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SRN

Ship Repair Newsletter



**The Peary Spirit in the large dock at FAYARD
(See Shipyards)**

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VIEWPOINT:

Business is good for regional ship repair operators participating in this year's Posidonia Exhibition in Athens. Shipyards in Turkey and Portugal are amongst those who have concluded business deals during the first few days of the show which every two years attracts the world's maritime community to Greece, the world's biggest shipping power.

"We have concluded three major deals during the first two days of Posidonia. Of those, two are repair projects for a tanker and a bulk carrier and the third is a rather significant conversion project for a ro/pax vessels belonging to an Italian owner," said Nedime Ozoglu, Repair Division Marketing & Estimating, Besiktas Shipyard.

"Posidonia is very fruitful for us and the biggest event we participate in. Greek shipowners constitute 80% of our portfolio because of the proximity mainly and because Turkey's shipbuilding industry has significantly improved its talent pool and expertise recently," she said. "In 2015 we repaired many Greek vessels, we give priority to the Greek market and we are competitive in our pricing and the quality we are offering."

Portugal's Lisnave and Turkey's Gemak, have also inked repair deals with fleet owners during the first few days of Posidonia 2016. Alex Scaramangas of Resolute Marine Services, the exclusive representative of the two yards in Greece, said, "We have managed to conclude a few business deals during this week mainly routine mainstream repair projects of various sizes. This is a great, given the current market's prevailing conditions with a weak freight market and China's perennial dominance in the bulk carrier sector."

As far as the outlook and future prospects, Scaramangas believes that the sector will improve. "A lot of drydocking repairs were brought forward in 2015 in order to avoid implementation of the BWT system so, subsequently, we were left with a bit of a vacuum in the first half of 2016. We remain optimistic, however, because shipping is a cyclical industry and on the bulker market, specifically, the consensus is that there will be some improvement."

This view is shared by Ozoglu who believes that 2016 will be a better than expected year for the ship repair sector in Turkey. "In 2015 we repaired many Greek vessels, but January 1st 2016 we suddenly saw that the market is going down and repair activity stopped because of the developments regarding the BWT regulation. The vessels got the extension and so everyone is now waiting. Many customers we have spoken with at Posidonia this week share the opinion that the market is improving marginally. While 2016 as a whole will not be better than last year, it will be better than expected," she added.

"Lisnave provides excellent service with capacity to accommodate six vessels simultaneously on drydock, but we cannot compare European shipyards with China, not even Turkey, which is more competitive in terms of price," added Scaramangas, whose company is also the representative of smaller ship yards in Senegal, which can accommodate Panama Size vessels, Bahrain and one more Portuguese yard on the banks of Tagus River.

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SHIPYARDS:

FAYARD:

Denmark's FAYARD is reporting a busy first half this year (2016) with all three drydocks occupancy very high and a number of ships entering the large 315/415 m x 90 m building dock. In the large dock No. 3 the yard recently had Teekay Corp's 109,325 dwt North Sea shuttle Tanker **Peary Spirit** in for installation of VOC-system and special survey. She was followed immediately by Knutsen OAS' 162,000 dwt North Sea shuttle tanker **Bodil Knutsen**.

Meanwhile, ships in FAYARD also include Donso Tank's 16,740 dwt chemical tanker **Prosdpero**, German Tanker's 40,600 dwt tanker **Seatrout** and Terntank's 14,796 dwt tanker **Ternvik**.

Ships due include the Royal Danish Navy's 6,930 displ tonnes command and support vessel **HDMS Absalom (L16)** and another North Sea shuttle tanker from Knutsen OAS, the 130,031 dwt **Loch Rannoch**.



The **Bodil Knutsen** in FAYARD

BRASA SHIPYARD:

SBM's Brasa Shipyard in Niteroi, Rio de Janeiro, Brazil has completed the topside installation work on the converted FPSO **Cidade de Saquarema**, for Holland's SBM Offshore. The FPSO arrived in Brazil in December 2015 from China's Chengxi Shipyard (Guangzhou), where the marine work in the conversion was carried out, along with some topside installation work. The FPSO was formerly the 1999-built, 308,491 dwt tanker **Elisabeth Maersk**.

Cidade de Saquarema has now left the yard for operations offshore for state owned oil company Petrobras in its Lula Field on a 20 year lease and operation contract. Production is expected to begin in July with the FPSO being able to process 150,000 bbls of oil/day and 6m m³ of gas/day, as well as having a storage capacity of 1.6m bbls of crude oil. The Brasa Shipyard completed the conversion of sistership **Cidade de Marica** last year. The FPSO was formerly the 2000-built 308,491dwt tanker **Eli Maersk**.

CURACAO DRYDOCKS:

Currently undergoing repair at the Netherlands Antilles' Curacao Drydocks, Willemstad is the Italian-owned high speed passenger/vehicle ferry **Croazia Jet**. Built by Australia's Austal Ships, the 5,307 gt vessel was chartered by her owners SNAV last year to Venezuela's Conferry, with a purchase option, and was operating from the Venezuelan mainland port of Guanta to the port of El Guamache on the island of Margarita.

Other vessels undergoing repair at this yard last week included the following:

- **Sigmagas** – 8,636 m³ capacity, 1998-built LPG tanker, owned by Bremen, Germany based Sloman Neptune Schiffahrts
- **Bourbon Orca** – 4,311 gt 2006-built anchor-handler, owned by Bourbon Offshore Norway AS. This owner has five anchor-handlers currently laid-up in Willemstad and repair and maintenance work is being carried out by Curacao Drydocks
- **Xin Hai Hu 4** – 11,888 m³ 2011-built trailing suction hopper dredger, owned by CHEC Shanghai Dredging
- **Icaro** – 99,438 dwt 1993-built tanker, owned by BSM Cyprus

GERMAN DRYDOCKS:

Germany's German Drydocks, Bremerhaven, recently completed the retrofitting of Alfa Laval PureSOx hybrid exhaust gas scrubbers on domestic owner Buss Shipping GmbH's two 14,517 dwt (1,025 teu), 2012-built sisterships **Condor** and **Corsar**. Both vessels are currently operating under the names of **SCA Tunadal** and **SCA Munksund**, on charter to Sweden's SCA Transport.

