

# SRN

## Ship Repair Newsletter

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The moonpool on-board the  
*FPSO Aoka Mizu* (See Shipyards)

Speaking at last week's IUMI 2017 conference in Tokyo, leading international marine and engineering consultancy and survey company – LOC Group – called for greater international co-operation to better manage maritime casualties.

Addressing a global audience of marine insurers, Captain Jonathan Walker, a consultant from LOC's Singapore office, raised concerns over the increasing trend to criminalise seafarers following a casualty; the lengthy period it was now taking to arrange salvage and complete the investigative process; and the growing requirement to remove wrecks irrespective of cost or environmental impact.

To help streamline the salvage and investigative process immediately following a major maritime casualty and to protect innocent seafarers, Capt Walker said, "We recognise, absolutely, the rights of sovereign states and the need to comply with all national laws but we would like to see a process, most likely driven by IMO, that requires sovereign states to clarify their jurisdictions within their governments prior to an incident. In the immediate aftermath of a major incident, it is vital to understand which authority we are dealing with. Similarly, those authorities need to retain experts who understand the maritime sector and the implications of a shipping casualty."

He continued, "We would also like to see IMO develop a Marine Investigation Code to govern shipping accidents. It should be completely transparent and consistent across national borders. Importantly, governments should commit to it and not interpret its guidance to suit national agendas.

"IMO, together with the International Labour Organisation and International Transport Workers' Federation, should develop early release procedures for seafarers under investigation by member countries. There are many cases where seafarers have been detained for many months even though immediate investigations had shown them to be completely without fault. The industry should not allow mariners to be criminalised in this way".

Walker pointed out that only 35 IMO member states had signed the Nairobi International Convention on the Removal of Wrecks, 2007, which clearly detailed how wrecks should be removed. Significantly, the Convention stated that actions should be 'proportionate to the hazard' and that activities "should not go beyond what is reasonably necessary". If this was agreed internationally, said Walker, then the requirement by some authorities to remove wrecks, whatever the cost and environmental impact, would be eliminated.

In general, enhanced and regular communication between all parties – governments, maritime authorities, shipping companies, regulators, insurers and others – is required to ensure future shipping casualties were better managed, the environment protected, and seafarers' rights secured.

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## ROG SHIP REPAIR:

When a Floating Production & Storage Offshore (FPSO) vessel was due to be towed from Europe to the Middle East, it was expected that she would encounter problematic weather conditions - it was then that Holland's ROG Ship Repair, Rotterdam came to the rescue.

The 89,184 dwt, 248.1 m long FPSO **Aoka Mizu**, which is owned and operated by Holland's Bluewater Energy Services, has recently been assigned a new contract.

She will be utilised for the early production system (EPS) phase of the development on Hurricane's offshore field in the North Sea.

The contract for the upgrade of the 30,000 bpd, **Aoka Mizu**, was awarded to Dubai's Drydocks World and the vessel needed to be towed from Gdansk, in Poland, where she was in lay-up, to Dubai. During this passage, high sea states were expected and therefore the turret moonpool on-board this big blue lady had to be closed off.

ROG Ship Repair was awarded the fabrication and installation of the moonpool cover, with delivery required in a very short lead time. It took ROG just two weeks working 24/7 to fabricate this steel structure according to the highest quality standards, in its workshops in Waalhaven.

After fabrication, the cover was transported to Maasvlakte, Rotterdam, where it was positioned and coordinated on the seabed, ready and waiting for the arrival of **Aoka Mizu**. When the FPSO arrived, under tow, she was moored in a position precisely above the cover. ROG then came on-board to mount the hoisting arrangements.

Before lifting the cover into the **Aoka Mizu**, air pressure hoses were connected underneath the cover to ensure that it was not sucked onto the seabed. Divers connected the cover to the hoist and ROG began the controlled lift, which hoisted the moonpool cover into the correct position. Once in position, sea-fastenings were installed and secured.

The job was well-prepared and precisely executed, and successfully within the contracted time frame following the highest safety standards.

ROG Ship Repair has open sea accessibility and is strategically located in the main port of Rotterdam with ISPS certification. Alongside the jetties there are lay-by facilities for (marine, sea-going and jack-up) vessels up to 320 m length, 60 m breadth and 9.5 m draft. ROG offers heavy lift crane capacity and a large yard area of more than 21,000 m<sup>2</sup> with a fully equipped workshop.

The **Aoka Mizu** was originally built in Japan's Hitachi Zosen shipyard, Ariake during 1998 and 1999. The hull is a further development of the FPSO **Bleo Holm** and FPSO **Glas Dowr** tanker hulls, and was already adapted to be finished as an FPSO. The unfinished hull was towed from Japan via Labuan (Malaysia), where she was laid up for several years, and then towed to Singapore's Sembawang yard for installation and integration of the topsides oil, water and gas processing and accommodation modules from 2006 until 2008.

In August 2009, the **Aoka Mizu** commenced production operations on the Ettrick field on the UK part of the continental shelf of the North Sea for Nexen. In 2011 the Blackbird field was tied in while the **Aoka Mizu** remained moored offshore with a short oil production stop of only a week.

The **Aoka Mizu** arriving in Rotterdam

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## EDR SHIP REPAIR:

Following the closure of Antwerp Ship Repairers, located inside the port of Antwerp in Belgium, the repair facility is now operated by EDR Ship Repair. Italian shipowner MSC has always supported this facility and, during this week, the 22,308 dwt containership **MSC Amy** was in the yard for general repairs.

The yard operates a total of six drydocks, the largest having a length of 312 m.

The **MSC Amy** in EDR Ship Repair, Antwerp



## N-KOM:

Qatar's N-KOM is seeing a steady demand for repair and maintenance services at its facility, with the shipyard consistently winning new and repeat clients with its track record of safe, quality and timely deliveries.

N-KOM's expertise in handling complex repairs for the world's largest gas tankers further demonstrates its extensive capability.

NYK LNG Shipmanagement's 135,169 m<sup>3</sup> LNG tanker **Al Jasra** was recently in the yard for repairs. Maintenance works involved hull treatment and painting, cargo tank examination, overhauling of LNG cargo and spray pumps, and propeller cleaning and polishing.

