

International Tug & OSV

INCORPORATING SALVAGE NEWS

March/April 2017



Asian Focus: Independent expert sees signs of recovery
Autonomous OSV drones to support oil & gas platforms
Industry leaders to hold tug safety forum at *Tugnology* '17

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FRONT COVER

ART Trident: This vessel is the first US-built Rotor® tug to enter service following its delivery from Master Boat Builders in Bayou La Batre, Alabama, to Florida-headquartered operator Seabulk Towing. The vessel, designed by Vancouver-based Robert Allan Ltd, is the first of three sister ships ordered by Seabulk Towing and is operating out of Port Everglades on Florida's Atlantic coast.



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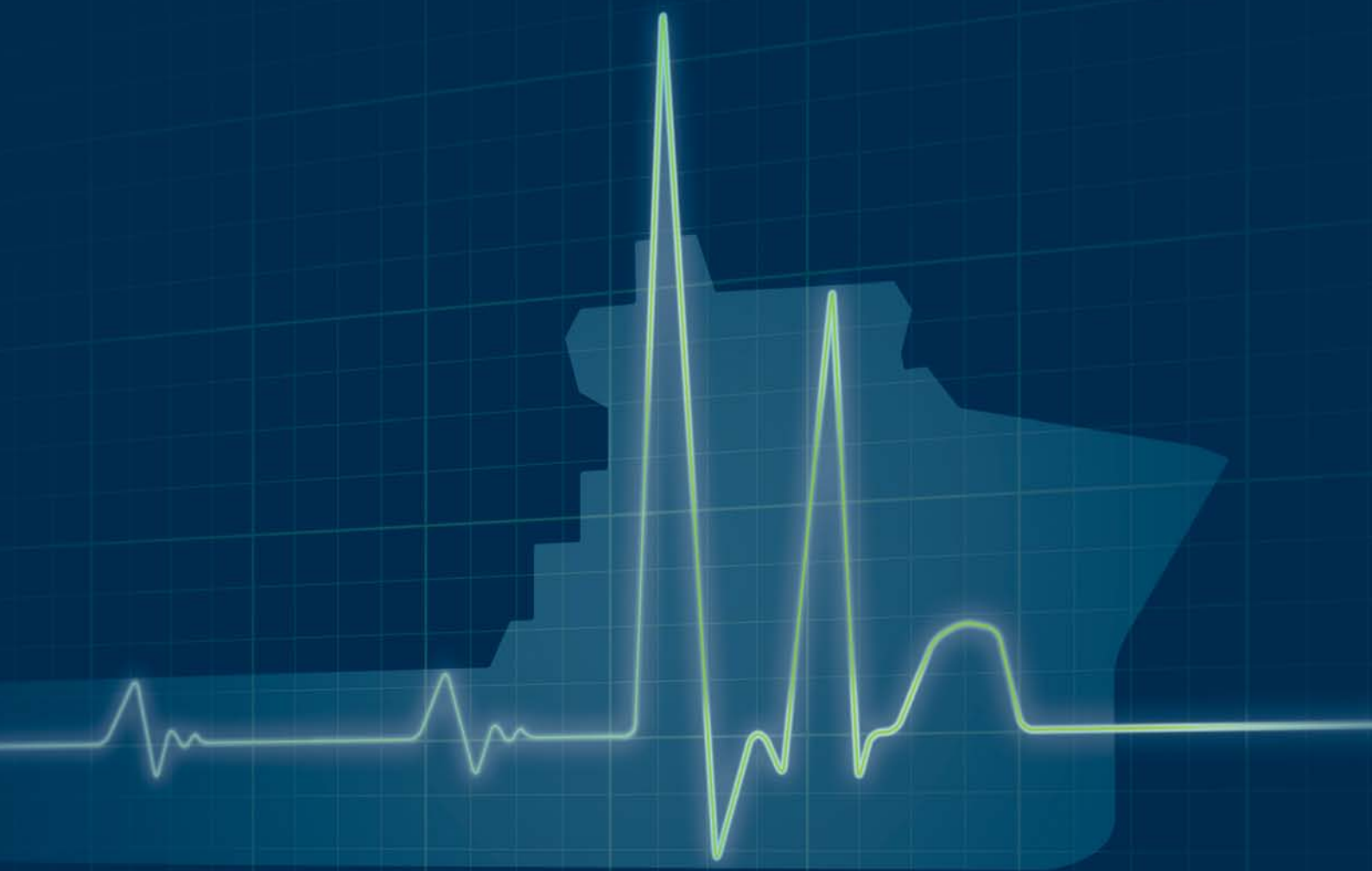
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Thinking the unthinkable

According to the English language proverb, necessity is the mother of invention. I would argue that it is also the mother of innovation and a close cousin of thinking the previously unthinkable. The offshore market remains grim, despite more than a few signs of light on the horizon, which has prompted several major players to take a course of action that would previously never have been considered an option. A case in point is the announcement that three of Norway's one-time rival OSV operators, Farstad Shipping, Deep Sea Supply and Solstad Offshore, are to merge into what market analysts VesselValue calculate will be the second largest operator in the sector, with a fleet of more than 150 vessels. The undoubted economic benefits of the creation of the new company, Solstad Farstad, are not new, but the once unthinkable making it a reality is. Throughout this issue there are examples of companies realising that although the market is indeed cyclical, it does not necessarily return to exactly where it has previously been. Radio Holland's strategic agreement to work with communications firm Cisco, aimed at allowing both companies to play a key role in accelerating digitisation, can also be seen as a result of the realisation that the need to reduce the cost of ownership will not disappear when the market returns. Similarly, Rolls-Royce Marine's latest vision of the future, involving remote-controlled and autonomous OSV drones and interchangeable 'containerised' engines, fuel tanks and onboard accommodation on a wide range of vessels, predicts a not-so-distant future where cutting operating cost is not a reaction to a grim market, but the norm. As I keep being told: what interesting times we live in.



Special features in this issue include Naval Architecture & Design, where Jim Hyslop, of Canada-based Robert Allan Ltd, argues that flexibility is the key to success, and US-headquartered HydroComp dives into what the firm describes as the 'uncharted waters' of propeller design software. In Emerging Markets we look at some of the latest news and views from Africa, while our Asian Focus section includes an expert overview of this important market from regional director of LOC, Alex Harrison. Meanwhile, our new Digital Innovation section, introduced this issue, will look at data-driven developments, from fuel-monitoring to autonomous vessels. Our At The Helm interviewee is secretary general of the European Tugowners Association, Anna Maria Darmanin, who is about to celebrate her first year in office, and tells us how she has found the tug community hard working, down to earth and great fun. This issue's In The Spotlight Q&A focuses on SeaTech Solutions director, Govinder Singh Chopra.

Finally, we reveal more about Tugology '17, our technical conference focusing on tugs and tugs alone, which will take place at the World Trade Centre in Rotterdam on 23 and 24 May. It will include a forum session, chaired by Robert Allan, on the Challenges of Tug Safety with Dirk Degroote of Damen Shipyards, Carsten N Nygaard of Svitzer and Capt Arie Nygh of SeaWays. More details about Tugology '17, including how to register, can be found at www.tugandosv.com

John McCready, Editor



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Experts to debate tug safety challenges



A panel of leading industry experts will discuss issues surrounding tug safety during a forum session at *Tugology '17* in Rotterdam in May.

Chaired by Robert Allan, executive chairman of Vancouver-based naval architects Robert Allan Ltd, the forum, entitled *The Challenges of Tug Safety*, will be held on the first afternoon of the two-day technical conference, which takes place at the World Trade Centre in Rotterdam on 23 and 24 May.

The panel, all experts in their field, will consist of Dirk Degroote, project manager tugs at Damen Shipyards, the Netherlands; Carsten N Nygaard, group marine manager at Svitzer, Denmark, and Capt Arie Nygh, managing director of SeaWays Consultants, Australia, who was founder president of the International Tugmasters Association.

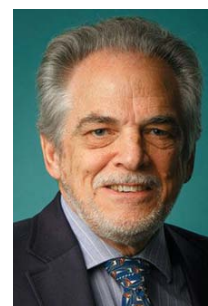
There will be an opportunity for delegates attending the event to question the panel.

Garth Manson, managing director of The ABR Company, publishers of *IT&O*, which organises the biennial *Tugology* conferences, said: "We are delighted to have such a prestigious panel to debate this important issue. I would like to thank all those involved."

The main conference, during which 14 in-depth technological papers will be presented, will be chaired by Mike Allen, who has chaired The ABR Company's hugely popular



▲ Rotterdam at night, above; opening speaker René J de Vries, left, and clockwise from near right, safety forum chairman Robert Allan and panel members Carsten N Nygaard, Capt Arie Nygh and Dirk Degroote



ITS conventions for many years.

The inaugural paper will be presented by René J de Vries, harbour master at the Port of Rotterdam Authority. Other presenters include Govinder Singh Chopra, director of SeaTech Solutions International (see *In the Spotlight* feature on page 72); Gijsbert de Jong, director, offshore service vessels and tugs, at Bureau Veritas, and Edgar Snelders, general manager, product platform thrusters, at Wärtsilä Netherlands.

A full list of papers and presenters is available at www.tugandosv.com, along with more details about the event, including how to register to attend.



The ground-breaking, innovative and thought-provoking papers presented at *Tugology* provide a detailed and invaluable insight into latest technological ideas and advances in our industry, covering design and construction, economics and operation. As a gathering of industry leaders and executive-level experts from around the world, *Tugology* also offers an excellent opportunity for making business deals, networking, renewing old friendships and forging new professional relationships.

The ABR Company would like to thank the sponsors whose generosity has enabled it to make *Tugology '17* such a special event.

The welcome reception, on the evening of Monday 22 May, will be sponsored by Rotortug and JonRie Intertech. Coffee and tea breaks throughout the event are sponsored by MTU, while Uzmar Workboat and Tug Factory is sponsoring lunch. Samson will sponsor the pre-dinner drinks ahead of the conference dinner on 23 May which is sponsored by Damen.

Call for papers for *ITS* Marseille

A call for papers is now open for the 25th International Tug, Salvage and OSV Convention and Exhibition (*ITS*) which will take place in Marseille, France, from 25 to 29 June, 2018.

Individuals or organisations wanting to submit an idea for a paper to be presented at the convention have until 31 July 2017 to do so. Full details of how to submit an idea for a paper can be found on our

website www.tugandosv.com

The paper selection committee is due to meet in August to discuss all the paper ideas that have been submitted, and start the process of finalising the programme.

ITS is the leading convention for tugs, salvage and OSVs. The unique global event brings together top level executives and decision-makers to network and discuss and share latest ideas.

Three Norwegian OSV operators to merge

Three of Norway's biggest OSV operators are to merge, creating one of the largest fleets in the sector, in a bid to ride out the current market downturn and be in a strong position to exploit a recovery.

Norwegian-born oil tanker and shipping magnate, John Fredriksen, and Norwegian billionaire Kjell Inge Roekke, have agreed a restructuring plan for Farstad Shipping, via a debt-for-equity swap and additional share issue. They will then merge Farstad and Fredriksen's Deep Sea Supply into Roekke's Solstad Offshore.

Karl Johan Bakken, CEO of Farstad Shipping, said: "With this solution, we provide Farstad, Solstad and Deep Sea Supply with an industrial platform to

sustain [business in] the current downturn in the OSV market and be well positioned to exploit a market recovery. We are pleased to have reached an agreement with our banks, bondholders and other stakeholders."

The three-way merger will create a new company called Solstad Farstad, which will have a combined fleet of 154 ships, making it the biggest owner of large vessels in the supply, anchor-handling and construction support segments of the global OSV market.

In an agreed statement, the parties said: "As repeatedly expressed by a range of industry experts, the fragmented Norwegian OSV industry requires consolidation.

"By agreeing to complete the Farstad restructuring and to work for the proposed

combination (of companies), senior lenders, bondholders and long-standing family owners supported by industrial investors, are making a collective effort to secure a successful refinancing of Farstad Shipping and to create a new and robust OSV company operating out of Norway in the high-end segments of the global OSV industry."

The new consolidated group will build on the complementary strengths of the three companies, combining the existing Solstad Offshore's CSV capabilities with Farstad Shipping's AHTS experience, international presence and good, long-standing position in Brazil and Australia, together with Deep Sea Supply's cost efficient PSV operating model.

The move will enable realisation of substantial cost and revenue synergies in the range of US\$47.7m to US\$77.5m annually that will further contribute to strengthen the combined company.

Lars Peder Solstad will be proposed as the CEO of the combined company, which will be headquartered out of Skudeneshavn, Norway. It will rank second in the top 10 OSV-owning companies and be worth US\$2.03bn, according to UK-based data provider VesselValue. Its statistics currently show Farstad as seventh.

A VesselValue report said: "The proposed merger has been long awaited in the OSV sector. It presents a significant moment in the future of Norwegian ownership of OSV and construction vessels, as this consolidated entity bids to ride out the current tumultuous period in the offshore sector."

◀ Farstad's Far Scimitar



Milestone 1,000th azimuth thruster delivered to client

Rolls-Royce has delivered its 1,000th azimuth thruster to Damen in what marks a milestone achievement in a relationship that spans more than 30 years.

The 1,000th and 1,001st Rolls-Royce US 255 FP azimuth thrusters, each with a power of 2,525kW, will be installed on a new Damen ASD 2913 tug, meeting customer demands for high bollard pull and cost efficiency.

Damen's first ASD tug design with Rolls-Royce US azimuth thrusters was delivered in 1993, but the relationship between Rolls-

Royce and Damen goes much further back.

Ronald Lindeman, Rolls-Royce, Marine head of sales, central Europe west, said: "In 1983, before its acquisition by Rolls-Royce, Rauma-based Aquamaster supplied the first retractable thruster for installation to the anchor-handling tug *Damen Dragon Fly*.

"In 2002 the ASD 2810 tug design was introduced and is today one of the world's most popular tug designs. More than 420 Rolls-Royce azimuth thrusters have been delivered to this series.

"The milestone delivery of the 1,000th and 1,001st US units underscores our partnership with Damen, our biggest customer for this type of thruster."

Aila Lainio, Rolls-Royce Marine area sales manager, who has 20 years' experience at the Rauma thruster plant, said: "You can say that Damen has become part of our life

now. Rauma has produced a wide range of azimuth thrusters for Damen's various tug designs. The ASD design and the Rolls-Royce US-type azimuth thrusters make a unique combination."

She added: "We have worked closely in co-operation with Damen over the years to develop the optimum azimuth thruster range for tugs. We have a very creative and talented team in Rauma.

"Whenever Damen presents new requirements, we accept the challenge of developing solutions that allow us to continue being Damen's first choice for propulsion equipment."

Lindeman said: "Rolls-Royce is investing £44m in our production plant in Rauma to further strengthen our position as the leading supplier of azimuth thrusters. The work to transform the facility in Finland is underway and is due for completion in 2020."

Damen's 1,000th and 1,001st Rolls-Royce US-type thrusters were delivered for installation in Romania.

◀ A Rolls-Royce US 255 FP azimuth thruster leaves the production facility





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Another milestone for locks



Hollywood enters Aquas Claras lock
Photo courtesy of Eric Sanchez

The Panama Canal saw another milestone with the successful transit of New Orleans-based TradeWinds Towing tug **Hollywood** and barge **JMC 3336** – the first transit by a tug and barge through its new locks.

The tug and deck barge departed Tampico, Mexico, on 3 January and headed, via the canal, to Seattle where the barge was delivered to new owners.

JMC 3336 has a beam of 36.6m, which is 4.2m wider than the Panamax width permitted in the original locks. The new locks can accommodate a beam of 48.5m.

Prior to the canal's expansion, a barge this size would have been towed via the Strait of Magellan, adding an additional 9,000 miles to the Tampico to Seattle journey.

For this transit, **Hollywood** towed the barge through with its tow wire, while an assist tug kept control of the stern and slowed the barge after it entered each chamber. The pilots and tug crews of the Panama Canal Authority ensured that the entire operation was safely executed. The successful passage was made possible by shipping agency Gateway Transit, which has unrivalled experience with towing operations through the canal.

Hollywood was acquired by TradeWinds Towing last year and recently underwent a life-extension at Conrad Deepwater Shipyard

in Amelia, Louisiana. It is powered by two EMD 16-645-E2 main engines, producing 4,200hp.

TradeWinds Towing operates a fleet of seven ocean-going tugs, ranging in horsepower from 2,600 to 5,750. The company's tugs operate throughout the US, Caribbean, Central America and South America, with voyages as far as Hawaii, Alaska, Senegal and Chile.

• The Panama Canal set a new monthly tonnage record of 36.1m Panama Canal tons (PC/UMS) in January, with the transit of 1,260 ships through both its expanded and original locks.

Brand merger aims to offer best service in challenging times

Albwardy Marine Engineering and Damen Shipyards Sharjah have officially brought both brands together under one umbrella – **Albwardy Damen**. The newly-named venture will continue with the same values as before – putting safety, quality and reliability at the forefront of its offering.

The change represents the venture's drive to maximise the efficiency of its operations and enhance its leading position during these challenging times for the maritime industry.

The UAE-based shipyard will continue to construct newbuild steel and aluminium vessels as well as provide ship repair services. Albwardy was founded in 1978 and has been a joint venture with Damen since 2008.

Albwardy Damen has facilities in three UAE locations: Dubai, Sharjah and Fujairah. In addition to shipbuilding and repair, the company also provides floating repair and diving services.

This year, to further strengthen its position, Albwardy Damen will build a new office and workshop facility in Dubai Maritime City.

Lars Seistrup, managing director of Albwardy Damen, said: "We aim to be the best regional shipyard for building and repairing niche tonnage, and with our expansion in Dubai we are positioning ourselves in the best possible way to serve our clients during these challenging times."

Consortium tug deals approved

The US Federal Maritime Commission (FMC) has allowed a consortium of ro-ro shipping lines to jointly negotiate tug services at US ports.

It voted four-to-one in favour of allowing an amendment to the service agreement between international car carriers Wallenius Wilhelmsen Logistics, Eukor, American Roll-on Roll-off

Carrier and Hyundai Glovis.

FMC chairman, Mario Cordero, said: "Careful analysis of what was proposed yielded no concerns about potential anti-competitive behaviour, or adverse consequences to ports or the American shipper. Ultimately, this amendment should increase efficiencies, benefiting our nation's port gateways."

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Firms in bid to usher in the new digital age



Maritime communications, navigation and automation specialist, Radio Holland Group, has signed a strategic agreement with leading US information and communications technology (ICT) company Cisco.

The companies aim to play a key role in accelerating digitisation in the maritime sector by developing and offering ICT solutions, for example remote monitoring and diagnostics services, data management and networks on board.

Dennis Mol, chief operations officer at the Radio Holland Group, said: "In a challenging maritime market it is Radio Holland's drive to keep finding and developing solutions that reduce the cost of ownership of vessels and improve the efficiency of ships' operations. If a ship can't sail because of technical problems, the costs incurred are substantial. Our customers are looking for innovative ways to make and keep the operations of their fleet more reliable, efficient and effective.

"Together with our partner Cisco and with our complementary expertise, we can develop scalable ICT solutions for various types of ships and market segments.

"We aim to translate 100 years of Radio Holland's experience into the right 'dashboards', creating useful information which will allow our customers to optimise their operations and to give them optimal support. Radio Holland sees opportunities to improve the unlocking of data on board in line with the trend of the 'Internet of Things' and to optimise the data connection between ship and shore.

"With our knowhow in maintenance processes we are also continuing to develop predictive maintenance concepts."

Edwin Prinsen, managing director Cisco Netherlands, said: "For Cisco, the co-operation with Radio Holland Group is an excellent example of the course we set in our market approach.

"We are both authorities in our own field of expertise and working domain, therefore it makes perfect sense to join forces and co-operate to support and stimulate the development of digitisation of, in this case, the maritime sector.

"Radio Holland has a unique reputation and global position, which means we can co-operate not only in the Netherlands, but in the wide-scope global maritime market. Our co-operation offers opportunities to develop, implement and effectively manage sector specific solutions.

"The development of the maritime sector also seamlessly connects to the initiative announced by Cisco to establish

▲ Left to right at the agreement signing are Edwin Prinsen and Dennis Mol with Gert Kaijen from Radio Holland Group and Harald de Wilde and Daan de Groot of Cisco Netherlands

an investment fund in co-operation with the Dutch government to stimulate the digital acceleration of the Netherlands."

● Digital Innovation, page 58

Tug fleet to grow with six newbuilds



Turkish tugboat builder and operator Med Marine is planning to expand its tug fleet in 2017 with the addition of six newbuilds.

All six will be RAmports 2300s designed exclusively for Med Marine by Robert Allan Ltd, and will be delivered during 2017.

The vessels will be 50-tonne bollard pull ASD tugboats 23m long by 10.9m wide. They will be powered by a pair of powerful CAT 3512C main engines, each developing 1,380b kW at 1,600 rev/min. They are equipped with a pair of Schottel SRP 340 FP thrusters, and subject to RINA FiFi E notation.

Other notations are: RINA C, ✱HULL,

▲ Med Marine's RAmports 2500W Eregli 52

✱MACH, ✱AUT-UMS, Fire-fighting Ship E with Water Spray, Unrestricted Navigation, Greenstar 3 and MLC Design

The contract was announced in tandem with the launch of Med Marine's new RAmports 2500W tugboat. Measuring 25.6m long and with 70-tonne bollard pull, the newbuild – which has been produced under the project name **Eregli 52** – incorporates two CAT 3561C main engines, each rated 2,100kW at 1,600 rev/min, and two Schottel SRP 1515 CP units.

Global firm doubles Brazil tug fleet



▲ Rutger Thulin, Svitzer's newly-appointed managing director for its expanding operations in Brazil and left, the tugboat **Svitzer Maria Darian** which works out of Rio de Janeiro

Svitzer is upgrading and more than doubling its fleet of Brazilian-flag tugs in 2017, unveiling a new service in Paranaguá and announcing a new managing director and commercial director for Brazil.

Two new Brazilian-flag tugs started operations at Paranaguá Port in January, strengthening Svitzer's position in the south of the country, where it already operates at São Francisco do Sul and Itapoa.

Additionally, the company is building four new tugs at INACE shipyard in Fortaleza and expects delivery in the second half of 2017. This means Svitzer will have 10 Brazilian-flag ships in operation by year-end.

The new Paranaguá vessels – 77 and 75-tonne bollard pull tugs – are of Canada-based Robert Allan Ltd design and were built at the Cheoy Lee Shipyard in Florida, US.

Recently, the company started operations in Argentina with nine tugs, assigning there some of the foreign-flag ships originally brought to Brazil in 2015.

Svitzer is deepening its commitment to

Latin America's biggest economy with fresh investments as part of a broader BRL200m (US\$63.2m) programme announced in 2015.

On top of this, the company, which is part of Maersk Group and also operates a PSV in Brazil, has appointed Rutger Thulin to head operations there.

Thulin is the former CFO for Svitzer in Europe, where the company operates 110 tugs. He is joined by Ricardo Costa, who worked for four years at Sulnorte and a further 12 years at Hapag Lloyd.

