Belgian flag ULCCs.

legislation is being revamped aimed at increasing Belgium and in particular Antwerp's attraction as a maritime centre. Among the initiatives is a revision of the Belgian seafarer labour agreements, which should be in place by the end of this year.

In 2008, the Belgian Register is to be audited under the IMO voluntary scheme. It is also seeking election to Group B from its present position in Group C. The Belgian flag, totalling 4.1 mill gt, is ranked in the top 30 of

These include:-

- 1) Tax measures aimed at supporting local businesses. The laws passed in 2002 and 2004 include a lumpsum profit setting already in place in several EU states (the so-called tonnage tax). Shipowners not willing to take advantage of this system will be offered an attractive alternative tax regime.
- 2) The social security of EU seafaring residents comes under Belgian law. However,

tax on professional income levied on seafarer wages, on condition that the seafarers concerned are Belgian tax payers.

Among the household names with oil and gas transport interests in Belgium are Anglo-Eastern, Euronav, Exmar and Transpetrol. The largest in terms of ship numbers are Euronav and Exmar. Anglo-Eastern and Transpetrol have representative offices in Belgium, the latter looking after commercial

and petrochemical carriers.

Most of the focus has been on the LNGCs, where Exmar has successfully developed the regasification unit, or LNGRV.

However, Exmar can trace its LNG history back almost 30 years since it agreed a long term charter of the 131,000 cu m *Methania* to Distrigas in 1978. Moving on the end of the 1990s, Exmar saw an opportunity to invest further due to a foreseen increase in demand and attractive newbuilding prices.

This resulted in a series of 138,000 cu m LNGCs ordered at Daewoo. The first vessel, *Excalibur*, was delivered in October 2002 and she was followed by the *Excel* in September 2003.

Joining together with Excelerate Energy and using its Energy Bridge process to regasify LNG on board a vessel and

discharge into a pipeline system, the first LNGRV, *Excelsior*, was delivered in January 2005, followed by the *Excellence* in May 2005 and the *Excelerate* in October 2006.

In conjunction with Excelerate Energy, Exmar has five more LNGRVs on order each having a larger capacity of 150,900 cu m. These will be named *Explorer*, *Express*, *Exquisite*, *Expedient* and *Exemplar*.

As for LPG and petrochemicals, Exmar said it concentrates on the midsize sector with vessels ranging from 22,000 cu m to 40,000 cu m capacity. The company also owns VLGCs and semi-refrigerated vessels.

Similar to the LNGs, Exmar has embarked upon a continuous newbuilding programme with two more VLGCs due for delivery at the end of this year and in early



Exmar pioneered the LNGRV

2008.

In addition, Exmar has entered into a joint venture agreement to order 10 fully-pressurised LPG carriers for delivery between November 2008 and July 2009.

In July of this year, Exmar announced it had taken over the technical and crew management of two 20,000 dwt chemical carriers - *Moyra* and *Valerie*.

Exmar Shipmanagement was previously known as Tecto and through its previous affiliates, has expertise in gas carriers, tankers and large bulk carriers, as well as containerships plus floating storage and accommodation units.

Apart from its headquarters in Antwerp, the company also has offices in Luxembourg, Germany, India, Cyprus and Singapore. **TO**

Dutch growth

Through August and by the end of September, Netherlands controlled shipping companies ordered another 23 vessels, on top of the 390 inked in previously. Thus, as of 27 September 2007, a total of 413 ships were on order for Dutch account at yards worldwide.

Nearly 40% of the newbuildings for the Dutch are on order from domestic yards (158 ships).

The total gross tonnage of the current Dutch fleet exceeds 3.1 mill and total deadweight is over 9.4 mill tonnes. There are nearly 170 shipping companies in the Netherlands. The largest five are Wagenborg Shipping, Seatrade Groningen, Vroon, Spliethoff and Feederlines, who together control 323 ships.

Elsewhere, the wholly-owned subsidiary of Norway's Stolt-Nielsen, Stolt-Nielsen Transportation Group, is Netherlands based and manages nearly 60 vessels, which would give it third place.

The total gross tonnage and deadweight on order for all Dutch shipowners is over 2.4 mill and 4.1 mill, or 77% and 43% of the existing fleet respectively.

About 85% of the newbuildings on order for Dutch concerns will fly the Dutch flag, while 5% will fly the Cypriot flag, UK (3%) and Netherlands Antilles (2.2%).

The remainder will be registered in Vanuatu, United Arab Emirates, Cayman Islands, Antigua & Barbuda, Panama, Marshall Islands, and Italy.

Although tankers do not feature highly, compared with the heady days of Royal Dutch Shell, there are 42 tankers on order and around 160 in service in the Dutch fleet.

Among the companies owning tankers flying the Dutch flag are Brostrom, Broere, Clearwater, Anthony Veder, Jo Tankers, Koole Tanktransport, Tarbit and Erik Thun. Despite managing its vessels from Rotterdam, Stolt Nielsen has no vessels under the Dutch flag except inland waterway barges. Broere is now a

subsidiary of Hamburg-based Essberger group.

A newcomer to Dutch shipping, Farmsum-based Management Facilities Group and its shipmanagement subsidiary Marin Ship Management, will take delivery of five oil and chemical tankers.

Two will be of 7,100 dwt each, while the other three will be of 17,000 dwt. The larger tankers are in the final stages of being built at a Turkish shipyard. The tankers will fly the Dutch flag.

Boasting a fleet of 50 vessels including oil, chemical and multi-purpose vessels, mainly trading in northern Europe and the Mediterranean, the company recently said that its aim was to grow to 60 by 2012.

The group used to be just a shipmanagement and crewing office. It now consists of three independent divisions, responsible for the entire management of the group, including supporting newbuilding, crew management, and technical and financial management. They are Marin Ship Management and Flagship Management Company.

A classic example of a traditional Dutch shipping company which is still in operation is the Anthony Veder Group

Veders' Netherlands Antilles subsidiary manages the gas ships, giving them the prefix 'Coral' after the Caribbean coral reefs.

Expansion of the gas tanker fleet occurred during the 1970s and 1980s, including the introduction of the company's first ethylene carrier in 1989. In 1994 it was back to the core business with a full focus on gas shipping. Fleet expansion included five newbuilding gas tankers from China plus secondhand purchases.

In 1999, the Rotterdam-based group took delivery of the world's first CO₂ tanker and last year ordered its first combined LNG/LPG/Ethylene carrier.

The multi-purpose 7,500 cu m capacity gas carrier will be built by Polish shipyard Remontowa and will enter a long term charter contract with Gasnor of Norway when delivered during the fourth quarter of 2008. **TO**

Complex shipbuilding projects to be highlighted at biennial exhibition

This year's Europort Maritime will be devoting special attention to the expertise available within the Dutch maritime sector.

The organisers said that this year's exhibition will be responding to the increasing tendency to choose the most advantageous locations for shipbuilding and vessel outfitting.

One of the northern European specialities is the handling of complex shipbuilding projects, such as specialist tankers. The trade fair will also devote extra attention to new shipbuilding

technologies, such as the use of composite building materials and the employment of preventive maintenance. In a broader perspective, it will be spotlighting Dutch expertise in the areas of equipment supply, engineering, fleet management, repair and maintenance.

The last Europort Maritime attracted visitors from 91 different countries. This year, more than 950 exhibitors from 35 countries will be exhibiting and

approximately one-third of the visitors will be coming from outside the Netherlands. This is a substantial growth compared to the 2005 show, claimed the organisers. By the beginning of this year, about 85% of the trade show had already been booked.

At the time of writing, 11 international pavilions had registered as exhibitors. In addition to a special Holland Marine Equipment pavilion, there will be national exhibits from the Netherlands, UK, Germany, Spain, South Korea, China, Denmark, Belgium, Romania and Turkey.

Seminars etc

This year's event will also involve seminars and workshops addressing relevant topics. Examples are emissions' regulations, new liability regulations, government subsidies and the use of composite building materials. Being held at the same time as Europort Maritime will be conferences and annual meetings (including CEDA Dredging Days and the First Annual Maritime Health Conference) attended by participants from throughout the world.

This year, the organisers will be offering overseas visitors a substantial VIP programme that will make it very easy and attractive for them to visit the trade fair. They can make use of a hotel service, onsite transport, and VIP lounges and can participate in social networking events.

Yet despite all of the internationally oriented activities, Europort Maritime will also market the activities of companies focusing on the Dutch market - the Dutch Maritime Cluster. Two years ago, for example, the show attracted 35,760 visitors. The majority came from the Netherlands.

Maritime Health

As well as the regular dredging and IBT meetings and conferences, for the first time there will be a Maritime Health Conference, lasting two days.

During these two days medical specialists, directors, policymakers and suppliers of medical solutions will debate current and future issues during eight different sessions.

The conference will focus on major issues such as the management of handling medical claims, analysis of medical data in port clinics, drugs & alcohol testing, accidents and casualties, US Coast Guard regulations, crew health, infections and outbreaks of disease, the role and scope of telemedicine.

Key speakers will include: **Tim Carter** - department of transport IHO.


Arvind Sharma - managing director, European operations, Eurasia.

Natalie Shaw - secretary of International Shipping Federation.

Rob Verbist - Mediport, Port Clinic Antwerp.

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Naturally for a show based in Rotterdam, Holland Marine Equipment will be taking a high profile.

technological developments, shipbuilding orders, shipowner and other information was sent out to 7,500 people every two weeks.

The digital bulletin, which became an important part of Europort Maritime's communications approach, marked the start of the marketing campaign aimed at the entire maritime sector. It runs from January to November.

Key speech

One of the key speeches will be given by Huang Pingtao, president of the Chinese society of Naval Architects and Marine Engineers (CSNAME).

Huang Pingtao will talk about the exceptional growth in orders for Chinese shipyards giving western businesses greater opportunities.

Other similar opportunities exist as there are many Romanian companies exhibiting in Rotterdam. Collaboration between Dutch companies and Romanian shipyards has long passed the stage of purely hull building and has reached the equipment suppliers' sector.

This year, with respect to size, the Romanian contribution is the largest ever at an international maritime trade fair. A Romanian dignitary is also planning to visit

Europort Maritime.

Another feature is the Maritime Innovation Award, which is a feature of the show. The nominations for this year's award have been narrowed down to just four. The winner will receive the award at a gala on 1st November.

- The lucky four finalists are:-
- **Huisman-Itrec** - subsea complex pipe laying systems.
 - **Kranendock Production Systems** - Welding robot system in combination with Rinas Weld.
 - **Roden Staal** - Deck rigger.
 - **Silvestris** - Glue and rivet connection technology.

The winner of the Maritime Innovation Award 2007 will be revealed by the State Secretary of the Ministry of Transport, Public Works and Water - Tineke Huizinga - during the Maritime Awards Gala on Thursday 1st of November 2007 in Rotterdam.

This event will also feature three other Dutch maritime awards - Ship of the Year Award (KNVTS), the Timmers Award (VNSI), and the HISWA Excellence Award.

Europort Maritime was created by the joining of the Rotterdam Maritime and Europort trade fairs.

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Exhibitors galore

Alphatron/Japan Radio

The joint Alphatron /Japan Radio Co (JRC) stand will consist of 180 sq m of navigation, communication and instrumentation equipment.

JRC is introducing various new products at Europort 2007. These include the JMA-5200, a recently launched compact radar for small commercial vessels and workboats.

Also on view will be the patented Constaview™, a digital signal processing technology, which gathers all information received from the radar and fully processes this within a few milliseconds before being displayed, generating a smooth image rotation.



JRC has developed the GPS compass technology.

The GPS compass had its origins as a direction sensing system. However, JRC has developed this technology with other features integrated into the new JLR-20 and JLR-30 GPS compasses enabling higher accuracy and stability.

JRC has launched the JHS-770S and JHS-780D series VHF, to replace the long running JHS-32 model. It comes with several new features, is available as semi-duplex or full duplex, and features

The following is a list of just a few of the exhibitors and some of the items that they will be showing.

a separate transceiver and compact controller that allows for a more flexible installation approach in confined spaces.

The JFE-380 and JFE-680 are types of IMO compliant colour echo sounders introduced by JRC to take advantage of going paperless. With various screen display options it will be suited to any number of operational criteria, with the capability to record to internal memory for a period of 24 hours as well as the possibility to connect the display to an optional printer.

Another exhibit will be the Fleet F33 satellite communication terminal, which incorporates the latest modern interfacing standards, such as LAN/Ethernet and USB, upgradeable to new and future Inmarsat FleetBroadband standards.

Alphatron Marine

Being a close partner of JRC for many years, Alphatron Marine is offering an additional range of own products to the European

market. The range of products at the show is comprehensive and includes:

- Integrated Marine PABX/PA/Talk-back systems, ALPHACONNECT 48 and 210. Developed and produced in Denmark, at Alphatron's own facilities they have been installed on more than 180 vessels, since their introduction.
- ALPHALINE instrument line MF. Combining analogue and digital presentation in one instrument offered in several variants.
- ALPHASEAPILOT. A wheelmark approved new range of autopilot/main steering systems ranging from a simple workboat version to a full adaptive main steering system for larger vessels.
- ALPHAMINICOURSE gyrocompass system : Claimed to be the smallest maintenance free gyro compass in the world introduced in 2005. More than 250 units have thus far been installed.
- ALPHABASICCOURSE. New at Europort maritime is the advanced low cost gyrocompass. It is manufactured by Yokogawa, Japan and under OEM to Alphatron Marine. It is larger in size and still requires yearly maintenance and is suitable for medium and large sized vessels.
- ALPHALINE MFC. A new line of instruments offering full digital presentation on a colour TFT screen, offered in several variants.
- ALPHABRIDGE. The

ALPHABRIDGE concept is offered in several variants ranging from the small ALPHABRIDGE for a 15 m pilot boat to a full INS system. A new full network based multifunction version will also be at show powered by Transas.

Other companies exhibiting on the joint stand include Yokogawa and Consilium.

Yokogawa is introducing a new gyro compass CMZ 900 series to the European market. The CMZ 900 B will also be available as ALPHABASICCOURSE

Being in partnership with Alphatron Marine for many years, Consilium is presenting the latest products ranging from voyage data recorders, doppler speed logs to the new exhaust gas measurement system.

De Wolf

De Wolf Products supplies safety equipment for the commercial shipping industry. A selection of SOLAS/GMDSS equipment will be shown in at the booth including:

- Stearns immersion suits and lifejackets.
- Challenger inflatable lifejackets.
- ACR 406 MHz EPIRBs and personal EPIRBs as the AquaFix and the new MicroFix.
- Zodiac life rafts, with the new extended period servicing (EPS) versions.

Recently, the Zodiac EPS rafts, with a service interval of 30 months, have been approved by the Dutch Shipping inspectorate for use on Dutch flag vessels.

A new Zodiac liferaft service station will be operational very soon. This will complete the full service facility for rescue boats, immersion suits, lifejackets, EPIRBs, SARTs, GMDSS radios and gas detection equipment.

Information will be available

about the extended range of ribs: the rescue boats of Zodiac and Narwhal and the MilPro boats of Zodiac and Avon.

Also, Typhoon dry working suits and BW gas detection equipment will be shown.

Holland Marine Equipment (HME)

Dutch trade association, Holland Marine Equipment (HME), is to organise a huge Dutch presence during Europort.