BLOHM & VOSS

Cunard's flagship, the 148,528 gt **Queen Mary 2**, drydocked at Hamburg's Blohm + Voss Shipyard on May 27th to start her 25 day multi-million pound sterling remastering, which is scheduled for completion on June 21st. This is the largest refit yet carried out on the vessel to date, and is the sixth time that **QM2** has drydocked at the yard since entering service in 2002.

The vessel is in B+Vs 320,000 dwt capacity Elbe Dock 17 graving dock. The work package on the vessel involves the redesign of Queens and Princess Grill suites and restaurants, adding balconies to 30 Britannia Grill suites, the fitting of 15 new Britannia class single berth cabins, changing the existing Winter Garden into the Carinthia Lounge. The remastering is being managed by London-based SMC Design.

On the technical side of **QM2's** remastering, the shipyard is carrying out Class renewal as well as prefabricating several steel decks, totalling 200 tonnes, for the forward part of Deck 13, and will carry out modifications to the vessel's bridge wings, install new bulkheads for improved damaged stability, as well as modifications to tanks. At the same time four new exhaust gas scrubbers will be fitted, along with the overhaul of the vessel's four podded propulsion drives, four stabilisers and removal and overhaul of the ship's three bow thrusters. Finally, a new environmentally-friendly coating will be applied to **QM2's** hull and superstructure.

Also at the Hamburg yard, completing a major refit is another cruise ship familiar to B+V, British-owned 37,303 gt 1981-built **Saga Sapphire**, originally Hapag Lloyd's **Europa**, now operated by Saga Cruises. This vessel arrived at B+V on April 13th and is scheduled to depart on June 9th. Work on **Saga Sapphire** included main engine repairs at a layby berth by MAN on the vessel's twin Bremer Vulkan-MAN 7-cylinder diesels, general steel and pipe repairs, accommodation refit and miscellaneous machinery repairs.

Meanwhile, the second vessel of a three ship repair contract from Hapag Lloyd arrived at the yard for repair on May 28th – the 47,829 dwt 2003-built **Montreal Express**. The work package on this vessel involves hatch cover repairs, main engine maintenance and five year survey. This work is scheduled for completion on June 9th and will be followed immediately by the drydocking of sistership **Toronto Express** on June 11th for the same work package. Hapag Lloyd's 52,600 dwt 2006-built **Quebec Express** underwent repair during May 7th -17th.

There has been a management restructure at B+V over recent weeks, following the merger of the newbuilding and repair divisions of the company. Blohm + Voss GmbH will now operate with four Business Units:

- Newbuilding – naval ships and the building and repair of mega yachts
- Ships' Service – the repair of commercial vessel



The QM2 arrives in Blohm + Voss

- Production – available for the Newbuilding and Ships' Services units
- Power Plants – industrial work

Jan Kees Pilar has left his position of Commercial Director and has been replaced by Frederik Carstens as Vice President Ship Services, formally part of the management team at MAN Fredrikshavn. Jan-Petter Rehberg is Director of Projects in the Ships Service Business Unit. Arne Waalkes, already at Blohm + Voss, has been promoted to Sales Director.

GIBDOCK:

Gibraltar's Gibdock has demonstrated that its strong reputation for ro/ro and containership repair work continues to resonate around the globe, following the drydocking of two con/ro vessels operated by Canada's Oceanex, which provides intermodal transportation services to the Canadian Atlantic provinces of Labrador and Newfoundland.

Gibdock was selected by St John's, Newfoundland-based Oceanex to carry out wide-ranging work on the 26,786 gt, 2013-built, 1,300 teu ***Oceanex Connaigra***, and the 21,849 gt, 1977-built, 1,125 teu capacity, ***Oceanex Sanderling***.

The 210 m long ***Oceanex Connaigra*** - the largest con/ro vessel flying the Canadian flag - arrived in Gibraltar on March 6th this year, departing two weeks later on March 20th. The 193 m long ***Oceanex Sanderling*** was drydocked on April 2nd for a programme of work that lasted just over a month.

The scope of work on the ***Oceanex Connaigra*** included the removal of the CPP propeller blades, the hub and tailshaft, the installation of a new hub, and the fitting of new propeller control pipework. The existing blades had to be machined in Gibdock's workshops before refitting to the new hub. The yard was also tasked with carrying out modifications to the vessel's exhaust gas scrubber system by replacing two bypass valves, each of which was 645 mm in diameter. This involved cropping and modifying the exhaust trunk and modifying the fuel oil module by making adjustments to the pipework.

Gibdock carried out a very different package of work on ***Oceanex Sanderling***, which is now nearly 40 years old. This required the removal of the con/ro ship's stern ramp, which is made up of three sections, the biggest of which weighs 93 tonnes. Paul Cano, senior ship repair manager, says, "This part of the work was an important milestone for Gibdock, involving the heaviest lift that the yard has carried out to date. Once the ramp sections were disassembled and lifted ashore, the yard carried out extensive steel repairs before refit.

Gibdock also removed ***Oceanex Sanderling's*** tailshaft for survey, removed and refurbished the rudder blade, reinforced the weather deck and fitted new container sockets to allow loading of 53 ft containers. The yard overhauled bow thrusters, repaired paintwork and carried out other works associated with a general five-year survey.

While the three-year old ***Oceanex Connaigra*** is a first time visitor to Gibdock, ***Oceanex Sanderling*** was previously docked, in 2011. Richard Beards, Managing Director of Gibdock, says, "The owner was quite clear



The ***Oceanex Sanderling*** in Gibdock

that *Oceanex Connaigra* and *Oceanex Sanderling* were required back in service within a tight timeframe, with minimal disruption to Oceanex customers. We were delighted to be chosen for this project, and to complete two very different but equally challenging projects on time on two con/ro ships of different ages.”

DETYENS SHIPYARDS:

Bay Ferries Limited has announced that The CAT high-speed ferry *Alakai* was recently refloated following an extensive period of refit, upgrade, and repair which commenced in early April at Detyens Shipyard in Charleston, South Carolina.

Following refloating, final work, including completion of regulatory inspections and dock and sea trials, were undertaken before the vessel departed South Carolina for Yarmouth and Portland. The vessel, under charter by Bay Ferries Limited from the US Navy’s Military Sealift Command, is intended to enter ferry service between Yarmouth, Nova Scotia to Portland, Maine, on June 15th.