Nakilat Shipping Qatar (NSQL)'s 215,000 m<sup>3</sup> Q-Flex LNG tanker **Al Gharaffa** underwent hull blasting and painting, overhauling of various work such as main engine cylinder cover and piston as well as LNG cargo and spray pumps, cargo tank repairs, central forward cooler cleaning and main and cargo switchboards.

During 2017, N-KOM has repaired four LNG tankers from Pronav Ship Management, a trusted client since N-KOM began operations seven years ago. Recently in the yard for repairs was the 210,110 m<sup>3</sup> Q-Flex LNG tanker **Al Ghariya**, which underwent maintenance involving hull treatment and painting, overhauling of main engine auxiliary blowers and steering gear pumps, main engine exhaust pipes renewal, and diesel generator exhaust silencers.

Additional vessels in the yard for repairs recently include Teekay Shipping's 217,000 m<sup>3</sup> Q-Flex LNG tanker **Al Kharsaah**, and MOL LNG Transport's 210,100 m<sup>3</sup> Q-Flex LNG tanker **Al Aamriya**.

N-KOM continues to see strong interest from Greek ship-owners for its repair services, with a variety of tankers, gas tankers and bulk carriers calling for repairs at the facility.

Euronav Ship Management (Hellas)'s 299,421 dwt VLCC tanker **Antigone** underwent drydocking and repairs including high pressure hull washing and rudder repairs such as fabricating and welding lugs in way of rudder position and propeller polishing.

Major dry docking and repairs were also carried out on-board Maran Tankers Management's 306,283 dwt VLCC tanker **Maria A. Angelicoussis**, which underwent maintenance such as hull treatment and painting, overhauling of main engine fuel pumps, ballast valves repairs.

During the past two months, N-KOM saw an increase in the number of repairs carried out for offshore vessels, with 25 repairs undertaken for clients such as Halul Offshore, Stanford Marine, Global Marine Services, Topaz Marine, Bourbon Offshore, Posh Fleet, Smit Lamnalco and Nakilat Svitzer Wijsmuller (NSW).

#### DRYDOCKS WORLD/DUBAI MARITIME CITY:

It has been reported that UAE's DP World has entered into a deal to buy two other Dubai state-owned maritime companies for a total of \$405m.

The Dubai-based ports operator will acquire Maritime World, the 100% owner of Dubai Maritime City (DMC), for a purchase consideration of \$180m, and 100% of Drydocks World by means of a capital injection of \$225m.

Both deals are expected to close before the end of the first quarter of 2018.

Drydocks World Dubai



#### BURGESS MARINE:

Britain's Burgess Marine has announced further growth in East Anglia as the Lowestoft maritime sector booms. Burgess acquired the Small & Co shipyard on Commercial Road in Lowestoft in October 2015. The business operates a 76.5 m by 14.5 m drydock and a 70 m layby berth at the site, which is in the ABP owned and operated Port of Lowestoft.

After a restructure earlier this year, the team at Burgess Marine Lowestoft have successfully grown the business in support of key customers such as Boston Putford, Fugro, Windcat Workboats, Dover Harbour Board and numerous major commercial, civil and tourist operators on the Thames.

Recently the business has completed major refit works for the UK Border Force in Malta. Today it is supporting two significant projects - the docking of **Incat 057** in Cherbourg and the launch of a 30 m x 12 m x 1.7 m pontoon, built locally in the old Brook Marine fabrication shed, weighing approximately 110 tonnes.

Both of these projects are of major significance and total circa £2m of contract value. Paul Kirby, the general manager of Burgess Marine Lowestoft, said, "Having successfully restructured the business earlier this year it's great to see further growth locally and we are clearly benefiting by being part of the bigger Burgess Marine business. To have built the Thames pontoon here in Lowestoft is fantastic and furthermore the team have greatly enjoyed supporting works in both Malta and today in France."

Nicholas Warren, Burgess Marine chief executive officer, added, "We're huge fans of the team in Lowestoft and the local customer base. Whilst there have been some issues regarding the transfer of the lease to

Burgess Marine from Small & Co, these have all been resolved to all parties satisfaction, and both ABP and Burgess Marine are now looking forward to continuing their professional working relationship in Lowestoft and across the UK. We'll continue to work our hardest for the port and all our local customers."

Burgess Marine leases land from ABP in Southampton and Lowestoft. Recently its sister company Meercat Workboats built a 15 m workboat for the Port of Southampton.

The OSV *Putford Achilles* entering drydock at Lowestoft



## DAMEN SHIPYARDS GROUP:

Holland's Damen Shipyards Group (DSG) has announced plans to establish a Service Hub in the Russian port of Novorossiysk in a Letter of Intent (LOI) signed with Delo Group. The primary aim of the Service Hub will be to optimise the services provided to the growing number of Damen vessels operating in the region in addition to strengthening DSG's cooperative relationship with Delo Group of companies.

Part of DeloPorts (which is, in turn, part of the Delo Group), Aleksino Port Marina Shipyard is a ship repair facility located in the Port of Novorossiysk, on the north-eastern coast of the Black Sea.

The LOI was signed by representatives from the two companies, with the open-ended agreement stating that co-operation between DSG and Delo Group of companies regarding the new Service Hub will commence before the end of 2017.

DSG's decision to set up the new Service Hub is based in part on the large number of Damen-built vessels that operate in the Black Sea area. Currently more than 30 vessels that Damen built are operating in the region. Having a Service Hub here will allow Damen to react very quickly to any service or maintenance issues, by which Damen ship owners can increase the uptime of their vessels. An on-going service programme can also lengthen the entire lifetime of a vessel while reducing the Total Cost of Ownership.

This current number of Damen vessels operating in the area is set to increase in the coming months, as Delo Services (also part of Delo Group of companies) takes delivery of three Damen ASD 2310 tugs in November. Handover of a fourth ASD 2310 is scheduled for 2018.