The 215 member companies are active in the fields of maritime engineering and contracting, fabrication of installations and components, the supply of maritime services and other functions.

Thanks to the overwhelming number of participants, the national pavilion will be split into two parts. The first will be set up in the Scheldehal, covering 700 sq m of booth space, while the second will be in Hall 1C, covering 200 sq m.

In order to maximise the size for participating companies and their guests, the lounge of the main pavilion will be situated on an upper floor.

Hall 1 (Scheldehal) will consist of Alfa Laval Benelux, Beele Engineering, Bloksma Heat Exchangers, Machinefabriek Borger, BOT Groningen, Centraalstaal, Dagin Marine Technology, Draka Marine, Eefting Engineering, eL-Tec elektrotechnologie, Hanwel Environment and Energy, Heatmaster, Hytop Hydraulics, Impas, Intertech, Johnson Pump, KST, Marine Service Noord, NR Koeling, N2Safety, Ned-Deck Marine, Netwave Systems, Nijhuis Pompen, Progress Technique, Ridderinkhof, Roden Staal, Rotor BV Elektro Motoren, Ship's Equipment Centre Groningen, Statendam Steel Plates (SST Staalsnijstechniek), Techno Fysica, Van Lessen & Punt - Cordobond, VDL Klima, Vuyk Engineering Groningen and Winteb VOF.

Hall 1C will include Absorbit

Trading, Amarcon, Brevini Nederland, Cubic Marine, Greenship, Johnson Controls Systems & Service, Kelvin Hughes Nederland, Liebherr Maritime Benelux, Smits Neuchatel Marine Department, Straaltechniek International, and BV Twentsche.

Imtech

Technical Service provider Imtech said that its Chinese maritime order book is growing rapidly. Growth is up more than 50% compared to two years ago. The Chinese order book currently includes work on providing technological solutions for more than 240 ships - projects worth a total of over Eur120 mill.

Imtech is one of the largest maritime technical services providers in the world. In addition to European and US interests, the company is also increasingly active elsewhere.

It is strengthening its growing Chinese market from a number of positions. On the one hand from maritime centres in the Netherlands, Germany and China, and on the other hand through participation in a Chinese joint venture, own production facilities, and a network of Radio Holland Group - acquired last year - service locations in China. From a total of seven Chinese maritime locations, Imtech is working predominantly for western shipowners who have ordered ships from Chinese shipyards but want high-quality maritime technology on board their vessels.

The order book includes dozens of Chinese shipyards. For example, it recently received an order for technology to be installed on board four chemical tankers being built at the Chinese shipyard Liaoning Hongguan.

An Action Plan was recently drawn up in this context to enable broader market penetration in China and gradual expansion of the number of Chinese service locations.

Imtech's range of products and services include project and site management, interfaced and integrated ship bridges, propulsion solutions, power generation and distribution, alarm and monitoring systems, local area networks on board, navigation, communication and entertainment equipment, air conditioning and climate control solutions, fire safety and sprinkler solutions and integrated security solutions.

PC Maritime

PC Maritime's Navmaster ECDIS system will be featured at Europort this year on the stand of the German company, Veinland.

Through collaboration with both Veinland and PC Maritime's UK agent, Lilley & Gillie, Navmaster received type approval from Germanischer Lloyd (GL) earlier this year, this being in addition to DNV approval, secured in 2006.

At the time, Gerald Rynkowski, managing director of Veinland, explained that GL type approval had removed a key barrier to marketing Navmaster in Germany.

Veinland's marketing of Navmaster at Europort this year will be fully supported by Lilley & Gillie, whose technical sales manager, Mike Howes, will be on the stand. Both PC Maritime and

Lilley & Gillie are part of the Liverpool-based Charente Group.

Veinland researches and develops software and in addition manufactures and markets electronic hardware for the maritime and industrial markets. The company offers various products such as serial converters, NMEA splitters and expanders, RGB distributors, touch screen displays, loading computers and so on.

Radio Holland

Radio Holland's (RH) presentation will be focused on complete bridge systems. For once, there will not be separate standalone equipment on RH's stand as all the equipment will be built into four unique innovative bridges, which show the various possibilities offered for complete concepts of integrated technology on board ships, for various applications. All the concepts are tailor made and can be adjusted according to customer's requirements and specific wishes.

Radio Holland will show a complete deepsea IBS among other types. In addition, RH will launch its latest VSAT broadband service CONNECTOR by Radio Holland at Europort and will also focus on global service, specifically on the various managed services agreements, which an increasing number of



Radio Holland will also have a large presence in Europort.



SAM Electronics Ship Control Centre (SCC).

shipowners worldwide have signed up to.

Another feature is the fixed installation package Danelec (S)VDR, for which RH is the exclusive global dealer. The presentation will be supported by the introduction of Radio Holland's new global website, www.radiohollandgroup.com, due to be launched in October.

The deepsea bridge system will contain the BlueLine concept, designed by Imtech Marine & Offshore, which is a fully automated, compact bridge integration system. There are also other (semi) conventional ways to create a bridge, which will also be shown. Visitors can compare the various possibilities.

SAM Electronics

SAM Electronics and its Rotterdam-based Dutch subsidiary, SAM Electronics Nederland, will feature an extensive range of advanced automation, communications, energy supply, navigation and associated safety systems designed for ships of all types and sizes.

Key exhibits include a ship control centre (SCC) functionally integrating navigation, communications, propulsion control and alarm monitoring functions using common hardware with high-resolution displays via standardised flatscreen monitors.

New products include the first public showing of a low-cost IMO-compliant, type approved S-VDR for retrofitting to commercial vessels - the SAM 4330; among its wide range of options is a special float-free protected data unit with an extended memory capacity of 8 GB. Also featured is a new automated Fire Alarm panel-control facility.

Communication exhibits include an Inmarsat Fleet 77 satcom terminal for high-speed ship-to-shore voice, fax and data communication, which additionally features a GMDSS capability, the DEBEG 3270.

Other sensor exhibits comprise SAM 4620 and 4630 navigation echosounders for shallow and deepwater operation with single or dual-channel displays, a GPM 500 module for combined generator and auxiliary engine protection and from associate L-3 company, Amplidan, the S2200 sound reception system for operation in totally enclosed bridges.

Transas

At Europort Transas will present its new improved generation of on board systems Navi-Sailor 4000 series ECDIS, Navi-Radar and Navi-Conning.

The company provides new technological solutions, conducts scientific researches into developing on board systems, simulation solutions and shore-based applications, presented as stand-alone or integrated systems.

At stand no. 312 Transas will present what it claims are innovative solutions in marine electronics.

UK Hydrographic Office (UKHO)

Two new electronic charting services developed by the UK Hydrographic Office (UKHO) will be unveiled at Europort.

The first service the UKHO team will put in the spotlight is an improved updating method for electronic navigational charts (ENCs).

The UKHO's ENC service is being improved to allow users to update their charts with the latest data remotely - which means they will have access to up-to-the-minute chart information over the Internet at any time and won't have to wait for the usual CD-ROM update.

Alongside this, the UKHO will be demonstrating a new web service that gives shore-based personnel the ability to view up-to-date charts on-line.

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Transas will be showing its simulated systems.

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 **W Bunker**

Rock plateaus as space runs out

For the last few years, the main selling point for Gibraltar has been the supply of bunkers, plus cruise ship calls. From 3,678 bunker calls reported in 2001, the number of vessels anchoring for 'bunkers only' calls shot up to a record 5,402 last year. In total, these vessels took on 3.98 mill tonnes of fuel.

In total, 7,600 ships called at Gibraltar last year, which was again a record. However, the problem is that the Port of Gibraltar is running out of space. At present there are 14 designated bunker 'slots' in the Bay and three floating storage tankers semi-permanently anchored. There are also facilities along the western arm of the North Mole for smaller vessels to bunker.

The 70,000 dwt plus storage ships are supplied by product tankers of around 30,000-40,000 dwt on a regular basis. Alongside deliveries to storage tanks have

The Gibraltar Port Authority is in discussions to better manage shipping in the Bay and expand the number of bunker slots available.

virtually ceased since the recent withdrawal of FAMM.

A problem exists in that with today's high demurrage rates, an operator is loath to wait off port limits for a slot to become free. On average a vessel will bunker for around six hours, depending on the size of the stem.

Gibraltar Port Authority chief executive and port captain Captain Cliff Brand explained that he was fully aware of the situation and was in talks with the government and other interested parties to expand the number of slots and to better manage shipping operations in the Bay.

One plan involves opening up the eastern anchorage, currently used as a waiting area and for vessels undergoing voyage

repairs, changing crew and/or picking up supplies, and keep the western anchorage inside the Bay for 'bunkers only' calls. At present the eastern anchorage on the other side of the Rock does not come under the jurisdiction of the port authority and is designated 'off-limits'.

Bunkers are transferred from tankers (bunker barges) of up to around 6,000 dwt to the vessels using the ship-to-ship (STS) transfer system while at anchor. This is strictly controlled by the port authority and accomplished under the guidelines issued by such organisations as OCIMF. The port employs a full time bunkering superintendent and has laid down its own code of practice.

Certain volatile cargoes are not allowed to be transferred using the STS method in port limits and single hull tankers are only allowed in the Bay if in ballast.

Captain Brand said that if the eastern anchorage is opened up to bunker calls, then STS operations would have to be regulated as it would not be deemed as international waters. Each vessel would have to provide a procedural plan for an STS operation to take place. On the western side the slots come under the auspices of the port authority who will examine the plans and regulate them as needed.

Gibraltar has its own oil spill response plans and equipment in place as do most of the bunker suppliers. The administration is also a member of Southampton-based OSRL, which can provide backup in an emergency.

The eastern anchorage is often 'home' to several LNGCs and other large tankers waiting to



An STS transfer in the western anchorage involving a product tanker and a storage vessel operated by Vemaoil (Queensway).



Between a Rock and a Hard Place! The *New Flame* sinking severely tested Gibraltar's emergency response capability.

load cargoes at Arzew, Egypt or West Africa as it is deemed safer to anchor off Gibraltar than off the loading areas due to the lack of security in these waters.

Down the years, Gibraltar has built up a reputation as a service provider, both in shipping and financial terms. Somewhat surprisingly, there are no outside third party shipmanagement companies on the Rock, only a few commercial management concerns. Technical management teams are in place to look after the bunker tankers and their mother ships.

Considering there are 70,000 plus vessels passing within a few miles of Gibraltar services, such as crew changes, repairs (both afloat and in dock) and supplies are well catered for and there are around a dozen or so ships' agencies located in the Rock, which offer all manner of services. There is also a shiprepair centre operated by Cammell Laird (Gibraltar), which has three drydocks, one of which can handle vessels of up to panamax size.

Keen competition has developed from nearby

Algeciras and La Linea, which are fast building up their industries and infrastructures. The recent opening of the first part of a new container terminal at Tangier, just 35 miles away across the Strait, will again increase the competition in the service sector.

At present, there is no joint vessel traffic control system in the Gibraltar and Algeciras Bay areas, which are very busy with shipping arriving and departing to and from the Mediterranean and the Atlantic areas, plus the local ferry traffic much of

which is high speed craft connecting Algeciras with Tangier and Ceuta.

Both port administrations hold regular dialogues on navigational matters. The problem was highlighted by the recent collision between the 46,362 dwt product tanker *Torm Gertrud* and the 43,815 dwt bulker *New Flame*, resulting in the latter's sinking just off Europa Point.

This incident severely tested Gibraltar's emergency response plans. At the time of *TANKEROperator's* visit, all the fuel had been removed from the half sunken bulk carrier, which was being prepared for cutting in two.

Following the recent general election, which saw a return to power of Chief Minister Peter Caruana by a slim majority, a new shipping and port administrator was appointed - Ernest Britto. He replaced long term incumbent Joe Holliday who was promoted to Deputy Chief Minister.

Last year's historic Cordoba meeting between the UK, Spain and Gibraltar paved the way for greater co-operation and indeed Iberia has started a daily service from the Rock to Madrid. This could lead to a greater number of flights between Spain and Gibraltar, which in turn would boost the Rock's economy and standing as a service centre. **TO**



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European flag of choice

Gibraltar flag sets its stall out to attract quality shipping

The flag administration has gone from strength to strength during the past seven years or so. Maritime Administrator Tony Nation said he put this down to marketing the flag "by word of mouth".

For example, by gaining such owners as the German tanker pair Carl Buttner and Carl F Peters and also German feedership owners, plus Dutch concerns Unifleet and Lauranne Shipping and some Scandinavian tonnage, the flag had seen other companies follow.

The Gibraltar flag has been dubbed by the administration as the 'European flag of choice' as anybody thinking of flying the flag automatically enters the EU cabotage trades. The

administration is a member of the UK's Red Ensign Group and is classed as a Category 1 registry at the IMO.

Nation told *TANKEROperator* that he was keen to expand the registry but in a controlled way. At the beginning of September, the number of vessels registered in Gibraltar stood at 245 of nearly 1.5 mill gt.

At present the ratio of surveyors to vessels is one to 40, which was one short of the target. However, Nation found that like other sectors of the maritime industry, recruiting experienced people proved to be very difficult in today's market.

Chemical and product tanker owners and managers were high on Nation's list of favoured vessel

types as these were often better managed than other types of vessels. "You don't get bit players in the tanker sector, but rather owners and managers with quality systems in place," he explained.

As if illustrating this point, a couple of gas tankers were expected to join the registry by the end of this year, while some of the many chemical carriers being built in Turkish yards were being targeted.

He explained that one of the advantages of being located in Gibraltar was that he could walk into his office in five minutes as the registry offers a 24/7 operation. An example is being able to issue certificate exemptions quickly should the

need arise. Nation said he was not in favour of on-line registration and would rather know who he is dealing with by meeting face to face. Once the paperwork had been completed then the records are kept electronically, he explained.

Another advantage was that an owner could pick up the phone and talk to the same person thus creating a sort of 'rapport' with the registry, which gives continuity of operation.

Nation has put the Gibraltar flag administration forward for the IMO's voluntary audit scheme and expects to undergo an audit during the second half of next year. A surveyor has been sent from the office for additional training to help with the audit. **TO**

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Service sector to the fore

There are over a dozen ships' agency in various guises located on the Rock and around eight bunker suppliers of varying sizes. Of the agencies, two are international - Barwil Unitor Ships Service and Inchcape Shipping Services.

Barwil Unitor, now part of Wilhelmsen Marine Services, has been established on the Rock for 17 years and has a large safety service centre at Algeciras. Barwil offers a full operation, including the provision of safety services and the supply of chemical gases.

Vessels can be supplied alongside at both ports, in the Gibraltar repair yard, or at the anchorages by launch. Vessels are normally supplied at the eastern anchorage and off Europa Point in designated off-limits areas, which is the favoured spot for attending waiting or passing large vessels, such as LNGCs and tankers. However, the agency also handles 90 plus vessels per month arriving at the western anchorage bunker slots.

The boat has a 10 tonne loadline and by using this method of ship supply, or undergoing crew changes, the vessel in question has little delay and deviation from the main Gibraltar Strait separation zones. Regional operations manager Gavin Griffin explained that by using off port limits a VLCC can be serviced when passing just by slowing down instead of having to manoeuvre in heavy traffic. A helicopter is also available for charter with a payload of one tonne.