The *Alakai* in Detyens

ASRY:

Bahrain’s ASRY has launched a new Landing Craft, *Safra 1*, which is being constructed for the Bahrain Coast Guard (BCG). This latest checkpoint confirms the fully Bahrain-based project, designed and constructed completely by ASRY, is still progressing on track having begun in September 2015 with steel fabrication.

“Our close co-operation with the Bahrain Coast Guard has enabled us to stay on track for this landmark project for the Bahrain maritime sector,” confirmed ASRY New Construction & Engineering Senior Manager, Sauvir Sarkar, who is overseeing the project. “As we launch the vessel, we can celebrate the Kingdom’s progress in being able to provide a state-of-the-art marine product that is made in Bahrain. Hopefully this will be a starting point for more homegrown construction projects.” Sarkar confirmed that now the launch was complete, installation and commissioning of machinery will be taken up so that trials can be commenced and the craft delivered.

The Landing craft marks ASRY’s first new build contract since launching the New Construction &



The landing craft launch at ASRY

Engineering division, which is tasked with growing the new construction programme at the yard. It will be approximately 34.5 m in overall length, with two 500 kW engines, having a top speed of 10 knots and cargo deck capacity of 40 tonnes. ASRY already has experience in the new construction sector having built offshore support vessels, ASD tugs and power barges.

EMISSIONS:

CHELSEA TECHNOLOGIES

Chelsea Technologies Group (CTG) has announced that its Sea Sentry Exhaust Gas Scrubber Water Monitoring System has achieved DNV GL Statement of Compliance for MEPC.259 (68). Vigilant testing by DNV GL ensured that Sea Sentry met the requirements for calibration range, drift, accuracy, precision and noise; as well as satisfactorily mitigating for the influence of turbidity, UV absorbance, temperature and salinity. The effectiveness of Sea Sentry's de-bubbler and the use of the test kit supplied to validate the optical sensors was also demonstrated to meet the requirements of DNV GL.

"We would like to give special thanks to our technical team for the hard work invested in developing such a refined system," said CTG's Maritime Sales Manager, Stephanie Lavelle. "We are extremely pleased to be successfully installing our systems on vessels around the world, so that ship owners can confidently monitor the efficacy of their scrubber systems and ensure they operate within regulations."

Sea Sentry is a turnkey solution which measures PAH, Turbidity, pH and temperature, as required by MEPC.259 (68). It has a de-bubbler and corrects for the effects of turbidity, UV absorbance and temperature. A touch screen display provides a flexible user interface and data is relayed to a main control system via an Ethernet connection. Sea Sentry is ideal for both new ship builds (as in the case of a recent installation on a bulk carrier) and retrofit installations.

Why is Sea Sentry the system of choice for wash water monitoring? To comply with IMO environmental regulations, global shipping is required to meet specific exhaust gas emission levels. One method of doing this is to clean emissions before release using an exhaust gas scrubber system. All varieties of wet scrubber systems use wash water which must be monitored at all times to avoid discharges that may exceed regulations and damage the environment. The CTG Sea Sentry confirms that the wash water is within acceptable limits and thus protects the environment from high levels of contamination in exhaust-gas scrubber wash water discharge. The CTG Sea Sentry is a proven wash water monitoring system which monitors both the sensor inlet and outlet of wet exhaust gas scrubber systems.

UNDERWATER:

HYDREX:

In April a Hydrex diver/technician team carried out underwater stern tube seal repairs on a containership in Tauranga, New Zealand. The ship was suffering from an oil leak and was not allowed to sail. Because no drydock was available close by an on-site repair was necessary. Taking advantage of the Hydrex flexible mobdock technique the team was able to carry out the entire operation underwater.

A leaking seal is always an unpleasant experience for a ship owner. It will force him to go off-hire, costing him time and money. To avoid going to drydock and keep the loss of time to the absolute minimum, Hydrex has developed the technology that enables repairs or replacement of all types of shaft seals to be carried out afloat. The ship can keep its schedule as seal repairs can

be performed during cargo operations. By creating a dry underwater working environment around the shaft, work on the seal assembly can be performed in dry conditions. This is done by using a flexible mobdocks which are designed specifically for this type of repairs. The mobdock fit all sizes of seal assembly.

The following case study gives an account of a recent underwater stern tube seal repair performed by Hydrex. Immediately after the operation was confirmed Hydrex's technical department arranged for a rapid mobilisation of a team of Hydrex diver/technicians to the container vessel's location in New Zealand, together with all the needed equipment.

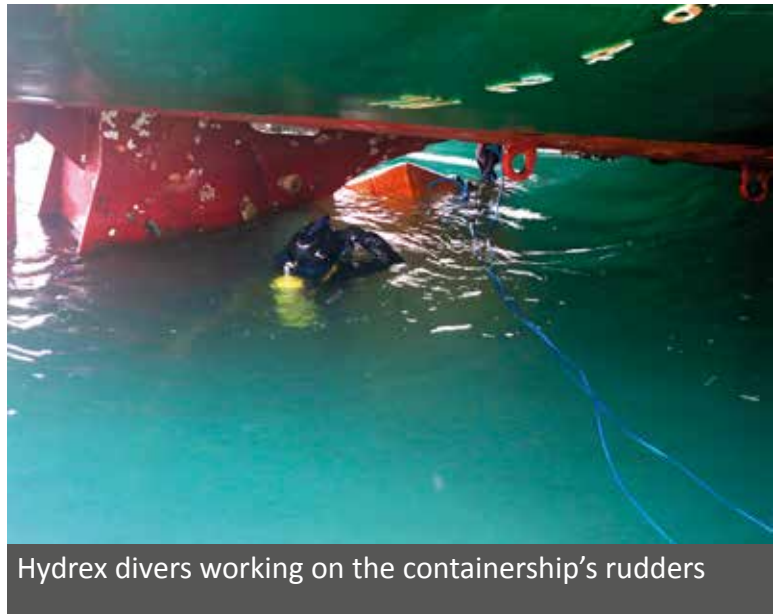
The diving team first set up a monitoring station. The operation then started with a thorough underwater inspection of the stern tube seal assembly. The inspection revealed that the rope guard had gone missing and that the bolts were broken off.