(Left to right) Igor Yakovenko (CEO JSC DeloPorts), Bart Kaal (Regional Service Manager, Damen Shipyards Group)



## CERNAVAL SHIPYARD:

Currently undergoing emergency repairs at Spanish shiprepairer CernaVal's Algerciras Shipyard is the 50, 59 dwt 2009-built containership *Tanja Rickmers*. This vessel has suffered propeller shaft failure and drydocked at the yard on September 7<sup>th</sup> for repairs that are expected to take one month and involve the dismantling of the vessel's main engine.

Other vessels undergoing repair at this yard the week beginning September 18<sup>th</sup> included:

- **Detroit Jet** – 2,869 gt 2000- built fast ferry, owned by Morocco's Inter Shipping
- **Naavig8 Seprum** – 25,198 dwt 2017-built chemical tanker, owned by London-based Navig8 Group

#### WORLD MARINE ALABAMA LLC:

Following the sale of its rig repair yard in Pascagoula, Mississippi, US shiprepairer World Marine LLC is now concentrating activities at its shipyard in Mobile, Alabama.

Undergoing repair in the yard's Panamax capacity floating dock the week beginning September 18<sup>th</sup> was Stolt Tankers' 25,024 dwt 2003-built chemical tanker **Stolt Betula**, while alongside was the 9,640 gt 1980-built offshore pipelayer **Ocean Constructor**, owned by Stabbert Maritime's Seattle-based Ocean Sub-sea Services.

Meanwhile, earlier this year the Mobile yard completed the intense 49 day drydocking and repair of the 8,520 m<sup>3</sup> capacity 1981-built trailing suction hopper dredger **Stuyvesant**, owned by California-based Dutra Group. Work on this dredger involved 60 tons of steel renewal along with repairs to pipes, machinery, as well as tank cleaning and coatings work.

#### SEMBCORP MARINE:

Singapore's Sembcorp Marine has won the inaugural Sustainability Award at the Securities Investors Association Singapore (SIAS) 18<sup>th</sup> Investors' Choice Awards this evening for its continuous commitment towards corporate responsibility and sustainable environmental, social and governance (ESG) practices.

The Group was among eight mainboard-listed companies in Singapore to receive the new Sustainability Award, jointly presented by SIAS and the National University of Singapore Centre for Governance, Institutions and Organisations (NUS CGIO).

Companies shortlisted for the award were evaluated on a number of sustainability considerations, including leadership and culture, ESG factors, framework and materiality assessment, and stakeholder engagement. The winners were selected following investor-centric research and a rigorous screening process by SIAS and NUS CGIO, with inputs from Thomson Reuters and a selection committee comprising industry leaders, analysts, fund managers, journalists, brokers and professionals. The evaluation also took into account feedback from retail and institutional investors.

Wong Weng Sun, President & CEO of Sembcorp Marine, said, "Sustainability is embedded in Sembcorp Marine's core values and culture. Corporate governance, environmental sustainability and social growth are integral to our business strategy and we are committed to managing these priorities well in order to create long-term value for our stakeholders.

"Since FY2011, Sembcorp Marine has gone beyond regulatory compliance to disclose our ESG performance according to international sustainability reporting standards. We believe that reporting these sustainability aspects in addition to our financial performance will give shareholders a deeper understanding of our business. Our active investor and stakeholder engagement, executed through a variety of channels and platforms, also promotes dialogue."

Over the years, Sembcorp Marine has embarked on a series of strategic initiatives to drive sustainable business growth.

The new-generation Sembcorp Marine Tuas Boulevard Yard, for example, is equipped with a 120,000 m<sup>2</sup> extensively automated steel structure fabrication workshop that enables the Group to strengthen its production capabilities and diversify into new areas across the oil and gas value chain. The yard boasts green features that optimise energy usage and reduce its environmental footprint.

With the move towards natural gas as a cleaner and more sustainable energy source, Sembcorp Marine

has introduced a number of innovative solutions for the gas value chain. These include the Gravifloat near-shore LPG and LNG terminal solutions for applications such as liquefaction, regasification, storage and power generation. Gravifloat terminals are more flexible and cost-competitive alternatives to existing onshore and floating facilities as they are redeployable, modular and scalable.

Through its continuous research and development efforts, Sembcorp Marine has also developed a suite of green solutions for the offshore and marine industry, including the award-winning Semb-Eco LUV Ballast Water Management System which utilises ultra-violet and patented bio-fouling control technology to effectively disinfect invasive aquatic species in challenging water conditions.

As part of its community outreach and engagement, Sembcorp Marine works closely with stakeholder partners and educational institutions to promote environmental sustainability through programmes such as the Green Wave Environmental Care Competition. The Group also has community care programmes, including the School Book Assistance Grant (SchoolBAG) which supports students from financially disadvantaged families.

Within the company, Sembcorp Marine offers employees equal opportunities for personal and professional growth.

The Group also works closely with customers, vendors and other partners to improve workforce training, skills upgrading, and occupational safety and health practices at the yard.



## MACHINERY:

### DNV GL:

Advances in alternative power engineering, especially in battery technology, are enabling new applications which are of great interest to the offshore oil and gas sector. In two projects DNV GL is co-operating with industry partners to determine how the industry can benefit.

Offshore vessels offer an attractive business case for hybrid power solutions incorporating batteries. In many operational situations the on-board power demand fluctuates greatly, placing extreme loads on the generating equipment. While the common diesel-electric power and propulsion systems are quite flexible, they tend to operate inefficiently when running at very low loads for extended periods of time while occasional peak loads are expected. Furthermore, battery systems can provide backup power to meet the strict redundancy requirements for dynamic positioning (DP).

During the conference of the Maritime Battery Forum in Flåm, Norway, a number of key challenges for battery systems on-board ships were discussed in depth. Manufacturers must meet a variety of regulations and requirements, and standardisation is an urgent concern to overcome cost hurdles. Questions regarding economic feasibility, battery capacity, reliability and safety, and specific applications must be answered for



the industry to embrace the technology.