The tie-in with Unitor has meant

Being strategically placed, the Rock's shipping industry is firmly geared to the service side of the business, not least in agency and bunkering.

that Barwil can offer more of a one-stop-shop service, customs clearance is handled internally as most of the supplies are trucked across the frontier. The border has a window of 08.30 to 20.00 due to Spanish customs working practices. The opening up of the airport to more flights per day also gives the agency an extra opportunity for emergency items and could enhance crew changes in the future. At present the crew are routed through London.

For pre-ordered supplies and spare parts, the agency will use the international warehouse distribution centre in Rotterdam, where goods can be relayed by air via London, or trucked down to the Rock in two to two and a half days. A small stock is also housed in Barcelona, but warehouse space is at a premium in Gibraltar itself. For stevedoring services, Barwil uses local concern MH Bland.

For crew changes, a letter of guarantee from Barwil is all that is needed for Philippine and Indian crew arriving at the airport. Griffin explained that crew can be on board their vessels in one to two hours from landing at the airport.

Barwil pools its resources in both Gibraltar and Algeciras. The latter is growing considerably on the back of the huge container terminal, which is undergoing

expansion, plus the oil refinery at La Linea and the anchorages. The oil refinery handles both crude, chemical, product and LPG carriers.

The agency has an extensive network of service stations on the Iberian Peninsular. For example, its Portuguese interests have been expanded to four stations thanks to the recent acquisition of Knutsen. Expansion is still underway in Spain with another branch opening in Las Palmas, which offers a full service. Other bases were opened in Barcelona and Tarragona this year.

Griffin said that tankers tend to need a lot of everything, including tank cleaning chemicals, cleaning agents, CO2 bottles, fire extinguishers, while the agency also offers follow up services for upgrading and issuing the relevant certificates.

Bunkers

The 'new kid on the block' in terms of bunker supply is Bunkers (Gibraltar). This operation started up about three or four months ago with a 78,000 dwt supply ship - *Europa Venture* - and a 6,500 dwt bunker tanker- *Europa Supplier 1*.

Bunkers (Gibraltar)'s Michael Greaves said that the company prides itself in delivering quality bunkers at the right quantity. He explained that a Jiskoot blender

was purchased and flow meters were used on every stem.

The Jiskoot viscosity trim in-line blender with a fully integrated SCADA system was installed on the *Europa Supplier 1*. It has been designed to produce anything from IFO 30 cSt to IFO 470 cSt from a wide range of base components and has a throughput of 100-800 cu m per hour.

Although there is increasing demand for low sulphur fuels before entering the North Sea or Baltic SECAs, IFO 380 cSt is still the norm. Gasoil can also be supplied on demand.

Europa Venture is fully crewed and Bunkers (Gibraltar) has a 'Document of Compliance' to operate the vessel. Like the other vessels in the anchorage, she can be moved at short notice in cases of emergency. The double hull product tanker had been chartered in from one of the company's major shareholders.

Greaves explained that they were looking to expand the bunker fleet in the near future. The prices quoted include bargeing and demand was increasing at the time of *TANKEROperator's* visit due to supply problems at Suez and tight supply in Rotterdam. The bunker tanker can easily supply vessels with a high freeboard, such as LNGCs, Greaves claimed.

Pricing depended on the supply situation to a certain extent but it is generally more expensive than Rotterdam, or Singapore as the product has to be delivered by sea to the storage vessel and then transferred to the *Europa Supplier 1*. **TO**



Bunkers (Gibraltar) bunkering tanker *Europa Supplier 1* and storage vessel *Europa Venture*.



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Small flexible multipurpose gas carriers

With all the hype surrounding the large LNGCs, it is easy to overlook the fact that not everyone needs 130,000-250,000 cu m cargoes of natural gas.

Indeed, we have seen Knutsen introduce a small coastal LNGC and Anthony Veder order a larger coastal unit.

A rather different approach has been chosen by IM Skaugen (IMSK), which is building a series of multigas type vessels, able to transport petrochemical gases, LPG (mainly ethylene) and/or natural gas.

Speaking at the recent Global LNG Shipping Symposium, Skaugen's Haakan Werner explained that one series will have a capacity of around 10,000 cu m, while an upgraded design has led to orders for gas carriers of around 12,000 cu m. Thus far, six of the smaller gas carriers have been ordered plus two of the larger types. Options for two more 12,000 cu m vessels are

declarable by the end of this year.

All the vessels are being constructed by Skaugen Marine Construction (SMC) with the smaller hulls being sub-contracted to Wuzhou Shipyard at Taizhou, while the larger ones will be built by Ding Heng Shipyard in Jiangsu Province. The cargo plants will be constructed by Jiangsu-based Shenghui Gas & Chemical Systems, which is 50% owned by IM Skaugen Marine Services (IMSMS), itself a 100% subsidiary of IMSK.

Skaugen created SMC in the autumn of last year to be totally responsible for all aspects of the newbuilding projects in China, including the design and construction, procuring steel work and major components plus most important, the key cargo handling equipment and related systems.

The first four multigas vessels will be operated by Singco Pte, a 50:50 joint venture involving IMSMS and transport leasing concern GATX. This takes effect from the first quarter of 2009 when the first vessel is due for delivery. Once in service, all four will operate in the Norgas pool.

In July, IMSK announced a tie up with Norwegian utility concern Lyse Gass to create a small supply chain for the Nordic markets - Nordic LNG.

A natural gas liquefying plant with an annual capacity of 300,000 tonnes will be built by Lyse and its partner Celsius Invest, which is expected to come on stream in 2010.

One of the newbuilding multigas vessels will initially be

assigned to the project to transport gas from the plant to receivers in the Nordic region. IMSK will have a 40% share in Nordic LNG while the other 60% will be in the hands of Lyse and its partners. IMSK said it would not only transport the gas, but would also take an active part in the whole supply chain, including taking the role of seller to the end user.

Skaugen claimed that the environmental benefits in the area would be considerable. A customer's shift from oil to gas would reduce CO₂ emissions by 250,000 tonnes per year and would also considerably reduce NO_x emissions.

One of the main aims is to supply customers by sea on short haul trips in the Nordic region who do not have access to a pipeline. The Eur120 mill plant will be built at Risavika, near Stavanger. The processing plant will be manufactured by Linde. A second phase, which would increase the production capacity to 600,000 per year, is already being planned. Shell will deliver about 200 mill cu m of natural gas per year from Karsto via Lyse's pipeline to the processing plant.

Skaugen claimed that more ships and land-based storage capacity can easily be added as the demand grows. Industrial users are being targeted who do not have access to pipelines due to location or size of operation. In the long term the logistics could be tailored to a customer's requirements. Turnkey distribution solutions could also be offered, including filling stations.

Principal Particulars

Loa	137.1 m
Lbp	127.2 m
Beam	19.8 m
Depth	11.5 m
Design draft	6.7 m
Speed	16.5 kn
Consumption	27t/d (IFO 380 cSt)
Range	12,800 nm

Capacity

Cargo	10,000 cu m
Deadweight	10,600 t

Propulsion

Main engine	MaK 7M43C
Output	7,200 kW @ 500 rev/min
Auxiliaries	3 x 910 kWe
Shaft generator	1,900 kWe

Cargo Systems

Tanks	1 x 4,000 cu m 1 x 6,000 cu m
Design pressure (IMO/USCG)	5.2/3.8 bar
Min temperature	-163 deg C
Max density	970 kg per cu m
Discharge rate	1,000 cu m per hour
Reliquefaction plant	SINTEF 20 t/d
Gas combustion unit	Saacke 20 t/d
Nitrogen plant	PSA type

The size of the storage needed will be driven by the size of the ships. The storage capacity should be large enough to always be able to receive at least one full cargo to minimise the logistics cost. By comparison, an LNGC of 135,000 cu m capacity would need storage capacity of 200,000-300,000 cu m, while a 10,000 cu m LNGC would only need 30,000 cu m of storage capacity.

In financial terms, at a cost of \$1,500 per cu m, a 30,000 cu m storage plant supplied by 10,000 cu m vessels would work out at \$45 mill, while a plant having two 140,000 cu m tanks supplied by large LNGCs would cost \$420 mill.

LNG can either be shipped from an LNG plant, be transhipped from a large receiving terminal, or transferred via the ship-to-ship transfer method.

Werner told TANKEROperator that there were many areas of the world that could benefit from gas shipments by sea, which do not have access to pipelines. "There are a number of mainland areas like Scandinavia where there are no possibilities for supplies via pipelines, but an abundance of large industrial users that could benefit from the use of natural gas," Werner explained.

Gas carrier design

The 10,000 cu m (10,600 dwt) multigas carriers will be of the semi-pressurised type, which IMSK claimed gave it flexibility to carry LNG, ethylene as well as LPG. The LNG will be carried at atmospheric pressure by using a liquefaction plant fitted on board. The design is claimed to be geared for quick and efficient

grade changes in the cargo tanks.

Each vessel will be able to ship two cooled and segregated grades simultaneously in two tanks. Each tank will be cylindrical stainless steel Type C cargo tanks of 4,000 cu m and 6,000 cu m capacity respectively, while the temperature range is from minus 163 deg C to ambient conditions. The maximum tank pressure will be set at 5.2 bar gauge IMO setting.

In addition, each vessel will be fitted with a 110 cu m capacity deck tank for the carriage of LNG/LEG/LPG with a maximum pressure of 18 bar gauge. The reliquefaction plant will be able to handle boil-off from all three cargoes, while LNG boil-off will be handled by a newly developed mini LNG plant and LEG/LPG will be liquefied in a newly developed cascade plant. The vessels will also be fitted with a gas combustion unit (GCU) designed for burning all three types of gas cargoes.

The mini liquefaction plant was developed in co-operation between IMSK and SINTEF, while the GCUs will be designed and manufactured by Saacke and will have a capacity of up to 20 tonnes per day.

For berthing at large LNG receiving terminals the vessels will be fitted with a dual manifold system, located at different heights on board the vessels. The vessels will also be able to berth at traditional LEG/LPG terminals, as well as smaller LNG terminals using the dual manifold system.

As for the machinery, each vessel will be fitted with a MaK medium speed, 4-stroke 7M43C diesel engine developing 7,200



An artist's impression of the loading terminal near Stavanger.

kW at 500 rev/min. The prime movers will be connected to a controllable pitch propeller through a reduction gearbox. They can also be used as power plants. The vessels will have a speed of 16.5 knots burning 27 tonnes per day of IFO 380 cSt.

Three auxiliaries of 910 kW will also be fitted. A shaft generator of 1,900 kW in a PTO/PTI mode will enhance the 'take-me-home' capability of the vessels. A 800 kW bow thruster will aid manoeuvrability as will a highly efficient spade rudder with a flap.

IMSK explained that dual fuel operation is not an option as the vessels have been designed for multi-gas trades, including global LNG operations. A catalytic exhaust gas converter will result in the NOx emissions being below that of the MARPOL VI regulations.

By keeping to a maximum design draught of 6.7 m, the vessels can enter most harbours. Also a relatively high discharge rate of 1,000 cu m per hour mean that turnaround times will be kept to a minimum.

Werner explained that for

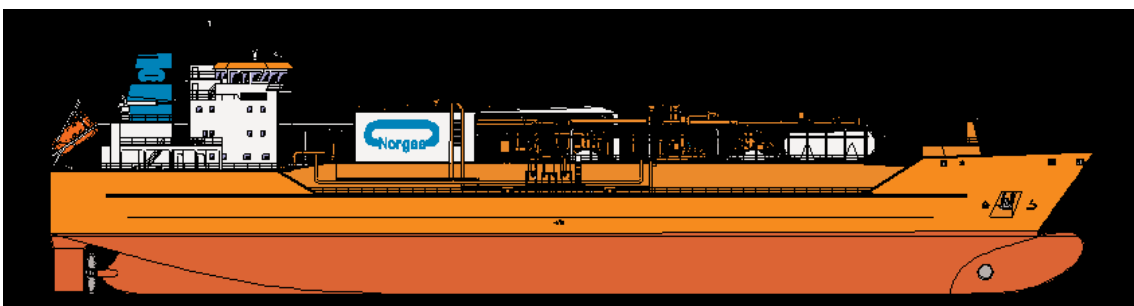
crewing the multigas vessels, IMSK will use its normal crewing process and provide the necessary LNG specific training modules. Being a leading ethylene marine services company, IMSK has long experience in handling cryogenic liquids. Ethylene is transported at - 103 deg C and is considered a more hazardous cargo than LNG. "Having an operational safety culture based on ethylene, gives us a good base for developing the needed LNG skill," he said.

Training

To ensure that IMSK has access to talented and competent seafarers, the company has set up a joint venture in China with Wuhan University of Technology.

The Wuhan University-Skaugen Training Centre (WSTC) was formed in March 1998 and is engaged in training seafarers in the handling and transport of dangerous cargoes, including liquid petroleum gases, chemicals and oil products, as well as vessel maintenance. Equipped with advanced training facilities, first class teaching staff and an ISO 9001:2000 accreditation certified by DNV, the centre is fast becoming a premier seafarer training establishment in China, the company claimed.

WSTC provides competent Chinese seafarers for both the domestic and international markets and has trained more than 16,000 students up to the end of last year of which 3,000 are serving on board international vessels.



An illustration of IMSK's multigas design concept.

Shortage of seafarers: simulation as a way of solving the problem

Participants in the recent Transas' Simulation Users Conference couldn't avoid the issue either as the maritime industry is continuing to sound an alarm.

As Graham Wagstaff, Transas' technical simulation sales product support manager mentioned in his speech, the study by the Baltic and International Maritime Council (BIMCO) and the International Shipping Federation (ISF) confirmed that the current moderate officer shortage will become severe unless maritime training is increased and measures are taken to address wastage rates.

The problem of the shortage of seafarers has already been discussed for number of years. Nevertheless, the urgency of the situation has not diminished.

only mount. In the short term the task of 'filling the gap' can be resolved by appealing to retired mariners to return to sea, to personnel from related industries, to serving and former members of the armed forces, or defence related industries facing a transition to civilian employment who have transferable skills. In the long term, the industry has to undertake more serious measures, paying special attention to the

emergency operations).

At the same time, marine simulation systems provide real-life operational training, extensive environmental effects, and generate various system faults ensuring team procedural training using visuals for greater realism.

Simulation-based training's advantages are self-evident. However, there are some obstacles. Governments and shipping companies are not

training gains new meaning. It allows a rating to gain necessary competence, underpinning knowledge and skills to qualify as an officer in a relatively short period of time. Simulator driven computer based training and assessment enables training to be delivered even at sea.

Overall, to boost the numbers of qualified sailors, it is vital to set up a comprehensive education, training, examination and certification system. Transas said that the company is ready to assist in this urgent matter.

Meanwhile, Transas has scored several successes recently, by way of installing simulators at various academies worldwide.

Late last year, Gothenburg-based Chalmers University of Technology took delivery of a large scale simulator, which it said would be used to develop and implement training standards, using the aviation industry as a model. It was due to be commissioned during the middle of this year.

Anders Rydlinger, managing director of Transas Scandinavia, said at the time of its unveiling, "Traditionally, all maritime training has been focused on individual technical skills in navigation and ship handling. It is now recognised that this knowledge must be complemented by leadership and management skills. Nowadays the objective of most training courses is to encourage teamwork with the aim of reducing the risk of individual error incidents and accidents."