The divers installed the flexible mobdock around the stern tube seal assembly creating a dry underwater environment so that they could work in drydock-like conditions. The split ring was then disconnected and brought to the surface to be cleaned. After cleaning the entire assembly, the team removed the damaged seals one by one and replaced them with new ones.

All parts of the stern tube seal assembly were then reinstalled and secured. Leakage tests were carried out with positive results, after which the divers removed the flexible mobdock.

Every Hydrex office has a fast response centre equipped with all the latest facilities, equipment and tools. These centres were designed specifically to increase speed of service. The lightweight flexible mobdocks packed in flight containers allow for a very fast mobilisation and a timely arrival of Hydrex teams on any location around the world. This combined with our network of local support bases provides us with everything we need to successfully complete any job, anytime, anywhere.

Damaged stern tube seals will cause an increasing amount of oil leaking or water ingress as the damage worsens. By replacing the seals when the damage is first discovered, Hydrex keeps the down time low.



Hydrex divers working on the containership's rudders

MACHINERY:

ABB:

ABB will supply its on-board motion monitoring and forecasting system to Coscol's 48,293 dwt semi-submersible heavy lift vessel ***Xiang Rui Kou***, meaning the entire fleet of Cosco Heavy Transport now benefits from the software. The system that will be installed is a mixed software and motion measurement set-up that on one hand provides clear advice on how to operate the vessel and her cargo through heavy weather, and on the other hand gives clear warnings on the bridge when certain motion thresholds are exceeded. "Ship operators are increasingly looking at ways to exploit the increased connectivity of ships and ABB has compelling Marine Software solutions to increase safety and efficiency," said Juha Koskela, Managing Director of ABB's Marine and Ports business unit.



The ***Xiang Rui Kou***

ABB and Cosco Heavy Transport have a track record of successful co-operation with ABB's decision support system on-board six of its semi-submersible vessels for several years. Cosco's semi-submersible newbuild, ***Xiang He Kou***, is also currently being outfitted with ABB's Motion monitoring & forecasting system. With the latest order for the ***Xiang Rui Kou***, the whole fleet of seven semi-submersible heavy transport vessels will be making use of ABB's Marine Software.

Marc Beerendonk, Director of Engineering from Cosco Heavy Transport said, "Now we have connected all our vessels to this software we are able to fully utilise ABB's Fleet Portal, so all the motion related data collected from the whole fleet can be tracked and benchmarked. By doing so, we are able to increase the safety of the voyages and the comfort level of our client significantly."

The motion and forecasting system combines wave measurements, weather forecasts, and navigation with ship characteristics, loading conditions, and motion sensor measurements. This facilitates continuous monitoring as well as simulation and forecasting of the ship responses and performance. Warnings can be instigated for possible hazards and their consequences. ***Xiang Rui Kou*** has a cargo deck of 177 m by 43 m.

BAKKER REPAIR:

NIOZ Royal Netherlands Institute for Sea Research is the national oceanographic institution for the Netherlands. Its mission is to conduct fundamental and frontier applied scientific research on important processes in delta areas, coastal seas and open oceans. NIOZ has four research vessels for seagoing research. Recently, Bakker Repair + Services inspected the main generator and four auxiliary generators on-board NIOZ's 1,615 gt flagship ***Pelagia***. These inspections showed that all generators needed immediate repairing.

NIOZ needed all generators operational again as soon as possible to meet their sailing schedule. Two rotors and multiple exciters were disassembled and transported to the workshop of Holland's Bakker Repair + Services, Sliedrecht. All repairs, including rewinding, bearing renewal, and rebushing, were successfully performed in record time.

After finishing the repairs, all rotors and exciters were transported back and installed on board the vessel.

After being commissioned successfully, the **Pelagia** was able to sail out according to schedule.

High voltage electric motors and generators oftentimes have a crucial role in the operations of businesses in the industrial and maritime sectors. Shutting them down for periodic inspections results in production losses, but not inspecting them at all can result in unexpected breakdowns and extra high costs.

Bakker Repair + Services offers the solution by inspecting high voltage machines during operation in just 30 mins. By checking the winding's partial discharge during operation, we can quickly determine the condition of the insulation of an electric motor or generator without any production loss. Mobile equipment is used to measure electric machines that are located in places that are hard to reach. It is not necessary to disassemble electrical machines to perform this measurement. By performing this measurement periodically, Bakker Repair + Services is able to discover trends in an electrical machine.

All measurements are conducted during normal operational conditions, providing reliable results. Bakker Repair + Services will give trustworthy advice, by comparing the measurement results with a database which contains 20 years of machine data. Having a clear picture about the condition of their electrical machines allows business to take the necessary actions timely, saving on high costs due to unexpected breakdowns. Highlights online partial discharge measurement:

- Quick measurement - just 30 mins/ machine
- No production loss
- Minimise risks of unexpected breakdowns
- Mobile equipment
- Benchmark with similar machines
- Reliable measurements and advice



NIOZ's *Pelagia*

WÄRTSILÄ:

The Wärtsilä Genius service offering now supports customers' business even better than before. The newly launched Wärtsilä Offline vibration analysis service monitors the health of propulsion and other rotating equipment. In addition, Wärtsilä Engine efficiency monitoring service is now available for dual-fuel engines. Wärtsilä Condition based maintenance service has been updated to allow daily follow-up of equipment condition, enabling Wärtsilä to take a more proactive role in supporting the customers' business.

During November 2015, Wärtsilä launched Wärtsilä Genius services, a new area of expertise designed to help customers optimise their operations and seize the opportunities offered by digitalisation. The service concept is based on comprehensive optimisation of customers' business and entire installation instead of

focusing on maintenance and servicing alone. Wärtsilä has signed several maintenance agreements that benefit from Wärtsilä Genius services, using real-time data and analytics.

“The main concerns for all our customers are uptime and cost-efficiency, both of which have a direct impact on profitability. We are developing Wärtsilä Genius services with these concerns in mind - we want to ensure that our customers can get the most out of their assets, while operating in a safe and environmentally friendly way,” says Mikko Tepponen, Director Digitalisation, Wärtsilä.

Wärtsilä Offline vibration analysis service is a new service for propulsion and other rotating equipment. This expert service analyses measurement data from the equipment to determine their condition and possible maintenance needs. With it, component defects, alignment issues and balance problems can be detected and remedied before they have a chance to cause significant damage.