These are precisely the topics two industry initiatives have been addressing: FellowSHIP IV, a two-year joint project of DNV GL, Wärtsilä Norway and Eidesvik Offshore, is studying the applicability of maritime hybrid battery power systems under a life cycle perspective; and the recently completed joint industry project (JIP) 'Hybrid Power' formed by DNV GL, Taratec Corporation, BG Group, Seacor Marine, ABB, Samsung Heavy Industries, Cummins, C-Rate Solutions and the University of Sao Paulo, has assessed barriers to the adoption of hybrid power, associated technical challenges and potential benefits.

The FellowSHIP IV project, which is scheduled to end in 2017, uses continuous condition and performance measurements conducted on a 442 kWh Li-ion battery system on-board the PSV **Viking Lady** to gain insight into the actual operation of a maritime battery system. In addition a variety of simulations are being performed to draw conclusions regarding fuel savings, emission reductions, power management strategies, design improvements, operational benefits, cost-saving potential and competitive advantages.

The Hybrid Power JIP, tasked with challenging established industry practices and determining the best role for alternative power, has identified specific challenges and quantified all benefits of hybrid power systems. The team found that hybrid power architectures are technically feasible for tugs, OSVs, shuttle tankers, and drill ships, with viable return on investment (ROI) and payback periods. In view of the current economic climate in the oil and gas sector, retrofits are the primary market opportunity while newbuilds will move into focus once oil prices recover. There are currently about 52 DNV GL-classed vessels in operation or under construction with Li-ion batteries as a power source.

**Fuel savings and emission reductions**

The JIP team analysed four ship types with selected operational profiles to quantify the fuel, emissions, and reliability benefits of hybrid power, including dynamic positioning, industrial services such as drilling, propulsion and backup power. The result is a multifaceted value proposition - operational efficiency is improved by balancing diesel engine loads and avoiding wasteful idling periods; reducing engine running time also cuts CO<sub>2</sub> and other noxious emissions. Redundant engines may be dispensable if the battery system functions as a spinning reserve. Avoiding cycles of extreme engine loads reduces engine wear and maintenance costs and may allow maintenance cycles to be extended. What is more, the ability to close the tie switch between buses can greatly improve the hybrid value proposition.

Batteries can be optimised either for fuel efficiency or for backup power, depending on the given application. In hybrid DP operations, batteries can supply load for approximately one third of the operating time, reducing generator cycles and responding faster than a generator set. As for backup power applications, economic feasibility depends on the ratio of investment cost vs desired duration of backup power availability.

Fire safety is a key concern for battery rooms, which must be designed to be functionally independent of the conventional architecture of the vessel, with fully independent ventilation, cooling and fire suppression systems and a sophisticated, integrated control system.

Payback times for battery systems range between zero and 7,700 engine operating hours. Efficiency improvements of up to 34 per cent were achieved in model studies. Hybrid power technology thus offers tangible benefits; whether they can be reaped will depend on the regulatory environment and a high-quality supply chain.

The **Viking Lady**



**WÄRTSILÄ:**

Finland's Wärtsilä and Germany's Flender (Siemens AG, Mechanical Drives) have reached an agreement regarding the contract manufacturing of Wärtsilä's marine gear box portfolio. With immediate effect, the assembly and testing of the gear boxes will be moved to the Siemens Mechanical Drives facilities in Voerde, Germany.

By taking advantage of synergies with processes developed at the Siemens plant, the new arrangement will secure the quality and delivery punctuality of the Wärtsilä gear boxes and will thus provide greater customer value. The design and technical specifications, as well as the delivery arrangements, project management, and interfacing with shipyards and owners will continue to be Wärtsilä's responsibility.

"We believe that we have found the best possible partner for ensuring that our gear box offering is of the expected quality, and for being able to serve our customers in an efficient, reliable, and on-time way. We wish to emphasise that it is only the production arrangements that are being revised; all the terms and conditions of our contracts with customers remain unchanged," says Arto Lehtinen, Vice President, Propulsion, Wärtsilä Marine Solutions.

"We are pleased to be cooperating with Wärtsilä in the production of their marine gear boxes. The products are excellent and they fit well with our manufacturing programme at this facility," says Felix Henseler, Executive Vice President, Applications, Siemens Mechanical Drives.

The gear box is a vital link between a ship's main propulsion engine and the controllable pitch propeller. Several configurations and sizes are offered according to the actual vessel requirements. Wärtsilä's gear boxes come in both single and two-speed variants, the latter being of particular benefit to enhance the performance of certain types of vessels.

Wärtsilä and Flender (Siemens AG, Mechanical Drives) have reached an agreement regarding the contract manufacturing of Wärtsilä's marine gear box portfolio

**KONGSBERG MARITIME:**

A new integrated 'Full Picture' technology delivery is set to enable significant operational efficiencies for the Mexmar's PSV, **Seacor Maya**. Mantenimiento Express Marítimo is Seacor Marine's joint venture in Mexico, which operates 15 offshore supply vessels. The contract, signed this September for delivery in January 2018, focuses on the integration of a sophisticated new hybrid power solution designed by Kongsberg to assist Seacor Marine and Mexmar in meeting strict environmental regulations by decreasing CO<sub>2</sub>, NOx and SOx emissions, with the added benefit of reducing operating costs through reduced fuel consumption.

Seacor Marine and Mexmar have chosen Kongsberg as a single supplier for this turnkey delivery, including supply and full integration of the energy storage system with a custom designed Energy Control System (ECS), and the existing Dynamic Positioning (K-Pos DP-22) and Integrated Automation System (K-Chief 700 IAS), both of which will be upgraded as part of the contract. The overall solution adds safety and efficiency beyond conventional energy storage.

The upgraded K-Pos DP-22 system functions include Power Load Monitoring and Blackout Prevention. The system will display all battery data including capacity and status, all of which support the operational

continuity of **Seacor Maya** and improve its ability to maintain position on DP even after a worst-case single thruster or power failure.

The ECS is made possible by combining existing and upgraded K-Pos, K-Chief and K-Thrust functionality through tight synchronised integration to deliver unique new features at the cutting-edge of DP technology. Core components of the system include Dynamic Load Prediction, Dynamic Inertia Control and Dynamic Hybrid Control combined with an Automatic start/stop strategy. This optimisation enables significant fuel efficiency while also extending battery life, lowering lifetime costs and maximising the investment in hybrid power. The contract includes an option for a second vessel.