The simulator itself was designed for use by external customers, for example, the training of the ship's bridge team, pilots and tug masters, as well as for investigation, research, design and master classes.

It is able to emulate any ship



The shortage of officers could become critical by the middle of the next decade.

By 2015, the shortage of marine officers is likely to nearly treble to 27,000. On the other hand, the number of ratings will rise to 167,000 in 10 years time from the current figure of 135,000, according to a global study.

This puts a huge impetus on the industry and the pressure will

training of personnel.

When it comes to comparing different types of education, training on board a real vessel (OJT) has its disadvantages, namely high costs, while theoretical courses do not provide the ability to demonstrate watchkeeping capabilities in reality (for example, standard and

always willing to invest in the expansion of training. There is no clear guidance from regulators; moreover, the lack of suitable qualified instructors is critical. These difficulties have to be overcome if the industry wants to avoid a serious crisis.

Considering the estimated surplus of ratings, simulator

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“All of the (MITAG) simulators operate with the Navi-Trainer Professional 4000 (NT-PRO 4000) platform and share common technological capabilities with an unrivalled level of flexibility.”

type, including high speed vessels and tugs. The scope of supply includes both primary and secondary bridges plus a built-in decision support system, a desktop bridge station and an interface to the Gothenburg SSPA hydrodynamic ship models database.

The system consists of two ship bridges with a circular visual field of view of 270 deg and 200 deg respectively.

It can perform the following tasks:

- Competency based courses for ship masters, officers and pilots.
- Human factors related courses.
- Crisis management on board, as well as in the whole organisation.
- Accident and incident investigation.
- Feasibility studies for port entry by particular ships.
- Port and fairway design.
- Research projects.
- Final assessment of master class students.

It also includes the scopes of part task bridge simulator and a GMDSS radio simulator.

As a full mission ship bridge simulator, the system meets the requirements of the Standards of

Training and Certification for Watch Keeping (STCW'95) convention.

In August, MITAGS opened a simulation training centre at the Linthicum, Maryland, US campus.

MITAGS has been offering training programmes to seafarers for over 30 years. Today, over 100 courses are available. It claims to be one of the few schools in the US that provides all of the STCW-95 training courses that are necessary to advance from ordinary seaman to unlimited master. MITAGS also offers specialised expertise for a wide range of research and development projects within the maritime industry.

The opening included the renewal, upgrade, and enhancement of the institute's onsite simulation facilities, which were all carefully implemented over a 12 month period. The implementation process itself included extensive research in the following subject areas:

- Available technologies.
- Vendor support capabilities.
- Overall quality.

MITAGS' simulation training centre upgraded facility includes

the following supplied by Transas:

- Two full mission shiphandling simulators.
- Two bridge tug simulators.
- Six part-task simulators.
- One full mission vessel traffic services simulator (VTS).

All of the simulators operate with the Navi-Trainer Professional 4000 (NT-PRO 4000) platform and share common technological capabilities with an unrivalled level of flexibility.

The Transas full mission shiphandling simulator is housed within a 360 deg curved projection screen that measures 80 feet in diameter and 30 feet in height. It includes a flexible bridge design and a series of enhanced instructor capabilities. The dedicated tug simulator utilises a 300 deg horizontal field of view plus a 42 deg vertical field of view. The six part-task bridges, and a second smaller tug simulator, offer 120 deg of visuals and are located in the fully upgraded all weather navigation (AWN) trainer. A VTS training suite and a 12 bridge ECDIS trainer, complete the current navigational simulator enhancements, which, along with all of the simulator bridges, can be

operated in almost any combination for interactive exercises.

MITAGS also has numerous Transas simulation development tools, such as model wizard and virtual shipyard, for the visual database and hydrodynamic modelling.

Transas USA has also supplied Mid-Atlantic Maritime Academy (MAMA), formerly Tidewater School of Navigation, with a full mission ship handling simulator.

The simulator, based on the Transas Navi-Trainer Professional 4000 simulation software, consists of a 225 deg horizontal field of view forward combined with three rear viewing channels.

The bridge equipment is convertible to enable ship handling training on large vessels, as well as tugs and offshore supply vessels. Transas was also contracted to supply all related PC hardware and the supply included control equipment such as Z-Drive and Voith-Schneider propulsion controls seen on many tugs and offshore vessels. The full mission simulator is an extension of the already existing ARPA/radar and ECDIS class room simulators.

In addition, MAMA is equipped with a Transas TGS 4100 GMDSS simulator and is able to offer a full range of USCG and STCW approved maritime training courses from able seaman to master mariner. The installation of the simulator completes an expansion programme.

TO







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OSG to offer US cadets sea time

Overseas Shipholding Group (OSG) and the Maritime Administration have signed an agreement that will provide training opportunities for American maritime academy cadets on board OSG's international flag vessels.

The public-private partnership marks the first formal agreement to make available on board training billets in the international fleet for US maritime academy cadets.

Under the terms of the agreement, cadets from the US Merchant Marine Academy and all six state maritime academies will be able to obtain work

experience and training on board OSG vessels. Under international and national requirements, maritime academy cadets must serve at sea for an average of 300 days in order to obtain enough shipboard training for a merchant marine officer license. This agreement will allow American cadets to serve on OSG's diverse commercial fleet of US and foreign registered vessels in order to obtain the necessary sea time training.

The signing ceremony was held at the Maine Maritime Academy, one of the state academies covered by the agreement, during the US Maritime Academy Presidents' annual meeting.

This agreement was signed by


Maritime Administrator Sean Connaughton and Captain Robert Johnston, senior vice president and head of shipping operations at OSG. In attendance were the superintendent of the US Merchant Marine Academy and the presidents of the State Maritime Academies of California, Great Lakes, Maine, Massachusetts, New York and Texas.

"It is impossible for aspiring mariners to obtain a merchant marine officer license without sufficient sea service," said Connaughton. "This agreement will expand the opportunities for American cadets to train on one of the world's largest and most modern commercial fleets. We applaud OSG for taking this initiative."

"This agreement is important for OSG and the rest of the maritime industry," said Johnston. "The health of the entire marine transportation industry depends on the availability of trained and skilled merchant mariners."

Vice Admiral John Craine, president of State University of New York Maritime College and current chair of the state academy presidents' council, noted that the US state maritime academies are increasing enrollment to meet the growing demand for skilled mariners, and said, "We all need more ships available to carry cadets for training. OSG's agreement is welcome news, and we look forward to more agreements like this."

TO




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Companies line up for ballast water approval testing

OptiMarin, the manufacturer of ballast water treatment systems is patiently waiting for approval while fellow Norwegian supplier OceanSaver completes testing of its C3 treatment unit at the Norwegian Institute for Water Research (NIVA), writes Brian Warshaw.

Meanwhile countries that have demanded controls on the quality of ballast water discharges, and then failed to sign the 2004 Ballast Water Management Convention and other environment measures, have raised the wrath of the IMO's secretary general Efthimios Mitropoulos.

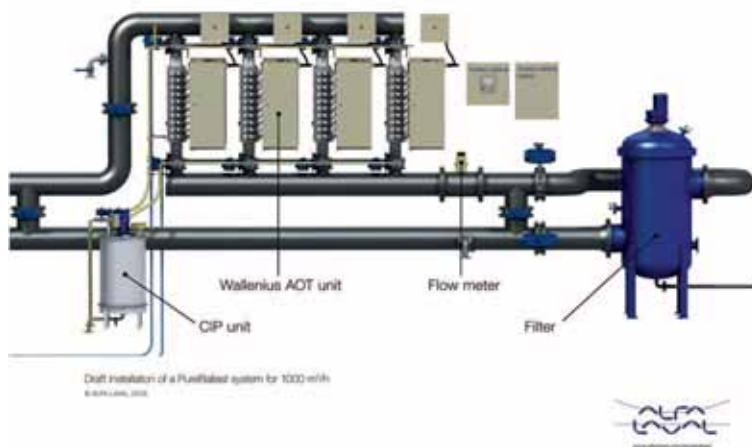
Some nations have already introduced controls of their own for ships visiting their territorial waters; but most are reliant upon the IMO Convention to protect their waters from alien species of bacteria, algae and zooplankton. Under the convention there are two methods of control, Standard D-1, which imposes a regime of ballast water exchange, and

Standard D-2 that is based on the use of ballast water treatment.

To obtain certification under Standard D-2 requires biological performance testing that is approved by a national authority, to be undertaken at a land-based centre over four to six months, followed by a further six months testing at sea. Additionally there is a procedure referred to as the Active Substance Approval, which certifies that the system leaves no toxic residues that could affect the environment.

Currently there is only one independent third-party accredited centre capable of meeting the IMO testing requirements, and having facilities to deliver a flow rate of water at 200 cu m per hour. The

BallastTech - NIVA laboratory is located within the Solbergstrand Marine Research Station, 20 km south of Oslo and performs laboratory-scale, pilot-scale, full scale and on board tests, under the direction of Det Norske Veritas as the certifying agency. The laboratory can complete three or four full



Alfa Laval's PureBallast system has received IMO recognition.

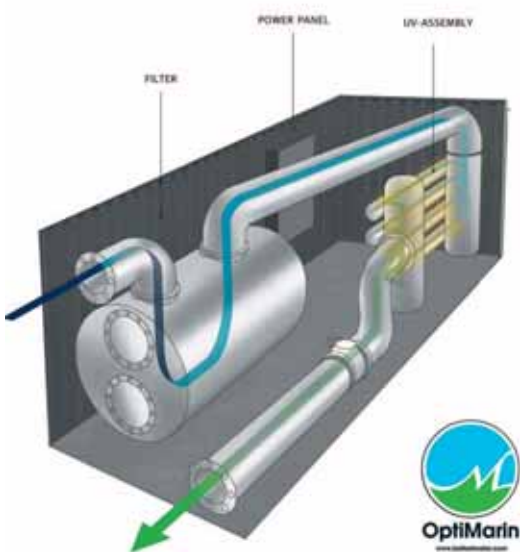
scale tests per year; but hopes to double this during the coming years. From the summer of 2008, it will have vacancies to carry out full scale tests.

The first company to use the Solbergstrand facility to obtain its land-based D-2 testing results was Alfa Laval, for the PureBallast system. At the heart of the PureBallast system is a chemical-free advanced oxidation process (AOT), which was developed in association with Wallenius Water. The Wallenius AOT™ is a titanium water purifying system, and when an internal light source strikes the water flowing and the surface of the titanium it produces free radicals. During the lifespan of a radical, lasting only a few millionths of a second, it impacts on the micro-organisms and other organic contaminants in the

water, stealing a hydrogen atom. The micro-organism or contaminant breaks down, and the radical ceases and exits the purifier.

In July, the PureBallast system became the first ballast water treatment system to be given formal recognition by the IMO. An immediate result was the announcement that German vessel manager ER Schiffahrt had ordered PureBallast systems for installation on its four newbuildings to be delivered in 2009.

By mid-October, BallastTech - NIVA AS had completed eight of 10 tests needed for the land-based element of the OceanSaver® system's certification programme, and it is anticipated that they should all be completed before the end of October. Six months of sea-based testing will then be



Official testing of OptiMarin's system was due to start in November.

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Frank Mohn AS, located outside Bergen in western Norway, is the leading supplier of submerged cargo pumps to the world tanker market.

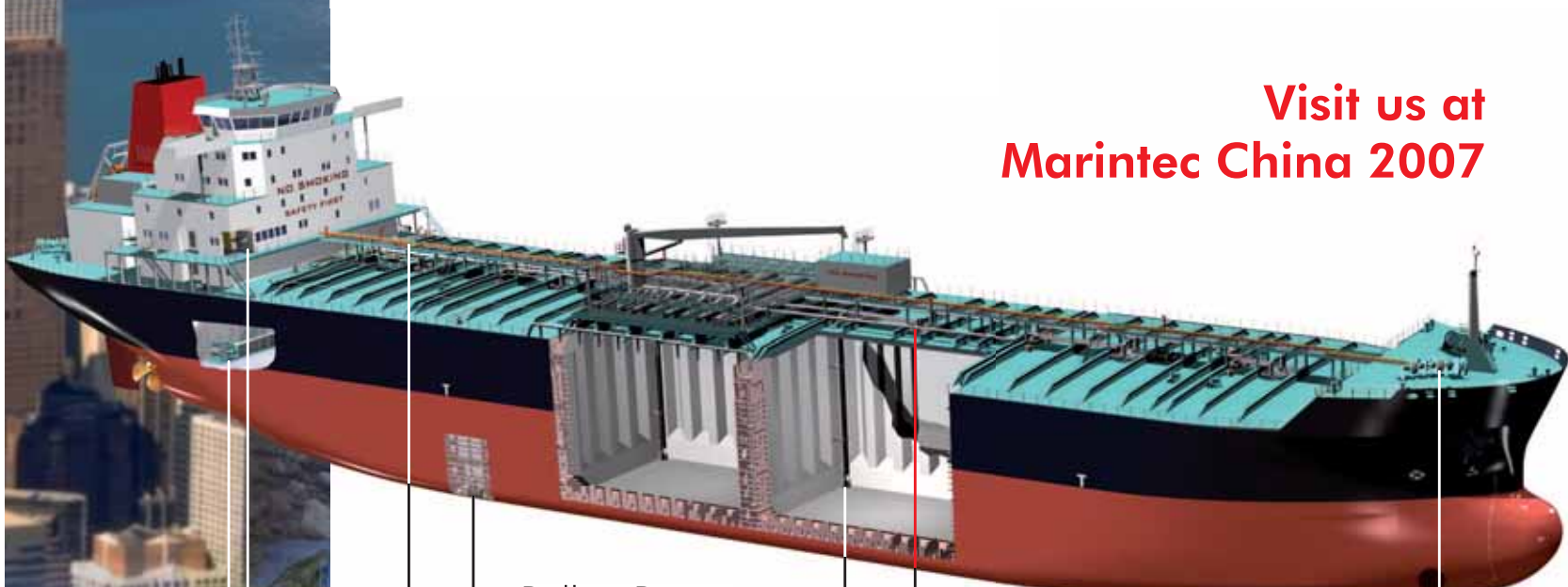
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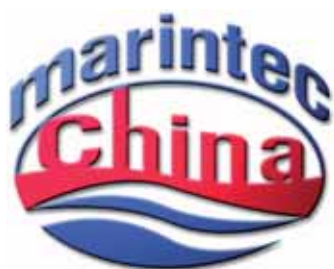
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conducted on the unit, which will be retro-fitted on Höegh Autoliners' vehicle carrier *Höegh Trooper*. The carrier was previously used from April 2005 for earlier trials of the OceanSaver system, and has a total of 15 ballast tanks to maintain with treated water, having a total capacity of 7,124 cu m.

OceanSaver treats the incoming ballast water within a three-part process; mechanical filtration, nitrogen supersaturation, and hydro-dynamic cavitation. The introduction of nitrogen depletes the dissolved oxygen in the water and renders dead all organisms with a breathing system, while the hydro-dynamic cavitation is effective in destroying bacteria.

The key to the system, the hydro-dynamic cavitation unit, operates by increasing the velocity of the ballast water flow rate to the point where it reaches vapour point, and cavitation is achieved, where the water shows a large growth in bubble formation followed by a violent collapse. The created forces rupture cell membranes and destroy the organisms.