“With Wärtsilä Offline vibration analysis, our customers can avoid costly downtime and enhance the reliability of their equipment. By observing and analysing the health of propulsion equipment we can help them extend the lifecycle of their assets and thereby improve their profitability,” Tepponen says.

The Wärtsilä Engine efficiency monitoring service is now available for dual-fuel engines. With this service, customers can optimise their fuel consumption by adjusting their operations according to real-time data. The service includes expert advice on overhaul and operational pattern. By extending the service to DF engines, Wärtsilä is strengthening its strategic focus on gas-fuelled engine technology. The Engine efficiency monitoring service also serves as a solid foundation for developing efficiency monitoring to include a wide range of operations of a gas or DF engine operated ship or power plant.

Wärtsilä has also updated the Wärtsilä Condition based maintenance service - the new CBM allows daily follow-up of key operational data in addition to the monthly reporting. CBM improves the availability, reliability and performance of the customer’s installation. This service provides essential data and insight about the state of the equipment and includes expert recommendations concerning the optimisation of maintenance intervals. With the new improvement, Wärtsilä will be able to take a more proactive role towards customers if and when needed.



Wärtsilä Genius services now include new services and updates that help customers optimise their operations and embrace digitalisation

LUBES:

NANOL TECHNOLOGIES:

Nanol Technologies, the producer of a patented high-performance lube oil additive, has announced that a 2% reduction in fuel consumption has been proven on-board Transfennica’s 7,200 dwt **Seagard**, an operational ro/ro cargo vessel, with use of its technology in the main engine.

Statistical analysis and verification by NAPA, the leading maritime data analysis, software and services provider, demonstrated that use of the additive in the ship main engine delivered savings during the testing period. The test was overseen by Lloyd’s Register.

In a project commissioned by the charterer and operator of the ship, European shipping company Transfennica and owner-operator Bore, ClassNK-NAPA GREEN vessel performance monitoring collected data over a four-month period during which the vessel operated along the same route and with the same engine settings. Two-months of data collected during the control period was compared to a two-month period with the recommended levels of Nanol's lubricant additive present in the system. Advanced algorithms were used to take into account fuel calorific value, operating conditions and typical engine load range. This analysis showed a statistically significant reduction in fuel consumption between the two periods, averaging a 2.01% reduction in fuel use when Nanol was present in active quantities.



Transfennica's ro/ro *Seagard*

The verification of the results of Nanol's technology has led Transfennica to continue further testing of its use on the *Seagard* and consider expanding it to other vessels in its fleet. The ground breaking results have also helped Nanol secure the opportunity to meet with 100 venture capitalists to support its future growth and development. Nanol was selected from over 1,200 applicants as one of only 50 businesses to be invited to Start-Up Fest's Investor Tour in Amsterdam.

Johan von Knorring, Founder and CEO, Nanol Technologies commented, "Based on previous test results by more than ten shipping companies and more than 13,000 hours of operational use, Nanol has long been convinced that our patented lubricant additive delivers immediate economic benefits in terms of fuel-efficiency as well as the long-term gain of prolonging key engine component lifetimes. With the support of Transfennica, Bore and NAPA we now have independently verified proof that this is the case for first time. While Nanol brings significant savings to our customers, we are very proud that we can help to save the environment by reducing emissions."

Rogier Heijnsbroek, Operations Manager, Transfennica Ltd. commented, "Transfennica is committed to meeting high environmental standards, reducing emissions and improving the energy efficiency of our fleet. With this in mind we always give consideration to operational tools and technologies that can help us meet these goals. However, we require investment certainty to enable us to make these decisions. Analysis gives us the tools for this decision making, and it is our intention to continue testing Nanol's technology based on verifiable facts.

Jouni Salo, Product Manager, Shipping Solutions, NAPA commented, "In the face of challenging business conditions and environmental pressures, NAPA is increasingly called upon to support owners, operators and charterers in making effective decisions about energy efficiency technologies; and by technology companies themselves seeking verified data to help make an impact on the market. Nanol's case is an excellent example of how powerful this proof can be, not only for sales but also for wider business development. They have developed a high-value solution that has demonstrated its effectiveness and we wish them well for the future."

CORROSION:

ECOSPEED:

Belgium's Subsea Industries has recently announced a new product for filling and building up a corroded and pitted steel surface to its original form prior to recoating with Ecoshield. Ecofix is as tough as the steel itself, machinable, and can be used to repair most pitting or corrosion damage on rudders, stabiliser fins, thrusters and other underwater gear.

Ecofix is used in combination with Ecoshield, the ultimate rudder protection coating. When a rudder or other piece of underwater ship gear has not been properly protected, the surface will become corroded. Cavitation damage can cause severe pitting. The steel needs to be restored to its original shape with a smooth surface prior to recoating. This is where Ecofix

comes in. It is a superior, tested and proven filler. Because it uses the same basic resin as Ecoshield, the coating can be applied just one hour after the filler. The bonding and hardness are extraordinary. This is the effective alternative to metal facing or very expensive alternative fillers. And because it is part of the Ecospeed/ Ecoshield family, it is fully compatible with the coating.

Ecoshield gives permanent protection against cavitation damage for rudders. The glassflake reinforced coating protects the rudder for the service life of the ship without need for recoating or major repair and comes with a ten-year guarantee. It is the only coating known to fully protect a rudder from all cavitation damage for the remainder of a vessel's service life. Now with the launch of Ecofix, the repair work needed on the underlying steel can be done effectively and economically prior to the Ecoshield application.

Ecoshield and Ecofix are also suitable for stabiliser fins, thrusters, nozzles and other underwater ship gear which needs special protection from corrosion. Now these items can also be repaired prior to recoating where other, less effective coatings have permitted corrosion and cavitation damage to occur.

With the launch of the new product, Subsea Industries offers a full package - Ecofix restores the surface of the rudder or other underwater gear and Ecoshield will protect the area from ever suffering corrosion and cavitation damage again.



A pitted rudder

EXICO:

A full range of protective coatings is available to extend the working life of motors by preventing corrosion even in the most demanding environments. As Jerry Hodek of Exico explains, motors can be supplied right up to C5-M, the highest category, which is typically required for maritime and coastal applications.