Thulin explains why Svitzer is increasing its presence in Brazil even at the height of difficult times for the Brazilian shipping market: "There is strong demand for a provider that offers world-class services, best practices, reliability and punctuality in Brazil, and this is especially important for our portfolio of global and local clients."

"Paranaguá is part of our growth strategy and strengthens our position in the south of Brazil as we continue to invest in Brazilian-flag ships."

Speaking exclusively to *IT&O*, Thulin said: "Brazil is a great market and we think there is room for another player to provide the quality of services locally that you would expect across the world."

"We have a long-term commitment to Brazil and believe in the growth potential. We also see short-term as well as long-term potential in one of the world's largest economies, providing services to clients across the country."

Thulin confirmed that, at this stage, Svitzer is not looking to expand into Brazil's inland waterways sector.

On a personal note, he said: "I am charmed by the rich culture of the Brazilian community and its people and also impressed by the level of professionalism I have encountered in the business community and particularly in the maritime industry."

"I really look forward to becoming more acquainted with the rich and diverse culture of Brazil so I can really call it my second home."

Dutch King takes a trip on emergency towage vessel



King Willem-Alexander of the Netherlands reopened the recently renovated De Ruyter Maritime and Logistics College in Vlissingen. He then went aboard the emergency towing vessel *Guardian*, operated by leading towage and salvage specialist Multiraship, which works closely with the college.

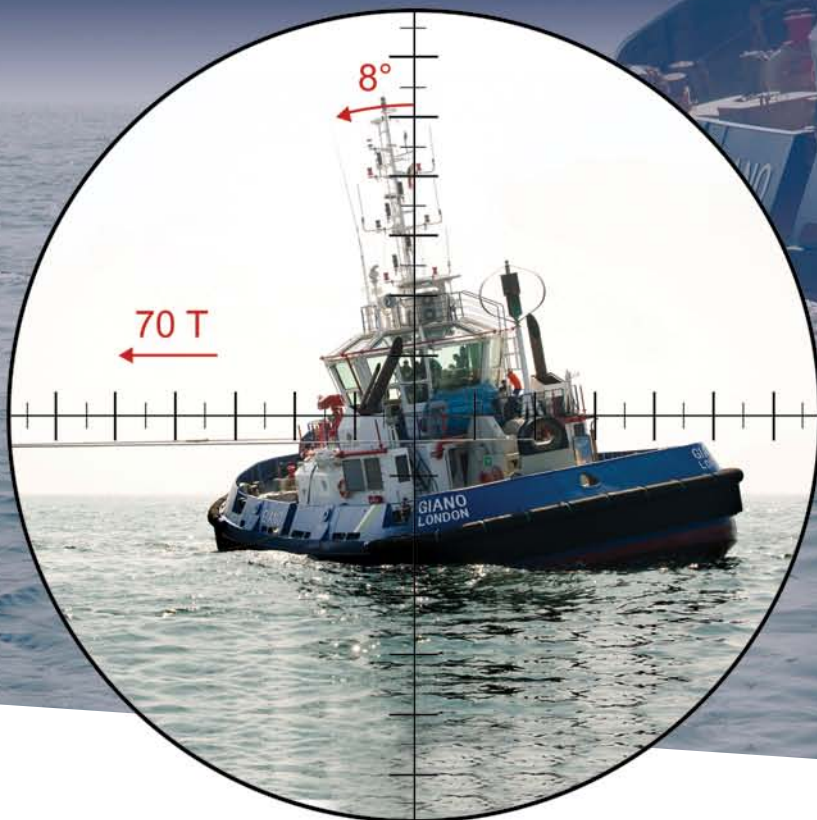
The college trains students as helmsmen and marine engineers. Its renovation means

◀ King Willem-Alexander of the Netherlands is welcomed on board Multiraship's emergency towage vessel *Guardian* by Capt Henk Helmendag

Photo: ANP

it now has modern teaching facilities, including new radar and bridge simulators. The refurbished college premises embrace nautical features, including two rooftop classrooms in the style of a ship's bridge. Multiraship offers traineeships to students. The king undertook a brief trip aboard *Guardian*, taking the opportunity to speak with the crew and trainees working on board the ship.

The vessel has been hired by the Netherlands Ministry of Infrastructure and the Environment for the past 10 years to provide emergency assistance to ships in trouble in the North Sea, under the direction of the Dutch coastguard.



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OUTSTANDING



By Rotortug.

In brief

UK-based drone company Coptrz has enabled its sister company Martek Marine of Rotherham to win an £8.5m contract from the European Maritime Safety Agency. Its drones will follow commercial ships to measure the amount of polluting sulphur and CO₂ they emit.

Vodafone is working with marine electronics company Navico to bring global connectivity to its GoFree product suite. Using the Vodafone global Internet of Things SIM, Navico's GoFree can provide the ability to monitor, log, transmit and report vessel information in real-time.

The IMO has announced that Jomo Kenyatta University of Agriculture and Technology, in Kenya, has been selected to host the regional Maritime Technology Co-operation Centre for Africa, under a project funded by the EU to help mitigate climate change.

International law firm Hill Dickinson has reached an agreement that will bring the shipping practice of Swinnerton Moore to the firm. The agreement will see founding partners Tony Swinnerton and Lewis Moore join Hill Dickinson.

Netherlands-based Iskes Towage & Salvage has expanded its services further across Europe. Its ADT *Arion* has left its home port of IJmuiden and commenced operations at the port of Lübeck-Travemünde, Germany.

Foss Maritime has released two time-lapse videos – available at www.foss.com/shipyards/ – of the construction of the third of three state-of-the-art Arctic class tugs being built at the Rainier shipyard, Oregon.

The environment committee of the European Parliament has voted to call for a ban on the use of heavy fuel oil by vessels when operating in the Arctic.

Spain-based shipbuilder Gondan has relaunched its corporate image and website: www.gondan.com

Jamaica is seeking election to Category C of the IMO council and become a viable maritime hub.

Tugboat on maiden voyage



Tugboat *Ivindo* has set off on its maiden journey to operate in west central Africa.

The vessel is the latest in the Bogaçay Class from Turkey-headquartered shipbuilder Sanmar, which has achieved such notable success in recent years with more than 30 having been delivered or on order.

This ASD design, exclusive to Sanmar, is known as the Robert Allan Ltd RAmports 2400 SX Class, but also benefits from considerable input based on Sanmar's own operational experience.

Measuring 24.4m in length with a moulded beam of 11.25m and an overall draft of 5.7m, the tug is powered by a pair of Caterpillar 3516C main engines, each developing 2,100kW at 1,600 rev/min, driving Rolls-Royce type US 255 FP azimuth drives with

▲ *The Sanmar-built Bogaçay Class tugboat *Ivindo* sets off on its maiden voyage to Africa*

carbon shafts turning 2,600mm diameter propellers inside high efficiency nozzles with stainless steel inner surfaces. Auxiliary generator sets are also by Caterpillar – a pair of 86kW C4.4s.

The port side main engine also powers the pump that feeds the external fire-fighting system with an FFS supplied monitor capacity of 1,200m³/hr located at the forward end of the bridge deck. This machinery combination delivers a bollard pull of up to 70 tonnes and drives the hull when free-running at a speed of 13 knots. The main winch, manufactured by DMT, is mounted on the fore deck.

• Emerging Markets, pages 80 & 83

Giro company continues to expand

US marine stabilisation company Seakeeper sold more than 1,000 gyros for the first time last year, continuing its trend of doubling shipments every two years, as well as launching two new product lines.

In November the company, which was founded in 2003, unveiled its Seakeeper HD range, designed specifically for military and commercial applications. At the same time, the company's new Seakeeper 3 gyro arrived on the market, aimed at vessels as small as 30ft.

The company projects continued growth in 2017 as sales of existing Seakeeper models increase and the Seakeeper 3 and Seakeeper HD models bring stabilisation to new classes of vessels and additional markets.

Seakeeper's technology eliminates up to 95 per cent of all boat roll, the rocking motion that causes seasickness and can lead to fatigue and anxiety.

Seakeeper's vice president of sales and marketing, Andrew Semprevivo, said the

company was proud of the growth it has achieved and of the impact its products had on seafaring.

Based in California, Maryland, the company has more than 125 employees globally, operating in the US, UK, Italy, Germany, Dubai and Singapore.

Fuel research deal

The US Coast Guard has entered into a Co-operative Research and Development Agreement (CRADA) with British diesel engine innovator, Cox Powertrain.

The CRADA will evaluate and test the advantages, disadvantages, required technology enhancements, performance, costs and other issues associated with diesel outboard engine technology.

Tug names reflect medical research support

US West Coast-based Harley Marine Services has named two articulated tug and barge (ATB) units under construction to reflect its support for medical research. The two 35m tugs are being built at Conrad Shipyards, while the 80,000-bbl barges are being built at Gunderson Marine.

On the first unit, the tug will be named *OneCure* and the barge *OneDream*, names that have a very personal meaning for company chairman and CEO, Harley Franco, as they honour his lifelong friends, Larry and Sherry Benaroya, of the Benaroya Research Foundation, for their work to fund research into a cure for type one diabetes. Harley Marine is a long-time supporter of the Juvenile Diabetes Research Foundation. The name *OneDream* derives from Seattle's successful fundraising Dream Gala.

Franco said: "We are blessed to have people such as the Benaroyas who model philanthropy in the Seattle community and beyond."

Larry Benaroya said: "These names will

reflect the singular vision of life without type one diabetes and will help tell a story of our fight against the condition."

The second ATB unit will be named with a nod to Harley Marine's corporate culture. The tugboat will be called *Todd E Prophet* and the barge *All Aboard For A Cure*.

Todd Prophet is Harley Marine senior vice president and CFO, who has been with the company for 19 years. He has spearheaded the financing and capital structures that have enabled steady growth, expansion and construction projects.

Prophet has battled lung cancer and fought hard to overcome enormous challenges, while continuing to work for the company and step up for many of its philanthropic pursuits.

Franco said: "We are honoured to have a vessel named after Todd Prophet, a valuable asset and senior leader in the company."

The name of the companion barge reflects the company's mission to give back to the Pacific Northwest community through supporting charities funding research into

cancer, cystic fibrosis and diabetes.

Harley Marine's company slogan of 'Cruisin' For a Cure', which dates back to its infancy, will remain until a vessel can proudly be named *Cure Found*.

The new tugs will each be equipped with two GE Tier 4 propulsion engines providing approximately 4,560hp, and two John Deere Tier 3 generators.

These cutting-edge engines reduce NO_x and particulate matter and reinforce Harley Marine's commitment to being an environmentally responsible leader within the maritime industry. The vessels are each equipped with a Markey tow winch and bow and stern fendering.

Czech firm enters Ukraine market



Czech Republic-based ACO Marine has delivered three of its smallest Clarimar wastewater treatment units to Ukraine-based Nibulon Shipbuilding and Repair Yard for installation aboard a series of high specification project tugs.

Nibulon, Ukraine's leading exporter of agricultural products, grains and fertilisers with a history dating back to the 19th century, entered the shipbuilding and repair sector in 2012, following the acquisition and development of a yard on the Southern Bug River, near the company's trans-shipment terminal, in Mykolayiv.

Three 1,200hp tugboats, built to the yard's 121M Project Tug design, will be delivered to Nibulon's own account for barge assist operations on Ukraine's network of inland waterways.

Each vessel will feature a Clarimar MF-0.5 wastewater management system, proving a treatment capacity of up to

▲ Nibulon's 121M Project Tug design vessels

1.2m³ a day from a system with footprint of just 1.63m².

Victor Zhigalenko, sales director ACO Marine Systems, said: "This is an important reference for ACO Marine in the tug and workboat sector. The Clarimar units we have delivered to the Nibulon yard are the smallest units we manufacture. Tugs typically have small machinery spaces so the Clarimar MF 0.5 is perfectly suited for this type of vessel."

ACO Marine managing director, Mark Beavis, said: "Nibulon has implemented an extensive newbuild programme and we are therefore delighted that the Clarimar system has been selected for these innovative tug boats. Winning this contract, the first we have secured to supply Ukraine-built vessels, will help us increase our leverage in both the workboat sector and Ukraine's nascent shipbuilding and repair industry."

In brief

Damen Shiprepair & Conversion has announced a reorganisation at three Dutch yards within its group. Staff members at Damen Shiprepair Rotterdam, Damen Shiprepair Van Brink and Damen Shiprepair Vlissingen were informed that the overall number of staff will be reduced by approximately 150 employees.

The IMO has decided that the theme for World Maritime Day 2017 will be Connecting Ships, Ports and People. It was chosen to provide an opportunity to focus on the many diverse organisations and individuals involved in shipping and logistics. World Maritime Day is celebrated on different dates in different countries.

Sydney City Marine has completed its first maintenance docking of a Damen vessel since signing a Memorandum of Understanding with Damen Shipyards Group last year. The vessel in question was *Svitser Warang*, a Damen ASD 2810 owned by global towage operator Svitser.

Norway-based Henriksen has introduced a new range of hooks for crews engaged in towing small to medium-sized vessels and loads. The new towing hook is available in three versions for use with loads from 10, five and two-and-a-half tonnes.

Indian Register of Shipping (IRClass) has received authorisation as a recognised organisation from Iran's maritime administration. It has also set up an office in Tehran.



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'OSV drones will support oil & gas sector'

Small and cheap to build autonomous offshore supply drones could be the way ahead for companies servicing the offshore oil & gas sector, according to the latest forecast from Roll-Royce Marine.

Oskar Levander, vice president innovation engineering and technology, marine, said Rolls-Royce had revised its view that the OSV and PSV market was unlikely to be involved in the first waves of smart technology vessels.

He said the engineering giant now felt that when the oil & gas market recovers to the extent that it is no longer in survival mode, firms will be looking for different, cheaper operating methods.

He predicted that one innovation would be OSV drones providing optimised delivery flows on a just-in-time timetable to supply rigs on a daily basis.

The eight-TEU vessels would be powered by permanent magnet azimuthing thrusters,

use situational awareness and dynamic positioning technology and have an autonomous navigation system. The vessels would only carry deck cargo.

Levander said: "We do not see these ships replacing all existing offshore vessels as there are certain things, such as heavy lifts, that they could not do. However, we do see them having an economic impact as part of an offshore operator's fleet."

He added that Rolls-Royce Marine thinks that the OSV drones could be in operation by 2025.

Another area of offshore work that he believes is ripe for a move to remote-controlled and autonomous operation are ROV support vessels.

The ROV could be supported by a small remote-controlled surface vessel with both the surface vessel and ROV submersible controlled from a shore-based control centre.

Benefits would include better (onshore) crew working conditions, higher utilisation of skilled operators, lower operating costs and smaller and cheaper vessels with no accommodation or other hotel system costs.

Levander said these offshore

innovation ideas were so new that they have not yet been pitched at operators.

He said: "Today in the offshore sector it's all about surviving, but when the market comes back, it will look different."

However, one concept that several operators have already expressed an interest in is the idea of a standardised basic hull design and the introduction of removable and interchangeable containers for many major elements of the vessel.

The example given by Levander at a media briefing in London was of a 1,000-TEU feeder, with a flexible design that could be tailored for specific routes and emission regulations, but the concept applies to a wide range of ships. Almost everything would be attached to the hull in removable units, including power packs, crew accommodation, fuel containers, battery containers and engine gen-sets. These could be swapped between the vessels in an operator's fleet, or added to, as and when needed.

He said a much wider, shallower design would do away with the need for ballast and ballast water systems, with the vessels having no fixed engines or fixed fuel tanks. The ease with which such vessels could be upgraded future-proofed them against new environmental rules, market fluctuations, change of work and technological advance.



◀ An artist's view of an autonomous offshore support drone



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CEO confident despite large fall in marine division profits

The future of Rolls-Royce's marine business remains uncertain as the company revealed continuing problems in the sector contributed to its record £4.6bn loss for 2016.

Underlying revenues in Rolls-Royce Marine fell 24 per cent to £1.1bn, while the division's order book also dipped below £1bn as it was hit by "expected further weakening in offshore oil & gas markets".

Operating losses for the year were £27m, with marine the only sector of the company's operations to end the year in the red.

While the company's £671m fine to settle a bribery case, and a £4.4bn loss from a sharp drop in the value of the pound following the UK's EU referendum, accounted for the overwhelming majority of the full-year loss, Rolls-Royce CEO, Warren East, insisted that drastic reorganisation across all divisions to save up to £200m a year was continuing.

Speaking about the business as a whole, he said: "We have made operational progress and performed ahead of our expectations for the year as a whole. At the same time we have delivered major changes to our management and processes and, while we have made good progress in our cost cutting and efficiency

► *Rolls-Royce chief executive, Warren East*



programmes, more needs to be done to ensure we drive sustainable margin improvements within the business."

In terms of its marine business, the company said: "Overall the outlook for marine remains cautious. We expect that the market will continue to feel the impact of low oil prices, and the general overcapacity in several segments will take time to reach equilibrium. This will impact the demand for our products and services. We will sustain our active cost reduction programmes, focusing on manufacturing, supply chain and overhead costs, in order to drive a more competitive business adapted to the current market conditions."

In brief

DNV GL has issued an official certificate for PC Maritime's Navmaster ECDIS after the company passed all necessary tests. Navmaster ECDIS is up-to-date against all current classification standards.

The seventh Seafarers Awareness Week organised by the charity Seafarers UK (24 to 30 June) has the joint themes *Maritime Jobs at Sea and Ashore* and *Sea Ports for Prosperity*.

Rotterdam-based Acta Marine Wind Services has completed the full management takeover of a 10-strong fleet of crew transfer vessels acquired from Workshops Contractors.

Wind farm developers installed more power than any other energy form last year in Europe, overtaking coal in terms of capacity.

The US' Dereecktor Shipyards is celebrating its 50th year in business in Florida. It also has yards in New York and Maine.

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Tributes as firm's former CEO retires

Former CEO of US-headquartered rope manufacturer Samson, Tony Bon, retired at the start of the year.

Bon, pictured below, joined the company in 1974 after leaving Berklee



College of Music in Boston, starting as a yarn handler on the factory floor at the Samson plant in Shirley, Massachusetts, a position he recalls as the lowest

paying at the time. Fellow former CEO, Steve Swiackey, said: "I remember when Tony first started. I guess you could classify him at that time as kind of a beatnik; long hair, beard and into music. He starts as a bobbin boy and retires as CEO."

"Some politicians say the American Dream is over...well they should know the Tony Bon story."

First conference

Sailors' Society's first Wellness at Sea conference took place in Singapore, with experts from across the world of maritime and medicine discussing issues affecting seafarers' health and wellbeing.

Sailors' Society CEO, Stuart Rivers, said: "I believe we can significantly improve the wellness of all seafarers. It is up to all of us to ensure that this happens."

Powerful vessel to join fleet



With the construction of a large and powerful infield support vessel (ISV) ART 100-46, towage provider KT Maritime (KTM) is continuing to expand its fleet and activities in the Australasian region.

A customised Rotor®tug with a bollard pull of 100 tonnes, the new ART 100-46 will be employed to assist with offshore operations in the region. At 46m long, it is even larger than the three ART 100-42 ISVs that KTM launched earlier.

The newbuild of this latest addition to the fleet was ceremonially initiated with a traditional steel cutting ceremony at Damen Shipyards in Sharjah, UAE. The vessel was

▲ KT Marine's ISV RT Beagle Bay

commissioned by KTM after the company was awarded a contract with Conoco Phillips to support its offshore operations in the Timor Sea.

While the latest new vessel is being built, ISV *RT Beagle Bay* is being deployed as 'front runner', carrying out all offshore support activities until the new vessel is ready to take over. *Beagle Bay* will then continue to carry out towage operations for the *Prelude* floating LNG project, for which the vessel has been designed.

● *Beagle Bay* delivery report, page 37

Motor offers 50 per cent more torque

In ship technology, as in many other industry sectors, increasingly higher demands are being placed on power. The recently launched Hägglunds CBM motor has been developed by Rexroth Bosch to meet these customer requirements.

The motor delivers enough power for a range of applications. Compared to its predecessor (Hägglunds Marathon), the Hägglunds CBM offers 50 per cent more torque at 6,000Nm/bar, and is 50 per cent smaller and lighter. This makes it the most powerful direct drive in the world.

The motor's performance data opens up new possibilities for users. It can cope with extremely heavy working loads, takes up less space, and with it being 50 per cent lighter, the output shaft has less weight to deal with.

Machines and in part also the equipment used can be made smaller, lighter and less complicated. Lower installation requirements combined with the higher productivity of the

motor mean that users do not have to invest as much. Rexroth says users also benefit from the operational advantages offered by a hydraulic direct drive – maximum torque from a standstill, overload protection, and four-quadrant operation.

The motor is based on the tried-and-tested Hägglunds CB platform.

Lars Andrén from the Hägglunds CBM development team, said: "With this motor we can offer the benefits of hydraulic motors for a wider range of applications. For example, winches equipped with the motor can handle higher loads than ever before. In the field of tidal energy, the drives represent an alternative to turbines."

The Hägglunds CBM motor features keyways which make attaching the motor to the drive shaft easier, thereby simplifying installation of the entire system.

Alternatively, shrink disk adapters are also available. For users of the previous



▲ The Hägglunds CBM motor

Hägglunds Marathon motors, Rexroth provides optimisation sets for subsequent upgrades. These allow quick and easy motor replacement in existing machines.

Winch has debut on new tug



US-based JonRie Marine Winches has debuted its new Tri-Winch set on US-headquartered Seabulk Towing's new Rotor[®]tug, *Trident*.

The Robert Allan Ltd of Canada-designed, 33m by 14.5m tri-Z-drive 5,750hp tug with a 78-tonne bollard pull, was built by Master Boat Builders of Bayou La Batre, Alabama, and is the first of three new additions to Seabulk's fleet.

The JonRie tri-winch set was designed for escort operation over the bow or from the stern, and long-line towing over the stern, making it ideal for the escorting, terminal support, towing and ship assist of the new container ships coming through the expanded Panama Canal. The tug will serve Port Everglades in Florida.

New features on the winch are its honeycombed drums (part of JonRie's Container Master series) and dual power units for independent operation. The winch features dual foot control to allow for hands free operation of each winch – press down to pay-out and heel back to haul in.

Unique are the three winches and drives, which are all independent and direct for each

▲ *JonRie's new Tri-Winch onboard Trident*

drum, from the gypsy to the level wind.

All activities are performed from the wheelhouse, providing safe operations as no-one is needed on deck once the lines are hooked up. Also included in the system is JonRie's tension readout for each drum with side lights and dimming for night use.

The hawser winch drums have the capacity to spool 165m of 233mm hawser, a brake capacity of 300-tons and a line speed of 35m/min. The direct drive design allows for quick response to fast loading inertia that an escort winch must endure.

The dual 75hp hydraulic power units can be cross connected to run one winch at faster line speed and for the independent operation of both bow and stern drums. All controls are the in-house design of JonRie InterTech.