Although still waiting for its official land-based testing to begin at the BallastTech - NIVA centre, OptiMarin has announced that it has carried out several tests that successfully meet the D-2 standard set forward in the Ballast Water Convention. Official testing was scheduled to begin at the start of November, to be followed immediately by sea trials, and the company expects to have final approval around the middle of 2008.

The OptiMar Ballast System, which was trialed on seven ships before the IMO Convention was agreed, is based on the use of filtration to remove the larger elements and organisms, followed by ultra-violet irradiation; consequently it uses neither active substances nor chemicals. A vessel for the on board sea tests has still to be selected, however, it is known that the testing will be

undertaken in collaboration with the Norwegian Torvald Klaveness Group.

In the period between 2009 and 2016 it is anticipated that there will be a substantial requirement to retro-fit treatment systems to existing vessels, and according to the company, its ballast system has one of the smallest foot-prints among the systems that are being developed, making it suitable for the retro-fit market as well as for newbuildings.

Second approval

NEI Treatment System, has become the second company to achieve approval for its ballast water treatment system. The Republic of Liberia issued a certificate on 11th October confirming that model VOS-2500 met the guidelines contained in IMO resolution MEPC 125 (53) for a treatment capacity rated up to 2,500 cu m per hour.

The NEI Venturi Oxygen Stripping™ system comprises a venturi injector acting as a pressure differential cavitation device that, as the ballast water passes through it, creates a vacuum to draw inert gas into the stream, forming a micro-fine bubble emulsion. The emulsion creates a rapid transfer of the dissolved oxygen in the water from the liquid phase to the gaseous phase, and deoxygenation (hypoxia), takes effect within 10 seconds. The ballast water is lowered to a pH of 6.0, giving an added bonus of reduced tank corrosion.

Chlorine dioxide is the medium chosen by Ecochlor for use in its ballast water treatment system. This is a common bactericide, fungicide and algicide, chlorine dioxide, that is used extensively in Europe, and increasingly so in North America and Australia, for disinfecting drinking water. In Ecochlor's ballast water treatment system the chlorine dioxide is generated on board the vessel, used at low dosages, and after eliminating the aquatic invasive species, can be discharged into

the sea without causing any environmental damage.

Ecochlor has been working with Atlantic Container Lines, and Matson Navigation, to obtain shipboard testing. Tom Perlich, president of Ecochlor told *TANKEROperator* that testing on the conro *Atlantic Compass* was being conducted by scientists from the University of Rhode Island Graduate School of Oceanography. The test results showed the technology's ability to meet D-2 as well as the standards being considered in the US.

Perlich said, "We are considering proposals for land-based testing in Europe. A decision will be made within the next four to six weeks. We are eager to complement our work with the United States Coast Guard in the Shipboard Technology Evaluation Program (STEP), by obtaining type approval from an EU member nation in 2008."

Vela initiative

Vela International Marine is the tanker subsidiary of the Saudi Arabian Oil Company and a firm supporter of ballast water exchange. It operates 19 VLCCs, and five product tankers, all of which will have to adopt some form of ballast water management, and the company has announced innovative concepts as to how this could be achieved.

Earlier this year, Vela's latest innovation received a US patent for what it described as a Loop Ballast Exchange (LoBE) system, claiming that it could achieve ballast water exchange without loss of speed and power to the vessel. The patent describes the system thus: "As the ship moves through the sea, the seawater is admitted through one or more inlet ports associated with a selected ballast tank, and is distributed into the upper region of the ballast tank. An ejector is positioned at the bottom of each ballast tank to remove the existing water from the ballast

tank via the outlet ports. The greater the ship's forward speed, the greater will be the volumetric flow of water through the main conduit or conduits, and thereafter through the ballast tank and the discharge port or ports associated with each tank."

If the LoBE system is turned into a fully engineered development, it will more than adequately fulfil Standard D-1 of the Ballast Water Convention, which stipulates seawater exchange must take place at least 200 nautical miles offshore using at least three times the volume of the ballast tank. The LoBE system could be managed to operate continuously or at regular intervals to exchange ballast



Vela's loop exchange ballast system.

throughout the voyage.

In 2004, Vela patented the Automatic Ballast Flow (AUBAFLOW) system, which had the same objective as the LoBE system; but employed a different layout of ballast tank piping. AUBAFLOW was, at the time, instrumental in influencing the IMO to form a working group to study seawater exchange.

While the equipment manufacturers and shipowners have been playing an active role in bringing to fruition the Ballast Water Management Convention, at the end of September it has been ratified by just 10 member states of the IMO with a combined tonnage of 3.42%. For the Convention to be brought into effect 30 countries must sign it, and together represent at least 35% of the world's gross tonnage. It is currently intended that the Convention will be phased in from 2009, commencing with small newbuildings.

TO

Victor Marine re-enters single nozzle tank cleaning market

The VP Monomatic is a single nozzle programmable tank washing machine that has been named after a previous unit that Victor Marine (when known as Victor Pyrate) manufactured. Designed for easy operation and maintenance, it has been engineered using current technology and modern materials. The VP Monomatic will enable the company to re-enter the single nozzle market.

Suitable for tackling the most aggressive environments, the VP Monomatic is constructed from

UK-based Victor Marine has added a new tank cleaning machine to its range of products, as well as a new distributor for Singapore and Malaysia.

AISI 316L stainless steel, and will complement the twin nozzle machines designated VP Minor and VP Major. The single nozzle machine is available with a range of deck flange sizes, a wide choice of inlet valves or flanges to suit a variety of connections, and various down

tube lengths.

Programmable by the operator, the VP Monomatic can throw a cleaning jet to a maximum distance of 22 m, at an operating pressure between five and 12 kg per centimetre squared. It employs a wash pattern of from 180 to zero deg elevation with a

variable rate of nozzle descent. The VP Monomatic cleans on a continuous cycle without need for further adjustment, and iterates the wash cycle time until it is turned off.

Duncan Marshall, Victor Marine's international sales manager, told *TANKEROperator* why they had reintroduced a single nozzle machine into their range. He explained that originally all tank cleaning machines had been twin nozzle and were restricted to being portable. "In the 1970s", he explained, "with the



A schematic of the VP Monomatic tank cleaning machine.

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introduction of Crude Oil Washing (COW), more systems were permanently fixed in the tanks. This allowed washing to be carried out during discharge and helped to prevent pollution of the oceans by reducing the amount of water washing needed on VLCCs."

The introduction of single nozzle machines created a debate, which is still relevant today. Should tankers be using single nozzle or twin nozzles? Marshall said that in many cases it came down to a user's individual preference and experience.

"Single nozzle machines have the advantage of being adjustable, which means they can carry out sector cleaning, typically bottom tank washing only; but in previous years they have been unreliable and more labour intensive than the twin nozzle machines. Twin nozzle machines have generally proved to be reliable, and are simpler to use and maintain. Although they can also perform a bottom wash, the process incorporates a broad wash round the tank, which in some instances can be a disadvantage", he said.

VP Marine Equipment has recently been appointed by Victor Marine as its distributor in Singapore. Ernest Mah, who will manage the agency, will also be responsible for the Malaysian market, covering the full range of tank cleaning machines, gas freeing fans and ancillaries, and the Hodge Separator product range. VP Marine Equipment

“

Single nozzle machines have the advantage of being adjustable, which means they can carry out sector cleaning, typically bottom tank washing only; but in previous years they have been unreliable and more labour intensive than the twin nozzle machines.

”

**Duncan Marshall, international sales manager,
Victor Marine**

will stock equipment and spare parts, offering repair and maintenance service from its workshop.

Originally known as Victor Pyrate, Victor Marine changed its name in 2005 when it incorporated Hodge Separators. It is now an autonomous division within the Samuel Hodge Group of companies.

If the experience of Victor Marine proves as successful as that of Scanjet Marine, the decision to reintroduce a single nozzle tank cleaning machine will have been a wise one.

Scanjet Marine, the specialist Swedish manufacturer that services the marine industry, has found that in recent years, since introducing its SC 30T single nozzle tank cleaning machine, approximately 60% of all newbuilding chemical and

product carriers worldwide are being equipped with this machine.

Sales director Björn Lundgren said that performance, reliability, easy operation, and safety features were driving sales. More than 35,000 machines had been delivered or currently were being assembled for the major shipyards, and installed on almost 1,000 vessels. The machine includes a patented magnetic transmission allowing exchange of the drive unit without exposing the tank to the outside atmosphere.

In common with all its models of deck-mounted tank cleaning machines, Scanjet can integrate the SC 30T with its WashTrac™ tank cleaning monitoring system. WashTrac provides the operator with instant information on the status of the machines and a

record of the performance. Typical details are the name of the vessel, port of call, tank details, product, wash programme, start and run times, and alarm conditions.

Another company that makes tank cleaning machines, Polarmarine, has recently become part of the Kockumation Group, joining with fellow Swedish companies Texon Automation, and Kockum Sonics.

Polarmarine was established in Sweden in 1978 and was instrumental in providing the tanker industry with the first fixed installation, programmable single nozzle tank cleaning machine. The company has a production facility in the Philippines, which has undoubtedly helped it to gain a significant sales foothold in Japanese shipyards such as



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Sumitomo Heavy Industries, Onomichi Dockyard, and IHI Corp.

On two occasions Polarmarine has won the *Samsung-Q Silver Mark*, which is awarded by the South Korean shipbuilder Samsung, for the excellent quality performance of its equipment. Swedish owned Laurin Maritime, an established operator with 12 oil and chemical tankers, has recently exchanged its existing cleaning machines to Polar Jet. The tanker operator trades mainly from the US Gulf to the eastern seaboard of North and South America, and transatlantic to Europe.

Notwithstanding that some manufacturers are finding a niche market for their machines, it is innovative and competitive industry that allows the shipyards and owners to enjoy a wide choice.

TO

Navadan strengthens its grip

To further strengthen its tanker servicing market, Danish concern Navadan has taken over all the activities of Croatian-based Credere Marine Service.

The deal includes all Credere's staff, including supervisors, marine superintendents and surveyors.

Navadan said that Credere's international experience, especially in chemical tanker trades, as well as with DPP and CPP cargoes, dovetails neatly with its own expertise.

The enlarged concern can now offer tank cleaning services on all types of tankers; vessel inspection and surveys; marine superintendent services; chemical and product carrier assessment; sale and purchase

surveys; safety inspections; and assistance in preparing a vessel for regulatory inspections worldwide.

Navadan claimed that since the takeover, it commands the strongest specialised team in the world able to provide these services.

Among the services Navadan offers to tanker operators are -

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- Removal of dye discolouration.
- Cleaning from carbon black feedstock to molasses or vegoils, etc.
- Tank cleaning advice and recommended tank cleaning

procedures.

- Delivery of tank cleaning chemicals from worldwide stocks.
- Delivery of complete units of chemical injection and special spraying equipment.
- Delivery of Navadan wall wash test kits.
- Supervision during cleaning at sea by experienced supervisors.

Navadan also offers a wide range of chemicals, and pump and spraying equipment in various forms. The equipment includes -

- Navastill D-40 T Set
- Navadan pump & spray equipment
- Navadan Versatile pump equipment
- Navapole
- Navagun

TO

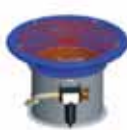
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Steady progress to recover VOC vapour

Throughout 2007, construction has continued on two volatile organic compounds (VOC) recovery systems at major land-based crude oil loading terminals, writes Brian Warshaw.

Few new orders have been placed, although contractors say that the signs for 2008 are positive. Meanwhile at sea, BP Shipping has been conducting extensive mechanical and efficiency trials with a shipboard VOC recovery system, while proposed changes in the Norwegian tax system may encourage greater investment in this type of environmental equipment.

At StatoilHydro's Mongstad terminal near Bergen, construction of the VOC vapour recovery plant is in the final stages of installation by Aker Kvaerner. The system's capacity to recover vapour at 36,000 cu m per hour will be needed to service the 450 crude oil tankers that are loaded each year, some tankers being as large as 450,000 dwt.

The vapour recovery unit (VRU) designed and supplied by Aker Kvaerner Cool Sorption of Denmark employs conventional carbon bed adsorption technology. Due to the high

volume of vapour being handled however, four sets of dual carbon bed vessels have been installed, taking an area of 40 m x 38 m, and rising to a height of 15 m.

Vapour, drawn from the crude oil being loaded, is fed into an adsorption vessel, and as it enters the carbon bed, the methane and pure air pass through the filter and are discharged to atmosphere, while the hydrocarbons are adsorbed on the surface. At the point where the carbon bed becomes saturated with hydrocarbons, the vapour is diverted into the parallel vessel and the first vessel is regenerated, using a process of reducing the pressure in the vessel. The freed hydrocarbon vapour is recovered as a liquid by an absorption process, and returned to the crude oil storage facility. The first vessel is again ready for re-use and placed on standby.

Compared to other European marine VRUs, Mongstad will be capable of handling the largest volume of vapour, and Tomm Lund of Cool Sorption confirmed

that it is on schedule for commissioning during February 2008.

The same carbon bed adsorption technology is being installed at the ConocoPhillips marine export terminal at Seal Sands in Middlesbrough, UK. The plant is being constructed by Costain Oil, Gas & Process of Manchester, with the VRU supplied by John Zink.

With a vapour capacity of 20,000 cu m per hour, a little over half the flowrate of the Mongstad installation, the John Zink VRU comprises two sets of dual carbon bed adsorption filters. The VRU has been mechanically completed and is currently at the commissioning stage.

Maaten Kool, John Zink's sales and application manager for the European vapour control group, told *TANKEROperator* that, "We see an increase in marine loading vapour control requests as emissions regulations are tightening. With ship loading activities we also see a significant increase in size or capacity of

equipment, which, because of the associated costs, leads to the discussion on what technology is most appropriate to use.

"The technology to use, whether is vapour recovery (VRU) or vapour destruction (VCU), depends on many factors. These include product value, investment, and operational costs, balanced against return on investment. The decision is very much project dependant." Kool said. He also said that he believed John Zink was the only company that had both technologies in its product portfolio. In 2005, John Zink supplied a 19,000 normal metres cubed per hour vapour combustion unit (VCU) to Botas, for its Ceyhan terminal in Turkey.

Explaining why Botas had opted for a VCU, Kool said, "This is a crude oil loading application, and due to relatively low value of recovered crude, the return on investment from a VRU would be less attractive than if it was a gasoline application. The capital cost of this VCU installation was probably some

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Mongstad's vapour recovery plant. Source: Aker Kvaerner Cool Sorption

40% less than a comparable VRU. Long-term it would also require less maintenance.

"Another possible reason," he said, "is that any activated carbon recovery technology is not able to remove the methane, and can only eliminate some 50% of the ethane from the vapour as it passes through the carbon beds." He explained that this is the reason why methane is excluded from the current EU VOC emission limits. In the case of non-stabilised crude oil that has high methane content, this could be a concern, especially with respect to environment/health and odours in populated areas. Conversely, having a high

methane content actually helps the destruction process in a VCU as it increases the heating value and reduces supplemental firing needs.

Although many national and local authorities still consider vapour recovery to be the best available technology, Kool believes that combustion is a serious alternative where this was not practical or feasible for technical or economic reasons. Using a VRU the act of lowering emission levels from 35 grams or even 10 grams down to 150 milligrams per cu m vent has a serious impact on power consumption, roughly doubling it. This affects both capital

investment and operating costs, and acts negatively on the return on investment. Also, he said, the extra power consumption is not an environmental free ride; it is also a burden on the environment.