In the past it was common to accept the corrosion of motors and to constantly repaint them just to hide the rust – and in truth this practice is still used today in some areas. The problem with this approach is that once corrosion has started it tends to continue unless properly dealt with, leading to the early failure of the motors, possibly shortening their expected working life by a considerable margin.

Exico takes the view that prevention of corrosion in the first place is far better than cure after it has begun. This has led it to offering a range of protective coatings, along with advice on selection. Corrosion classifications according to EN ISO 12944-2 start with C1, which is typically in heated indoor applications such as offices and schools where the atmosphere is clean and dry so there is a very low corrosion risk.

It rises to C5 where permanent condensation and high levels of pollution make the corrosion risk very high. In fact C5 is split into C5-I for industrial and C5-M for marine because the two environments can be significantly different, particularly with respect to ambient salinity.

Class C4 also represents very demanding environments. Typically these will be in industries such as chemical manufacture and sewage processing, but can also include swimming pools, boat yards and inshore waterways. It is the highest class in which aluminium motors can be used, as they cannot be hot dip galvanised. Medium risk C3 classification covers urban applications and industrial uses where the presence of moisture and damaging pollutants is fairly low. C2 is a low risk category, which may be under cover or inside unheated buildings (unlikely to be outdoors), where contaminants are low but there is a risk of condensation due to temperature fluctuations.

To meet demanding environmental requirements, Exico's motors and parts (frames, end shields and terminal boxes) are specially treated. Cast iron parts are shot blasted to cleanliness level Sa 2.5 in accordance with EN ISO 8501-1, while steel parts are thoroughly cleaned and degreased by hand. All parts are then hot dip zinc galvanised before being primed with a special resin for maximum protection against corrosive atmospheres.

Only once all parts are clean and treated does Exico assemble its motors, and once assembled they are cleaned again to remove all traces of grease, oil and other possible contaminants. After this, two coats of a two-part epoxy coating are applied to all external surfaces. All of this creates superb protection against corrosion, yet does not compromise the motors' ability to dissipate heat.

Exico recommends special coatings for all motors operating out of doors, indoors but exposed to direct sunlight, motors open to the weather (even if under cover) and in atmospheres where there may be acids or alkalis or aggressive compounds such as sulphur dioxide present.

It also notes that tropical installations may be subject to considerable humidity which can induce corrosion, so recommends protective coatings. Along the same lines non-tropical but humid environments such as swimming pools, spas, shower rooms, proving ovens, and industrial processes using steam or hot water require special consideration.

By using the guidance provided by EN ISO 12944-2 the environment operating conditions for a motor can be assessed and lead to an informed decision on the level of corrosion protection required. Finally a good rule of thumb will be that if you are uncertain, be cautious and move up to a higher C-classification rather than down to a lower one – any extra expense is likely to be repaid handsomely through greater longevity and reliability.



EXICO016 – A special coating protects Exico motors from corrosion

FUEL TREATMENT:

WILHELMSSEN:

Norway's Wilhelmsen Ships Service is advising vessel operators to wage war on soot. According to WSS, soot accumulation in a ship's exhaust gas boiler (EGB) is a serious issue, leading to reduced EGB efficiency, significant cleaning costs, corrosion, and the risk of soot fires. However, a simple post-combustion fuel treatment can solve all these problems, at negligible cost.

Refined heavy marine fuels are full of contaminants, such as Vanadium, Sodium, Aluminium, Silica, and Potassium, which leave deposits when burnt. These particles, soot, pass through vessel exhaust valves and turbo chargers, continuing with the flue gases until they reach the EGB. Here they stick to the boiler's heat transfer surfaces and impair its efficiency, as Jonas Östlund, WSS Product Marketing Manager, Marine Products, Oil, explains, "Just like any heat exchanger, an obstructive deposit will reduce the transfer of heat and therefore reduce the efficiency of the equipment," he notes.

"Soot deposits are particularly effective at reducing heat transfer as they insulate extremely well. A 1mm layer of soot can reduce EGB efficiency by 10%. Left to build up to a 3 mm layer, EGB efficiency can be reduced by up to 50%. "Obviously this calls for cleaning, with typical EGBs requiring around five hours of cleaning during port calls, usually every two to three months. This means labour, equipment, and the disposal of wash water that contains acidic soot – the latter being something currently up for regulatory discussion, with an expectation that it will have to be disposed of onshore, at extra cost. "So, the cleaning task is more than a minor hassle – it's a major inefficiency, cost and labour burden for the engine room."

Cleaning and EGB inefficiency are the most obvious problems, but it doesn't stop there. Östlund states that un-burnt fuel and lubricants can also be deposited in the EGB. These lower the ignition temperature of soot, and increase the risk of soot fires. "These can permanently damage the ECB and, although uncommon, pose a very real threat," he says. "In addition, cold corrosion is also a factor. Sulphur in the fuel reacts with oxygen during combustion to form sulphur dioxide and sulphur trioxide. When the temperature drops below 135°C, which occurs in EGBs operating at low velocities, the sulphur trioxide reacts with the moisture in the air and forms sulphuric acid. This is very corrosive to tube surfaces, and affects metal in a similar way to rust."

The problems are myriad, but the solution is simple, according to Östlund. He stresses that post-combustion fuel treatments – such as WSS' Unitor's FuelPower Soot Remover Liquid Plus – provide easy relief, adding "fuel treatment shouldn't just end in the fuel tanks."

In the case of WSS' proprietary Unitor offer, it is automatically dosed four times a day, dispensed as a fine mist that condensates onto the soot and continues to oxidise it. The result being that almost no soot is deposited in the EGB. The solution is active from 180°C, making it suitable for the low exhaust gas temperatures associated with slow steaming. Unitor's FuelPower Soot Remover Liquid Plus has been thoroughly tested over the course of the last year on-board Wilh.Wilhelmsen's 76,500 gt ro/ro vessel **Tønsberg**. Prior to its daily dosing, the vessel's EGB required regular cleaning every two months.