Meanwhile, JonRie has supplied its sixth 90-ton winch to McAllister Towing of New York which was installed on the company's new tug *Jeffrey McAllister*. The Series 250 escort winch was designed to handle the full 75-tonnes bollard pull of the vessel.

● *Trident* delivery report, page 38

Tugboat has to be rescued twice in two days

An RNLI lifeboat crew from Selsey on the UK's south coast rescued a tugboat for the second time in two days after it reported engine failure.

The three crew members aboard *General*

Six called the coastguard and an RNLI all-weather lifeboat was launched after a helicopter crew spotted the stricken vessel in the Channel, off the Sussex coast around eight miles east of Selsey.

The volunteer RNLI team were with *General Six* within 25 minutes and the tugboat was then towed to Littlehampton.

Selsey RNLI had rescued the same boat the previous day after its crew reported machinery failure and were drifting approximately five miles south west of Selsey Bill. On that occasion *General Six* was towed to Chichester Harbour.

◀ *General Six* is towed to Littlehampton

Photo: RNLI



In brief

Fleet Xpress from Inmarsat Maritime has secured the Smart4Sea excellence award 2017, the most prestigious of an inaugural set of awards presented by the Greek publisher whose special focus is safer, smarter and greener shipping. The award recognises the organisation best able to demonstrate technological excellence in smart maritime activity.

InterManager, the trade association for ship managers, together with the Warsash Maritime Academy, part of Southampton Solent University in the UK, has presented the findings of its fatigue study, Project Martha, to the IMO. It highlights growing levels of fatigue, particularly among masters and watch-keepers.

Norway's state oil company Statoil drained the Norwegian anchor-handlers' spot market after booking nine vessels for rig moves. It also hired four PSVs. According to Westshore, a Norwegian shipbroking company, the move indicates the market is getting closer to balance.

The Nautical Institute says inspections by the US Coast Guard that showed that on some vessels the foam inside certain Chinese-made life-jackets (Type 1, 160RT) had turned to dust, highlights the importance of checking life-jackets and all other life saving equipment regularly.

Huisman is to deliver the first crane built and tested at its production facility in Navegantes in the south of Brazil. The 50-ton (deck) knuckleboom crane is the first of an order of two for DOF/Technip.

Research by DNV GL shows almost half (49 per cent) of senior professionals surveyed expected their businesses to diversify into, or invest in, opportunities outside oil & gas.

Istanbul-based Med Marine mobilised 115 mooring boats, a fast boat, and 260 marine personnel to clean up a fuel leakage in Turkey's İzmit Gulf.

Wärtsilä has signed an agreement with the Seabin Project to join its global pilot programme addressing littering in oceans.

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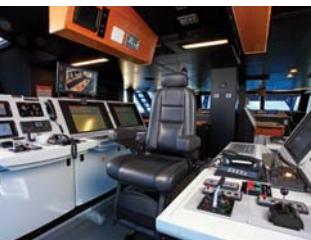
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Expanding firm buys harbour and coast tug

Germany-based towage company, J Johannsen & Sohn, has purchased another harbour and coastal tugboat to expand its offshore and towage service in northern European waters.

Formerly known as *Felix*, the vessel which has been operating in Norway and the North Sea, has been renamed *Carl* and was delivered to its new owners in January.

Established in 1896, Johannsen, a fifth-generation traditional family firm, has always

picked family names for its tugboat fleet.

Owner and CEO, Michael Schaefer, said: "With *Carl* we found a vessel which ideally fits into our segment and which we can use variably in supra-regional markets. Certainly an attractive price compared to its standard and outstanding maintenance status convinced us to select the tug."

Carl was designed by Robert Allan Ltd of Canada and built at East Isle Shipyard Ltd, Canada, in 1995. With Aquamaster

ASD propulsion and Caterpillar 3516TA diesel engines, the vessel has a bollard pull of 52 tonnes and a maximum speed of 13 knots. It is

fitted with fire-fighting monitors and with tank capacities of 230m³ marine gas oil and 36m³ of potable water.

Carl's home port will be Lübeck, where Johannsen is headquartered and its tugs used to work before *Axel* and *Michael* were transferred to Rostock in 2011 to operate in co-operation with Fairplay Towage. *Carl* will most likely work in different ports along northern European waters.

Schaefer said: "This is the first of a number of fleet additions. Difficult markets in many branches of our industry mean we expect to see attractive, good quality, used and new-build tugs coming up for sale at low prices."

In order to support its own purchase ambitions, since August last year Johannsen has started to offer technical management of offshore supply tugs to third parties through a new consultancy office.

Along with towage, Johannsen offers further services in the ports of Lübeck and Wismar such as mooring, stevedoring and cargo lashing/securing with a team of 60 employees.

Schaefer says that, in the short and medium term, Johannsen's strategy is to seek the best possible way to enlarge its expertise in selected fields of business in order to withstand and counter the current adverse economic climate.



◀ *Carl with its crew after the vessel was handed over to Johannsen in Norway*

Company to celebrate 70 years of radar

Electronics firm Kelvin Hughes is planning events to celebrate 70 years of radar. Its first Type 1 radar, pictured right, was installed in 1947.

The company has been responsible for a number of significant technology firsts, including the first navigation radar for commercial ships to be type-approved. In 2006, it

launched the first commercially available, solid-state maritime navigation radar. By removing the need for a magnetron, SharpEye has increased radar reliability, reduced costs and enhanced the user's situational awareness, all at the same time.

In 2010, the company brought SharpEye to vessel traffic service and coastal surveillance

applications and 2013 saw the launch of the world's first upmast multi-purpose navigation radar to be located in a carbon composite housing with stealth characteristics.

That year it also launched the SharpEye SxV, the first 360-degree X-Band, pulse Doppler radar for both ground surveillance and marine security.



Caribbean island yard has new management

Following an agreement made between the government of Curaçao and Damen Shipyards Group in September last year, Damen Shiprepair & Conversion took over the management of the Curaçao Droogdok Maatschappij on 1 February. The yard will continue activities as Damen Shiprepair Curaçao.

Strategically located on the route to the Panama Canal, outside the hurricane belt and offering excellent working conditions within a natural bay, Curaçao is part of the Kingdom of the Netherlands.

Agreement expands valuable market foothold

Unique Group has announced a joint co-operation agreement with Kazakhstan-based Caspian InterIndustrial Company (CIC). The agreement will primarily cover the territory of Kazakhstan and will spearhead the establishment of a local office and workshop within the region to support the oil & gas sector, both onshore and offshore, as well as the mining and utility market sectors.

CIC is a recognised leader in the Republic of Kazakhstan for providing quality, cost-effective solutions to a number of challenges inherent in the country's oil industry. It offers a growing portfolio of services to oil & gas

exploration companies.

The new agreement will focus on Unique's on-site engineering services as well as drawing upon its wider support services. In addition the group, through the partnership, will promote its survey equipment, marine and subsea, buoyancy and ballast, and diving and life support divisions. The overall aim will be to work towards establishing a joint venture company within Kazakhstan.

Unique's newly appointed director for its on-site engineering division, Steve Hague, said: "This is a very exciting and positive move to expand and develop a foothold in the Eastern European/Eurasian market."

Sailing ship arrives safely after epic voyage

Netherlands-based delivery company Redwise has completed the epic voyage of the 37m two-master medical support sailing vessel *Ruach* from Amsterdam to Newcastle, Australia, for final outfitting, before it is used to provide medical aid in Papua New Guinea.

Crewed by a mixture of both professionals and volunteers, the vessel – which was sailed on its own keel – set off at the end of September

last year and arrived at its destination at the end of January after a voyage that took in the Canary Islands, Caribbean, Panama Canal and Polynesia.

Ruach was given to medical organisation YWAM Ships Newcastle in May last year and, once outfitted, will deliver medical supplies to remote communities in Papua New Guinea (PNG). The support of Redwise, which ran a major fundraising and publicity campaign before and throughout the voyage, meant that the delivery could be undertaken on a non-profit basis. It was also almost entirely emissions-free.



◀ *Ruach* before setting off on its epic voyage to Australia

YWAM Ships Newcastle managing director, David Stephenson, said PNG had the worst health status in the Pacific.

He said: “A ship isn’t the best option – it’s the only option for reaching these isolated islands. What an opportunity we have to partner with our nearest neighbours in PNG to deliver basic health care services.”

The PNG government has partnered with the non-profit YWAM Ships for the past six years, as part of its national strategy in reaching its rural and remote citizens with medical care. In PNG 43 per cent of the population are under the age of 15 and one in four people does not live to celebrate their 40th birthday.

Ruach will join the existing fleet of medical outreach vessels operating in PNG with YWAM Ships. It aims to set sail in mid-2017 to deliver primary health care, optometry, dentistry, vaccinations and medical supplies.

Redwise, which has delivered thousands of vessels around the world, became involved in the project after recognising it as an opportunity to make a significant contribution to the people of PNG.

During the voyage, crew posted several online blogs. After leaving Tahiti, Renske Buisman wrote: “As predicted on the weather charts, heavy winds joined us, accompanied by rain, and lots of it.

“So over the next few days, every once in a while we emerged from the dry but steaming hot wheelhouse; wrapped in raincoats and a safety harness we spread over the deck to carry out yet another order from the captain. The swell grew higher and turned our endless blue into a beautiful wild chaos, where the pouring rain sent a spray dancing over the surface, where one wave lifted us high into the sky and the next let us surf down again.”

Later Buisman added: “With more than 13,000 nautical miles of sea and countless uncaught fish behind us, the excitement of arrival is growing every day.

Hopefully we are blessed with more steady winds that playfully curl up in our sails to send us sliding through the water and flying towards our destiny: Newcastle, here we come.”

Firm has 87 reasons to celebrate

For Robert Allan Ltd 2017 marks its 87th consecutive year in business. That particular anniversary, though laudable in any business, didn’t hold much importance for the company until the tally of tugboats delivered in the past calendar year was completed. That number is a remarkable 87 tugs.

The total comprised six ART Rotor®tugs, one TRAKTOR-V class VSP tug, two RAmpage class offshore support tugs, 54 RAmports class ship-handling tugs, three RApide class shallow draft river tugs, two RAscal class line-handling tugs, 11 RAsstar class tanker escort tugs, a Tundra class ice-breaking tug, six Z-tech class tugs and the first of an exciting new

VSP design series: the VectRA 3000.

According to Robert Allan Ltd, notable among these deliveries were *Harvey Stone*, a RAmpage 6500-ZH class offshore support tug for Harvey Gulf International Marine of Louisiana for operation at the Shell Stones field in the Gulf of Mexico, three ART 110-42 class offshore support Rotor tugs for the Shell Prelude LNG project off Australia and *Seaways 24*, a RAmpage 5500-ZM OSV for Seaways International of Dubai.

Other important milestones achieved in 2016 were the 100th vessel built to a Robert Allan Ltd design by Cheoy Lee Shipyards, and the 150th Robert Allan-designed tug built by Sanmar.

Prime minister meets crew on port’s new emergency towage vessel



Saam Smit Towage Canada (SST) welcomed prime minister of Canada, Justin Trudeau, on board SST *Capilano* in Vancouver harbour.

Trudeau had recently announced the allocation of two emergency towage vessels for the Canadian West Coast, under the

country’s new Oceans Protection Plan.

Capt Mark Bingham, vice president, operations, said: “Saam Smit Towage was honoured to host prime minister Trudeau. We are very proud of our newest fleet additions. The *SST Capilano* and *SST Salish* will play an important role in supporting safe ship movements throughout the Port of Vancouver for years to come.”

The 22m, 65-tonne bollard pull sister vessels were constructed to Lloyd’s Registry standards at ABD Shipyards in North Vancouver and delivered in 2015 and 2016.

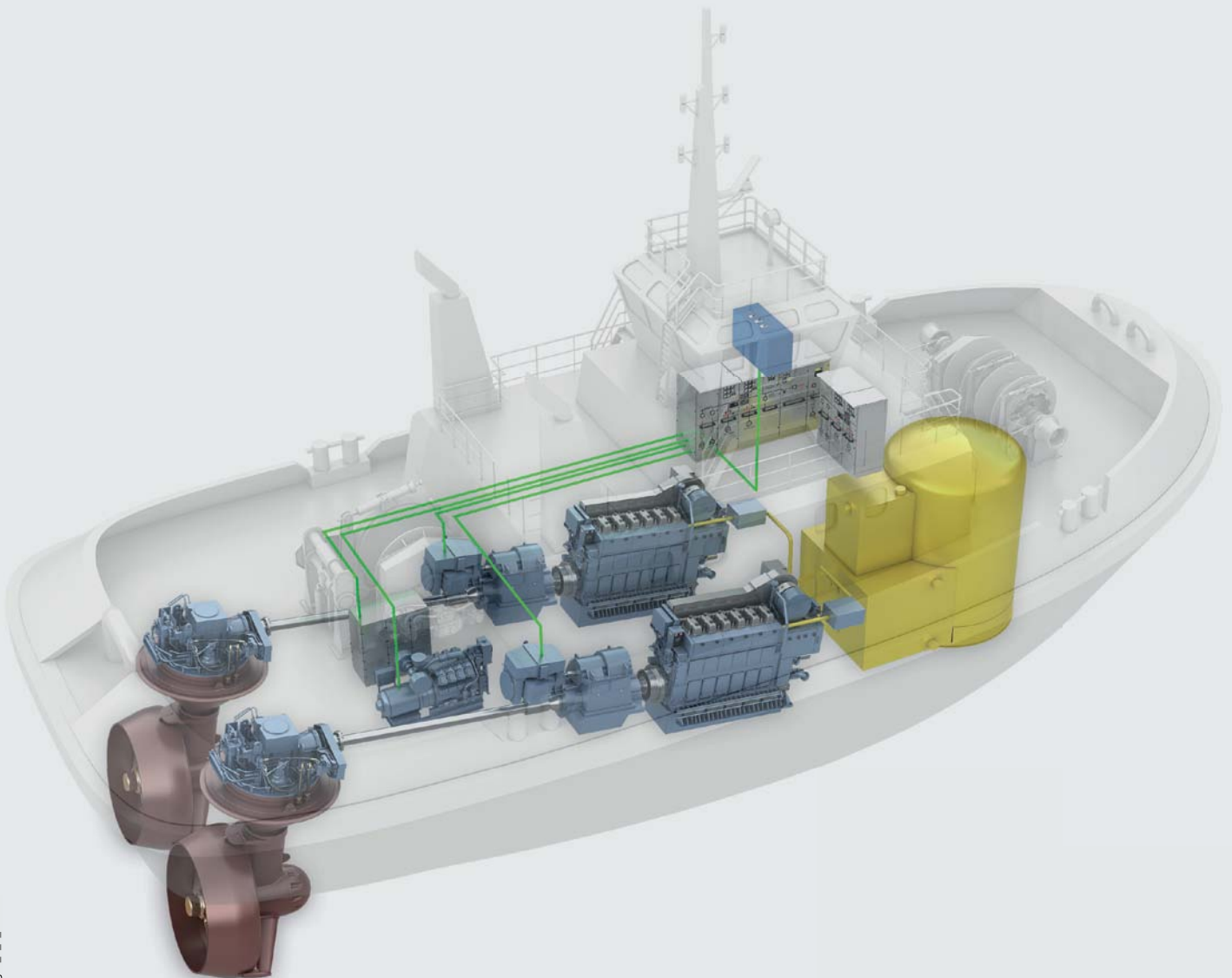
◀ Pictured on board *SST Capilano*, left to right, are: Brad Scott, Trevor Kreutziger, Capt Mark Bingham, Justin Trudeau, Beverley Vlassopoulos, John Armstrong and Peter Byland

Powered by natural gas

Rolls-Royce is widely recognised for its system solutions for a broad range of vessel types.

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People in the news



Kristina Effler

Kristina Effler is the new global business manager for **Alfa Laval PureBallast** – assuming the role just as the global shipping industry prepares for the implementation of the IMO BWM Convention's entry into force in September 2017. Effler brings 12 years of experience in various positions throughout the Alfa Laval organisation. Most recently, she served as the global business manager for the PureNOx system within the company's marine division.

Andreas Schell has been appointed as CEO of **Rolls-Royce Power Systems**, succeeding Dr Ulrich Dohle who retired at the end of 2016. Schell joins Rolls-Royce from UTC Aerospace Systems.



Gary Aucoin

Gary Aucoin has taken over as the new general manager of **Schottel Inc** in Houma, Louisiana. He brings to the role extensive experience and enormous knowledge of the US propulsion market, most recently as account manager at Wärtsilä with responsibility for new business development and after sales service in the offshore market. He succeeds Nils Moerkeseth, general manager of Schottel Inc for many years. Moerkeseth will stay with the German-owned company as executive chairman.



Tom Boardley

The Mission to Seafarers has announced that Tom Boardley, executive vice president of Lloyd's Register, has been appointed as the new chairman of the global maritime welfare charity. He will formally take on the role from the incumbent, Robert Woods CBE, on 1 April. Boardley, who has been with Lloyd's Register since 2009, has 30 years' experience in the maritime sector and is currently the president of RINA.

North Sea shipping company **Atlantic Offshore** has named Andreas Lian Kvam as CFO. Kvam has 10 years' experience in the shipping and offshore industry, including working as business controller at Odfjell SE and finance manager in Ocean Rig. He holds an MSc in Business Economics, a CFA and an executive MBA in finance, all from the Norwegian School of Economics (NHH).

Lee Jeong-kie has been elected as new chairman and CEO of the **Korean Register (KR)**, following the death of B S Park. Lee has worked for KR for 29 years in senior management positions, most recently as executive vice president of the classification society's survey division.

Mississippi-based **VT Halter Marine**, a subsidiary of Vision Technologies Systems, has named Robert A Socha as senior vice president of business development and estimating. He brings to his new role more than 30 years' experience in sales, marketing, business development and public relations, as well as deep industry knowledge of the offshore and inland shipbuilding and engineering/construction industries.



Robert A Socha

Simon O'Connell has been named as senior SOLAS market manager at **Ocean Safety**, focusing on sales to customers in the international maritime and offshore sectors of SOLAS-approved safety products.

Ali Gürün has been appointed as a non-executive director of the **Shipowners' Club**. Based in Turkey for many years, Gürün is technical director and shareholder of the Club's longstanding member, Sanmar AS. Gürün graduated from Istanbul Technical University as a mechanical engineer in 1993 and received a master's degree in marine engineering at the same university in 1996. The Shipowners' Club is a member of the International Group of P&I Clubs and works with more than 600 broking companies globally to insure more than 32,000 vessels.



Ali Gürün

Electric submersible pump manufacturer **Borets** has named Obren Lekic as CEO of **Borets US**, located in Houston. With more than 20 years' experience in the oil & gas industry, Lekic will spearhead strategic market growth through new product development, implementing strategic sales and marketing tactics and leading regular assessments of existing and potential sales channels and products. Prior to his newest position, Lekic served as vice president of business development focusing on US growth opportunities.



Obren Lekic

Sweden's **Viking Supply Ships AB** has appointed Trond Myklebust as CEO; he will also act as CEO for the company's Danish arm, **Viking Supply Ships A/S**. Myklebust, previously CEO of Fjord Shipping AS, has extensive experience of the offshore industry, most notably from his position as MD of Bourbon Norway, and as a ship broker and general manager for Seabrokers. He has also been MD of Kongsberg Evotec and has had a long career as chief officer and master in the Norwegian Coastguard and Remøy/Havila.



Trond Myklebust

Astrid de Bréon is **Bourbon's** new group CFO, with effect from 1 February.

Design aimed at offshore renewable market

Norway-based Ulstein Verft has signed a contract to build a DP2 offshore construction and support vessel (CSV) for Netherlands-based Acta Marine. The vessel is primarily aimed at the offshore wind market and carries the new SX195 design from Ulstein Design & Solutions.

Rob Boer, managing director of Acta Marine, said: "We are expanding our services and fleet for offshore wind and chose Ulstein for our new construction support vessel. The dedicated SX195 design with the X-STERN®, an integrated walk-to-work gangway system and 3D crane, and its accommodation, represents a next step in responding to the market needs."

The vessel, due for delivery early in 2018, will also perform support and maintenance tasks on completed wind farms. It will provide in-field flexibility, winter workability, safe transfer of people and cargo, optimised on-board logistics, high productivity and high comfort for charterers' crews.

Boer said: "This vessel will be the next level in the market and very well suited to operate in the offshore, and specifically the renewable, market. Furthermore, Ulstein Verft is renowned for its quality and on-time deliveries, and a vital part of the ship construction is carried out in a roofed and controlled environment."

Ulstein Group chief executive, Gunvor

Ulstein, said: "We are very pleased that Acta Marine has chosen us for this project. We are looking forward to co-operating with them to deliver a new vessel to the growing renewables industry."

The CSV will measure 93.4m long and 18m wide, and will be able to accommodate up to 120 people in 80 cabins. It will be equipped with an SMST provided dynamic motion compensated gangway system, mounted on an integrated tower with height adjustment and a personnel/cargo lift. Additionally, the vessel features a 3D-motion-compensated crane with 6-ton lifting capacity. The cargo area will be 500m² indoors, and 500m² outdoors. The vessel will provide safe and efficient walk-to-work transfer for personnel and cargo in significant wave-heights (Hs) of up to 3m.

Besides carrying the X-BOW® hull line design, the vessel is also equipped with the X-STERN, which increases flexibility and operability while at the offshore wind farm. The hull shape increases comfort for the crew, with a substantial reduction in slamming, noise and vibrations.

Kristian Sætre, managing director at Ulstein Verft, said: "Together with Acta Marine, we have developed a state-of-the-art vessel, and we are ready to build a vessel that will serve the owner well in the offshore wind industry."

Ship owner Acta Marine supports clients on a world-wide basis in areas such as dredging, civil construction, offshore oil & gas and offshore renewables. The company is independent and family-owned and owns and operates a fleet of around 45 support vessels.



◀ An artist's impression of the new Ulstein-designed SX195 CSV at sunset

In brief

Two 31m harbour tugs have been ordered from the Tuong Aik Shipyard, Malaysia, in a change for the yard, which uses its own designs, that until now has spent the decade building OSVs and AHTSs.

Mumbai-based Greatship India is selling *Greatship Disha*, one of its five PSVs, to an undisclosed buyer. It was built in 1999 by Vard Brattvaag in Norway, based on a UT 755 design.

Ohio-headquartered Great Lakes Shipyard was awarded a contract for drydocking and repairs by Geo Gradel & Co for its tug *John Francis*.

Oil firm awards several contracts

Rio de Janeiro, Brazil-based Norskan Offshore, a subsidiary of the Norway-headquartered DOF Group, has been awarded a one plus one year contract with Petrobras for its AHTS vessel *Skandi Botafogo*. The contract for the UT 722 L-design vessel was due to commence on 15 February.

The 80.4m LOA *Skandi Botafogo* was built in Brazil and has a 181-tonne bollard pull. It provides accommodation for 40 people.