"A VCU will, under certain conditions, require additional fuel gas for supplemental firing; but the power consumption is only some 5% of that required by a VRU, and requires less plot space, investment and maintenance," he concluded.

John Zink has supplied a VCU for Sabtank in Saudi Arabia, and was earlier this year awarded a VCU order for the Ras Laffan terminal operated by Qatargas. During September, it shipped a

second refined petroleum products VRU to Porto Petroli at Genoa to further extend the existing system supplied.

At sea, BP Shipping continues to test a VOC recovery system manufactured by Norway's Venturie. The Venturie cargo system operates in conjunction with a higher vent pressure that is maintained within the safe working rating of the cargo tank. The unit reduces the creation of VOC vapour during loading, and reabsorbs vapours discharged by the loaded vessel during the voyage. Vapour is taken back into the cargo, passing through an absorption unit in which the gases are commingled with crude or product oil pumped from one of the vessel's tanks.

The demand for this type of on board VOC system has taken on greater significance as Norway has announced a change to the tax regime for shipping companies in fiscal year 2008.

Finance minister, Kristin Halvorsen, in announcing the changes, said that the proposals would bring the tax system into line with those available in the European Union. Under the present regime, company profits are taxed only upon withdrawal of profits or exit from the scheme. As part of the phasing out of the present regime, two thirds of the deferred taxes will have to be paid over a period of 10 years. The shipping companies will be allowed to use the

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remaining one third of the tax obligations for environmental investments.

Despite objections from shipping interests, who claim that it will require the industry to pay back NOK20 bill (Eur2.615 bill) over 10 years, owners will be allowed to retain around NOK6.67 bill provided it is spent on environmental improvements. It is this money that could reasonably be used to equip their tankers with VOC recovery systems. Venturie claimed that the cost can be recovered in 10 to 12 months with crude oil valued at \$60 per barrel.

In addition to Venturie, ship board VOC recovery systems are available from Cool Sorption, APL and from Hamworthy Gas Systems, all three being Norwegian companies.

Since March 2007, Venturie has been working with Skaugen PetroTrans Marine Services (SPT), and latterly with Mariflex of the Netherlands, to establish and develop harmonised lightering and vapour balancing



VCU at Botas, Ceyhan. Source: John Zink

standards. Dr Sven Haagensen, principal engineer with Venturie, told *TANKEROperator* that with knowledge of how vapours are generated, vapour-balancing operations could be made more environmentally friendly with small changes, and a little extra equipment. Major oil companies have also joined the working group to ensure harmony with

other parts of the transport chain.

In addition to key safety issues such as static electricity, eliminating the risk of sparks during hose connection and disconnection, and gas sampling strategies, the participating companies will look at managing and monitoring vapour flow.

Haagensen said that '...vapour

return to the ship being lightered is not sufficient to remove emissions. The higher the pressure, the lower the vapour growth. This is the prime instrument to cut emissions, on top of the vapour return itself, unless a vapour recovering process is installed.'

An advocate of automated control to maintain ship tanks at the highest safe pressure to minimise evaporation, Haagensen believed that if the pressure is kept steady, then vapour build-up can be reduced by 20%-50%. He said that in-transit pressure venting on the lightering and sea-going tankers can be removed altogether with the installation of vapour control equipment.

Taking the lightering and transit together, he said that the cost of the equipment would be recovered within five to 10 months.

The workgroup instigated by SPT, Mariflex and Venturie is continuing its investigation, and would welcome other companies who want to join in the study. **TO**

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Scrubbers in the lead

The IMO Scientific Group on air emissions is currently looking into the various solutions put forward to reduce the shipboard emissions.

This group held a second meeting at the end of September and will issue a report by the end of this year. Following this, new rules on air emissions are expected to be adopted in April of next year - in effect a revision of MARPOL Annex VI.

In advance of this, *TANKEROperator* went on a fact finding mission to Athens with senior representatives of Krystallon to hear the views of some of the leading Greek tanker owners on the particular question of distillates versus scrubbers for emissions control.

Joint venture

Krystallon is a joint venture company between BP and Kittiwake and is managed by Chris Leigh-Jones, who is also head of Kittiwake. The company is currently exploring the possibility of setting up a scrubber manufacturing plant in Greece,



Krystallon's md Chris Leigh-Jones.

Leigh-Jones said.

In alphabetical order, reproduced below are the views of some of the Greek tanker majors.

Kristen Navigation

Kristen Navigation's managing director Stavros Hatzigrigoris said that he would have to see a study before making any

decisions. "Does more LSFO result in a bad environment? What does it mean for the refineries?" he wanted to know.

He agreed that retrofitting would be a nightmare as among other considerations, it is very difficult to book a drydock today. "We are trying to get extensions for special surveys", he explained.

Hatzigrigoris explained that the problem with the cost of fuel oil, especially if switching to distillates, was that it is incorporated into the Worldscale charter rates annually and any major change would obviously affect these calculations.

Kristen Navigation manages a large fleet of VLCCs, suezmaxes and aframaxes, which includes seven VLCCs on bareboat charter to ChevronTexaco. The company also has a large orderbook encompassing the three tanker types it already manages. None of the vessels are ice class, but most of the trading fleet and all the newbuildings will be able to carry at least three different types of fuel.

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Manolis Papamichael

Marinter

Marinter Navigation's Manolis Papamichael thought that scrubbers were the best solution as distillate fuel would prove too expensive. He also agreed that the fitting of such equipment was best undertaken at the newbuilding stage.

He pointed out that Greece was importing fuel oil as the refineries were not producing enough due to economic reasons. The monthly fuel demand in Greek ports was running at 1.5 - 1.8 mill tonnes, while local refineries were only producing 50,000-60,000 tonnes. At present there was a premium of \$50 per tonne for LSFO in Greece.

For larger companies he thought that there was the possibility of SOx offsetting by trading half their vessels on HSFO and the other half with LSFO. The biggest problem is the one of space to carry the different grades of bunkers, especially for smaller vessels.

Speaking of the impending IMO discussions, he said; "We need flexibility to use distillates, LSFO and scrubbers."

Marinter has embarked on a newbuilding project involving up to six 3,500 dwt - 11,000 dwt coated chemical tankers in Chinese yards having sold its fleet of product tankers a couple

of years ago. Options are in place for more vessels of the same type.

Papamichael said that the company had identified a demand for smaller chemical tankers/bunkering vessels in the Mediterranean area, primarily due to the EU single hull ban.

Metrostar

Metrostar technical director Theodoros Pavlidis also agreed that there was a need to try to find a solution. For NOx monitoring, Metrostar had already installed Martek's MariNox system on board three VLCCs

and was about to fit the equipment on a fourth.

Two of the new VLCCs are fitted with Wartsila RT-Flex common rail engines with automation systems supplied by Kongsberg. In general, Pavlidis said that the engine manufacturers were loath to change a sensitive engine.

One of the problems identified in fitting scrubbers is the space needed in the stack, which needs planning at the design stage. This is one of the main reasons for opting to fit scrubbers at the newbuilding stage and not to retrofit. For example, there is normally a maximum width of 3-5 m in the funnel of a VLCC. The payback time of fitting such equipment is also important, Pavlidis said.

Pavlidis also said that one of the fuel tanks on Metrostar's VLCC *Crudestar* was being divided to take 1,500 tonnes of LSFO and 3,500 of high sulphur fuel oil (HSFO) under ABS rules at the next drydocking schedule in a project costing \$1 mill. He explained that when in service, on average it takes a VLCC 96 hours to change from HSFO to LSFO and 70 hours for undertake the reverse process.

As gas oil or diesel oil is needed while alongside at Long

Beach, Metrostar is thinking about fitting small scrubbers to the generators. "We need to have something simple. Three different fuels and two types of lubeoil is a nightmare," Pavlidis said. "The software also needs to be customised."

Metrostar has been running a pilot project with MariNox system for the past six months whereby the vessels' main engines and auxiliaries are monitored by head office through the Inmarsat Fleet communications system.

In 2002, Metrostar sold 16 suezmaxes to General Maritime (GenMar) and has since continued to rebuild the fleet.



Theodoros Pavlidis



Metrostar's VLCC *Crudestar* is to have her fuel tanks divided to take both LSFO and HSFO.

Today, the company manages four modern VLCCs bought secondhand from Samco, Embiricos and two from Gulf Marine, the latter pair being only five months old. The other two are around five years of age.

In addition, Metrostar has embarked upon a newbuilding project, involving two VLCCs at Hyundai for 2010 delivery and seven suezmaxes at Hyundai Samho for delivery from 2009 through 2011. The company has also recently invested in a series of handysize bulkers.

Queensway

In common with all the tanker owners interviewed, Queensway Navigation, manager of the Vemaoil fleet, thought that scrubbers have a future for reducing SOx emissions. "Refineries don't know what to do with the sulphur extracted, also we have to investigate the increase in air pollution by the refineries' process to produce the low sulphur product," managing director Vassilios Terzis said.

He thought that scrubbers had a good future for shipping as they would save money in the long term over other forms of

emissions controls, such as the use of distillates in the main engines.

"We plan to start (scrubber) trials on a small Vemaoil bunker tanker," Terzis said.

Kittiwake's representatives led by Leigh-Jones explained that a 2.2 MW powered scrubber system would cost in the region of almost Eur1 mill. When retrofitted to a secondhand vessel, the cost would be higher. About 10% of the main engine's power would be needed to operate the scrubbers, he said.

They also said that all Greek coastal vessels, including the huge ferry fleet, had finally to switch to low sulphur fuel (LSFO) by 1st October, following several date extensions.

Queensway operates around half a dozen bunker tankers based at Gibraltar, which comes under EU legislation. "We have to solve the problems for local vessels in the Mediterranean, look for solutions we can accommodate," Terzis said.

It is estimated that there are 450 local tankers operating in the Mediterranean and emissions control is a particular problem on smaller vessels. The owners of



Vassilios Terzis

these vessels will not be able to recover their costs when fitting emissions abatement equipment, so through the Union of Mediterranean Tanker Owners, of which Terzis is vice chairman, ways of obtaining EU subsidies to reduce emissions were being discussed.

In total, Queensway manages two aframaxs, of which one is used for storage, one panamax and seven bunker tankers. The

company's philosophy was to "build things up step by step," Terzis explained.

Leigh-Jones claimed that scrubber maintenance would be easy and the residue would be in the order of 20 kilos per tonne, producing anything from 1-3 tonnes per month, depending on the size of the installation. This can be recycled to burn, or transferred into the slop tank, he explained.

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Dean Tseretopoulos.

Thenamaris

Dean Tseretopoulos, Thenamaris' technical manager agreed that the fitting of scrubbers was only possible at the newbuilding stage, otherwise problems would exist with finding space in an already small and congested accommodation block. "They would not be strong enough for retrofits, and of course there would be the problems of auxiliaries and boilers, which could be emitting as much as the main engine manoeuvring at full speed", he explained.

"The EU or IMO needs to look at the case of boilers. On engines, the luboil will need adjusting and cylinders will need honing. Reception facilities for wash water will also be a problem. Maybe we can run the main engines pilot to pilot then use diesel while entering port, as a first stage in buying more time" he suggested.

The refineries would need huge investment and increase desulphurisation would cause greater air pollution. Thenamaris thought that the IMO made a brave decision to delay its findings until it has all the facts. Tseretopoulos explained; "We need shipowners, refineries, class societies, authorities and especially shipyards to get together and agree on a common strategy.

"An owner would have absolutely no chance in trying to convince a shipyard to disrupt their already very high and very profitable production and delivery schedules, in order to install some intricate emissions treatment unit, if it is not supported by some form of IMO or at least legislative requirements. Similarly, refineries have no motivation to disrupt their convenient existing system of allowing the ships to burn their by-products that they would rather forget about,"

Tseretopoulos stated.

Chris Leigh-Jones also added that there needed to be proper regulations in place. "We should all speak with the same voice," he said. Thenamaris thought it needed to be a class requirement.

Tseretopoulos explained that Thenamaris started to prepare for LSFO in the late 1990s by fitting extra holding and settling tanks, plus the extra heating equipment needed. The company manages some Ice Class 1B tankers, which often operate in the Baltic and during their special surveys, bulkheads will have to be fitted in the holding tanks, enabling the vessels to reasonably trade in the enlarged SECA areas.

Thenamaris manages a mixed tanker fleet and has a further two panamax and two suezmax tankers building in China and has

recently invested in drybulk carrier newbuildings.

Leigh-Jones added that the question of wash water treatment plants was to be discussed by the IMO's bulk, liquid and gas (BLG) sub-committee in Berlin this November. If a standard is recommended to the MEPC then it will more than likely get passed, Leigh-Jones thought.

Tsakos

Tsakos new projects manager Panagiotis Soulis said regarding emissions control, "We need to design separate piping, dedicated tanks for luboils, push for redundancy, for example the fitting of two boilers. As the equipment is already ordered by the shipyard, you have to take the equipment off the shelf and sign contracts on a basic design", he said.

One example of a need to slightly change a design was the fitting of different manifold systems for vessels calling at Primorsk. The suezmaxes generally load up to 130,000 tonnes in the area due to Baltic draught restrictions. Tsakos has an approved dripping plant on all of its manifolds and the dedicated bunker tanks were also analysed.

Soulis explained that when a tanker is on long term charter for example, the luboils will have to be switched to a BN 40 type if regularly using LSFO. Inert gas

scrubbers were also being used on the boilers. He said that the use of urea will be banned in the future.

In 2003, Tsakos introduced a class EP notation. However, Soulis said that proper crew training was the best protection for the environment.

Soulis thought that in five years time, there could be many LSFO areas, but the refineries would be unable to cope with the extra LSFO needed. In Brazil, for example, Petrobras was already calling for fuel of less than 1% sulphur content.

"We are conservative and need the best technology, which is practical, easy to maintain, understand and is reliable. Today we have to rely on technological decisions", he explained.

Tsakos manages around 54 tankers with another 22 on order. Since the company started taking delivery of newbuildings in 1997, 48 vessels have been delivered and an extra six 53,000 dwt product tankers added when the assets of Western Petroleum were purchased.

The range of vessels managed covers virtually the whole spectrum from VLCCs to ice class MR types, plus one LNGC, which Soulis said was a learning curve for the company before it embarked on ordering a series of large gas



Panagiotis Soulis

tankers, which will probably come in the future. Tsakos also manages an extensive containership and drybulk carrier fleet.

Krystallon - the economic case

Many ship operators who have to comply with existing and upcoming emissions and fuel legislation, are having to evaluate the full range of options for compliance. In the current Baltic SECA operators currently have two options: either buy 1.5% LSFO, or continue to use HSFO and fit abatement technology to achieve the same level, that is 1.5% or better.

According to Krystallon, the considerations that were needed to be taken into account are:

- 1) How often is my vessel in the controlled area?
- 2) What is the current and future price difference (future differentials as quoted in forward curves offered by oil companies and banks) between HSFO and LSFO?
- 3) If I invest in scrubbers, what is the payback period? Will it fit my board's investment criteria of three years or less?
- 4) What is my view on where future price differences will be for both distillates and LSFO over HSFO?
- 5) With more legislation around the corner, do I start future-proofing my vessels now so that I am not faced with a hasty compliance need when legislation is effected later?