However, after ten months of regular treatment, every six hours, the vessel, which has a busy trading pattern between Europe, the US and Japan, has yet to require EGB cleaning – saving time, money and a lot of work. Stein Gravdal, Chief Engineer on-board the **Tønsberg**, refers to the product as a "magic potion that works wonders", adding that the EGB still looks almost completely clean after the extensive test period. "And the best thing about this," Östlund concludes, "is the cost. The outlay is negligible when measured against the very real efficiency gains the treatment delivers. It amounts to less than 0.5% of daily fuel cost. "The ROI on this is, to say the least, compelling."

HYDRAULICS:

V&A HYDRAULICS:

UK firm V&A Hydraulics is relaunching its product supply and bespoke assemblies division to drive worldwide trade. The Birkenhead based family firm is one of the UK's leading hydraulics businesses with more than 30 years' experience delivering solutions for the maritime, subsea, manufacturing and engineering, papermill, aerospace, automotive sectors.

V&A hydraulics managing director Vic Seddon said the firm has built a strong reputation for hydraulics inspection, manufacturing, installation, maintenance and troubleshooting services. However, he believes few competitors can match the knowledge and expertise within the firm's product supply division which delivers a complete range of hydraulic fittings, tubings, clippings, flexible hoses as well as component valves, motors and pumps.

Mr Seddon said V&A's mature supply chain and extensive partner network built around the Liverpool City Region along with global transport links make it ideally suited to national and international trade. "Our product supply division currently accounts for around 10% of total turnover but we believe our relaunched offering could contribute closer to 50% of total sales," said Mr Seddon.

"We have restocked our storage containers with popular products in anticipation. We have recently received orders from India, China, South Korea and Iran and are now looking to drive greater awareness of the service we can provide worldwide.

"Through a combination of unique factors V&A Hydraulics is able to identify, source and supply any form of hydraulics equipment with great accuracy, speed and efficiency," said Mr Seddon. "As well as straight forward product supply we also have the expertise to manufacture bespoke hydraulic assemblies made to each customers' own requirements.

"V&A is among the most skilled and knowledgeable hydraulics companies in Britain and we are keen to use this core strength to drive our newly launched product supply division. We have a team of 12 engineers who all have more than 25 years' experience in the trade.

"Historic industry knowledge is crucially important when it comes to product supply. For instance, the maritime ship repair sector relies heavily on sound, trustworthy, reliable and competent subcontractors. We frequently come across equipment which people cannot identify due to the fact a great deal of older hydraulics equipment is no longer in production.

"Part identification can be a complex, convoluted web, and this historical knowledge cannot be bought or found on the internet. With the average age of the global vessel fleet between 15 and 30 years old, there is a high demand for engineers who have knowledge of parts dating back to this time. "Our longevity in the marketplace has also helped us to develop a strong supply chain and partner network which enables us to deliver a consistent and reliable service. We further benefit from first class transport and logistics services with a variety of land, air and sea freight feeder services."

Although around 80% of V&A's work is in the maritime sector, the firm is also diversifying by targeting other sectors too – including industrial, manufacturing and engineering, papermills, aerospace and automotive.

It largely carries out installation, servicing and repair, and also delivers design, pressure testing and system flushing. V&A recently delivered a complex flushing service for a manufacturing system to Victrex – one of Britain's biggest polymer manufacturers.

SHIP MANAGEMENT:

BASSNET:

In a comprehensive tender process involving the foremost fleet management software companies, Holland's Anthony Veder recently came to the same conclusion as other shipping industry leaders, such as Stolt Tankers, NYK, K Line, Wallenius, Wilhelmsen and CMA CGM, by choosing the integrated BASSnet software suite for its 29 vessels and offices.

"The selection of the BASSnet software is an important strategic element for Anthony Veder, being an integrated shipping company with a wide range of high-quality gas tankers", says Alcuin de Weert, Fleet Director at Anthony Veder. He further explains, "Safe, reliable and flexible services are the core focus areas for Anthony Veder in developing long-term relationships with clients. Quality will always prevail over quantity, yet we aim to achieve responsible growth and further improve our market position. For this, we need a comprehensive software suite which is robust and flexible for our company to continuously adapt to changing internal and external circumstances."

Following a thorough assessment process, Anthony Veder demonstrated its endorsement by signing up for the full BASSnet package. With BASSnet encompassing all key aspects of fleet management in one complete solution for the maritime and offshore industries, Anthony Veder will have an intuitive suite in place to streamline its operations across its fleet of 29 vessels. As of current, the company is in the midst of implementing the Maintenance and Procurement modules of the BASSnet suite where Risk Management, Safety Management, Document Management and other modules will then follow.

"We are proud to get Anthony Veder as our customer. They are highly quality-conscious, demanding and have done a very thorough evaluation of different maritime software products and vendors' capabilities. To win their confidence is a great recognition for us", says Haakon Dalan, BASS' Vice President of Sales.

"The fact that BASSnet is fully developed and matured on up-to-date technology – Microsoft.NET – was important to Anthony Veder. As BASSnet was one of the first maritime software on this technology platform, it has been well tested and proven over many years with high volumes of live transactions by large customers. This provides us with the basis to focus on our business processes rather than IT", says Benne Engelen, ICT Manager of Anthony Veder.

Erik-Jan Verdegaal, CFO of Anthony Veder, adds, "Our ambition is to be a gas shipping company that leads in safety, service and sustainability, and we are enthusiastic about our switch to the BASSnet software. As a company with an expanding fleet, we believe it is crucial to have a high-quality fleet management system that can help us offer a reliable service to our customers."

Securing Anthony Veder as a customer marks a year-end success for BASS in 2015 following a string of agreements with other reputable clients. "This agreement with Anthony Veder represents a milestone for BASS, setting up a bright business outlook forward. It is a significant deal in terms of quality, value and size that will strengthen our venture in the European market," says Per Upsaker, CEO of BASS. "We are delighted to welcome Anthony Veder as a BASS customer and to develop a long-term relationship with such a highly recognised and respected company."

FEATURE:

More doom and gloom as new contracting plunges to mid-1980s levels:

Analysis of the Clarksea Index over the last two-and-a-half decades is a depressing business. The index, which represents average earnings of tankers, bulk carriers, container ships and gas carriers, is compiled weekly by analysts at Clarkson Research in London. Between 1990 and 2000, the index averaged about US\$12,000 a day, nearly doubling to \$22,000 a day from 2000 to 2010. Since then, though, the index has fallen back again to about \$12,000 a day but plunged recently to less than \$9,000, a level described by shipping economist Martin Stopford as the top of the 'earnings resistance band' where ship operators sink into seriously red figures.