Norskan also secured contracts with Petrobras, the Brazilian semi-public oil company, for *Skandi*

Leblon and *Skandi Flamengo* for 365 days and 668 days respectively. The vessels are two PSVs sold in 2015, that Norskan retained market risk on contract renewal after sale. A further contract with Petrobras was secured for *Skandi Vitória*, the first pipe-lay vessel built in Brazil.



▶ Skandi Botafogo

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Hybrid tug dredgers ordered for work in French Guiana

Baggerbedrijf De Boer (Dutch Dredging) has ordered two custom, special-purpose tugs to be built at Damen Shipyards Hardinxveld in the Netherlands through the subsidiary De Boer Remorquage SARL. The tugs are for a 10-year contract with Grand Port Maritime de Guyane in the ports of Cayenne and Kourou in French Guiana.

Their primary functions will be assisting vessels entering and leaving port, and rendering help in the event of emergencies including fire-fighting.

An important secondary role for both vessels will be assisting with maintenance dredging operations in both ports.

The larger of the two, the WID 2915, will be configured for a variety of roles including dredging using the air and water injection dredging (AIRSET) method. The smaller ASD 2310 SD shallow draft tug will be fitted out to operate the equipment needed for bed-leveling, and will also carry out surveying

activities. As these two tugs will be the only support vessels available to either port they can also be used for the transportation of equipment and cargo, up to container-sized loads.

Hugo van de Graaf, Dutch Dredging CEO, said: "We chose Damen for its reputation for designing and building both tugs and dredgers to a high standard. This made it the ideal partner for the construction of custom, multi-purpose tug/dredgers. In addition to this, the vessels will be built under French rules and classification, something in which Damen is also experienced."

French Guiana is a department of France, and is perhaps best known for being the location of the Guiana Space Centre, which is used by the European Space Agency.

Joining Dutch Dredging in the project is Ijmuiden-based Iskes Towage & Salvage, which will be Dutch Dredging's co-owner in the French subsidiary company De Boer Remorquage SARL – the legal entity that ordered the vessels. It will also operate the tugs and will aim to employ and train a number of local staff and crew in the skills required to man and maintain workboats. Iskes already operates a number of Damen vessels, including three ASD 2810 tugs, and is due to take delivery of a Damen ASD 3212 in the next few weeks. Its operating experience in harbour towing and assistance has already



▲ An artist's view of the WID tug 2915 hybrid

provided valuable input for the design and build process.

Jos van Woerkum, managing director of Damen Shipyards Hardinxveld, said: "The success of this deal was based on trust and a respect for each other's knowledge that the counterparties quickly developed."

"While we know Iskes Towage & Salvage well, this is our first time working with Baggerbedrijf De Boer. Yet in just a few months we developed together the WID 2915 by taking an existing Damen design and adding the collective experience of the project partners to create the optimum solution."

The vessels have been designed to meet the needs of the end client, Grand Port Maritime de Guyane, which also contributed to the development of the designs via its own consultant, Hydro GC. The consultant checked and approved the design, and helped optimise the dredging-towing balance so as to achieve an equilibrium within the given specifications.

The WID 2915 is due for delivery in February 2018, with the ASD 2310 SD joining it in November 2018.



◀ An artist's impression of the WID tug 2915 and ASD 2310 SD to be built at Damen Hardinxveld shipyard

New tug to replace 50-year-old veteran at island port

France-based Piriou has received a new order for an OST 30, from its tug range dedicated to towage, from Caraïbes Remorquage which operates in Pointe-à-Pitre harbour on the French Caribbean island of Guadeloupe.

To be built in Vietnam, the 30.3m, 4,500hp-plus tug, with a 55 tonnes bollard pull and azimuth stern propellers, is scheduled for delivery in the first quarter of 2018.

Felix Ramaye, Caraïbes Remorquage manager, said: "This investment is part of the development of the Jarry terminal and of the increase of the capacity of the container ships we have to assist. The new tug *Pointe Tali* will replace our venerable *Pointe Jarry* which is 50 years old. We will then have two fi-fi equipped azimuth tugs."

The OST 30 is a versatile tug designed for towing and push-pull harbour assistance

as well as for high sea towing operations. Its two ASD propellers are driven by two high-speed marine diesel engines. On the bridge, the ergonomics of the control room allow the captain to perform all driving and manoeuvring tasks single-handed, due to good visibility, both horizontal and vertical, over the working area and the environment.

In order to answer specific operating conditions, the tug features a pneumatic starter system to limit the number of batteries on board, gas-oil and fresh water systems for ship supply, fi-fi equipment with separate motorisation to perform fire-fighting, a

towing hook for high sea towing, fenders adapted to push low freeboard barges and an indirect refrigeration system involving all the vessel equipment with box coolers adapted to tropical conditions and no seawater circulation. Accommodation will be compliant with the latest ILO 2006 standards and special attention was paid to sound insulation and air conditioning.



► Piriou's OST 30 tug design

Winch packages for two new AHTS vessels

Huisman, the Netherlands-headquartered worldwide specialist in lifting, drilling and subsea solutions, and the new Oceana Shipyard in Brazil, part of Companhia Brasileira de Offshore (CBO) group, have signed a contract for the delivery of two additional anchor-handling and towing winch packages for two new Havyard 843 AHTS vessels.

These two winch packages are additional to the CBO order for four anchor-handling and towing winch packages signed in 2015, the first system of which was delivered to CBO in November 2016.

Similar to the 2015 order, these two winch packages will be built at Huisman's production facility in Navegantes, Brazil. Delivery is scheduled for the first quarter of 2018. The winches will be delivered with 50 per cent Brazilian content.

The two Huisman electrically driven anchor handling and towing winch packages each consist of one 400-ton anchor-handling winch, one 400-ton towing winch and two 120-ton secondary winches.

Besides the typical winch functions, the anchor-handling and towing winches are fitted with water-cooled clutches integrated in the drive train, enabling overload protection, high speed pay-out and emergency release



functionalities. Furthermore the contract includes services such as spare parts, training and ICT supervision.

Huisman equipment, ranging from stand-alone to highly engineered and integrated systems, is designed and manufactured under its own management, from concept

▲ An artist's impression of Huisman winches on a Havyard 843 AHTS vessel

to installation. The company, which has offices worldwide, has production facilities in the Netherlands, Brazil, Czech Republic and China.

Coating chosen for its proven performance in polar ice

Subsea Industries has received an order for its specialist hull and rudder coatings for application to a shallow draft AHTS vessel under construction at Turkey's Atlas Shipyard.

The hard-type coatings were selected against strong competition because of their proven performance in polar waters. The Ice Class 1A, 65m tug will carry out anchor-handling and oil recovery duties in the ecologically sensitive Arctic in compliance with the IMO Polar Code requirements that came into force in January.

The contract was secured by Subsea Industries' agent in Turkey, Amat

Engineering. Managing director Orkun Comuoglu said: "This is a super Ice Class vessel and required extensive hull protection for the operations the vessel will undertake. The entry into force of the Polar Code is likely to result in more vessels applying the Ecospeed technology."

Manuel Hof, production executive and NACE coatings inspector at Subsea Industries, explained that the Polar Code recommends the application of abrasion resistant, low friction coatings to vessels operating in ice-covered waters.

Hof said: "There is always a risk that conventional antifouling will degrade

rapidly in polar ice, leach chemicals or leave paint fragments behind when ice impacts and damages the coating. There is no such risk with our hard type of coating. Ecospeed and Ecoshield are tough, durable and highly abrasion-resistant coatings.

"Ecospeed is highly relevant to ice-going tonnage. We have a number of icebreaker references now, all of which are producing some very positive results. We are focusing on the ice breaking and ice-going market and are in discussions concerning a number of projects."

The contract includes options for an additional two OSD-designed tugs.

BWT systems deal

Bio-Sea, France's only ballast water treatment (BWT) manufacturer, has been contracted to deliver three new BWT systems to the Piriou shipyard at Concarneau.

Designed to be modular, reliable, innovative and energy saving, the Bio-Sea90 systems will be installed on offshore support and assistance and hydro-oceanographic multi-missions vessels, to be delivered by Piriou to the French Navy and Morocco.

Monitoring and alarm systems order for 13 tugs

Louisiana-based Marine Technologies (MT) has contracted Ulstein Power & Control to deliver alarm and monitoring systems for 13 tugs, designed by Damen, being constructed in the US at Edison Chouest Offshore yards.

The tugs have been designed for heavy-duty mooring assistance and escort in response to two major contract wins in Texas and Alaska. The bridge solution on the tugs has been developed by MT.

Ulstein Power & Control managing director, Gunnar H Hide, said: "We have developed our marine alarm and automation

systems (Ulstein AMS) to fit the new generation of digitalisation, and have based it on a new platform dubbed the Ulstein X-Connect®.

"In Ulstein AMS, information can be easily interpreted for efficient and safe operation. In addition, our new, event-driven systems will save more than 90 per cent strain on the systems and on data traffic.

"This gives the ship owners the option for ship-to-shore operations, in which data can be collected from several ships, and they'll get a more specific insight of what is profitable and what is not."

Mainstay design is first for Italian company

Expanding Italian towage company Ocean has ordered a Stan Tug 2608 from Damen Shipyards Group. The contract marks Ocean's first Damen tug purchase. After delivery – scheduled for June 2017 – the vessel will be mobilised for harbour towage duties in the port of Monfalcone.

Ocean delivers tug, towage and offshore services in the northern Adriatic Sea. It is part

of the larger Ocean Group headquartered in Trieste, Italy.

Managing director Michela Cattaruzza Bellinello explained the company's motivation to purchase its first Damen tug. She said: "We are very aware of Damen's high standards. And for us, compared to the rest of the market, the price was very competitive. Furthermore, the fact that the

delivery is extremely fast is very attractive.

"We bought a Stan Pontoon from Damen a couple of years ago and have been satisfied with its performance. Damen is efficiency."

Stan tugs are one of the mainstays of the Damen portfolio. The Stan Tug 2608, in particular, is an ideal vessel for

harbour towage and vessel assistance roles. Its broad wheelhouse offers an all-round view of operations, and an unobstructed deck creates a safe working area for the crew.

Damen regional sales manager, Andrea Trevisan, said: "This 26m tug delivers an impressive 45-tonne bollard pull. It is a real Damen workhorse – and because we build vessels on stock, we can offer fast deliveries at competitive prices."

The tug will be built at Damen Song Cam Shipyard in Vietnam. To meet Ocean's required specifications, the yard will make a number of modifications to the standard vessel design, including the addition of a 600m³ fi-fi installation and an aft winch.

Contract to supply state-of-the-art vessel

German navigation system manufacturer Raytheon Anschütz, together with its exclusive Norwegian distributor Syberg, has been awarded another contract for the supply of the Synapsis Integrated Navigation System (INS) to a new state-of-the-art wind farm service vessel (WFSV).

Havyard Design & Solutions has developed the new WFSV design – Havyard 831 SOV – in close co-operation with Danish ship owner Esvagt.

The vessel is compact and efficient, but with ample capacity to cater for on-board service and to transport technicians and equipment.

Raytheon Anschütz will supply an INS with a total of six Synapsis NX multi-functional workstations for chart radar, ECDIS and conning, as well as X and S-band NautoScan NX network-based radar transceivers, a fully redundant Standard 22 gyro compass system and the adaptive, high precision, NP 5500 trackpilot.



◀ A Damen Stan Tug 2608

Prompt order placed for new tug

News that Robert Allan Ltd and Sanmar have jointly worked on a pioneering design of compact tractor tug resulted in the signing of an order within just a few weeks of the announcement of the concept.

Port Taranaki, on the west coast of New Zealand, has awarded the Turkish shipbuilder a contract for construction of the very first of its exclusive Deliçay series, a compact design conceived as

an off-the-shelf unit with numerous variations to suit customer needs.

This vanguard of the series will measure 25.3m by 12m and have a guaranteed bollard pull of 60 tonnes from a propulsion plant comprising Caterpillar engines and forward mounted Rolls-Royce Z-drives.

The new tug will be tailored to cater for Port Taranaki's needs, which include precise vessel handling in tough sea conditions.

New walk-to-work solution chosen for multi-purpose vessel upgrade

Olympic Shipping has chosen Kongsberg Maritime's new K-Walk integrated vessel gangway solution for installation aboard the multi-purpose support vessel (MPSV) *Olympic Orion*.

Designed to increase efficiency and safety for walk-to-work (W2W) duties, K-Walk will

be integrated with the advanced Kongsberg information management system (K-IMS) and the existing K-Pos dynamic positioning system on board *Olympic Orion*, which will be upgraded as part of the installation in the latter half of 2017.

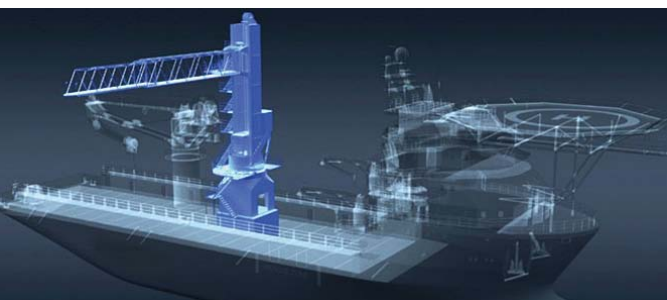
The K-Walk system takes a new approach to increasing productivity and efficiency for W2W vessels by improving operability of key systems on board. In addition to full integration to enable mission and route planning for increased service capability within a wind farm, the system

interconnects with the DP and a planning station and extends vessel availability by increasing the operational weather window.

Bjørn Kvalsund, COO, Olympic Subsea, said: "We also see a potential to install this integrated gangway solution on board several of our existing vessels."

Stene Førsund, executive vice president, global sales and marketing, Kongsberg Maritime, said: "K-Walk provides total oversight of route planning and gangway hook-up operations."

"It enables better real-time and long-term management decisions, and empowers safer, more predictable, and efficient operations through reduced human interaction and automation based on the deep integration of critical systems on board."



◀ Graphic showing Kongsberg's new K-Walk

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Trio go to work supporting FLNG facility

Three infield support vessel (ISV) Rotor®tugs have now been delivered by ASL Shipyards in Singapore to their owner, KT Maritime Services Australia Pty Ltd. The vessels are of Rotortug ART 100-42 Class, the world's first purpose-designed and purpose-built floating LNG (FLNG) ISVs. Their new owner is a joint venture of Kotug International BV and Teekay Shipping Australia Pty Ltd.

Designed by Robert Allan Ltd of Vancouver, the vessels are named *RT Beagle Bay*, *RT Roebuck Bay* and *RT Kuri Bay* after bays in Western Australia that the vessels sail past en route from their home port in Broome to Shell's *Prelude* FLNG facility off northwest Australia.

These three innovative Rotortug vessels are modern high performance tugs, custom-designed to meet Shell's demanding requirements and constructed to Lloyd's Register class requirements with the following notation: LR ✱100A1 TUG, ✱LMC, UMS, IWS, FiFi1 (with water spray). Tasks include escorting and berthing LNG carriers, condensate tanker tow-backs, pilot transfer, floating hose handling, as well as playing an integral part in security, emergency response, rescue and evacuation requirements.

Very high fuel oil and fresh water capacities were required for a 35-day offshore endurance, with reserve. Additionally, the vessels are operating in significant environmental conditions. The RAsar-style hull form was selected due to its proven

seakeeping performance in high sea states. It provides considerable reduction in motions and accelerations compared to more standard wall-sided hull forms.

An extensive model testing programme and computer-based computational fluid dynamics (CFD) analyses were conducted to verify performance and to optimise many aspects of the design including hull shape, propulsor arrangement, and appendage arrangement.

The vessels all measure 41.95m x 16m with a loadline draft of 7.9m and have a propulsion system comprising three Niigata 6L28AHX main engines each developing 2,220kW at 800 rev/min (IMO Tier II compliant). These power three Niigata ZP 21 Z-drives (two forward, one aft) with 2,700mm fixed pitch propellers and idle slipping clutches. Sometimes known as a triangular propulsion arrangement, the configuration can best be described as a tractor tug with its aft skeg replaced by an additional Z-drive.

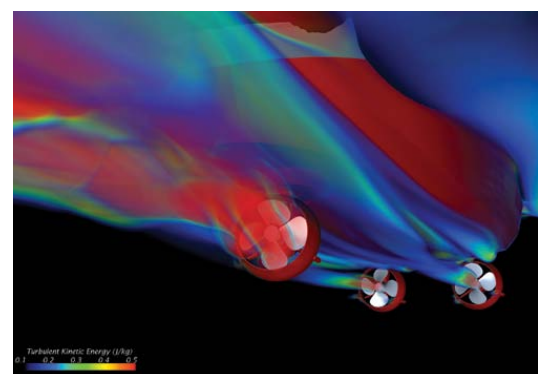
Other engine room systems include a pair of Caterpillar C9 ship service generator sets, each providing 200ekW at 1,500 rev/min. These are backed up by an emergency generator set consisting of a Cat C4.4 developing 82ekW. The external fire-fighting system comprises a single 2,850m³/hr pump driven off the port main engine, 2 x 1,200m³/hr monitors, water spray, as well as foam system capability of 300m³/hr from the starboard monitor.

On trials, the ISVs achieved essentially

equal ahead and astern speeds of over 12 knots, sidestepped at over 6 knots, and produced more than 100 tonnes of bollard pull in both ahead and astern directions.

Crew accommodation is arranged with eight MLC-compliant cabins on the main and forecastle decks. One spare cabin is also designated as a recovery room for four survivors and is connected to a treatment room. The main deck also contains the galley and mess, generous dry and cold store rooms for the galley, and laundry. On the lower deck, the survivor space (capable of accommodating 85 survivors) doubles as a recreation room.

The wheelhouse features both fore and aft control stations providing the best possible visibility for day-to-day ship handling, hose handling and pilot transfer, as well as for emergency operations such as deploying the Norsafe Mako 6.55m-long fast rescue craft



and the Dacon rescue scoop.

Located on the forward deck is a Kraaijeveld electric escort towing SafeWinch model KASW-30-E-TR/28/28 featuring a split drum, two wildcats, single warping head and spooling gear. Aft is a similar Kraaijeveld electric aft escort towing SafeWinch but featuring a single drum with capacity of 350m of 80mm synthetic rope. Other deck

equipment includes a Kooiman retractable towing fairlead (Omega pin), Delta pins with chain stopper for hose handling from the same manufacturer, an HS Marine 50-ton metre deck crane, two 10-ton tugger winches and a 5-tonne vertical capstan.

The vessels are very heavily fendered for the expected high swells that may be present during pilot transfer and other operational

duties. Ship-handling fenders at the bow comprise an upper row of 1m diameter cylindrical fender and a lower course of W-fender. Sheer fenders consist of 1m high by 450mm thick W-fender. Stern fenders either side of the open bulwark comprise an upper row of 1,000mm diameter cylindrical fender and a lower course of W-fender.

Andy Smith



First US-built Rotortug makes an entrance

ART Trident has undergone trials and is now in service with Seabulk Towing of Fort Lauderdale, Florida. Designed by Robert Allan Ltd to Rotortug principles, and designated as an ART 80-98US, the new vessel was built by Master Boat Builders in Bayou La Batre, Alabama.

Trident, the first in a series of three sister ships on order, is the first US-built Rotortug to enter service in the country. This trio of tugs, each with three engines and Z-drives, will truly raise the bar for omni-directional ship-handling operations in US waters.

The ART (Advanced Rotortug) designation applies to Robert Allan Ltd-designed tugs featuring the unique triple configuration, originally conceived and developed by Ton Kooren of Rotortug (KST) BV of the Netherlands. Offering exceptional manoeuvrability and control, with a redundant propulsion machinery configuration, the ART series offers enhanced performance for ship-handling, terminal support and escort towing.

"We have made a conscious decision to introduce the Advanced Rotortug in the United States because we believe they represent the next generation of highly manoeuvrable tugs that provide an ideal

solution for LNG export terminals and other applications that demand safe moorings," said Rick Groen, chief operating officer of Seabulk Towing, a unit of Fort Lauderdale-based Seacor Holdings.

He continued: "For more than half a century, Seabulk Towing has been a proud and reliable ship-docking partner at ports along the Gulf and southeast coasts, and the introduction of the Advanced Rotortug expands upon these trusted capabilities, furnishing the latest technology for safe, dependable operations even under the most challenging of circumstances. As the US LNG market continues to grow, we definitely see increasing demand for such versatile ARTs."

The leading measurements of the new vessel are 30m x 13.25m with a maximum draft of 5.7m. Main propulsion comprises three Caterpillar 3512C diesel engines, each developing 1,911bhp at 1,600 rev/min, and each driving a Schottel SRP 1012 fixed pitch Rudderpropeller unit. Two are located at the bow with the third aft in place of the fixed skeg on a conventional tractor tug.

The electrical plant consists of two identical Caterpillar C7.1 diesel gen-sets, each with a power output of 150ekW. The

pump feeding the external fire-fighting system, supplied by FFS, is driven off the port main engine. Duramax box coolers with impressed current anti-fouling systems provide the necessary cooling.

On trials, *Trident* met or exceeded all performance expectations, with an average bollard pull ahead of 78 tonnes and a free running speed of 12.5 knots

The vessel has been arranged and outfitted to a high standard with six crew berths in total. The master's and chief engineer's cabins are located in the deckhouse with two double crew cabins located on the lower accommodation deck. A fully appointed mess/lounge and a modern, well equipped galley are also located in the deckhouse.

The deck machinery consists of a JonRie Series 230 ship-assist hawser winch forward, and a JonRie Series 500 combination towing/hawser winch on the aft deck. The tug is equipped to perform escort operations over both the bow and stern, and is also equipped for long line towing over the stern. The wheelhouse is designed for maximum all-round visibility with a forward control station providing maximum visibility to both fore and aft deck working areas and featuring an

Alphatron integrated bridge system.

International Paints (both Intershield and Interthane systems) have been employed to protect the vessel, and the fendering, supplied by Schuyler, is comprehensive. Ship-handling fenders at the bow consist of a row of cylindrical fender at the main deck level, 800 x 400mm, and a row of 480 x 300mm W block fender arranged below. Two rows of 250 x 250mm hollow D fender provide

protection at the main and forecastle deck sheer lines, and an 800 x 400mm cylindrical fender is used at the stern with a course of 480 x 300mm W block fenders beneath. A combination of 250mm and 300mm hollow D fenders are arranged around the stern and below the waterline for submarine operations. *Trident* will be followed in May by *Triton* and, by the end of the year, *Trinity*.

Seabulk Towing is recognised by the

towing industry as an established leader in harbour ship assist operations and offshore towing services. Founded on the basic principles of safety and service excellence, it assists petroleum and chemical product tankers, barges, container ships and other cargo vessels in docking and undocking and provides services along the Gulf Coast and southeastern seaboard from Cape Canaveral, Florida, to Port Arthur, Texas. AS

Anchor-handling duo built for extreme cold

Normann and *Pomor*, a pair of newly built icebreaking AHTS vessels have sailed on their maiden delivery voyages to Kholmsk from Bergen in Norway after completion at the nearby yard of Havyard Ship Technology AS. The 22-day trip involved using the Northern Sea Route to the Russian port on the island of Sakhalin in the Sea of Okhotsk to the east of the Russian mainland.