Currently, both IMO and the EU have effected sulphur emission legislation, which can be adhered to by using LSFO, or by fitting scrubbers. It is being widely anticipated that future legislation from 2010, will try to tackle both particulate matter (PM) and NOx emissions.

Compliance for these emissions may be achievable by using LSFO, including distillates, but on the other hand, it may not be. The current Californian Auxiliary engine rule enforced on 1st January 2007 is already causing

conjecture on whether using distillates will meet compliance for all three of the emissions detailed in the ruling (SOx, NOx and PM), although a recent US Federal court case overruled the Californian's stance, the situation is still far from clear.

Certainly the Californians have pointed to the fact that premature death and high levels of asthma in coastal areas is directly attributable to PM emissions from ships. PM emission reduction has therefore become very high profile in the US, which will likely press the IMO to include it by the next round of legislation.

Krystallon claimed that one thing that operators can be sure of that if there is even the remotest chance that legislation moves to distillate type goal based solutions, scrubbers will be an absolute 'no-brainer' solution if distillate is the only other alternative. In most instances, payback for scrubbers versus a distillate alternative is less than six months. The current differential from HSFO to distillate is around \$350 per tonne, which for most operators would mean millions of dollars of additional fuel costs if this was their only alternative.

For newbuilding applications, most operators are already at the stage of believing that fitting scrubbers is cost effective. The additional cost of the installation for a retrofit application can make the decision border-line versus the current alternative of buying LSFO.

However, this can vary dramatically on the fuel usage and utilisation of the vessel - so Krystallon recommends that operators should send the details of what fuel usage is applicable to any vessels considered for scrubbing, along with the amount of time it will spend in a controlled area, to the company for analysis.

Another factor that Krystallon reminds operators to take into consideration is how they are going to handle the elimination of PM once this becomes

mandatory. The Californians have already given a glimpse of what could be around the corner for anyone currently not operating in Californian waters.

Krystallon asserted that if a distillate or distillate-type goal-based solution is put forward by IMO or other legislative bodies, then scrubbing will be a far cheaper option - as versus distillate, scrubbing enables the operator to use HSFO and gives a much cleaner emissions signature. Scrubbing versus distillate is much much cheaper and more importantly, is much better for global health, Krystallon claimed.

Technical case

Krystallon's approach to pollution abatement technology is designed to achieve compliance with all current global legislation - be it IMO, European or US. Fitting seawater scrubbers will also future-proof vessels from the next rounds of legislation with regard to SOx emission reduction and also PM emissions, the company claimed. The following high standards and levels of reliability will apply:

- 100% sulphur removal.
- 3.5% fuel sulphur equivalent of 0.1% fuel sulphur emissions as the base case.
- Over 80% particulate removal from the exhaust gas.
- Full instrumentation to monitor both scrubbing efficiency and water discharge quality.
- Provides compliance with current SECAs and addresses pending legislative changes.
- Meets EU requirements for 0.1% sulphur fuel for all berthed vessels in EU waters from 1st January 2010.
- Exceeds existing and expected environmental criteria for air and water discharge quality.
- Performs all of the above, reliably over a 25-year life cycle.

To achieve this, the Krystallon Seawater Scrubber maximises the use of the following key system components:

- Scrubbing unit - one for each engine or a combined unit with gas path separation for auxiliary engines.
- Wash water treatment system - normally one treatment system is capable of handling all wash water flow from main engine and auxiliary engine. The wash water treatment plant removes oil and particulates from the wash water for safe disposal as oil sludge (typically 100 tonne fuel consumption creates 200 kg of oily sludge).
- Continuous monitoring of exhaust gases utilising latest Cascade laser technology. This technology provides in stack gas measurement for CO2, SO2, NO and NO2. Utilising the CO2:SO2 ratio in accordance with IMO Sea Water Scrubbing guidelines establishes compliance in SECAs of equivalence or below of 1.5% sulphur fuel. In fact with virtually 100% scrubbing efficiency it is rare to detect more than 5- 10 ppm SO2 after the scrubber when using 3.5% sulphur fuel.
- Continuous monitoring of wash water discharge - utilising pH and oil content measurement, (the latter to levels of ppb) the continuous compliance with in port wash water criteria can be demonstrated.
- Data recording and transmission - the Krystallon data recording system complies with data integrity, fraud and tamper evident requirement for Port State inspection of vessel position and emissions for any point in time for up to at least three years previously.
- Pumps including variable speed control - all system pumps and controls and all sensing and system protection.
- Glass reinforced epoxy pipe work - all pipe work is supplied to comply with the environmental requirements of a sea water scrubbing system. **TO**

INTERTANKO's stance on the environment

Oil tankers are environmentally-friendly, energy-efficient and effective in terms of minimising greenhouse-gas (GHG) emissions, claims INTERTANKO.

One litre of fuel on a modern VLCC moves one tonne of cargo more than 2,800 km; this is more than twice as far as 20 years ago. The average carbon footprint (in terms of CO₂ per tonne/km) of each of the world's oil tankers is less than a 10th of that of a heavy truck and less than 100th of that of an aircraft.

Over recent years tanker owners have invested an average of nearly \$32 bill per year in new ships and today over 75% of the internationally traded fleet is double hulled. With this increased protection for the oil cargo, as well as the ship's fuel tanks, accidental oil spills this decade have been at record low levels - 33% of the previous decade and 10% of the 1970s - at a time when oil transported has more than doubled since the mid-1980s.

Engines are more efficient and other measures, such as segregated ballast water, the application of new tin-free paints, optimal weather routing and the recovery of otherwise wasted heat from the engine and auxiliaries, have resulted in significant gains in energy efficiency and reductions in environmental impact.

A particular issue for the tanker industry has been the control of cargo vapours (volatile organic compounds - VOCs) during loading and on passage. VOCs have a global warming potential

of approximately 20 times that of CO₂ and the tanker fleet has voluntarily developed means to reduce these emissions to a small fraction of what they were.

Tanker owners are however not complacent and are committed to 'continuous improvement' in all fields right across the industry. New technologies are being tested for application in both existing and new ships, including ways of achieving further efficiency gains and reducing harmful engine exhaust and GHG emissions.

Air Emissions

Air emissions from ships are regulated by the IMO. MARPOL Annex VI was adopted in 1997. This Convention covers the emissions of oxides of sulphur (SO_x) and nitrogen (NO_x) as well as CFCs and VOCs, and makes provisions for regional control zones for sulphur emissions.

As early as 2000 the IMO produced a study on GHG emissions and is currently working on an update to give a better foundation for future decisions. Additional measures to regulate GHG emissions are under review and will be debated more fully in the first half of 2008.

Sulphur levels in most fuels used today by ships average just 60% of the maximum permissible level in the IMO regulations. Within Sulphur Emission Control Areas (SECAs), currently covering the Baltic Sea and from

November the North Sea and English Channel, where maximum sulphur levels are set at one third of the global level, the sulphur level of the fuels used by ships is frequently below the maximum permissible level. Since 2000 all new engines installed on ships also produce significantly lower NO_x emissions.

This Convention is currently being revised with a target completion date of 2008.

INTERTANKO has submitted a specific proposal to the IMO, which would require the use of cleaner fuel (distillate) on a global basis. Other (shorter and longer term) proposals under review include the application of abatement technologies and/or the expansion of SECAs.

In order to fast-track the revision of Annex VI, the IMO has endorsed a proposal by its secretary-general and has commissioned a comprehensive study, by an informal cross-government/industry Group of experts, to evaluate the effects of the various proposals for revisions and establish the facts.

One of several inputs was a report by INTERTANKO, which included a model for estimating the global usage of marine fuels by ships subject to Annex VI regulations and their associated emissions, together with an explanatory note of the underlying assumptions in the model. This report makes no comparison with either estimates

of previous years or with other transportation modes. The group of experts is responsible for making any comparisons with other models as part of the process of validation for its final report.

INTERTANKO said it will not comment on the contents of its report, the ongoing work of the IMO group of experts nor on speculation about the total or mix of emissions from shipping.

Regrettably, despite understandings with regard to the confidentiality of the work of the IMO group, a third party has released INTERTANKO's input and subsequently various press articles and comments have appeared out of context and in advance of the publication of the IMO report in December.

World trade growth

World trade and ship numbers have naturally seen a steady increase over recent years, but in parallel there have been economies of scale (with larger, more efficient ships) and on a per unit basis emissions both of harmful substances (pollutants) and GHGs from ships have been reduced, allowing shipping still justifiably to assert that it is the most environmentally-friendly and the most energy-efficient transport mode.

Shipping is therefore a part of the solution to the challenges of air emissions and global warming which face the world today, rather than being the problem. **TO**

Ship efficiency - no easy answer

Today ship efficiency and the environment seem to be commanding shipping's 'great and the good' attention more than any other subject. A two-day conference recently took place in Hamburg where speakers representing most sectors of the shipping industry aired their views on the subject.

"Ship efficiency is a question of perspective", this was one of the conclusions drawn at the conference organised by the German Society for Maritime Technology on "How to make ships more efficient?"

More than 150 participants from all over the world attended the first international conference on ship efficiency in Hamburg. Increasing fuel prices and strong environmental concerns were the key elements of this meeting of naval architects, ships engineers, shipowners, shipbuilders, maritime institutions, suppliers, classification societies, financial analysts and academics.

Presentations were given on how commercial seagoing ships could be designed, equipped and operated to burn less fuel. GL's Dr Hermann Klein, president of the German Society for Maritime Technology pointed out in his introduction: "Shipping is the most eco-friendly means of transport. The public image, though, is somewhat different. Rising fuel prices, increasing emissions and the continuous lack of well-trained staff hit the news on a daily basis. As engineers, it is not only our task to set this record straight, but to convince: by developing intelligent and efficient solutions, by making shipping both profitable and environmentally compatible."

Rising oil prices and stricter

international rules called for a continuous optimisation of ship design and operation. Efficient power generation, alternative marine fuels and modern construction would help to reduce emissions substantially.

The conference was subdivided in three themes covering ship operations, ship design, future fuels and efficient power.

Eco-friendliness

It was Peter Nielsen from Wallenius Marine who pointed out what was relevant for a shipbuilder and shipowner in respect of eco-friendliness. Objectives like increased capacity, reduced fuel consumption, increased safety as well as improved working conditions and minimised environmental impact were the predominant aspects, when planning a new vessel.

Wallenius' experience of operating vessels on low sulphur fuel from 1998 to 2001 was very promising. Savings were generated from less maintenance and cleaning on board, fewer spare parts and reduced cylinder oil consumption - apart from substantial cuts in SO₂ emissions. However, in the end it was too costly and undermined its competitiveness.

The company has since decided to cut its fuel consumption and CO₂ emissions by 10% within five years from this year.

Nielsen's account of measures to



GL's Dr Hermann Klein is also the president of the German Society for Maritime Technology.

optimise the fleet contained the installation of pre-swirl stators, looking at the trim, which has a large impact of the required propulsive power, as well as an improvement of the propeller-rudder interaction. Wallenius is also currently analysing waste heat recovery systems by installing either steam or power turbines or a combination of both. Whether the fuel cell will be an answer to the energy demand on board will be seen in future.

However, at the end of last year, Wallenius installed a methanol pilot system.

The role of port to improve ship efficiency was highlighted by Wolfgang Hurtienne, Hamburg Port Authority director. He suggested streamlining the flow of information to improve ship calls. Delays due to late departure at previous ports, tidal restrictions, weather conditions or technical problems, as well as occupied berths could be resolved



More than 150 people attended the 1st International Conference on Ship Efficiency

by a better information chain involving the shipowner agent, terminals, line operator, harbour masters office, tug assistance and pilots. An automated electronic exchange of information within all parties involved could be a solution for less efficient ship call procedures.

Hull resistance

International Paint's John Willsher said that the reduction of resistance and its impact on fuel consumption depends on the roughness of the ship's hull. Slime, weed, and shell fouling contributed up to 40% of drag. The effect of micro roughness can be measured in terms of additional fuel requirements. If the vessel could not increase power, it would slow down. Foul release systems could contribute to further efficiency in cases of low hull roughness, good resistance to mechanical damage and if they were able to prevent attachments of fouling. While tests have shown that these coatings lowered hull roughness even more than biocidal anti-fouling, application required qualified and competent staff.

Ship routing services was

another topic highlighting the diversity of ship efficiency. By offering optimised voyage planning, taking into account weather forecasts and updates, shore based routing advice can contribute to minimising fuel consumption.

Dr Pierre Sames, responsible for strategic research at Germanischer Lloyd (GL) put new safety regulations into perspective and answered the question of how they could be applied more economically. He pointed out that the new coating performance standard, ballast water management, fuel tank protection, SECA requirements and ship recycling underlined the necessity to reduce the risks or to minimise the environmental impact of shipping. Rule compliance required new documentation and procedures to keep data updated. Classification societies could help ship operators transform these new rules into competitive advantages for their clients.

Efficiency

Commenting on how complex thermo efficiency systems were was MAN Diesel's Thomas

Knudsen whose presentation dealt with exhaust gas for power generation. He proved that significant increases in efficiency were possible while the reliability of diesel engines remained unchanged. Given the high order volume at shipyards, he said that there was reluctance to introduce thermo efficiency systems. Thermo efficiency systems had to be considered at an early stage of a new building project. Knudsen had no doubt, that 2-stroke diesel engines will have a great future due to their already high efficiency ratio of up 50%.

'Efficient hull forms' was the topic of Uwe Hollenbach's paper. He concentrated on the necessity of optimal main dimensions, optimised hull forms, best wake field, propeller - rudder interaction, and the optimisation for service conditions. All of these elements must be analysed at the design stage. He called for realistic estimates in respect to power consumption. Actual loading conditions and expected environmental conditions such as wind, sea state, roll motions, drift and temperature had to be taken into account rather than contract conditions. These are

usually defined as design draught in calm waters only. "From the operators point of view it can be much more advantageous to optimise the vessel's hull form for the actual environmental conditions and the individual operating profile expected for the newbuildings," he said.

Further down the line the role of the rudder came under investigation by Dirk Lehmann from Becker Marine Systems. He gave an overview of future developments in rudder design and claimed that efficiency can be gained through sophisticated rudder systems. An efficient rudder system could save up to 8% fuel if it had a slim and low drag profile, a high lift at small rudder angles, and tuned against the ship's propeller.

Future fuels

The second day covered future fuels and efficient power. It was Professor Rulfs' job to insist that the future of ship propulsion will be the diesel engine due to its higher efficiency compared to steam or gas turbines.

However, the success story of heavy fuel oil will probably come to an end due to the gaseous byproducts, such as nitrogen oxide (NOx) and sulphur oxide (SOx) released into the atmosphere by vessels in addition to carbon dioxide (CO2) and particulate matter. Even today, problems with heavy fuel oil cause interruptions in ship schedules thus undermining efficiency. He listed catalyst fines, lack of stability and compatibility, the ignition quality and contaminations with waste products as major sources of engine malfunctions. He forecasted a further deterioration in fuel quality, and higher contamination with burnable waste products.

Charterers tend to purchase the cheapest fuel, which has to be processed by cost-oriented fuel system designs. The increasing incompatibility of different fuel

batches added to significant adjustment problems in engine management. Stricter environmental standards on sulphur contents require different types of fuel in specific water regions. Engine inspection and maintenance routines would also have to be adjusted to mitigate any adverse impact on the engine that comes from consuming these different types of fuels. A holistic approach would help ship operators plan and co-ordinate the demands of environmental regulations with other operational concerns to bring about smooth, safe and cost-effective vessel operations.