Speaking to journalists recently at a pre-SMM press conference in Hamburg, Stopford described some of the industry's current woes. For a start, he said, just take a look at the big picture. Rates of growth in global sea trade are steadily slowing down. From an annual average of more than 4% in the first six years of this century, growth in seaborne trade – with a couple of anomalies in 2009 and 2010 – has continued to drift downwards. This year, Stopford predicted, growth will fall to just 2% compared with an estimated 2.6% in 2015.

At an industry level, weak trade growth and a slowing in the rate of seaborne trade expansion have resulted in disastrous overcapacity in most of the main markets except tankers. Compounded by the astonishing collapse in the price of oil, serious over-tonnaging is now evident in the dry bulk market, the container sector and the offshore energy business. Some suggest that these surpluses could continue for years to come in the same way that surplus supply overshadowed shipping throughout the mid-1980s.

Stopford went further. He said that world shipbuilding capacity is still 50% greater than required, and this despite the closing of 581 uneconomic shipyards, leaving 423 facilities functioning on a 'go-slow' business with their bosses urgently seeking out alternative revenue streams. Shipyards already shut down accounted for just 20% of construction capacity, Stopford said, because many of them were relatively small. But the remaining yards still provided annual building capacity of about 100m dwt, about 50% more than the average historical demand of 65m dwt.

Shipbuilding overcapacity is more evident than ever as new contracts have virtually dried up over the first half of this year. This will cause a spell of extreme discomfort for a wide range of shipping enterprises including class societies, engine builders and equipment suppliers. Only 71 orders for new ships were signed during the first quarter of the year, according to industry statistics, and shipyards have signed only a small number of new contracts since April. It is three decades since new contracting last fell to this level.

Not all is doom and gloom, however, according to Stopford, who believes that shipping is entering a new era in which digitalisation and connectivity will underpin a transformation in the efficiency of shipping operations. Comparing the business to Formula One in which many aspects of racing car operation are controlled by computers, Stopford said that smart technology will now enable more efficient and safer sea transport. Marine transportation systems, he said, will become streamlined in the same way as companies like Amazon, UPS and Uber in which Saudi Arabia's wealth fund has recently invested \$3.5bn.

Shipping is often criticised for its inherent resistance to change. But the digital revolution is unstoppable, Stopford believes. He cited new satellite communications services such as Inmarsat's Fleet Xpress which provides high-throughput Ka-band services around the world, telematics sensors, remote monitoring, data storage and processing, smart-phone apps and greater automation as key elements in a new era of smart shipping. However, not everyone yet appreciates the scale of the transformation and Stopford warned that those who fail to adapt will be left behind for ever.



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ON WATCH:

- **Palfinger Group** has signed the acquisition of 100% of the shares in Herkules Harding Holding AS and thus, the globally operating Harding Group, headquartered in Seimsfoss, Norway. Palfinger Marine operates now as top player for deck equipment and handling solutions within the marine industries. Closing after approval of the authorities is expected in the next weeks. Harding is one of the leading suppliers of lifesaving equipment and lifecycle services for maritime installations and ships. With this acquisition, Palfinger Marine completes its product range with lifeboats and broadens its portfolio with rescue boats and davit systems. With the joint set-up Palfinger Marine will control a global service set-up of 350 people in 18 service stations.
- The **Sustainable Shipping Initiative**, a pioneering coalition of companies from across the global shipping industry, has announced the appointment of Ian Petty as its first ever General Manager. The new appointment reflects the SSI's strengthening in depth and wealth of industry experience, as well as its commitment to providing further resource to delivering its Vision of creating a truly sustainable shipping industry by 2040. Ian Petty will take responsibility for the day-to-day running of the SSI and continuing to drive this agenda forward. He will be working closely with SSI members to deliver against core elements of the Roadmap, and engaging with and building strong coalitions and support for change within the industry.
- For the past 15 years, **GAC** has worked with a sub-agent in Namibia but with its growing oil & gas expertise, lay-up services newly introduced in Namibia and South Africa, and growing cargo trades between the country and other African countries, it was decided that the time was right to expand. Starting today, the company provides a portfolio of ship agency services for vessels calling at the country's ports, from its central office close to Walvis Bay port. That service package includes bunker fuel supplies, offshore support, dry-docking, project logistics and husbandry, as well as lay-up and warm stacking support and for all sorts of vessels from liners, oil & gas tankers and more. Managing Director Eric Barnard says the new office gives clients the additional peace of mind that comes from dealing directly with the GAC Group.
- Japan's **ClassNK** has opened its new Nantes Office in western France with operations commencing June 1st 2016. This marks the third exclusive survey office for ClassNK in France. ClassNK has already established survey offices in Dunkerque and Marseille. Through the opening of its latest office, ClassNK will improve the efficiency of its ship surveys in the Bay of Biscay region, allowing it to swiftly respond to clients' needs throughout the country. ClassNK will continue to expand its worldwide survey office network in order to meet its clients' requests and provide timely and high quality services.
- The President of the **Singapore Shipping Association (SSA)** Esben Poulsson has been elected as the new Chairman of the International Chamber of Shipping (ICS). Mr Poulsson was elected at the ICS Annual General Meeting in Tokyo. He takes over from Masamichi Morooka, who has stood down after four years in office. Speaking about his new role Mr Poulsson expressed his honour at being elected as the next ICS Chairman. He said, "Rather than viewing this as a personal achievement, I believe my election is more a reflection of Singapore's stature as a respected flag state and major international maritime centre. "International engagement and outreach has been, and remains, very much part of the SSA strategy, as approved by this and the previous Council, and is something for which we sense widespread membership support." It is status quo at the Association with Mr Poulsson remaining as President of the SSA and assisted by Vice Presidents Lisa Teo and Tan Chin Hee, at least until the end of his current term in June 2017. As ICS Chairman, Mr Poulsson identified two main challenges that he will focus on, "The first is working with IMO Member States to make further progress addressing international shipping's CO₂ emissions, including our proposal that IMO should develop an 'Intended IMO Determined Contribution' for reducing the sector's CO₂, similar to the commitments already made by governments as part of the COP21 Paris Agreement.