Both vessels are now operating from the port, joining sister vessel *Aleut* which was delivered in the autumn of 2015, providing offshore support – one of several locations around the world where owner/operator Femco is present as an AHTS and dry cargo operator. The company began as state-owned in 1976 to support Soviet offshore exploration drilling in the Sea of Okhotsk; current and previous operations since becoming a private company cover the Arctic, South Africa, Caribbean, Brazil, North Sea and West Africa with a 16-strong fleet.

Pomor and *Normann* are designed for extremely challenging conditions. Both are constructed according to DNV's Ice Class Icebreaker Ice-10, with classifications demanding capabilities of breaking up to 1m thick, one-year old ice. There are also specific requirements in terms of hull strength, use of material, rudder and steering systems, propellers and propulsion system.

Construction of the two ships has taken place with class notation Winterized Cold (-30) in mind. As such, these vessels are constructed for work in temperatures as low as -30 degrees C without freezing up. This means vital safety equipment and environment are protected against ice and frost at shielding, incorporation and electric heating or melting. Ships are fitted with



engine power effective enough to go full out winterisation and anchor-handling operations at the same time.

The vessels both measure 86.7m overall x 19.5m beam with a maximum draft of 7.75m. Propulsion comprises four Bergen diesels, two at 4,000kW and two at 3,000kW powering two Rolls-Royce Kamewa CP propellers of 4,300mm diameter. The vessels each have four Rolls-Royce tunnel thrusters, all of 1,000kW, one pair forward and another aft. This configuration gives the vessels a top speed of 16 knots and a bollard pull of 204 tonnes. An economical speed of 12 knots burns less than half the fuel consumed at maximum speed.

Complying with DNV FiFi1 notation is a main engine driven fire-fighting system with water spray supplied by Jason Engineering. It comprises two pumps, each of 1,650m³/hr capacity, feeding two wheelhouse roof mounted long-barrelled monitors.

Executive vice president Lasse Stokkeland of Havyard Ship Technology says that the Leirvik shipyard has knowledge and experience from the design and construction of a wide variety of ships. Furthermore, deliveries of these and previous icebreakers have given Havyard a good relationship with the Russian market.

"We hope to further develop this relationship and our knowledge regarding construction of vessels for Arctic areas. We have the competence and technology attractive for shipowners operating in these

areas, and in addition to the Havyard 843 ICE design, we also have other icebreaking designs in our portfolio, enabling us to quickly adapt these designs to the needs of the customers."

This 843 ICE design provides crew accommodation for 53 people in 15 single cabins, seven twin cabins and six four-berth cabins. In addition there are berths for 20 survivors and a seating area for a further 45 rescued personnel. Notwithstanding this, the owner states that the ship can be safely run with just 11 people. In addition to the normal galley and mess facilities, each ship incorporates a hospital.

The vessel's bridge is well equipped with a comprehensive selection of navigation and communication electronics. The fit-out includes a GMDSS system covering all areas A1 to A4 and Sailor (Thrane & Thrane) have provided the Inmarsat C, MF/HF with DSC and six VHF's. In addition there is a Furuno navtex and five Motorola UHF stations.

Dynamic positioning is provided by a DP2 Rolls-Royce Icon system with Poscon joystick control. Raytheon Anschütz provided three gyrocompasses and the autopilot, while Furuno supplied the majority of the other items, including three radars, two GPSs, weather fax and BNWAS. Skipper, however, was responsible for the speed log and echo sounder.

The main anchor handling/towing winch is a Rolls-Royce double drum unit with 2,000m of 76mm diameter wire on each drum. A



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secondary winch from the same manufacturer has a split drum with 835m and 209m of 180mm diameter rope. Other Rolls-Royce supplied items include an 8-ton capstan, two 10-ton tugger winches, shark jaws and tow pins. On both port and starboard sides of each vessel is a deck crane manufactured by the Bergen-based TTS Group.

Two 15-person waterjet propelled and

Steyr-engined FRB 700 rescue boats from the Ulsteinvik-based Mare Safety AS are carried and other rescue equipment includes a rescue scoop, eight-person rescue basket and scrambling net – all provided by Dacon.

The two new ships are each able to carry a deck cargo of 1,200 tons on a free deck area of 600m². Tanks are available for 2,282m³ of fuel oil, 906m³ of fresh water, 2,824m³ of

ballast/drill water and 543m³ of brine/mud. Some 239m³ of bulk storage is also available in four tanks. Recovered oil collected by ORO can be stored in tanks totalling 938m³.

These two vessels for the Moscow headquartered Femco were initially constructed at the Cemre and Tersan yards in Turkey and subsequently taken to Norway for final fit-out. AS

Tug duo off to work in new Hamburg home



The latest addition to Germany's largest fleet of tugs is a pair of multi-purpose ASD tugboats built at the Boğaziçi shipyard in Istanbul, Turkey. Owner and operator Bugsier took delivery of *Bugsier 11* in Hamburg late last year, with identical twin *Bugsier 12* arriving as *IT&O* went to press.

Designed by Spanish firm Cintraval, based in Bilbao, the all-welded steel construction vessels have ABS classification and are capable of providing berthing and unberthing of vessels at harbour premises,



pull and push during vessels' mooring manoeuvres, escort services, open sea and harbour tug services from the stern and fire-fighting, salvage and oil recovery services.

The 497gt *Bugsier 11* and *12* are 32m x 12.5m with a depth of 5.6m and maximum draft of 6m. Main engine power comes from two NRF box-cooled ABC 12 DZC engines each delivering 2,500kW at 1,000 rev/min to twin Schottel Type SRP 4000 CP azimuth thrusters with four-bladed 2,800mm diameter propellers. This combination gives the vessels a maximum speed at full power of 14 knots and a maximum bollard pull of 88 tonnes, with BP of 85.5 tonnes ahead. A single Schottel STT 170 FP bow thruster at 250kW gives the tugs excellent manoeuvrability. Volvo Penta provides the auxiliary power with a trio of diesel generators – two rated at 225kW and the third at 70kW – also with an NRF box-cooling system.

On deck, a trio of winches were supplied by Kraaijeveld. The forward hydraulic driven double-drum anchor-towing winch has a

static brake holding of 200 tonnes and a drum pull of 70 tonnes. Drum capacities are 200m of 52mm diameter Dyneema synthetic rope and 300m of 52mm diameter steel wire. Aft is a towing winch, also with a hydraulic driven double-drum with a capacity of 850m and 250m of 52mm diameter steel wire. Drum pull is again 70 tonnes with a drum brake-holding capacity of 200 tonnes. A hydraulic tugger winch is also fitted.

The Karmfork and tow pin system is by Karmøy Winch, has an SWL of 300 tonnes and can accommodate wire or chain up to 102mm diameter. The tugs' multi-purpose credentials are further enhanced by a Palfinger deck crane, stern roller and reel winder, while the 60m² deck area has a three-TEU loading capacity.

Bugsier 11 and *12*'s FiFi1 status is courtesy of twin water/foam monitors with an output of 1,200m³/hr and two pumps each with a capacity of 1,350m³/hr, all supplied by FFS. There are international ship-to-shore fire connections and a foam capacity of 15m³.



On the bridge, two ECDIS systems were supplied by Transas, while Navitron was responsible for the autopilot and Sperry Marine for the gyro compass. Other key navigation and communication equipment was supplied by Furuno, including two radars, GPS, speedlog, AIS, navtex and echo sounder.

While both vessels can operate with a crew of six at sea and three in port, there is accommodation for up to 10 crew members. This is fully air-conditioned and comprises two single-berth cabins with WC and shower

unit plus four twin-berth cabins also fitted with WC and shower. Other onboard facilities include a galley, mess room, two provisions stores, laundry and wet gear locker.

Bugsier, which began business in 1866, is based predominantly in Hamburg and Bremerhaven on Germany's North Sea Coast and also operates out of Rostock on the Baltic Sea. These latest arrivals bring its tug fleet to 29, while the company also operates a smaller fleet of marine environmental protection vessels as well as cranes and pontoons.

John Oliver

'Young and diverse' fleet welcomes twins



Two Azistern 3270 harbour tugs, designed by Offshore Ship Designers (OSD) have been delivered to their new owner, PACC Offshore Service Holdings (POSH Singapore), the Asia-based international OSV operator.

POSH Husky and *POSH Hardy* were built at Paxocean Shipyard in Singapore. They are classed by Bureau Veritas and fly the Singapore flag. The 488gt vessels have a LOA of 31.6m, with a moulded breadth of 12m, a moulded depth of 5.2m and an operations draft of 5.4m.

Main propulsion comes from two Niigata 6L28HX engines, each delivering 1,838kW at 750 rev/min and driving twin Z-Peller-ZP41 azimuth fixed pitch Z-drive propellers. This combination gives *Husky* and *Hardy* a top speed of 13 knots and a bollard pull of 72 tonnes. Auxiliary power comes from two generators, each providing 220ekW, and a single 62kW gen-set.

Deck machinery includes a forward towing winch with a brake holding of 180 tonnes and a pull of 60 tonnes at 0-6m/min. The twin-

drum capacity is 220m of 60mm rope on each drum. The 70-tonne aft towing winch, has a brake holding of 140 tonnes with a drum capacity of 1,000m 52mm diameter steel wire plus a 400m synthetic line. Also on deck is a 70-tonne tow hook and a deck crane delivering 0.5 tonnes SWL at 8.6m outreach.

Both tugs have FiFi1 notation thanks to their twin 2,800m³/hour fire pumps linked to a pair of 1,200m³/hour remote-controlled fire monitors. They are also equipped to deal with oil spills, with their 0.5m³/hour oily water separator and a two-nozzle dispersant pump linked to a 10m³ dispersant tank. Other tank capacities are 251m³ of fuel oil, 42m³ of potable water and a 10m³ foam tank.

The comprehensive range of navigation and communication equipment on board is from leading names in the industry. Simrad supplied the radar, DGPS navigator, AIS, wind anemometer and GPS compass. Twin Inmarsat Cs, a pair of VHF radio telephones, an MF/HF, EPIRB and SART were all supplied by Cobham subsidiaries Thrane & Thrane and Sailor. Lilley & Gillie were

responsible for the speed log and magnetic compass, while JMC supplied the echo sounder and navtex receiver.

POSH Husky and *POSH Hardy* each have a crew of 10 accommodated in six single-berth and two twin-berth cabins, all of which are air conditioned.

Michiel Wijsmuller, managing director of OSD, which is headquartered in the Netherlands, said: "POSH has a young and diverse fleet of over 100 vessels servicing various sectors of the offshore oil & gas value chain, and we are delighted that it has supplemented its portfolio with the addition of these two new OSD-designed tugs."

The new vessels will form part of POSH's harbour services and emergency response division. The company launched its harbour services business more than a decade ago. Through a joint venture, Pacific Workboats, POSH owns, operates and manages a fleet of harbour tugs and heavy lift crane barges that are actively engaged in supporting harbour towage operators and providing heavy lift services to shipyards. **JO**



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Success prompts follow-on order for new AHTS trio

Three more Wärtsilä-designed AHTS vessels have been delivered from the Wuchang Shipbuilding Industry Group yard in China. The ships have been built for China Oilfield Services Ltd (COSL), the largest fleet owner of offshore service vessels in China. They have been constructed to CCS class with notation that includes FiFi1 and DP2.

The delivery of these ships follows the success of the Wärtsilä VS designs for four AHTS vessels and two PSVs delivered in 2015 to the same customer, and which are now in regular operation. The contract for the original six ship designs was placed in December 2012, and another for these three new AHTS vessel designs in December 2014.

The designers have received excellent feedback from the customer concerning the six ships already in service, noting especially their efficient designs, successful operation and high performance. As a result, COSL opted to deal directly with Wärtsilä for the design of the new AHTS vessels.

The three new vessels, named *Hai Yang Shi You 677, 678 and 679*, measure 74.1m x 18m with a draft of 6.4m. They are each powered by four medium speed diesels from Weichai Heavy Machinery, two at 2,720kW and two at 2,040kW. These power two 3,800mm diameter controllable pitch propellers (CPPs) from Berg Propulsion to give a bollard pull of 150 tonnes, service speed of 12 knots and a maximum speed of 16 knots recorded on sea trials. Three 770kW Kawasaki tunnel thrusters from Wuhan Kawasaki Marine Machinery are also fitted.

Each tug has a bow thruster room ahead of a full vessel width switchboard room. Aft of the engine room, which has the four engines abreast, is a workshop and various stores.

Further aft are numerous tanks and four dry bulk silos, each with a capacity of 48m³.

On the main deck there is a sick bay with bathroom attached and a changing room. The gymnasium, laundry and drying room are also on this level. There are cabins for a total complement of 28 persons on two upper accommodation decks; rescue facilities for 100 people are provided.

Deck machinery was supplied by Wuhan Marine Machinery Plant and includes a 400-ton brake load waterfall configuration, split drum main winch, which sits ahead of the wood clad working deck (560m²), and a 6m x 3,000mm diameter stern roller. Two retractable shark jaws have an SWL of 400 tons. A hydraulic deck crane is also fitted along with two 15-ton tugger winches and a pair of 7.5-ton capstans.

Each vessel has considerable cargo carrying capacity including a deck load of 1,000 tonnes, 1,100m³ of fuel oil, 580m³ of fresh water, 680m³ of liquid mud and 350m³ of brine (or rig chain).

Cai Dian, vice general manager shipping at COSL, said: "We have great respect for Wärtsilä's competences and experience in designing successful offshore service vessels. The six Wärtsilä Ship Design vessels in operation since last year are meeting all our expectations and we are extremely satisfied with them."

"Wärtsilä's design portfolio is outstanding and we are very pleased to have them as a partner in this latest project."

The AHTS vessels are based on Wärtsilä Ship Design's VS4612 design, and have been customised to meet COSL's operational requirements. The design features a reduced environmental impact and an optimised hull line providing lower fuel consumption. AS

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Offshore Marine & Workboats ME
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Deliveries in brief

 US marine transportation company Vane Brothers has taken delivery of its latest tug, the 4,200hp **Delaware**. It is the fourth of an eight-tug order from Florida-based **St Johns Ship Building** and has joined the other three primarily engaged in towing petroleum barges in Vane Brothers' Philadelphia operation.

The 30.5m x 10.4m ocean-going vessel is a steel-hulled, model bow tug designed by Frank Basile of Entech Designs from Louisiana. It is powered by two Caterpillar 3516 Tier 3 engines, each generating 2,100hp at 1,600 rev/min. Twin John Deere Power Tech 4045, 99kW generators deliver service power to the boat, with a third John Deere 4045 driving the Intercontinental DD200 towing winch.


Like the other tugs in the series, **Delaware** has accommodation for up to seven crew members and features an enhanced fire-fighting system and the latest Simrad electronics package.

Elizabeth Anne, the first tug in the series, was delivered to Vane Brothers in January last year. The fifth tug, **Philadelphia**, was scheduled to arrive in March, with the final three all due to be delivered by the end of this year.

The **Elizabeth Anne** Class is a close cousin to Vane's Basile-designed **Patapsco** Class tugboats, 15 of which were produced between 2004 and 2009.

Baltimore-based Vane Brothers, which began life in 1898, operates a fleet of 150 tugs and barges providing maritime services from seven locations along the US Eastern Seaboard – New York, Philadelphia, Baltimore, Norfolk, Charleston, Savannah and Jacksonville.



 **Cao Gang 26** is a new RAmports 3300 ASD tug designed by Robert Allan Ltd, constructed at **Jiangsu Zhenjiang Shipyard** in China and delivered to owner Cao Fei Dian Port in northern China.

Main propulsion for the 33m x 12.2m vessel comes from a pair of Yanmar 6EY26W diesel engines, each rated at 1,920kW at 750 rev/min and each driving a Rolls-Royce US205 FP Z-drive unit. That combination gives **Cao Gang 26** a free




running speed of 13.5 knots and a bollard pull astern of 60.5 tonnes.

The electrical plant comprises two identical diesel gen-sets, each with a power output of 120ekW. Deck machinery consists of a ship assist hawser winch and a pair of independent anchor windlasses on the bow.

Accommodation for a crew of 14 includes master's and chief engineer's cabins on the main deck and two six-person cabins on the lower deck. Each deck also has a common WC.

Tanks on the vessel have capacity for 70m³ of fuel oil, 36.2m³ of fresh water and 120.6m³ of water ballast.

 The first of a new series of shallow-draft pushboats, the RApide 2000-Z2 Class, has been delivered to Cargill Transportation in Brazil to support the company's operations transporting soybeans on the Amazon River system.

Cargill Jau is now working on assisting port manoeuvres in Cargill's terminals on the Amazon and is one of a growing number of modern Z-drive pushboats designed by Robert Allan Ltd for operation in this area.

Built at **Estaleiro Rio Maguari** in Belém to the south of the Amazon delta, the vessel has a LOA of 19.5m, beam of 9m and depth of 3.1m, with a normal operating draft of 2.1m. The pushboats were designed to ABS and Brazilian NORMAM-02 requirements, built under survey of Brazilian classification society Bureau Colombo.


The wheelhouse is designed for maximum all-round visibility with a split forward control station providing maximum



visibility to the foredeck working area of the pushboat as well as to the convoy of barges ahead. For maximum operational flexibility, accommodation for up to four people is provided, although operations will normally occur on shifts close to one of the terminals.

The deckhouse extends aft over the main propulsion components which comprise a pair of Caterpillar C18 diesel engines driving Schottel SRP 330 Z-drive units. The drives are fitted in tunnels to optimise flow while reducing draft. Two identical Caterpillar diesel gen-sets are provided in the vessel's auxiliary machinery space located below the main deck.



 Rimorchiatori Riuniti has taken delivery of a Damen ASD 2913. The new vessel – named **Germaniia** – was handed over to the Italian tug operator in January from **Damen Shipyards Galati** in Romania.

The powerful, 80-tonne bollard pull tug had additional extras installed by Damen including FiFi1, oil recovery and escort notations as well as an aft winch, meaning that it can be used for some offshore duties.

Germaniia is in service in Genoa – Italy's largest seaport and the busiest in terms of tonnage, while also handling a substantial amount of passenger transport in the form of ferries and cruise ships.

During the building of the new tug, Rimorchiatori Riuniti ordered a second, identical ASD 2913 from Damen. This will be delivered in mid-May by outfitting a built-for-stock vessel – a process Damen calls 'smart customisation'.

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Photo courtesy of Sanmar Shipyards

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Spanish tug operator Remolques Gijoneses has added a RAmports 2400-W vessel to its fleet operating out of the port of Gijón on Spain's north coast. **Ponga**, built by **Armon Navia Shipyard**, is a tried-and-tested design from Robert Allan Ltd.

Described by the designers as 'powerful yet agile', the 2400-W features standard RAmports class characteristics, such as good deadrise for improved thruster performance, modest side flare, a half-raised forecastle deck for good seakeeping and a gently rounded deck line in plan to ensure the tug can safely and easily come alongside and remove itself at speed.

With a 24.4m LOA and 11.25m breadth, **Ponga** is powered by twin Caterpillar 3516C engines each rated at 1,920kW at 1,600 rev/min and driving Schottel SRP 1215 FP Z-drives through a straight line shafting system. This gives the tug a mean bollard pull of 70 tonnes and a free running speed in excess of 13 knots.

Deck machinery includes an Ibercisa hydraulically driven, split drum hawser winch forward for ship handling operations. On the aft deck are a tow post and tow hook as well as a vertical warping head and a deck crane. The compact tug's FiFi1 fire-fighting system incorporates a Jason centrifugal pump type OGF 300x450, CCW of 2,800m³/hour at 14 bar, driven by a Kumera gearbox and twin Jason water/foam monitors forward.

Accommodation for six crew members is laid out across two decks: the main deck contains two officer cabins, the mess and galley; the lower accommodation deck, which remains above the deepest load waterline in all load conditions, features two twin cabins, WC and shower, laundry and stores room.

US operator McAllister Towing's latest vessel, a twin Z-drive tug, is named in honour of Capt Jeff McAllister, a member of the fifth generation of the family to work for the company which began life 153 years ago.

Jeffrey McAllister was delivered to



McAllister Towing in January by **Eastern Shipbuilding Group** and is the 11th tug built for the company by the yard, based in Panama City on Florida's panhandle, since 2001. It is a design provided by Jensen Maritime in Seattle.

Power for the 30m long tug comes from a pair of EMD 8-710G7C EPA Tier 3 certified marine diesel engines, each delivering 2,500hp at 900 rev/min and driving twin Schottel SRP-1215FP Z-drives with shafting, bearings and propellers.

The main generators are two John Deere 4045AFM85 auxiliary engines, rated at 99kW at 1,800 rev/min. Both of these are also EPA Tier 3 certified, as is the John Deere 6135AFM85 auxiliary engine which powers the InMar/FFS SFP 13,640ltr/min fire-fighting pump and twin InMar/FFS monitors.

Deck machinery includes a Series 250 hydraulic towing winch and Series 230 hydraulic towing winch, both supplied by JonRie Intertech.

Jeff McAllister began his career in 1973 at the age of 18 as a deck hand on the fleet's offshore crew boats. He gained experience on numerous McAllister tugs before becoming a tug captain and then, in 1986, a docking pilot.

Today, he is the senior docking pilot for McAllister in New York, although the **Jeffrey McAllister** is in service several hundred miles down the Atlantic coast in Charleston, South Carolina.



US Gulf Coast operator E N Bisso has taken delivery of **Gladys B**, the most powerful tug in its now 16-strong fleet providing ship-assist, harbour tug and offshore towing services out of New Orleans along the lower Mississippi River.

Named after the wife of the company's founder, the 24.6m LOA ASD tug is the newest RApport 2400 class tugboat design from Robert Allan Ltd and was built in Pascagoula, Mississippi, by the shipbuilding arm of **Signet Maritime**.

Gladys B has a bollard pull ahead of 63 tonnes (astern 60.5 tonnes) thanks to its propulsion package of twin MTU 16V 4000 M64 EPA Tier 3 engines, each rated at 2,681hp at 1,800 rev/min, driving two Rolls-Royce US205 P20 FP azimuth stern drives. Electrical power is generated by two John Deere 6068AFM marine generators with 99ekW of power each at 480V.

Deck machinery consists of a Markey DEPGF-42S hawser winch located on the

bow and a Markey DEPC-32 towing winch on the stern. Also fitted is a 5,910ltr/min off-ship fire pump driven via an electric motor.

Gladys B's sister ship, **Signet Magic**, has been part of Signet Maritime's fleet for three years. The new vessel has been adapted through the provision of an increased hull beam, modified skeg and the addition of bilge keels, making it fully ABS Class compliant for escort operations.



A new **Damen ASD 2310** tug is the most powerful vessel in the tug fleet of Foyle Port in Northern Ireland. **Strathfoyle**, built in China, is in service at the port's Lisahilly terminal by the mouth of the River Foyle.