“On completion of the upgrade, **Seacor Maya** will feature one of the most advanced powertrain solutions of any vessel at sea,” said Tim Clerc, Manager of Engineering, Seacor Marine. “The hybrid power solution has the potential to significantly reduce operational costs while at the same time provide access to new functionality for improved safety and effectiveness of DP operations. The solution is complex, but Kongsberg’s focus on combining established, class-leading technologies through deep integration delivers a highly reliable platform for Seacor to benefit from the use of cutting-edge hybrid power.”



#### MAN DIESEL:

MAN Diesel & Turbo’s CEO, Dr Uwe Lauber has presented Gerd Wessels, Managing Owner of Wessels Reederei with a take-over certificate marking the formal conclusion of the **Wes Amelie** LNG conversion project.

Gerd Wessels said, “This pioneering project marks a milestone in the European container feeder market, and MAN has impressively proven that existing engines can be converted to LNG operation with a tremendous effect on exhaust emissions and the environment.”

The project involved the retrofitting of the 1,036-teu feeder container ship’s MAN 8L48/60B main engine to a multi-fuel, four-stroke MAN 51/60DF unit that enables dual-fuel operation – the first such conversion of its type the world has ever seen.

Christian Hoepfner, General Manager of Wessels Reederei, said, “The **Wes Amelie** operates in the highly regulated Nordic and Baltic Seas. Since they are both within Emission Control Areas, the ship needs to meet the highest environmental standards and strictest limits for emissions. By converting to a low emission fuel, we are safeguarding the future of this container ship as well as our own competitiveness in the market.”

Stefan Eefting – Head of MAN PrimeServ in Augsburg – also attended the ceremony and said, “We are very happy to have successfully completed this project with the great co-operation of our partner, Wessels Reederei. In doing so, we trust that the dramatic reduction in emissions will mark the beginning of a trend towards the adoption of LNG as an environmentally friendly fuel within the maritime sector.”

“By providing customers with the technology to retrofit their existing fleet, we are driving what we call the maritime energy transition”, adds Dr Uwe Lauber, CEO of MAN Diesel & Turbo. “There are roughly 40,000 cargo vessels in operation worldwide. If we are serious about decarbonisation and want the shipping industry to be climate neutral by 2050, we need to take action today.”

The dual-fuel conversion has enabled the **Wes Amelie** to significantly reduce its SOx emissions by >99%, NOx by approximately 90%, and CO<sub>2</sub> by up to 20%. The vessel now meets both the Tier II and Tier III emission requirements set by the International Maritime Organisation (IMO).

Work was carried out at German Dry Docks in Bremerhaven in co-operation with gas-specialist, TGE Ma-

rine Engineering, who provided tank and LNG components.

Bureau Veritas classed the conversion. Wessels and MAN Diesel & Turbo originally signed the retrofit contract with MAN Diesel & Turbo at the Europort exhibition for maritime technology in November 2015. The **Wes Amelie** was constructed in 2011 and has already re-entered service on its usual route between the North and Baltic Seas.

The *Wes Amelie*



#### ROYSTON:

UK's Royston Diesel Power has successfully completed the specialist overhaul and maintenance of engine systems and components for a specialist Royal Navy support vessel operated by Serco Marine Services. Serco's **SD Faithful** is a twin tractor unit tug based at Devonport where it is used for a range of 'push-pull' ship handling operations.

Working to tight timescales to reduce service downtime for the vessel, diesel engineering specialist Royston recently completed the top end overhaul on its two Ruston 6RKCM main engines and the full overhaul of a Cummins 6CT8.3D(M) generator.

The work was carried out at the A&P dockyard in Falmouth, with the engine overhaul including the removal of all the fuel injectors, main engine sea water and fresh water pumps, as well as four cylinder heads and charge air coolers.

The components were shipped back to Royston's Tyneside engineering workshop for cleaning and overhaul while the on-site engineers removed the four pistons from the main engines for inspection and witnessing by a Lloyds Register surveyor.

With the Cummins generator, a full strip down enabled the cylinder head to be sent to the Royston workshop for reconditioning which included the fitting of new valves and valve guides. In addition, the sea water pump and cooler were also cleaned and reconditioned.

On site, all major generator components were renewed using genuine Cummins parts. This included new pistons, cylinder liners, main bearings, oil pump and water pump, as well as new seals and gaskets.

On completion of the engine overhaul and rebuild work, the **SD Faithful** completed successful sea trials and was returned to service as part of the Serco Marine Services support contract.

Royston diesel power has successfully completed the overhaul and maintenance of engine systems and components for **SD Faithful**



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## PAINTS & COATINGS AND ANTI-CORROSION:

### CATHELCO:

Cathelco is supplying hull corrosion protection systems for three trawlers which mark the first stage in modernising the Russian fishing fleet. The freezer trawlers are being built by the Vyborg Shipyard for the Arkhangelsk Trawl Fleet JSC who will operate them in the North and Far East fishing basins.

Each vessel will be equipped with the latest trawl equipment enabling the production of up to 160 tons of raw fish products per day. The first in the series of vessels, named **Barents Sea**, is 86 m in length and 17 m breadth and will be rated to Ice3 class with hull strengthening to Arc4. The trawler will have an automated fish filleting and canning plant together with facilities for processing fish oil and meal.

The Cathelco impressed current cathodic protection (ICCP) systems will protect the underwater surfaces of the ship's hulls from corrosion in the most demanding Arctic conditions.

Unlike sacrificial anodes which may have to be changed at every drydocking the ICCP anodes have a life in excess of 15 years. This reduces maintenance costs as well as ensuring that the hull receives reliable protection at all times.

"This is one of a number of projects where we have worked in close collaboration with Vyborg Shipyard to provide a technical solution which will work effectively in Arctic waters", said Anna Siodlak who has supervised the project at Cathelco.