By focusing on overall costs and longterm benefits it would make sense to spend more on better fuel quality to reduce emissions and to cut down on vessel maintenance and repair costs. The net gains from implementing an eco-friendly strategy could exceed the apparent savings from using cheaper, 'borderline' fuels, he warned.

'How to match environmental and economical challenges' was the title of Frank Oberhokamp's presentation. Diesel-electric propulsion concepts have a number of advantages compared to diesel mechanical configurations, such as improved life cycle costs due to reduced fuel consumption and maintenance. They offer the possibility of optimising the loading of prime movers and cause less propulsion noise and vibrations.

Heinrich Schmid from Wärtsilä Switzerland pointed out that efficient propulsion for seagoing vessels depended on a large number of influences such as hull geometry, engine design and technology, and propulsor design and technology. He proposed to reduce emissions by waste heat recovery. About 50% of the fuel input energy is currently not being put to productive use. Recovering part of the wasted energy provided the vessel with lower fuel consumption and

hence less emissions.

Legislation concerns

It was Timothy Gunner, technical consultant for INTERTANKO, who explained the influence of environmental legislation on the efficiency of ship operation. He said that international regulations should meet long term goals. They should be achievable and consistent to allow for planning and to allow for operational practicalities. He insisted that international regulations should maintain a level playing field for all ships worldwide.

Regional regulations should be avoided as they created many operational and planning difficulties and uncertainties. He questioned some of the currently discussed conventions, such as the ballast water regulations or oil pollution regulations. There were inadequate reception facilities for oil slops in many ports.

Distillates

In the discussion he recalled

INTERTANKO's initiative for a switch from burning residual fuel to marine diesel oil as the most effective way of reducing air pollution from vessels. It would immediately trigger real and global reductions in atmospheric pollution such as SOx and NOx emissions. Owners would either pay a higher price for cleaner fuel, often recoverable through freight rate adjustments, or they would pay for the fitting, running, maintenance of fuel purification and emission abatement systems, whose cost would not be recoverable. In addition, the latter option would require the disposal of liquid and solid wastes generated by those systems, as well as associated liabilities.

Summing up the conference Dr Hermann Klein called for such a meeting every second year to monitor the progress made in improving ship efficiency and reducing the environmental implications of shipping even further.

TO

F-GAS explained

Pressured to cut costs and increase quality, shipping has squeezed its knowledge bases into increasingly narrow segments. The introduction of a new EU regulation on fluorinated greenhouse gases (F-GAS) illustrates some of these changes.

A ban on disposable refrigerant cylinders in the EU is the perfect example of one of the multitude of changes that demand attention to ensure compliance.

"I recently held presentations on refrigerants at our customer seminars in Germany. I heard that several shipowners came specifically because they wanted to hear about refrigerants and regulations related to them," said Barwil Unitor Ships Service

product group manager Hans-Joachim Koblichke.

Koblichke is currently a member of an advisory board that is looking at further regulation related to refrigerants and their use in industry.

The F-GAS regulations came into effect this July, but Barwil Unitor was aware of the changes as early as last summer. One of the company's procurement managers working in Rotterdam and closely co-operating with the EU notified Koblichke, who analysed the impact for customers and put together a campaign to notify and advise them of the change, and to offer a solution.

"It's a case of knowledge transfer. We're close to the source because we're co-operating with the rule-making bodies. On one hand, we advise these groups on

the feasibility of new rules for the maritime industry and, on the other, we help inform the market of new and upcoming rules," explained Koblichke.

"With respect to the F-GAS regulation, its main sphere of influence is within the EU. At the same time, global operators need to be aware that the non-refillable (disposable) refrigerant cylinders will soon not be available in any EU ports. At the very least, it would require them to change their procurement routines," said Koblichke.

F-GAS is, like the EU's emissions trading scheme, a European response to the carbon-reducing and global-warming promises made under the Kyoto Protocol. The EU, however, is the only authority so far to have acted decisively on the particular

issue of fluorinated greenhouse gases.

Said Peter Horrocks of the EC's team working on F-GAS: "As regards policy elsewhere there are many restrictions on the use of refillable containers for ozone-depleting substances (bans for instance) and this is also the case for the EC. Other countries do not have regulatory controls on F-Gases and in most instances non-refillable containers can still be used."

Despite Horrocks' assurances that extensive efforts were made to communicate the impact of F-GAS to the business community, not everyone got the message. At least one environmental manager for a major shipowner expressed interest in information about F-GAS, as he had heard of it, but not its consequences.

TO

TANKEROperator's Singapore TMSA conference

Commitment or compliance, lack of consistency in oil major treatment, and confusing wording - some of the issues which arose in TANKEROperator's TMSA conference held during Digital Ship Singapore in September.

Tanker company safety managers and oil majors both agree that you should not try to comply with TMSA.

"Oil majors are looking for commitment, not just compliance," said Captain Dinesh Pradhan, marine manager, Teekay Singapore. "You have to show them the commitment is there."

"TMSA is a guide, a standard, a tool and most importantly an opportunity. You can better your organisation. If we have the attitude, we have no choice – we have to do it, then we are just making trouble for ourselves."



Patrick Slesinger.

Terry Luke, from Chevron's Singapore marine department, said that the company is benchmarking tanker companies against other companies, not against their TMSA scores.

Anglo Eastern's quality and safety manager Captain Janardhanan said, "I don't believe TMSA is a compliance tool, it is a guidance tool. It should be a motivation tool, not a standard. We believe TMSA is about commitment not compliance."

"There's a big difference between completing a task and accomplishing it," said Epic Shipping's risk, safety, security manager Captain Sanjay Mittal.

TMSA attitude

Patrick Slesinger, chief information officer and director of Wallem Group, said that you can potentially tell a great deal about the safety and quality mentality of a tanker operator from its attitude to TMSA.

If the company complains about TMSA and the work involved, and treats it as a 'tick the box' exercise, that could indicate that their company does the minimum to comply, he said.

But if the company likes TMSA, that tells you that they genuinely want to operate the safest quality operation that they can, he said.

Capt B Kartik, marine manager and designated person ashore (DPA) with World Tankers

Singapore, said that "TMSA is aimed at distinguishing between people who embrace the ISM code in its true spirit, and those who do not."

"We feel TMSA has introduced a new concept," he said. "It is a standard framework for consistent assessment of operators. And oil majors are providing free management consultancy."

"It's a continuous process. It's not something you allocate to a safety manager," said Mittal.

"TMSA is a beacon," he said. "Industry expectations are clearly laid out."

Bad idea

While everybody agrees that trying to manage your company to reach a specific score is a bad idea, you also need to bear in mind that your score will probably be taken into account when your vessel is being considered for charter.

Sometimes this has been made quite explicit. "A few months ago, a customer asked us if we could be at level 3.5 so he could give a ship to us," said Mittal.

A principal benefit of TMSA is that it gives high quality tanker operators an opportunity to prove to their customers what they can do and how good they are.

"Teekay looks at TMSA as an opportunity to prove to your customer your performance is backed by a quality management system," said Pradhan.



Capt B Kartik.

"It's a best practise guide for tanker operation. OCIMF is our customer, and it tells you what your customers' requirements are."

"It is a huge opportunity," said Mittal, "You can present your management's approach to targeting safety and environmental excellence to your business partners."

Good tanker companies should find that their vessels get chartered preferentially over mediocre tanker companies, which should lead to higher business returns.

"The advantages of TMSA could include better management fees, better money for seafarers, better quality of life at sea, better



Captain Sanjay Mittal.

quality and motivated seafarers, fewer accidents, fewer off hires, enhanced operational efficiency, competitive advantage," said Kartik. "This is something the ISM code could not get."

Standards

Many speakers complained about a lack of consistency between different oil majors.

"Each oil major perceives it differently, and you have to know the specific requirements of different oil majors," said Mittal.

But you can ask the oil majors what they are specifically looking for, and most will be happy to share it with you, he said. "Be guided by what individual oil majors want to see for different elements."

"We have been through a lot of fleet audits," said Janardhanan. "Oil major audits have different needs and varied interpretation."

"Some of them say, I want you to do it this way, whilst others say, you could do it better."

Clarity

There were plenty of comments about the wording of TMSA, and whether there is enough clarity about what tanker companies are expected to do.

"Is TMSA well written to help tanker operators improve their system?" said Janardhanan.

"It's a bit like the SOLAS and MARPOL in a few areas where

the interpretation could vary depending on the individual," he said.

"Management of change is very much in an infancy stage," he said. "After three years we're still not sure if we're doing the right thing."

"It has its ups and downs," said Pradhan. "But instead of trying to put it down, we should try and move on."

Mittal said that he had reliable information that TMSA was not written by a seafarer. "TMSA was a take off from the International Marine Transportation business review," he said.

Chevron believes that TMSA is too prescriptive but some people complain that it is not prescriptive enough, said Luke. "It's not a numbers game, we agree to it not being so prescriptive," he said.

"The new TMSA will come out in June next year, with the major change to bring in barges," revealed Luke. The new version also has wording improvements, he said.

Time in rank

There was a discussion about oil major 'time in rank' demands, asking for ships to be crewed by seafarers who have served a certain number of years.

"Oil majors say, they want seafarers with experience, because experience translates into safety," said Kartik.

"What people neglect is time in other ranks. There has to be a formula where 50% to 60% of time in other ranks is considered. For example, for a master, 50% to 60% cent of his time as a chief officer should count."

One delegate said that his company had had a brand new ship rejected by an oil major because the crew did not have enough "years in rank".

Another delegate said that his company had done a comprehensive risk assessment of the crew complement it was proposing to put on board, shown the risk assessment to an oil major which had then accepted it.

Epic's Mittal said that "oil majors do take into account seafarers' experience in other ranks."

Is it more work?

One speaker raised the issue about why the tanker industry is perpetually given more systems and none of the older ones get taken away.

"There's many additions to the rules," he said. "Nothing is leaking off. There has to be some decree from some central

government about it."

"It's all driven by governmental bodies, and required either to address an incident or the changing needs of the environment we operate in," said Teekay's Pradhan.

"It's the natural process of things," said Mittal. "Everything gets upgraded."

Dimitris Lyras, conference chairman, noted that it was not sensible to introduce a new procedure for seafarers to follow, without coming up with one which they no longer have to do, because seafarers do not have free time.

Slesinger noted that TMSA does not have to mean more work, if you do it as you go along, rather than as a discrete task.

"The example I use is, if we were making cigarettes, we could count cigarettes when we make them, or count them every month in the stockroom," he said. "If it's the latter, then its extra work. Gathering data and reporting statistics should be a bi-product of a process rather than a process in itself."

Seafarer retention

Anglo Eastern's Janardhanan said that his company is doing very well on seafarer retention,



The Singapore audience listens to the issues surrounding TMSA.

claiming a 90% annual seafarer retention rate.

Anglo Eastern has grown its Singapore tanker fleet by 69.7% since 2006, he said, so it has a lot of need for more seafarers.

"Altogether, the industry will require 80,000 trained seafarers over 2006-2008," he said.

"In the booming job market it is becoming increasingly difficult to train seafarers to company standards and retain them."

Janardhanan had several other comments about TMSA.



Capt Janardhanan.

"Near miss investigation is one of the major challenges. You ask anybody how many near misses you want, you'll get that many near misses," he said. "If you say 'I need eight near misses per month,' people will give you eight. Near miss reports have to come naturally."

Guidelines are usually reactive, he noted. "ISPS was brought in, in such a rush and hurry, all it was, was a bunch of papers. You put security tags all over the place. But has it made the ships any safer?"

"In remote parts of the world when a vessel is attacked by pirates – pressing the security button does not necessarily ensure that the ship would be safe. Yes the code has brought about more transparency and most incidents get reported, so additional precautions could be taken."

One concern Janardhanan had was of pilotage standards in certain ports around the world, and the little power the shipping company has to do anything about it.

"With more requirements and compliance to work rest hours on board the vessel is still a big issue. We are running ships with 16-18 people, which we used to man with 30-35," he said. "Has the industry thought about having a relook at the minimum manning certificate?"

Bonuses

The first time Teekay looked at TMSA, "We complied with 211 KPIs out of 241 KPIs," said Pradhan.

"We are a big company and we have a large fleet. We could compare ourselves to a franchise like McDonalds. You go to any McDonalds anywhere in the world and you get the same quality product," he said. "We deliver the same quality of service all across the globe."

At Teekay a ship has to be ready for inspections all the time, he said. "Today everybody is used to all these inspections, we've learned to cope with it."

Pradhan said that there is no point in complaining about the way TMSA encourages tanker companies to modernise.

"We have to move to the modern day and age, we have to



Dinesh Pradhan.

rely on the modern electronics and all. We have to move ahead," he said.

Measured

Kartik said he welcomed a measure designed to improve standards of shipping, but which did not revolve around punishment.

"The threat of punishment should not be the only drivers for improvement," he said.

However smaller tanker companies will struggle with TMSA, he said. "For an operator with six or seven ships, it's hard for him to commit the resources to benefit from this free consultancy. There has to be a certain critical mass."

"TMSA looks at the most fundamental aspects," he said.

Plenty of things are required to make TMSA work, including better co-operation and knowledge sharing between ship and shore (such as officers holding seminars in the shipping company office); good reporting and feedback systems, more ship visits from shore staff.

"One advantage has been the introduction of KPIs," he said.

Luke asked World Tankers if they saw any increase in business because of TMSA. "Actually yes," Kartik replied.

Mittal joked that TMSA is a journey from "tanker managers' silent aversion" to "Timebound methodical structured approach."

TMSA helps management focus on leading indicators (which indicate how well a company is being managed), such as recruitment quality, maintenance, navigation safety, emergency preparedness.

"I would rather focus my energy on the leading indicators so I can manage the lagging ones better," he said.

He explained how the company had set about one TMSA task, fitting electronic chart systems on ships.

It put together a schedule running from March 2008 to November 2008, including



Viswanathan Shridhar.

running a trial of ECDIS (official electronic chart) equipment, choosing suppliers, doing initial navigation audits, and training.

"At Epic Shipping we have two full time fleet training managers, with a very broad training agenda," he said. "They go on board the ships, identify training needs in the first three days then it is one to one training."

Software

Viswanathan Shridhar, fleet manager with V Ships, talked about his company's in-house safety management software ShipSure.

"Everything is integrated into one module," he said. "It's a good tool for everyone to see the ships performance."

The software runs on the ship and on shore. "Data is entered on the vessel, it goes to the management office," he said.

"It's integrated with purchasing and budgeting system. It also integrates with the crewing."

The system has information about all the certificates. "The colour changes to red when it needs renewing."

The software compares the actual budget with the expenditure budget," he said.

For training, V Ships sends a staff member on board for 25 days. "He teaches people on the ship how to key in the information," he said.

TO

Zero pollution

Reputation

Political scrutiny

Asset management

Client relationships

Common rules

Environmental matters

Arctic operations

Self assessment

Fleet renewal

Technical competence

Vessel integrity



Life is sustained by our environment. Tanker owners and operators looking to meet stringent environmental standards and to improve asset integrity can benefit from our services. When reputations are increasingly linked to environmental performance, you can rely on us to help you manage your environmental **matters**.

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