The new vessel represents a £4m investment by port operators, Londonderry Port and Harbour Commissioners, and is being used to tow very large vessels in and out of the terminal, which is a major gateway to north-west Ireland, handling around 2m tonnes of cargo a year.

The 23m LOA **Strathfoyle** is powered by twin Caterpillar 3512C engines generating 4,000hp at 1,600 rev/min and driving Rolls-Royce US 205 azimuth thrusters. The vessel has a free running speed in excess of 12 knots and has a bollard pull of 50 tonnes.

The new boat is working alongside the port's existing ASD tug **Shrove** and has replaced another tug, **Culmore**.

Cole Guidry, a 24.6m 2,000hp inland towboat, is the latest delivery from **Bollinger Shipyards** to long-standing customer and fellow Louisiana company **Lorris G Towing**.

The vessel is powered by three Caterpillar C18 EPA Tier 3 engines rated at 670hp each. The reduction gears are Twin Disc Model MGX517ODC with a ratio of 6:1. Electrical power comes from three Kohler generators each rated at 65kW.

Following completion at Bollinger's Morgan City facility, **Cole Guidry** was sailed the short distance to **Lorris G Towing's** facility at Cut Off.

John Oliver



Towing the line on defining salvage

When can an unexpected problem that happens part-way through an operation under a towage contract legally be said to have turned it into a salvage operation? Regular columnist Simon Tatham looks at some borderline cases



► Simon Tatham

At the Salvage and Wreck Conference in London in December, one subject that caught the attention of participants was the question of when towage becomes salvage. Perhaps one reason is that when margins are tight, the occasional ‘encouraging’ salvage award can boost both the bank balance and staff morale.

As one tug operator commented recently after a small salvage claim was settled, they did not make a lot of money as the ship and cargo values were low, but it took them out of the daily routine, tested their resources and was actually quite a lot of fun. There will however be few tug owners who have not asked themselves whether a particularly stressful situation during an assistance or tow was borderline salvage.

So, what are the guiding principles to have in mind in those cases? There is in fact plenty of law on the point: numerous cases mainly stemming from the late 19th century when steam tugs and ship owners were confronted with this novel situation.

The modern law of salvage, reflecting the old court decisions, is encapsulated in the Salvage Convention of 1989, adopted by most maritime nations. The principles set down by the courts in those early days are thus still good today, and these are relatively simple; it is the facts that are less clear. As one judge put it in 1857, there is no possibility of mistaking midnight for noon, but at what precise moment twilight becomes darkness is hard to define.

Let’s therefore apply the principles to three typical situations. The first is where a tug,

engaged to tow a vessel on standard terms, is required to do more than was bargained for. The second is where a tug has been engaged for a towage with a ‘no salvage claim’ clause bolted on to the bottom and, thirdly, where a tug is engaged by LOF contractors on commercial terms to carry out part of a salvage operation.

As to the first, every incident or mishap that may take place in a towage service does not necessarily turn that towage service into something else. As Article 17 of the convention puts it: “No payment is due ... unless the services rendered exceed what can be reasonably considered as due performance of a contract entered into before the danger arose.”

“There is no possibility of mistaking midnight for noon, but at what precise moment twilight becomes darkness is hard to define”

To constitute salvage by a tug under contract to tow two elements are thus necessary, and the bar is set quite high: first that the tow is in danger which could not reasonably have been contemplated and, second, that risks are incurred or duties performed that could not reasonably be held to be within the scope of the contract – see the *Holmwood* case decided back in 1928.

The courts will therefore look to the provisions of the contract to decide the scope of what was contemplated. Thus a rescue tow implies just that, but if the tug engaged to hook up unexpectedly finds the vessel abandoned with the result that his crew must additionally board to stem a leakage that left unchecked would make towage impossible and start auxiliaries before heaving the tug’s wire on board, the line has been crossed.

The situation and danger are unforeseen. Usually in these situations the law regards the towage contract as suspended while salvage services take place and then, once the tow is proceeding normally, the contract resumes.

The next situation is where typically TOWCON or TOWHIRE additionally contains a ‘no salvage claim’ clause. Here, although the tug is bound by its agreement not to make a claim, equally it cannot be compelled to perform services in the nature of salvage outside the contemplated scope.

This leads to a potential stand-off, as the contract cannot adapt to a change in circumstances. Alternatively, if the tug does

not wish to go beyond its contractual duty, having no right to claim salvage, it may fall back on clause 21(b) entitling it to engage external salvage services (assuming that clause is not deleted and that other tugs are in the vicinity). But that rather defeats the purpose of the ‘no salvage claim’ provision.

Nonetheless, they are widely imposed nowadays and will constrain the tug operator other than in exceptional cases. Hopefully, in return, the agreed remuneration will reflect the anticipated additional risks or dangers.

Finally in this connection, it would have to be a very extreme case that would result in the terms being examined by a tribunal pursuant to Article 7 of the convention, which allows a court to modify or annul a contract if the payment is in an excessive degree too small for the services actually rendered.

These instances are rare, although in a recently reported case ship interests contended that they had agreed a harbour rate equivalent to around US\$550/hr for what turned out to be salvage services. The Article 7 point did not arise as the court decided that no hourly rate had been agreed.

Thirdly, salvors who have obtained an LOF will understandably wish to sub-contract tugs in the locality on commercial terms. The first point to make is that such a tug is not contracted to the casualty itself and very arguably falls at the first hurdle in salvage law not being a ‘volunteer’, that is to say it is under a pre-existing duty to assist, reflecting Article 17 mentioned earlier.

Likewise, as above, they cannot be compelled to perform beyond the scope of their contract. Most professional salvors would moreover ensure that the contract prohibits a parallel claim: if the services are difficult, the salvage contractors will wish to claim that benefit for themselves. In return they need to pay well. If they have an appetite for risk and are in a good bargaining position, the sub-contractor might go for the ISU Award Sharing Sub-Contract, but not if values are small. There will be lots to think about and always very little time in which to do so. This discussion, however, leaves one question unanswered: what if the salvage situation arises as a result of the tug’s fault? That, however, is for another day.

• Simon Tatham is a partner of Tatham Macinness LLP and founder member of the TugAdvise.com service. He has more than 30 years’ experience of shipping law.

Grounded tugboat in pollution alert

A pollution control operation took place in Alaska after the tug *Samson Mariner* ran aground and spilled fuel while towing a barge in the vicinity of Rosa Reef in Tongass Narrows.

The US Coast Guard, the Alaska Department of Environmental Conservation, Southeast Alaska Petroleum Response Organization, National Oceanic and Atmospheric Administration, and specialist firm Alaska Commercial Divers took part.

Approximately 5,000ltr of diesel spilled from the tug prior to it being patched by Alaska Commercial Divers. The spillage was later dealt with.

In brief

Director of Boluda's offshore and salvage unit and ISU vice president, Charo Coll, has received the Honour al Mérito Empresarial y Social de la Generalitat Valenciana, honouring her career and contribution to the economic interests and promotion of Spain's Valencia region.

A joint operation by tug operator McKeil Marine and the Canadian Coast Guard freed grounded bunkering tanker *Arca 1* off Nova Scotia. The stricken vessel refloated after 300 tonnes of ballast water were removed.

Edward Wollaston, one of LOC London's shipping technical directors, has returned to London from the company's Hong Kong office where he has worked since 2013, to strengthen its salvage and wreck removal response business.

Tug *Crosby Endeavor*, operated by Crosby Tugs of New Orleans, towed US car carrier *Alliance St Louis* to Port Arthur, Texas, after an engine room fire left it adrift for more than two days off the coast of Louisiana.

Tug operator Sea Tow has been hired to salvage a boat in the Houston Ship Canal that sank following a fire. A US Coast Guard crew from Galveston, Texas, rescued two crew members from the blazing vessel.

Concern over container fires



The International Union of Marine Insurance (IUMI) has raised concern over the number and severity of fires on board increasingly large container ships.

Writing in the organisation's newsletter, Capt Uwe-Peter Schieder, vice chairman of IUMI's loss prevention committee, said: "Major fires on container vessels count among the worst hazards in global shipping. In 2016 alone, there were three major fires: *Maersk Karachi*, *NNCI Arauco* and *Wan Hai 30*. All three ships required external help to extinguish the fires, despite two being in the harbour and the third anchored just off Hong Kong, fuelling IUMI's concerns over the challenges involved with managing these incidents at sea.

"Containerships have changed quite drastically over the past few years, far more than the size and arrangement of bulkers and tankers. Containerships have become larger and may now have six, seven, and sometimes even 11 layers of containers on deck making it far harder to contain a fire once ignited.

▲ Fire-fighting tugs tackle a blaze on a container cargo vessel

"Fire-fighting procedures are different in bulkers as CO₂ can be used to fight a fire and the CO₂ can have direct contact with the cargo. This cannot happen with containers.

"Furthermore, containers will contain oxygen which can make fire-fighting even more challenging.

"Currently, fire-fighting operations on container vessels are limited to allowing the containers to burn out in a controlled manner in such a way that the fire cannot spread further. This approach is still correct and reasonable but, in view of the rapid pace of development towards ever-larger ships, new technical solutions are also required."

Schieder added that IUMI is well aware of the SOLAS regulations, but is calling for further dialogue involving the IMO, classification societies, shipbuilders and shipping companies to further improve fire-fighting capabilities on board containerships.

Indian Navy in US\$2.9m contract to salvage frigate

The Indian Navy has signed a US\$2.9m contract with US-based Resolve Marine Group to lift the 3,850-tonne frigate *INS Betwa*, which tipped over at the Mumbai naval dockyard killing two sailors and injuring 14 others on 6 December 2016.

The Brahmaputra-class frigate slipped from its dock blocks, tilted and then crashed flat on its left side while being undocked during a maintenance refit, according to the *Times of India* quoting unnamed sources.

With the main naval dry dock at Mumbai blocked by *INS Betwa*, the Navy wants the frigate to be salvaged and made battle-ready to rejoin the fleet as soon as possible. In January, Resolve sought a month to mobilise company

resources from different places as well as build the rigs and sponsons it needs for the complicated operation.

The salvage operation was due to get underway as *IT&O* went to press.

The mishap apparently occurred due to the miscalculation of the load distribution equilibrium required in the complex and delicate undocking procedure, leaving the frigate heavily damaged with at least 25 per cent flooding in its compartments, according to the press report. The incident occurred when the process of flooding the dry dock was in progress after completion of the frigate's underwater repair package.

At that time, the dock also had missile boat *INS Pralay*, a tug and a caisson lock-gate (large floating iron) in the close vicinity of the stricken vessel. Commissioned in July 2004, *INS Betwa* had begun its two-year medium maintenance refit at the dockyard in April last year.



◀ *INS Betwa* on its side in Mumbai naval dockyard

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Green shoots – but recovery will be slow

With more than 1,000 vessels lying idle and charter rates low, the Asian tug and OSV market is depressed – but there are some signs of recovery, says Alex Harrison, regional director for Southeast Asia and the Pacific at independent marine consultancy LOC

The effect of low oil prices on the offshore and towage industry has been felt as keenly across Asia as in other parts of the world, with hundreds of vessels laid up or ‘re-purposed’, shipyards going into liquidation, exploration at a standstill and business opportunities scarce.

“The underlying market is still very depressed from a tug and OSV perspective,” according to Alex Harrison of LOC.

“More vessels are still being stacked, with about 1,300 idle in the region, and charter rates remain very low. In China alone, about 300 spec-built vessels are currently alongside or on slow build in Chinese yards, with the hope that by the time they are finished, the market will have picked up enough for them to find a buyer.”

The market is still way off any parity in supply and demand, in both tug and OSV markets. “However,” said Harrison, “the general feeling is that we are at the bottom of the market now. There is light at the end of the tunnel – we just don’t know quite how long the tunnel is.”

LOC, as a service provider, has recently seen something of an upswing in survey business. “We have recently been getting increased requests for OVID (Offshore Vessel Inspection Database) surveys on behalf of oil companies, DP audits and FMEAs (failure mode and effects analyses) for charterers and operators. We are also seeing more requests from banks for pre-purchase surveys, and enquiries about general suitability and reactivation surveys – all of which represents an initial indicator of

an upturn in the market.”

Reactivation of the AHT and OSV sector is one area that Harrison sees as providing some opportunities over the coming months. “The main driver here is that the oil companies, having sat on their hands for almost two years, now need AHTs and PSVs to support rigs for oil well workover in the region. There has also been a recent gradual upturn in seismic survey activity, and when the seismic vessels start moving, it is an indication that new exploration drilling is on the cards.

“How big the recovery will be is not yet clear, but my personal feeling is that oil prices will remain fairly static for the rest of this year, so it is likely only to be gradual.

“There is light at the end of the tunnel – we just don’t know quite how long the tunnel is”

Alex Harrison, LOC

“However, the oil companies have done a lot of cost-cutting – to the point where they are starting to reap the benefits. We are seeing increased capital expenditure this year, compared with 2015/16 – so there are some green shoots of potential recovery.

“At the same time, charter rates are still very low and oil companies are pushing for long-term charters, of up to five years, to try to capitalise on the current low rates. The market is also seeing a downward pressure on vessel ages allowable under charter parties.”

As far as the salvage industry is concerned, there is increasing insistence from regional



◀ Alex Harrison
of LOC

governments on the use of local companies as salvors, along with local vessels and crew. This is among the biggest challenges facing the traditional salvage companies working in Asia, and will be one of the topics under discussion at the Asian Marine Casualty Forum, to be hosted by LOC in Singapore on 27 and 28 April.

LOC has been working successfully to maintain its current resource base across the region, and as part of that strategy for future growth the company is on course to open an office in Kuala Lumpur later this year, following in the footsteps of leading offshore contractors that have moved their headquarters to the Malaysian capital in recent years.

Looking to the medium term, two areas that will provide opportunities for LOC are renewables and decommissioning.

“Offshore wind will be an increasing market in parts of the Asia region in the coming years,” Harrison said. “And decommissioning of old oil platforms will be happening across the whole region: the Gulf of Thailand, Malaysia, Indonesia. But it won’t be happening immediately on a large scale – without cash first coming in from new oil exploration/production, as the oil price increases slowly.”

Joint venture opens engine production plant in China

CSSC Wärtsilä Engine Company (CWEC), the joint venture company formed between Finland-based Wärtsilä and China State Shipbuilding Corporation (CSSC), has formally opened its new production facilities at Lingang, Shanghai.

The new 20,000m² production plant is the first in China capable of locally producing large-bore, medium speed diesel and dual-fuel (DF) engines.

The plant, which is focused on the offshore and special vessel markets, among others, will also manufacture medium-bore, medium speed diesel and DF engines. Wärtsilä 26, Wärtsilä 32, Wärtsilä 34DF, Wärtsilä 46F and Wärtsilä 46DF engines will be produced at the factory, which has a planned production capacity of 180 engines a year.

CWEC’s production process strictly follows Wärtsilä’s industry standards. Of particular importance to the company’s customers is Wärtsilä’s dual-fuel engine technology, which by being able to use LNG as a marine fuel, enables compliance with the IMO’s Tier III environmental legislation.

Speaking at the opening ceremony earlier this year, Wärtsilä’s president and CEO, Jaakko Eskola, said: “Being close to our customers in order to serve them better is central to Wärtsilä’s global strategy. We are, therefore, extremely pleased to officially open this modern production facility, the first in China capable of producing DF engines, which will serve China’s shipbuilding industry with high quality, technologically advanced Wärtsilä marine engines.

“It is an honour to be sharing this day with our joint venture partners, CSSC, one of China’s most modern industrial corporations. Together, we are supporting China’s shipping industry’s move into the age of LNG fuel.”

CSSC president Wu Quiang added: “This is an important day for China’s shipbuilding sector as we now have local availability of both medium and large-bore Wärtsilä diesel and dual-fuel engines. Wärtsilä’s extraordinary technological accomplishments and global reputation have been built on its proud history spanning more than 180 years. With our two companies now standing shoulder to shoulder behind this joint venture, we can anticipate great things for the future.”

Eighty people are employed at the plant; this is expected to rise to 130 during 2017.

In brief

A parliamentary-style debate will take place at Sea Asia 2017 to discuss the motion: *This House believes that the best days of the private independent ship owner are over*. Chaired by Andreas Sohlen-Pao – group CEO and managing director at BW Maritime, and chairman of the Singapore Maritime Foundation – the debate will provide an opportunity to hear industry leaders give their opinions on the future of the industry and also provide delegates with a chance to make their views known. Three speakers from each side will put forward their opinions, which will be followed by a floor debate and conclude with a vote. The conference is being held in Singapore from 25 to 27 April.

Singapore-based offshore services company Vallianz has closed its repair and maintenance shipyard in Singapore. The company said it planned to consolidate its yard operations in Batam, Indonesia, citing slower market conditions. Other closures include the group's third party crew management and travel services. The Batam marine base will continue to service the group's fleet and support its chartering activities, particularly in the Middle East.

The Singapore Maritime Officers' Union (SMOU) is to contribute S\$1.2m to local shipping companies to encourage them to provide training berths for Singaporean seafaring cadets. The money will be contributed over a period of two years to the local shipping companies that have collective agreements with SMOU, and up to 240 cadets are expected to benefit from it.

The Institute of Marine Engineering, Science & Technology (IMarEST), the world's largest global marine and maritime professional body, is opening an office in China. Following a steady growth in membership, and meetings with Chinese government and industry representatives, IMarEST has taken office space in Shanghai's Maritime and Finance Excellence Centre.

In response to a fast-growing market, the Liberian Registry has made some key appointments in its Asian regional offices. Wan Ching Chiang becomes registrations manager in Singapore, while the Greater China team is boosted by the appointment of Pao Chi Hsu and Owen Fu as technical managers.

Chinese shipyard tender is tug development milestone

Robert Allan Ltd's new RAstar 3800-DF class dual-fuel (LNG-MDO) tug for China's Ningbo Port Company is currently in the shipyard tendering stage. This represents a key milestone in the development of the latest addition to the Vancouver-based company's growing family of LNG-fuelled tugs.

The latest design builds on the extensive history of collaboration between the two companies on several successful series of tug designs, dating back to 2004, and includes multiple series of 32-39m long tugs, of 4,800 to 7,200hp.

The new RAstar 3800-DF tug will be powered by a pair Niigata 8L28AHX-DF dual-fuel engines, each driving a Rolls-Royce US 255 CP Z-drive, and delivering a bollard pull of close to 80 tonnes. The tug also features a double-drum W-Rig hawser winch forward, and a 100 tonne SWL Mampaey tow hook aft.

The tug will have an LNG capacity of 55m³ and the gas system has been specially designed with Niigata to deliver superior engine acceleration performance when running on gas. The vessel will be classed

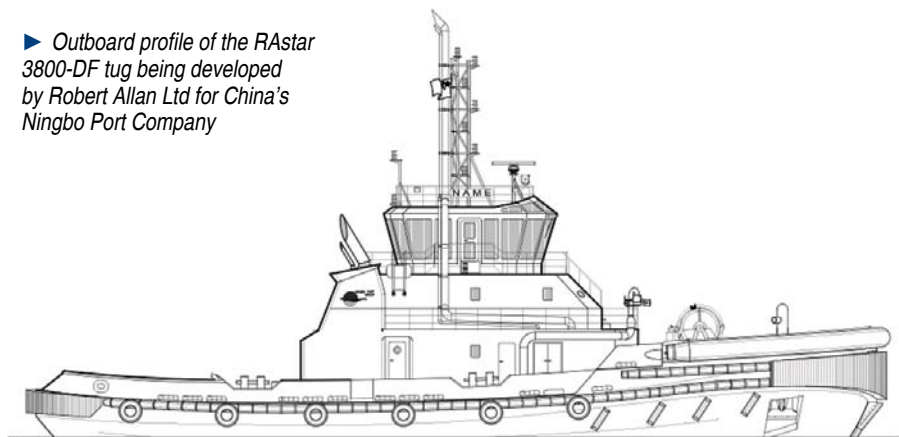
as a dual-fuel tug with China Classification Society (CCS), and fully equipped to a Fire-Fighting Ship 1 (FiFi1) standard.

Comfortable accommodation is provided for up to 14 crew members, with all cabins located in a spacious deckhouse with ample natural light. The very large lounge/crew mess on the main deck also serves to maximise crew comfort aboard.

This latest addition to Robert Allan Ltd's portfolio of LNG-fuelled tugs is specifically tailored to Ningbo Port Company's exacting requirements. By working closely with the owner throughout the design process, a solution has been developed that not only meets all of the owner's specific requirements for the tug, but also maximises the benefits of running on LNG.

The Port of Ningbo-Zhoushan, in Zhejiang province on the East China Sea coast, is the busiest in the world in terms of cargo tonnage, handling nearly 890m tonnes in 2015. A modern multi-purpose deepwater port, it includes inland, estuary and coastal harbours with a total of 191 berths – including 39 deep water berths able to handle vessels with a capacity of 10,000 tonnes and above.

► Outboard profile of the RAstar 3800-DF tug being developed by Robert Allan Ltd for China's Ningbo Port Company



Delivery firm sees regional upturn

The Asian market is providing a number of opportunities in 2017 for ship delivery specialist International Maritime Services (IMS), according to the Western Australia-based company's chief operating officer, Brendan Cooley.

He said: "We have a busy year ahead, with 26 voyages either having arrived at their destination or in contract to be completed by the end of December 2017. Twenty of these voyages involve tugs. Last year, we completed 20 deliveries all up, so things are looking better for 2017."

Notable multiple-vessel contracts include the deliveries of six RAstar 3500 escort tugs

from Singapore to Port Hedland, Western Australia, for global resources and mining company BHP Billiton – with the first tug arriving at the Australian port on 1 March.

IMS will also be carrying out five return transits from Cape Preston to Singapore to carry out docking surveys for another large mining company.

Cooley said: "Additionally, we have in the past three months delivered a PSV into Singapore and an AHTS into Kaohsiung port in southern Taiwan, and carried out a tug and tow to Batam, Indonesia. We will also soon have another PSV leaving the Chinese port of Guangzhou."



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UK propeller maker expands its Indonesian operation

UK-headquartered BT Marine has successfully opened its new production facility in Batam, Indonesia. The new operation is home to the technical service centre and sales office – relocated from the firm's previous premises in Sukajadi, Batam – and will be housed alongside the new propeller production and sterngear fabrication side of the business.

The new facility, located in Batam Centre Industrial Zone, can accommodate propellers of up to 4,000mm diameter with brand new, bespoke inspection, pitch measurement and balancing facilities designed to service the Asia market.

The first set of propellers to be finished on site are two shipsets of 2,000mm diameter propellers for a Java shipyard, to be fitted to two 60m buoy-handling vessels for an Indonesian government project.

All the machinery and equipment was designed and built at BT Marine's UK production facility and shipped to Indonesia, where it was installed and commissioned by BT Marine Indonesia workers, assisted by a technical team from the UK.

The design and production capability will be increased over the next few months with the aim of producing the first complete high speed propulsion system package to be entirely designed and manufactured in Indonesia.