The purpose of the ICCP system is to neutralise the corrosive activity which occurs on the surface of the hull by enveloping it in a small, but effective impressed electrical current. The system consists of an arrangement of hull mounted anodes and reference electrodes which are wired to a control panel. The reference electrodes measure the electrical potential at the hull/seawater interface and send a signal to the control panel which raises or lowers the output to the anodes accordingly.

One of the Russian trawlers to be protected with Cathelco ICCP systems



"Systems for fishing vessels are easily installed and usually consist of two aft mounted anodes and reference electrodes, therefore the number of hull penetrations are kept to a minimum", Anna Siodlak explained. Cathelco are world leading suppliers of ICCP systems for vessels of every size ranging from workboats and fishing vessels to cruise vessels and container ships with a record of more than 20,000 installations. They also produce marine growth prevention systems (MGPS) which prevent blockages in seawater pipework caused by bio-fouling.

#### I-TECH:

The inventor of the unique anti-fouling ingredient Selektope, I-Tech AB, has responded to strong market demand in Japan by enhancing its local supply chain arrangements, after signing an agreement with well-known chemicals trading company Nagase & Co, Ltd.

To date, hundreds of Japanese vessels have been coated with anti-fouling containing Selektope, but demand continues to grow strongly. Under the new agreement, I-Tech will continue to manage sales of Selektope in Japan while Nagase will exclusively handle imports.

"Establishing this business relationship reflects the need to address increasing demand for our product in Japan and we are honored to be working with such a highly reputed company in Nagase," says Philip Chaabane, CEO, I-Tech AB.

The organic, non-metal compound Selektope is the only ingredient of its kind used in a marine anti-fouling application. It is characterised by high efficacy at extremely low concentrations (approx.0.1% w/w), ultra-low leaching and flexibility and can boost the performance of copper-based paint formulations or replace copper completely. Due to the low concentration required, Selektope does not compromise the chemical structure, color or other cooperative biocides of a marine coating.

Nagase is a chemicals trading firm, founded in Kyoto, Japan in 1832. I-Tech AB is a Gothenburg-based bio-tech company that has developed and marketed the unique anti-fouling ingredient Selektope since 2006.

Philip Chaabane



#### ECOSPEED:

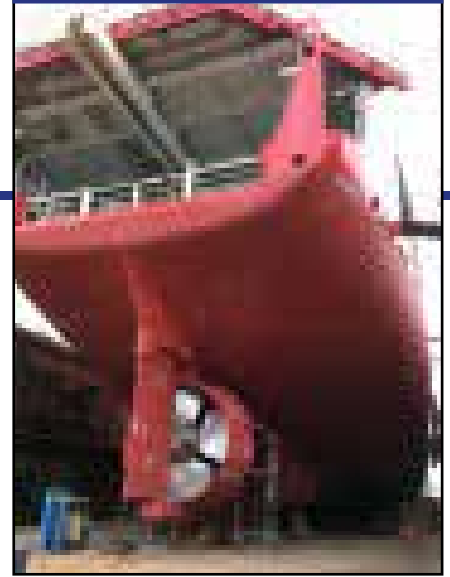
British Antarctic Survey's decision to apply the Ecospeed hard coating to the hull of its new polar research ship RRS **Sir David Attenborough** has been validated after the recent drydocking of sister vessel RRS **Ernest Shackleton**.

The 80 m long vessel is a logistics vessel used to transport cargo, fuel and passengers. The ship has basic scientific capability and undertakes research work in the Antarctic. She was initially coated with Ecospeed in 2009 and when she drydocked this summer the hull was found to be in almost perfect condition.

BAS Superintendent Andrew Webb, said, "**Ernest Shackleton's** hull condition is the best I have seen after typical ice year operations." In eight seasons operating RRS **Ernest Shackleton** with Ecospeed coating, BAS had to touch up Ecospeed only in areas of mechanical damage and carry out minor repairs around the bow, the most susceptible area to ice impact. This year they needed to repair even less surface area than expected, despite the vessel encountering heavy Antarctic ice.

Based on their experience with the **Ernest Shackleton** and her sistership RRS **James Clark Ross** (coated in 2015), BAS selected Ecospeed for the newbuild RRS **Sir David Attenborough**. The 15,000 gt ship is scheduled for operational duties in 2019 and will be one of the most advanced polar research vessels in the world.

The *Ernest Shackleton* in drydock



#### CHEMCO INTERNATIONAL:

According to different classification societies, ships are required to drydock twice every five years. The cost of having a ship in the drydock can be astronomical, which is why ship owners cautiously manage their drydocking programme, take their time deciding when to go to drydock and also carefully select the location where they will dock their vessel(s).

Shipowners have always been looking at ways in which they can reduce the time their vessels spend in the dockyards. The longer the vessels are drydocked, the more money it costs ship owners, not only in increased drydocking fees, but also a reduction in income as the vessels are not working.

If shipyards make money from ships being drydocked in their yards, then why would they want these ships to be there for a shorter period of time?

In an ideal world, shipyards would like vessels to be drydocked for the longest time period possible as this will bring them more revenue. However, many factors are now becoming apparent which raises the question as to what benefits shipyards can achieve by reducing the docking period for shipowners.

Quite simply, the quicker they can return the vessels to charter, the more vessels they can drydock. If they can reduce a vessel's time spent in the drydock, the more likely these vessels are to return to this shipyard in the future. It is therefore beneficial for shipyards to return vessels to charter in the quickest time they can.

So how can ships reduce their drydocking periods? The surface preparation methods used and choice of coating systems selected play a major role in the overall drydocking period.

Abrasive blasting will always offer the best surface preparation. This is the method traditionally utilised for all conventional paints. Unfortunately, abrasive blasting encompasses a lengthy setup, large labour squads and extensive equipment requirements. Abrasive blasting also involves many time consuming operations; containment, collection, removal and disposal of the abrasive. All these factors result in more time and cost being spent in the shipyard.

Conventional paint systems are also solvent-based. Solvent-based paints themselves have their own problems. They are hazardous which means that all other work within the vicinity must be stopped; resulting in lengthy, unneeded and undesired project delays. Solvent-based paints also have humidity and dew point restrictions which means that additional equipment requirements have to be used to control the environment during their application.