BT Marine has been supplying numerous vessels in Asia in recent years, with deliveries to various shipyards in Indonesia, Malaysia, Vietnam, China and Bangladesh for complete propulsion systems and support packages for a mixture of commercial and military vessels including tugs, workboats and landing craft.

Zeri Naldi, general manager of BT Marine Indonesia, said: "Having a facility strategically located in Batam and next to Singapore gives us the scope not only to meet customers and clients easily, but also to undertake commissioning, sea trials and after-sales services from a central location with good connections to all of Southeast Asia."

BT Marine will be exhibiting at the Inmex 2017 show, to be held in late December in Ho Chi Minh City, Vietnam.



◀ At work in BT Marine's new propeller manufacturing operation in Batam

Law firm builds on Hong Kong presence

International law firm Hill Dickinson's application to operate as a single entity in Hong Kong has been approved by the Law Society of Hong Kong, following the completion of a three-year period of association with a local Hong Kong firm, as required by local regulations.

Currently operating as Hill Dickinson Hong Kong LLP in association with Laracy & Co, the transition will marry the two firms together as a single Hong Kong firm under the name Hill Dickinson Hong Kong, with effect from 1 April.

Hill Dickinson opened its Hong Kong office in 2013, providing a convenient pan-Asia base for its clients, following expansion into Singapore in 2009. The Hong Kong office is led by experienced litigator and arbitrator Damien Laracy, alongside master mariner and partner Mike Mallin, who relocated from Hill Dickinson's City of London office to spearhead the firm's venture into Hong Kong.

Offering a broad range of legal services, the office is best recognised for its commercial litigation and international arbitration work, as well as contentious shipping and trade matters, servicing a diverse range of institutional, corporate and private clients across the globe.

Hill Dickinson CEO Peter Jackson said: "Damien and Mike have been instrumental in the success of our operation in Hong Kong. We are now in an ideal position to build on this success and further extend our international footprint in the Asian market."

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Harnessing the power of big data

Rolls-Royce has confidently expressed its intention to have a remote or autonomous ship in operation by 2020. While this first remote-controlled toe in the water is likely to be a vessel operating close to shore – possibly a harbour tug – the global technology company also envisages “fully autonomous container ships to be routinely plying the world’s oceans within 15 years”.

It says that fleets of ocean-going, crewless vessels controlled or monitored from an onshore operating centre are a question of when, not if, as they offer huge commercial, financial, technological and safety benefits.

Key to realising that vision is big data – real-time collating, measuring and analysing billions of items of information every day to provide Rolls-Royce Marine and its customers with a detailed, up-to-the-minute picture of how the company’s products are performing anywhere in the world.

Big data has long been part of the Rolls-Royce armoury in supporting customers to get the best use out of their equipment. The company first utilised what it calls ‘equipment health management’ in the early 1990s in its aerospace division – working with airlines and military customers to maximise the on-wing availability of engines by monitoring their performance throughout every flight.

But it was not simply a case of transferring that understanding and technology to the maritime sector, according to Marco Cristoforo Camporeale, general manager – intelligent asset management at Rolls-Royce Marine, who said: “In aerospace, you are looking at the engine, which has a pretty predictable cycle. We are monitoring the entire vessel and all its equipment – the amount of data is enormous.”

To gather that data, Rolls-Royce Marine is installing sensors across its onboard products – engines, deck machinery, electrical systems and steering gear. This provides the company and its customers with a deep understanding of the equipment’s performance – as individual items and as part of a complex ship system. In turn, this helps operators utilise their vessels more efficiently and effectively, saving them time and money.

For an OEM like Rolls-Royce, the real opportunity comes not by looking at a single data set from a single product but at the behaviour of that product in the context of a ship’s entire operation and the product’s total development and operational history across all platforms. This gives a larger and ever-more-detailed picture of how pieces of equipment are operating, along with



upgrades, maintenance undertaken and other specific information. From that, the company has a clear idea about the reliability, life-expectancy and failure modes of its equipment and components; in short it knows how its products are supposed to behave and

“The marine industry is in pain. We want to help our customers reduce their operating and overall lifecycle costs – if we don’t, they may not be there next year.”

**Marco Cristoforo Camporeale,
Rolls-Royce Marine**

when they are deviating from that behaviour.

According to Camporeale, it is this “model of normality and knowledge of the failure modes and consequent effect which builds up the diagnostic networks and which constitutes the company’s distinctive intellectual property”.

For its customers, this knowledge allows them to alter maintenance schedules to maximise vessel availability, potentially reducing operating costs. Rolls-Royce has also introduced a marine version of its long-standing ‘power by the hour’ model, whereby operators enjoy lower overall maintenance costs and effectively only pay for the time their assets are operational – reducing the need to maintain an extensive service infrastructure or hold stocks of spares. By taking on some of its operators’ risks, Rolls-Royce also takes a share of the rewards.

Another use of Rolls-Royce’s big data capacity is in what it terms energy management systems; it is available on board as well as being transmitted – after being securely encrypted – via a link to a Rolls-Royce hosted web portal for more detailed analysis and comparison.

▲ Data-gathering sensors allow Rolls-Royce Marine to monitor onboard equipment anywhere in the world; right, Marco Cristoforo Camporeale, general manager – intelligent asset management



A cloud-based portal enables fleet operators to compare real-time and historical performance of equipment and vessels, with selected information displayed graphically for ease of access and use.

For example, fuel consumption and fuel consumption per nautical mile can be displayed. Fuel is one of the biggest variable costs faced by vessel owners and operators, so the energy management system rapidly allows them to see whether consumption is higher than needed for the conditions and, if so, to adjust a vessel’s operation – such as by changing the number of engines running.

Camporeale reported: “During trials of the energy management system on board two PSVs, one customer has reported fuel savings up to 15 per cent. We were expecting somewhere between five and 10 per cent.”

For many people, big data is about developing the smart, autonomous ships of tomorrow and clearly that vision of the maritime world relies on that ability to gather and utilise the vast amounts of information captured from every piece of equipment on board. But it is already playing a vital and immediate role for today’s vessels.

Camporeale concluded: “The marine industry is in pain. We want to help our customers reduce their operating and overall lifecycle costs – if we don’t, they may not be there next year.”

Smart fuel monitoring drives fleet efficiency

In these competitive times, tug and OSV operators are increasingly looking for smart solutions to optimise their fleet and transform vessel performance. Fuel will always be one of the largest variable costs for tug and OSV fleet owners and charterers, and yet operators are often in the dark when it comes to understanding what drives fleet fuel economy and performance.

Fuel monitoring solutions shine a light in the dark. They are the key to fleet and vessel performance: fuel efficiencies, logistics savings and fuel security – all adding up to significant improvements in business performance and profit.

When deciding on a fuel monitoring solution, there are two common concerns: the accuracy of the data collected onboard, and the reliability of that data being made available onshore. Addressing these concerns is not simple. The remote nature of operations and the diversity of the fleet – different vessel designs, power plant types, fuel quality, telecoms and connectivity, IT systems onboard – contribute to technical complexity and disparate data sets. Any fuel monitoring solution that relies only on existing onboard sensors, connectivity and IT systems cannot provide the standard of data quality, security and availability required to deliver a step change in operational efficiency across the whole fleet.

The Fueltrax® marine fuel management system is the only self-contained smart monitoring solution that standardises the acquisition, secure transfer and analysis of accurate, reliable fleet-wide performance data – independent of vessel class, fuel type, engine model or geographic location.

According to Nautical Control Solutions (NCS), the company behind Fueltrax, this is where Fueltrax sets a new standard: a smart, self-contained fuel management solution which, when installed, enables any vessel, anytime, anywhere to provide the highest standard of data quality. Innovative technology effectively puts ‘your man onboard’ to monitor and manage fuel logistics on every vessel in your fleet.

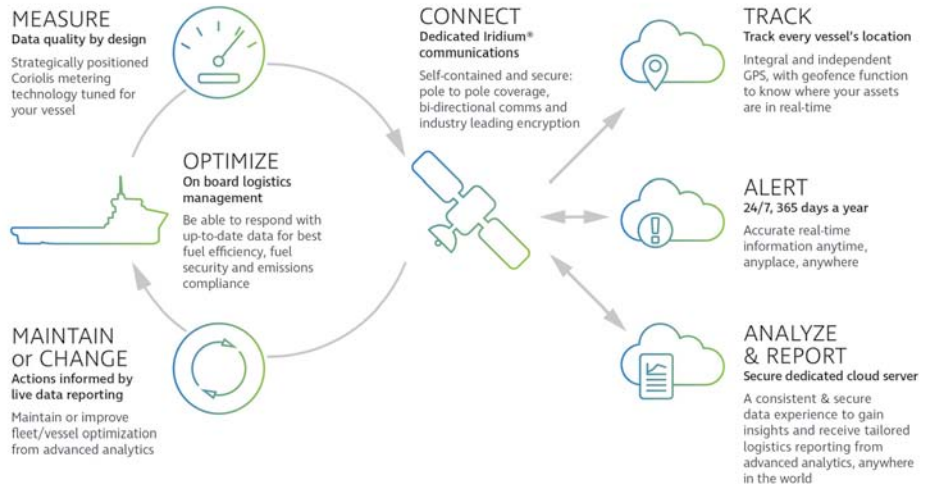
Anthony George, CEO of NCS, said: “We currently deploy our system on hundreds of

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OSVs and tugs around the world. It ensures every vessel is fit for business: captains can optimise throttle settings on the bridge and improve their vessel fuel economy in real time; managers onshore can receive up-to-date, accurate information from every vessel in their fleet to improve logistics and triple-lock their fuel assets to prevent slippage.”

Fueltrax has collaborated with vessel owners and charterers for more than 14 years in the development of the first self-contained smart fuel monitoring solution, which has been revolutionary in saving operators both time and money.

George said: “We only use the best technology in our system – without compromise, period. Our Coriolis mass-flow metering technology – the most accurate way to monitor fuel activity through direct measurements – is always tuned for unique vessel conditions.

“Dedicated Iridium satellite communications provide pole-to-pole connectivity so the system is ‘always on’ – collecting and transmitting fuel consumption and transfer measurements in real time. We understand that for tug and OSV operators time is money – every one of our systems

► Anthony George, CEO of Fueltrax owner Nautical Control Systems



is pre-engineered as a turn-key kit to make installation straightforward, with minimal disruption to standard operations.”

He said operators can rely on the system to remotely address service needs, no matter where the vessel is located in the world. Support technicians are on hand 24/7, 365 days a year to manage infrastructure, remote diagnostics and software upgrades via bi-directional communications, eliminating costly service breakdowns and delays in port.

As fuel monitoring becomes a more critical operational tool, owners and charterers need access to the data from onboard that is both reliable and secure. All data collected onboard by the system is made available through an online secure web portal. This allows management to monitor and export data across the entire fleet, in real-time with 15 minute updates.

All data is stored in the system’s database indefinitely, enabling easy and detailed reporting across a multitude of vessel and engine types, and operating locations.

George concluded: “Fueltrax sets a new, smarter standard for vessel performance making it possible to secure fuel assets, make more informed charter decisions and continually improve vessel and fleet efficiency.”

Good ideas start in the garage

Ship-to-shore data communications services provider Dialog has launched Innovation Garage – a company that aims to change the way software providers deliver IT solutions to the global shipping industry.

The new venture will work alongside Dialog’s existing R&D teams on a remit of interacting with customers and the

industry to drive software thinking by encouraging radical ideas free from politics or bureaucracy.

With shipping demanding more data and more analysis, Morten Lind-Olsen, CEO at Dialog, said the idea behind Innovation Garage was about “working with our existing customer base of 3,000 ships to prepare for the future”.

Crew transfer vessel added to wind fleet

Services provider CWind has invested in its largest crew transfer vessel to date. Newly named as *CWind Phantom*, the 27.4m catamaran can hold 20,000ltr of fuel and has a 20-ton cargo capacity, making it suitable for longer stretches of work at wind farms located further from shore. CWind's fleet now totals 18, with access to additional cable installation and maintenance vessels via parent company, Global Marine Systems.

"Our experience on the world's largest offshore wind farms has helped us build a diverse range of vessels that meet the changing needs of our valued clients," said Lee Andrews, managing director for power at CWind.

"Transporting technicians quickly, safely and comfortably to and from sites, even in tough weather conditions, is critical to offshore project performance. *CWind Phantom* is designed to exhibit reliability, superior fuel efficiency, high transfer height during operations and a large, flexible payload capability, all crucial specifications for the harsh conditions far from shore. Highly seaworthy and with impressive seakeeping ability, *CWind Phantom* is also extremely manoeuvrable for a vessel of its size, with a proven and reliable propulsion combination."

Built in 2015, the vessel can carry up to 12 passengers, with berths for eight people. The accommodation is fully air-conditioned and heated, and offers all the amenities required to remain at sea for extended periods, including a dedicated meeting space.

Featuring an aluminium hull with 8m beam width and 1.4m draft, *CWind Phantom* can carry containers in a combination of configurations, while an on-board crane can lift 1.1 tons at 5m outreach. The jet-driven vessel is powered by two MAN D2862 main engines and is capable of reaching a maximum speed of 27 knots.

Andrews concluded: "There is currently significant demand for vessels with the ability to work further offshore and we are already seeing client interest in *CWind Phantom*. Ultimately, this investment enables us to provide a more integrated offering for both the construction and operations and maintenance phases of an offshore wind farm project."

Upgraded W2W vessels help keep wind farm costs down



Keeping costs down is a crucial factor in the offshore wind sector, according to Dutch OSV owner/operator Chevalier Floatels. A large part of managing the cost is completing projects on time, which in turn depends on having technicians onsite completing as much work as possible on a turbine each day.

Vessels that can manoeuvre quickly and make a speedy connection with the turbine are therefore essential, as this is what determines the number of crew that can be transferred to the turbines each day.

In this respect, Chevalier Floatels is very pleased with the results of last year's upgrades to its two DP2 OSVs, *DP Galyna* and *DP Gezina*. Both vessels were fitted with a fourth azimuth thruster, new Ampelmann Hyper-mode software and a new deck, with a pedestal under the gangway additionally installed on *DP Galyna*.

Following the upgrades, the vessels participated in 11 different offshore projects, almost all of which were completed ahead of schedule – largely due to the high performance of *DP Gezina* and *DP Galyna*.

The new Ampelmann software improved bad weather performance, while the new propulsion layout made the vessels highly manoeuvrable. The vessels can travel at 6 knots on DP and manoeuvre quickly into

▲ *DP Galyna* at work in the North Sea

the right position for transfer. The result, says Chevalier: "Lots of transfers per day. On several days more than 50 individual connections to different turbines were achieved: a new record in the industry."

Fast transfers, coupled with efficient operational costs, have led to multiple rebookings for both vessels. Last season, *DP Gezina* and *DP Galyna* worked for a number of clients in the offshore wind sector, including the Jan de Nul Group and Dong Energy on the *Burbo Bank* and *Race Bank* wind farm projects, TenneT on *HelWin Alpha* and *HelWin Beta*, and the Forewind consortium on the *Dogger Bank* wind farm development. The vessels also provided crew transfer services at *Nordsee One* for Ambau and *Veja Mate* for Seajacks. In a number of these projects the vessels were each used several times.

Chevalier initially added the two OSVs to its fleet in response to the growing renewables market. They were billed as the world's first state-of-the-art onsite accommodation and walk-to-work vessels to support installation, maintenance, upgrading and life extension for offshore wind and oil & gas platforms and production facilities, from 30 miles offshore.

Offshore operator gears up for 'wind rush'

Offshore energy service vessel (OESV) operator Seacat Services has invested heavily in its operational team and logistical support infrastructure based on the Isle of Wight, UK.

The business has moved into a new purpose-designed headquarters in Cowes and continued to strengthen its support team. The investment represents a further commitment to supporting local industry on the Isle of Wight, in conjunction with regional training initiatives and an ongoing relationship with

local boat builder South Boats IoW.

With several high-profile multi-GW offshore wind developments poised to start construction from April, the industry is preparing for a prolonged period of heightened activity.

Seacat MD Ian Baylis said: "While it has, to all intents and purposes, been 'business as usual' at Seacat Services over the past few months, behind the scenes we have been gearing up for what is likely to be the busiest period of offshore wind construction to date."



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Magnet technology switch to marine sector

Finnish technology supplier The Switch is targeting 200 per cent growth in the marine segment over the next five years building on the success of recent orders, its acquisition of Wärtsilä Drives and the financial muscle of Japanese parent company Yaskawa Electric Corporation.

The Switch believes its permanent magnet (PM) and frequency converter technology can have the same transformational effect on marine as they have had in wind, where the company is a preferred industry supplier providing PM generators and full-power converters to wind turbines worldwide.

Its largest low voltage (690V) PM generators installed have a capacity of 8.6MW out of a total installed capacity in excess of 13GW.

PM machines, in conjunction with frequency converters, convert mechanical energy into electric power that can then be utilised for onboard systems and equipment.

The Switch's PM shaft generators can be used to create cost-effective electricity and save fuel, while vessels utilising electric propulsion can optimise fuel consumption and access predictable and flexible power.

In addition, The Switch's frequency

converters deliver reliable and accurate speed control, making them ideal for tugs and other vessels operating in varying environments and speed ranges, and perfectly suited to the demands of dynamic positioning systems.

"We are now a specialised provider for the marine industry. We believe we can make a real difference in marine – championing enhanced efficiency, the environment and our customers' businesses. We see this as the beginning of a new era."

Mika Koli, business development manager at The Switch

Mika Koli, business development manager at The Switch, said: "PM technology and frequency converters offer substantially lower operational costs for owners, while also ensuring that vessels can be future-proofed.

"They provide accessible, affordable and

easily integrated energy for the demands of all future systems while, crucially, lowering fuel consumption and emissions.

"This means owners can operate greener ships and comply with tightening environmental regulations."

Since entering the marine sector in 2013, The Switch has won more than 20 orders for its PM shaft generator technology, with first deliveries scheduled to take place later this year.

In July 2014, Yaskawa – a €3.3bn turnover business – became the sole owner of The Switch which, in turn, paved the way for the company's acquisition of Wärtsilä Drives in November last year.

Koli said: "That move was crucial. It gives us competency in specialised megawatt-class power drives alongside a test centre and manufacturing facilities in Stord, Norway.

"It means we are now a specialised provider of drive trains that are engineered specifically for the marine industry.

"We believe we can make a real difference in marine – championing enhanced efficiency, the environment and our customers' businesses. We see this as the beginning of a new era."

Range of turbochargers injects increased performance

Injection technology specialist and Rolls-Royce subsidiary L'Orange has introduced a new range of high-performance turbochargers for large diesel engines as well as gas and dual-fuel engines used in the marine and offshore sectors.

The German company says its new ZR turbochargers offer more power, reduced fuel consumption and fewer emissions. They are designed for engines from 500kW to 10,000kW by differing the size of the compressors, turbine wheels, pressure ratio and volume flows.

L'Orange's ZR range was developed in collaboration with fellow Rolls-Royce Power Systems subsidiary MTU Friedrichshafen and the company says that by developing turbochargers that work as part of a

harmonised system, the needs of a wide variety of customers can be met.

It also believes the new products fill a significant gap in the market for operators needing high performance upgrades for large diesel engines.

Olav Altmann, L'Orange head of sales, said: "High performance, low consumption, reduced emissions and good interaction between all units even under highly transient engine operation conditions – the requirements placed on engines are almost identical everywhere and they are increasing steadily. A single component cannot entirely address them, whereas harmonised systems can.

"Thanks to the turbocharger's diverse product family, we can meet different customers' needs without compromising

on performance or efficiency. Since the turbochargers and other L'Orange components are perfectly matched, they can be superbly integrated into the engine's overall package."

Adding turbochargers increases the engine power and the efficiency of the combustion process. With the drive of the compressor coming from the engine's own exhaust gas, the energy of the exhaust gas is used and the necessary power for the charge exchange coming from the engine is reduced.

This effect increases the efficiency of the engine further on. To cope with conditions at sea – as well as at altitudes of 4,000m and in low and extremely high external temperatures – the ZR turbochargers have sealing and bearing points that are thermally isolated and can be water-cooled if needed.

L'Orange has its headquarters in Stuttgart, with other manufacturing operations in Germany as well as plants in the US and China. The company employs more than 1,000 people worldwide.

Bronze age propeller

Finnish company TEVO has developed a bronze propeller for 1A Super class vessels operating in Arctic conditions.

The three-year development project showed the bronze propeller was an efficient and cost-effective alternative for ships operating in ice compared to steel propellers.

Diesel dominance set to continue

The value of the global market for marine gen-sets is predicted to rise by 20 per cent between 2016 and 2021, driven by a growth in shipbuilding and more stringent controls on emissions.

Research firm MarketsandMarkets, headquartered in India, estimates that the sector will rise from US\$4.5bn in 2016 to US\$5.4bn by 2021, with the Asia-Pacific region accounting for much of the growth as the beleaguered shipbuilding industries

of China, Japan and South Korea start to recover.

While diesel fuel marine gen-sets will continue to dominate the market, they will lose market share to natural gas and alternative fuel versions mainly driven by new, lower targets on emissions. Despite that, diesel fuel gen-sets will remain popular, thanks to safe fuel storage and their longer engine lifespan and lower maintenance costs compared with other fuel types.

Gearboxes still offer powerful performance

Rumours of the death of the gearbox in marine applications have been greatly exaggerated, according to the CEO and founder of Norwegian electric propulsion specialist, Stadt.

Writing about the fifth generation of his company's drive technology, Halvard Lidset

Slettevoll insists that the use of gearboxes – particularly when linked to an electric motor and AC drive – still offer real advantages to ship operators.

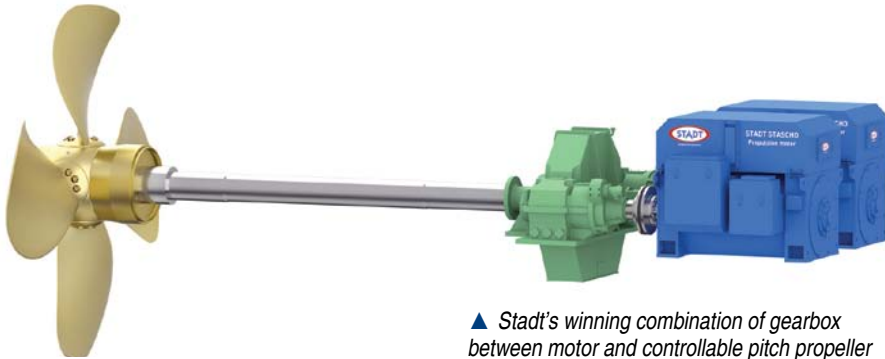
He said: "The nature of rotating machines, both electric ones and combustions, and the physical laws for them, tells us that a gearless

solution that uses an electric motor only will not be able to deliver the required power/torque as efficiently as the geared solution."

In Stadt's latest No-Loss drive systems – developed and tested over several years – the gearbox is combined with the use of a controllable pitch propeller, delivering increased power and torque while saving space and weight.

Slettevoll says that this also results in fuel savings of up to 5 per cent over traditional AC drive solutions and more where the energy is provided by generators with other power sources shut off when not needed.