However, by electing to use alternative surface preparation methods, such as water jetting and mechanical preparation, and solvent-free coatings the time and cost spent in the shipyard can be significantly reduced.

So what the answer? Chemco International has developed a range of solvent-free, wet and rust tolerant coating systems which can be used for almost all areas of the ship including almost all tank internals, decks, superstructures, pipework, engine rooms, plus many more areas.

Any surface preparation method can be utilised when applying these coatings, with surface standards as low as WJ-3/4 or St 2 acceptable. This means that for many applications the expensive and time consuming use of abrasive blasting is not essential.

Chemco's IMO approved coating systems offer long-term maintenance-free protection, even when ap-

plied to rusty or poorly prepared and wet surfaces, where the coatings exhibit outstanding adhesion.

There are no humidity or dew point restrictions with these coatings - therefore there are no extensive and expensive dehumidification or ventilation equipment requirements.

The environmentally friendly nature of this process (no grit blasting and solvent-free coatings) also allows other refurbishment work within the vicinity, including hot work, to continue without disruption.

Chemco's solvent-free, wet & rust tolerant coating system can also 'continue to cure' underwater. This means that if the ballast tanks are the last or only areas to be coated during the drydocking period that the vessels can be put back into service much quicker than using conventional paint systems. Vessels can begin to ballast again within 4-8 hrs as opposed to conventional paints which could be anywhere from a few days to two weeks.

All of these factors mentioned above will result in not only an environmentally friendly application, but will also significantly reduce the drydocking period for all vessels. By saving the ship owners time and cost by reducing their docking period, these ship owners are likely to use their shipyard again. It also gives the shipyard the opportunity to drydock more vessels. As previously mentioned, it is therefore beneficial for shipyard to return vessels to charter in the quickest time they can.

Applying RS500P with hot-work going on nearby



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## UNDERWATER REPAIRS:

### HYDREX:

Last month saw a flurry of activity for Hydrex dive teams, with a number of hull repair and shell plate projects in Europe and the United States. All repair projects were carried out while the vessels remained afloat and on hire using the Antwerp-based company's award-winning mobile drydock technique, mobdock.

However, the repair to the flat bottom plates of vessels in the Port of Santander and Palm Beach required a more bespoke solution.

A 115 m LPG tanker had just left drydock in the Port of Santander, Spain, when damage to the flat bottom was discovered, but since returning to drydock was not an option due to unavailability and cost, Hydrex was contacted to carry out the repair. The vessel's shape, however, necessitated the design of a bespoke mobdock (mobile drydock) so technicians could carry out the repair underwater in drydock-like conditions while



the ship was berthed alongside the repair yard.

Once diver/technicians discovered the extent of the damage, which required a 400 m x 300 m insert, they began to tailor-make a mobdock on site to fit the rounded shape of the hull.

The mobdock was constructed at the yard for installation by the Hydrex team. The shipyard team was then able to effect repair in the best possible conditions, keeping the vessel on-hire and on schedule without having to wait for a drydock space to become available.

A tailored mobdock also had to be constructed in Palm Beach, USA, to facilitate the repair of a section of hull affected by corrosion. The damaged area was the aft starboard side shell plating by way of the bilge so it was imperative that the mobdock could sit perfectly over the rounded shape of the hull.

After the modified mobdock was installed, the frame covering the damage was removed. This allowed the diver/technician team from the Hydrex facility in Tampa, Florida, to cut away the damage and the surrounding area. A new insert plate was then positioned and welded following our class-approved procedure.

"This is the real beauty of the mobdock concept," says Dave Bleyenbergh, Hydrex Production Executive. "We can modify or build custom-made solutions on site to suit any shaped hull or appendage in very little time. This way most repair projects can be carried out underwater, in dry condition.

"Of course, there are occasions where damage does not allow a permanent repair, but we can install temporary doubler plate over the damaged areas, allowing vessels to keep sailing until their next scheduled drydock. This was the solution offered to the operator of an offshore supply vessel recently, when a small hole was discovered in the hull on the starboard side of the flat bottom. A minor patch repair like this can easily be carried out in less than a day without any interference to a ship's schedule."

Hull repair to a 198 m general cargo ship berthed close to the Hydrex facility in Antwerp was, however, a lot less straightforward. A detailed inspection of the vessel revealed corrosion damage in the flat bottom but shell plating around the damage was in poor condition and too thin to accommodate the welding of an insert plate. Instead, four large doubler plates were inserted on the inside of the hull to cover the damage and other areas at risk.

"The 1,255 mm x 400 mm plates were cut to size at Hydrex HQ's fast response centre and then fitted and secured by our diver/technicians. To prevent any further leaks, additional welding work was carried out to the rest of the area before detailed thickness measurements were taken to make sure the vessel could sail safely until the next drydock visit," said Bleyenbergh.

The Hydrex mobdock in position



## FEATURE:

### INTERVIEW WITH MITSUHIKO KIDOGAWA (CLASSNK):

Mitsuhiko Kidogawa, Regional Manager of Europe and Africa, ClassNK London Office, joined ClassNK shortly after graduating from Kyushu University with a degree in naval architecture in 1984. He spent his first seven years in the ClassNK Hull Department until transferring to a branch office in Western Japan for two years. He worked at ClassNK's Hamburg Office in 1997 for five years, before returning to Head Office in Japan, where he served in a number of roles including Manager of the Survey Department and later General Manager of the Hull Department. Part of his role in the society also included overseeing ClassNK's joint projects with the Finnish software house NAPA, such as the operational support software ClassNK-NAPA GREEN.

ClassNK's Mitsuhiko Kidogawa



He said, "In my new position as Regional Manager of Europe and Africa, I hope to use the experience I have gained from working in classification over the past 30 years."

**What are the main services provided by the London Office? Who is responsible for these activities?**

"The London Office provides Classification Surveys, Safety Management System Audits for Companies and vessels (ISM) Ships Security Audits (ISPS), Maritime Labour Inspections (MLC), Ship's Security Plan Approval, MLC Reviews, and Certification of Quality Management System for ISO 9001.

"We have a team of seven highly experienced surveyors and auditors. I oversee the day-to-day operations of our regional service network, while being responsible for implementing ClassNK's long term strategy in the region."

**How many clients does the London Office work directly with? What is the geographical scope of activities?**

"We work directly with 30 clients in the London territory alone. Our wider service network comprises of 29 offices located across 17 countries, including Norway, Germany, the Netherlands, as well as three offices located in the UK.

"Our subsidiary NKK(UK) Ltd. was established to offer third-party elective services, and was accredited by UKAS for ISO9001 in the middle of 2016. While not under jurisdiction of the ClassNK London Office, NKK(UK) Ltd. works closely with the maritime community here and abroad, offering certification services to clients not just in the UK but around the world."

**What are the current objectives for the London Office? How do you measure your success?**

"Our clients are our number one priority. Since the establishment of the London Office in 1962, we have had a long history of cooperation with the maritime community providing our classification services and technical advice in a timely and accurate manner. In order to do this, we have several objectives we aim to fulfill. For instance, we are striving to further develop our certification service in line with MED (Marine Equipment Directive) and EU-MRV (Monitoring, Reporting, Verification) regulations to make it easier for clients to keep up follow the latest requirements. Through enhancing media coverage and working together with Japanese organisations in Europe, we aim to help strengthen the brand image of the Society. In addition, we are striving to improve technical capacities and expand services through working together with technology firms in Europe, as well as service improvements across our network to further acquire class registrations.

"To a large extent, this objective remains unchanged. However, with the introduction of new regulations present new challenges to owners and operators, we feel it is our responsibility to work together with industry and the support of our Head Office in Tokyo to proactively develop and provide the right solutions.

"For us, success is measured by the feedback from our clients, and how we manage to incorporate their needs into our service."

**Do you think Brexit will have an impact on the activities of ClassNK in Europe? How do you expect to cope with any potential challenges?**

"Over our five decades operating in London, our links to the community here are stronger than ever. London hosts a wide variety of international meetings - IMO playing a central role. In addition, as the city continues to hold a central position in shipping finance, it is believed that the effect of Brexit on our shipping industry will be relatively limited compared to other industries.

"However, at this moment, Brexit is still an ongoing process, and it is difficult to make any serious predictions with a high amount of certainty. What remains is that we have a strong service network in the EU and throughout greater Europe, which will still be in place to serve our clients in the region.

**What is most important to the London Office?**

"The most important objective for the London Office is to provide our clients with what they need, when they need it. That requires preparation as well as flexibility. With Survey Department representatives located in at the London Office and the Hamburg Office, we have the same final decision-making authority as Head Office, enabling us to offer the same high quality services directly here in Europe."

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## ON WATCH:

**Genoil Inc** has announced the appointment of Nari Narayanan as Vice President of Genoil's India operation. The development comes as interest in Genoil's desulphurisation technology continues to increase rapidly in line with the global demand for cleaner energy.

At Genoil Mr. Narayanan will be responsible for sourcing and progressing market opportunities throughout India. The country is investing in a wide range of measures to green its energy system and reduce sulphur emissions.

Mr. Narayanan has extensive financial experience drawn from a variety of senior roles across investment and corporate banking. He joins Genoil from Kuberon Capital LLC where he was a managing partner. Previously he was a Senior Vice President of Investment Banking at Source Capital Group focusing on the BPO (business process outsourcing) and IT sectors, and cross border mergers and acquisitions.

The Board of Directors of the **International Chamber of Shipping (ICS)** has appointed Martin Cresswell, Technical Director of the Hong Kong Shipowners Association, as the new Chairman of the ICS Marine Committee. He succeeds Peter Bond (Cyprus Shipping Chamber) who recently stood down following four years of service as Chairman of ICS's principal technical committee.

"The Marine Committee is very much the engine room of ICS, overseeing the work of the many ICS technical committees and the development of policy positions which we represent at IMO meetings, on behalf of the global industry as represented by our member national shipowner associations" said ICS Secretary General, Peter Hinchliffe.

"We are very fortunate to have signed up Martin as Marine Committee Chairman with his tremendous experience of commercial ship operations and his understanding of the great importance of ensuring that regulators make sensible and practical decisions, as part of our collective effort to further improve maritime safety and the industry's environmental performance."

**Bolero International** has appointed Andrew Raymond as its new global head of sales. Raymond will leverage his 25-plus years' global experience in the fintech market to drive further growth in the number of organisations using Bolero's cloud-based services. "This is a challenge I couldn't miss," said Raymond. "I'm going to be building on Bolero's existing momentum – talking to customers and prospects to understand their challenges and exploring how they can benefit from the gains in speed, efficiency, productivity and security that trade digitisation delivers. The staff at Bolero are great people and I'm really looking forward to working with them." "We are now at a pivotal point, where many banks and businesses in international trade

are starting to execute their digitisation plans removing the era of old-fashioned inefficient paper-based transactions that are highly costly and prone to mistakes and fraud.”

**Phoenix International Holdings** has announced that Matthew Long has joined the company as General Manager (GM) of our Largo, MD headquarters office. Matthew will oversee all aspects of Phoenix’s government and commercial deep ocean search and recovery service lines, as well as the company’s Engineering and R&D work.

A retired US Navy Engineering Duty Officer and Diver, Matthew brings to Phoenix his decades of experience managing technically challenging marine engineering projects worldwide. As a licensed Professional Engineer and certified Project Manager, Matthew’s qualifications supplement his deck-plate knowledge in all of the Largo GM areas of responsibility. Commenting on this appointment, Patrick Keenan, Phoenix President stated, "Matthew Long is the perfect person to lead Phoenix’s Undersea Operations and Engineering teams. He has the technical acumen, financial expertise and proven leadership skills necessary to sustain and grow our business, both in the markets we currently serve and into new areas

The logo for SHIPPAAT, featuring the word "SHIPPAAT" in white, bold, uppercase letters centered within a dark blue oval.