He said: "This leads to a fuel saving that may count up to 30 per cent a year compared to ships with mechanical propulsion, in particular for ships with a variable load profile, DP or doing slow steaming as part of their operation."



▲ Stadt's winning combination of gearbox between motor and controllable pitch propeller

Electric propulsion gives Antarctic the silent treatment

Australia's next-generation Antarctic supply research vessel (ASRV) will include an electric propulsion system designed by Bakker Slidrecht.

The ASRV will be equipped with an electrical propulsion system that enables flexible use of the available power on board as multiple power configurations are supported. Additionally, the DC drive configuration enables power take-in and power take-off use of the electric propulsion motor. These advanced operations are required to allow the vessel to function in multiple operational profiles such as ice-breaking and silent sailing mode.

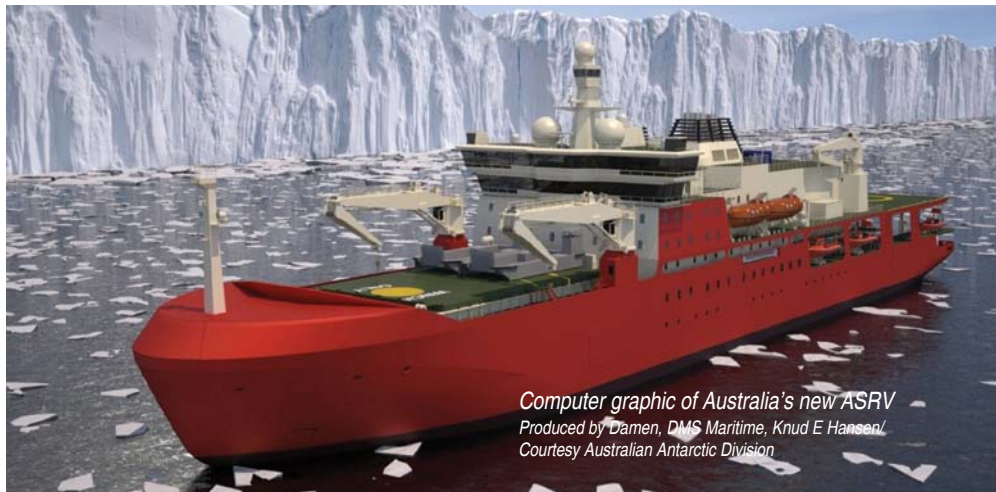
Netherlands-based Bakker Slidrecht will provide the design, engineering, production, FAT-testing, certification and commissioning of two common DC bus drive systems for electric propulsion motors and bow thrusters; two main DC bus drive switchboards, and six squirrel cage induction motors for bow/stern thrusters.

The ASRV is being built by Damen

Shipyards Galati in Romania for the Australian government. It will form an integral part of the Australian Antarctic programme in the coming years, following its scheduled delivery into service in 2020.

The as-yet-unnamed vessel will supply

Australia's permanent research stations in Antarctica and Macquarie Island, transporting cargo, equipment and personnel. Designed with 500m² onboard laboratory and office facilities, the ASRV will also conduct research activities.



Computer graphic of Australia's new ASRV
Produced by Damen, DMS Maritime, Knud E Hansen/
Courtesy Australian Antarctic Division



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Seasoned campaigner lobbies for tug firms

Anna Maria Darmanin will shortly be celebrating her first year as secretary general of the European Tugowners Association (ETA). Here she talks to *IT&O* editor John McCready about her ambitious plans in her new role, the challenges ahead and how she has found the tug community hard working, down to earth and great fun

Anna Maria Darmanin has loved the sea for as long as she can remember. Her childhood was spent living by the sea and playing on the shore and she returns to it as often as she possibly can.

The 45-year-old life-long campaigner and lobbyist, who will celebrate her first anniversary as secretary general of the European Tugowners Association in May, said: "I was born in Malta and lived by the seaside (well this is not difficult since Malta is a very small island). The sea was always a very important part of my life since I spent most of my childhood by the sea."

After leaving secondary school, Darmanin attended the University of Malta. She still lectures there once a month.

She said: "I was educated in Malta. I have a first degree in communication and psychology. My honours degree is in communication studies and my master's degree is in human resources development. I made sure that when I left secondary school, I picked subjects that I enjoyed. It's the same with work: I have to enjoy what I do."

It was during her young adulthood that Darmanin's social conscience and campaigning zeal first came to the fore.

She said: "There was always some cause to work for or some campaign to carry out or some association to become an activist in."

Darmanin in fact led the first student protest which was aimed at protection of the national heritage and lobbied for the government to raise the penalties for those caught vandalising historical sites.

Darmanin also took on voluntary roles – for example, working with elderly people or with depressed patients in psychiatric institutions. She also led a campaign in

support of the work of the Red Cross in the former Yugoslavia, helping people whose lives had been torn apart by the country's descent into civil war and murderous ethnic cleansing.

Darmanin said: "I have over the years been active in various organisations and participated in various campaigns. Today I am part of the Foundation for Women Entrepreneurs, which is self-explanatory; Morning Tears, a pan-European organisation that focuses on helping children in some developing countries, and the Islands Forum, which, as the name suggests, primarily deals with campaigning in support of islands."

It was Darmanin's students' union activities – she was elected its president in her final year at university – that led to her being head-hunted for her first management role.

She said: "My first job was head of department of the leisure section within the largest English language school in Malta. I was paid to manage a team to create fun activities for students visiting Malta for English lessons."

"It was a real fun job, but I also learnt a lot as it was my first management experience. I ended up in this job because the language school, many years earlier, had its roots within the students' union. Therefore I was head-hunted when I was about to finish university."

Darmanin says that at this time she had a clear career plan and thought she knew the path that her working life would take. However, things did not go quite to plan. Nobody, she says, is more surprised than she is about the direction in which her various jobs have eventually taken her.

She said: "When I started my career 23 years ago, I never imagined that today I would be doing what I am doing. I set off to be an executive in the corporate world with the ambition of working outside of my own country. However, at the time Malta was not a member of the European Union (EU) so getting a visa was rather difficult."

"After a few years in some top jobs in Malta, I realised



▲ Anna Maria Darmanin, ETA secretary general

that what I was doing was not particularly fulfilling, so a friend and I set up our own company, and I became an entrepreneur for quite a few years.

"Then in 2004 when we joined the EU, I was asked to represent Malta in one of the EU's institutions, the European Economic and Social Committee (EESC). In 2007 I sold my shareholding in the different companies we had opened by then, and worked more full time in EU affairs – however, always as a self-employed person rather than an employee."

During her tenure at the EESC, she was elected vice president for a full term between 2010 and 2013, following which she held the post of chair of the single market observatory. As a member of the EESC she participated in a number of the committee's policy positions, including maritime-related policy.

However, by 2015 Darmanin felt as if she had become stuck in a rut and her work, although still interesting in many ways, was no longer as challenging as she would like.

She said: "I wanted to find something that combined my passion for maritime affairs with my knowledge of lobbying within the EU – the ETA job was a perfect match."

Darmanin joined the ETA at a pivotal time as the organisation set itself a demanding strategy for growth, both in terms of membership and influence.

She said: "Much of our efforts are in executing this strategy. Primarily we need to get ourselves known even more within the legislative spheres. A sterling job has been done until now; however, now our presence needs to be felt on a regular, frequent and constant basis in order to ensure that our lobby is timely and effective."

"We also want to increase our membership base. Whereas the large players are all within ETA and also a substantial number of medium sized ones, we need to be able to



◀ Darmanin spends most of her leisure time on the water

attract more smaller operators. Quite a few of them are already members, but there are still some who are not.

"In view of the global trends within the shipping industry and also the specific challenges the tug sector may be facing in the future, membership within ETA has particular significance as it is by forming alliances (and ETA is the place to do this) that specific challenges in the future can be faced. Another area that we are working on is the collection of data to be able to map out clearly a concise picture of the industry. This would significantly help our lobby work."

Darmanin said there were many reasons for European tug operators of all sizes to join the ETA, but perhaps the top three were: regular opportunities to network, forge working relationships and share best practice, and co-operate in achieving common goals.

She said: "The informal social side of our regular and annual meetings is extremely important for catching up with long-term friends and colleagues or forging new business relationships."

Secondly, she said membership meant operators knew about what was going on throughout the industry, such as developments in maritime or employment legislation, and had access to expert advice.

Thirdly, through a strong and dynamic ETA, operators had the chance to influence both EU and international decision-making.

Darmanin said that an example of how the ETA could influence decision-making was the introduction last year of a new EU regulation on port market access and financial transparency. Originally proposed for all port services, it was watered down during the legislation process to exclude many services, including pilots, but not towage, which remained subject to regulations that many operators saw as restrictive.

She said: "While we would have liked to see towage placed on an even keel, we were able to make specific changes – words such as 'must' and 'will' became 'should' and 'may'. The regulation is up for review after six years

and we're already gathering evidence about its impact on tug operations."

Asked what has given her most pleasure in her present role, Darmanin said: "It is difficult to pinpoint specifically one thing, as I must admit I love the work I do and for me every day is a very enjoyable day. I think what makes my role even more special is the members themselves. I was so impressed to find out that the tug community is composed of very wonderful people, hard working, extremely competent, down to earth, and fun.

"I believe the success of ETA is its members. It is the members who are the driving force."

Last year Darmanin had a major surprise for her family, friends and colleagues. She got married. She said: "I never wanted to get married or have children. Especially in my younger days, I was married to my work, which was great for me.

"However a few years back I met my current partner, Gareth. I met him through sailing, which we both love. He was an instructor and I was still finalising my RYA sailing qualifications.

"The informal social side of our meetings is extremely important for catching up with long-term friends and colleagues or forging new business relationships"

"It was Christmas 2015 when we decided to get married. This was a rather significant thing for someone like me who was convinced I never would. So in March last year we went off to Hong Kong and got married, but we didn't tell our friends and family for three months. It was quite a shock for everyone."

After they married, the couple bought a dog, which they named Qwerky. She said: "Our dog feels very much like a child as he is always with us. I have wanted a dog for a long time and Qwerky is just how we wanted him, a little crazy dog."

Family is very important to Darmanin; although she works in Brussels, where the ETA recently relocated its headquarters, she still considers Malta to be her home. Her father was a civil servant and her mother, before having children, worked at HMS Dockyard Malta, where she was responsible for taking care of tugboat bookings. Darmanin said: "Family is very important in Maltese culture, where family occasions and gatherings are always big celebrations. My husband is British and finds this somewhat strange, but nice."

◀ Darmanin with husband Gareth and their dog Qwerky



▲ A powerful and passionate speaker, Darmanin has been involved in numerous campaigns since she was at university

When asked which famous person she would like to dine with, either from the present or from history, Darmanin came up with a whole dinner party guest list. Sitting around her table would be: first female US secretary of state Madeleine Albright, former EU president Jacques Delors, Mother Teresa, US entrepreneur Tony Robbins, business investor Warren Buffett, motivation author Napoleon Hill, and the yachtsman Jean Louis Bernicot, who circumnavigated the globe in the 1930s. "I could talk to each one of them for hours," she said.

Looking to the future and moves to develop crewless vessels, Darmanin said: "I am a firm believer that innovation is an answer to the challenges of change; autonomous vessels are essentially an innovation that has been around for a while and which will, to a certain extent, become more widespread.

"Having sailed 35,000 nautical miles on a sailing yacht, I am also a believer that human intervention is critical to certain decisions that need to be taken at sea. So many variables come into play when taking a decision as a skipper or a master, that this human element cannot be eliminated altogether."

On the UK's impending departure from the EU, she said: "The tug sector in the UK is an open market and in itself it will not be directly affected. However, indirectly, one needs to look at the trade agreements the UK will strike with the EU and with the rest of the world, as this will have an impact on the trade and flows into the ports of the UK."

Finally, her advice for anyone thinking of embarking on a similar career path to her own, is: "Stick to your values; be yourself; be open and honest; network as much as you can; always know what is going on."

● More information about the ETA, including how to become a member, can be found at www.eurotugowners.com



Flexibility is key to design success

Jim Hyslop, manager, project developments at Vancouver, Canada-headquartered naval architects, Robert Allan Ltd, looks at the need for designers to be flexible in a business environment that is constantly changing and developing



► Jim Hyslop

As Robert Allan Ltd enters its 88th year of business, and approaches a milestone 1,000th tug delivery, it has become clear that change is constant.

To fail to recognise a need and be flexible enough to meet that need is to be left behind and flounder.

The key to success is to back up that flexibility with a well thought out plan; be it with sound engineering or strong management, experience is the foundation to that success.

From a designer's perspective there are two key elements that are currently driving the tug market: safety and the environment.

A lot has been written about tug stability recently, and indeed as tugs have grown more

and more powerful for their size, this is a topic of concern.

In evaluating stability one must be aware that there are two main factors that determine righting moment: GM (and the resulting righting arm) which is multiplied by the tug's displacement to calculate righting moment.

This is a critical point – it is one thing to have a huge GM, but a tug needs mass to resist towline forces. In addition, a large GM generates higher accelerations in a seaway, putting the crew at risk of injury. The balance of GM and displacement are what create a stable and safe tug.

Ergonomics is another key element of safety – the layout of the propulsion system enabling predictable handling, good sight

lines from the wheelhouse, proper stair slopes and well positioned hand rails – all these contribute to reduced injuries and less damage to equipment.

As for environmental considerations, it remains to be seen which propulsion system will prevail: diesel engines with strict emissions controls, LNG powered vessels, or some form of electric/hybrid propulsion.

All have their merits, and no doubt, in a few years things will have changed considerably. The key will be to be flexible enough to meet the constantly changing requirements.

CAD/CAM training aims for world-wide endorsement

More workboats are designed for more clients using SSI's ShipConstructor software than any other shipbuilding CAD/CAM application.

ShipConstructor is the global standard for designing tugs, OSVs and other workboats.

Now there is a globally available certification programme to validate a user's proficiency.

SSI has introduced its own SSI certified training programme for its ShipConstructor and EnterprisePlatform software.

The programme starts with free training in ShipConstructor essentials that can be completed in as little as a day or two and in a person's own time using a free trial of software. After that, higher

levels of certification may be acquired.

SSI CEO, Darren Larkins, said: "Industry has requested certification credentials to assist it when hiring, promoting and compensating employees and subcontractors. Our goal is to make our training certification a globally accepted endorsement of expertise."

ShipConstructor has an AutoCAD foundation and ShipConstructor users also need to keep up-to-date with the latest AutoCAD enhancements and other Autodesk software that they could be leveraging. Therefore, SSI offers training in Autodesk programs as well.

SSI can deliver training in a variety of ways: online, or in person at a client's office or at a centralised training facility.

The company has a network of authorised training centres around the globe, staffed by SSI-certified trainers to give advice on the best options available.



◀ An SSI face-to-face training session underway using ShipConstructor software

Software enables easy creation of explosion views in all major formats

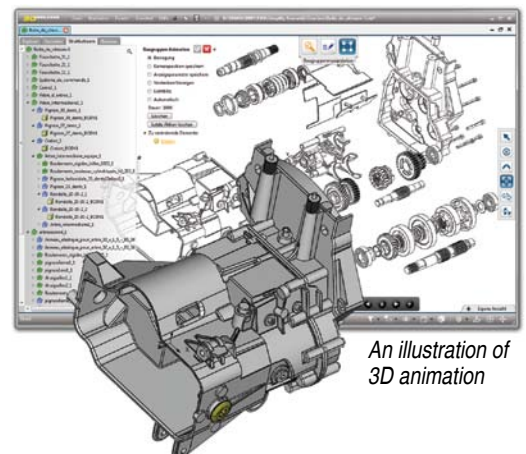
Core Technologie (CT), the Franco-German software manufacturer, has developed a new unique CAD Viewer module for 3D video animation of assemblies. It now offers a unique new module that enables very easy creation of animated explosion views for assemblies of all major CAD formats.

Illustrated as explosion view, the model can be animated and visualised in 360-degree views like an interactive 3D video. This innovative documentation software helps users by making the structure, installation and disassembly of

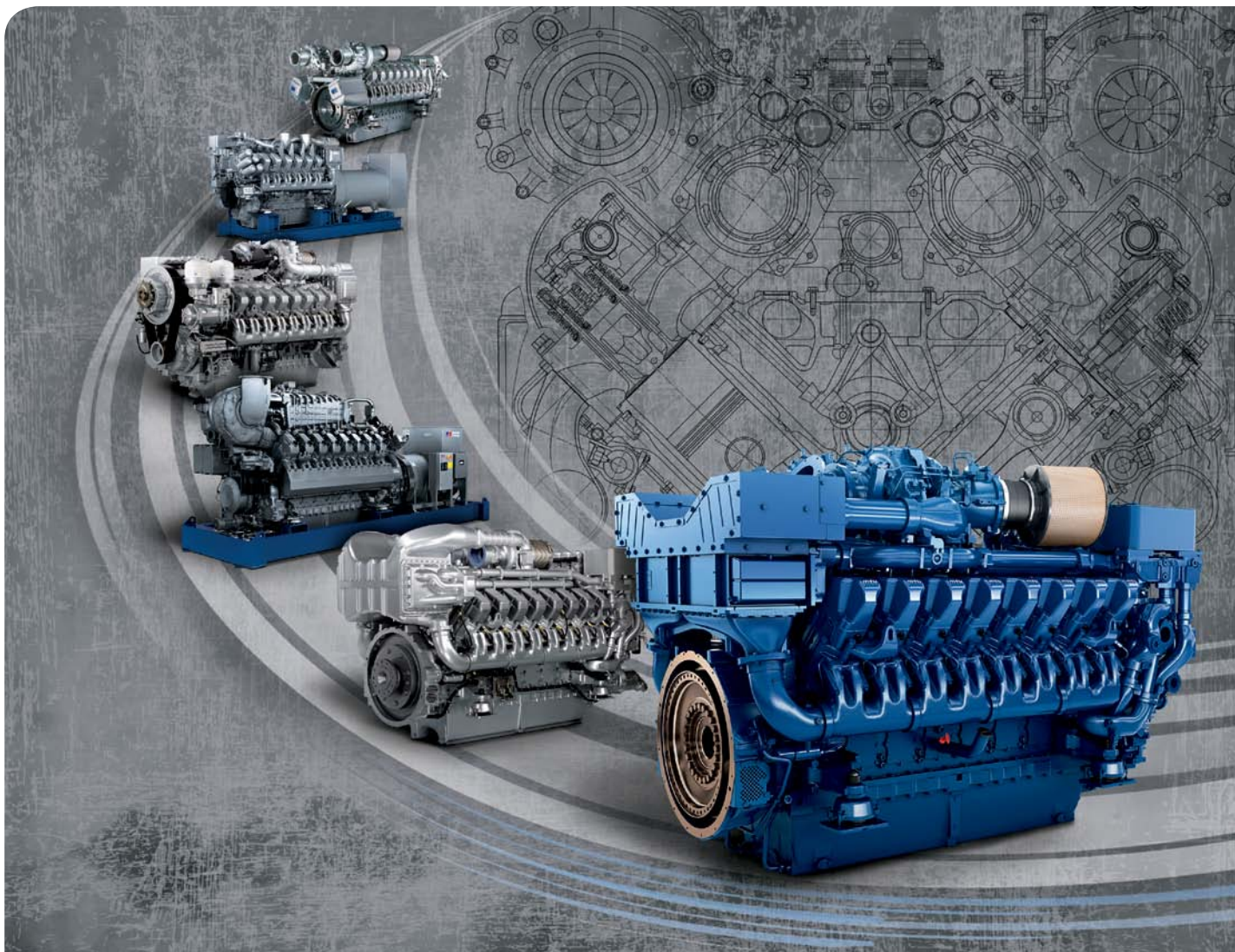
complex assemblies visible.

The user can look at, zoom and move the animated 3D model from any point of view. The 3D animations are saved in a CT-native format.

The video can be moved forward and backward, stopped and repeated at any position. Dimensions and comments can be generated and user-defined views saved. The generated models created can also be opened and played back on mobile devices such as Windows Surface Tablets using the cost-effective 3D-Analyzer CAD viewer.



An illustration of 3D animation



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Power. Passion. Partnership.

Design tool for largely uncharted domain

HydroComp PropElements 2017 – the propeller ‘design for performance’ code from HydroComp of Durham, New Hampshire, US – is the latest build of its commercial software for marine propeller design and analysis. While the company says propeller specialists will find it an essential addition to their software tools, it adds that it also tackles the component-level hydrodynamic needs of naval architects

Still an uncharted domain for many naval architects, propeller design is an iterative process following a typical design spiral – from initial sizing through detail design. System-level propulsion design and analysis tools (such as HydroComp NavCad®) are used in early design stages to identify principal propeller parameters (diameter, pitch, blade area, number of blades) and to even make a first assessment on certain performance details, such as hydroacoustics.

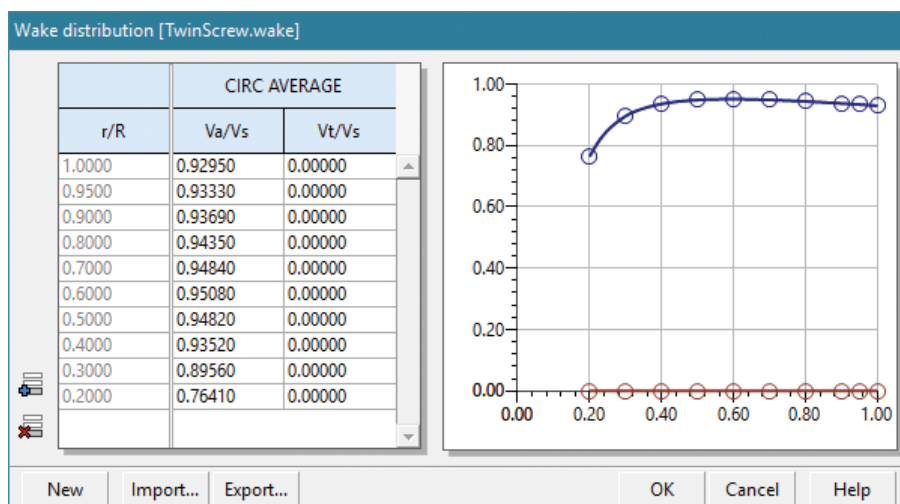
It is after this point that naval architects typically defer final propeller details to the manufacturer or a specialised consultant.

With the advent of custom and semi-custom propellers – commonplace for new vessel designs – naval architects now have a new set of technical challenges.

These propellers differ from stock series or off-the-shelf propellers in two principal ways. They are:

- designed using contemporary foil geometries, and
- optimised and fitted to the individual vessel (or vessel type).

To fully take advantage of the benefits that custom or semi-custom propellers make available – or to evaluate them in service –



naval architects must look to a different kind of propeller calculation.

Of course, specialists can use *PropElements* to help prepare the final design for a particular application, but now with *PropElements 2017* naval architects can become a meaningful participant in the design and analysis of these contemporary propellers at later design stages. For example, they can employ the code to conduct studies of alternatives prior

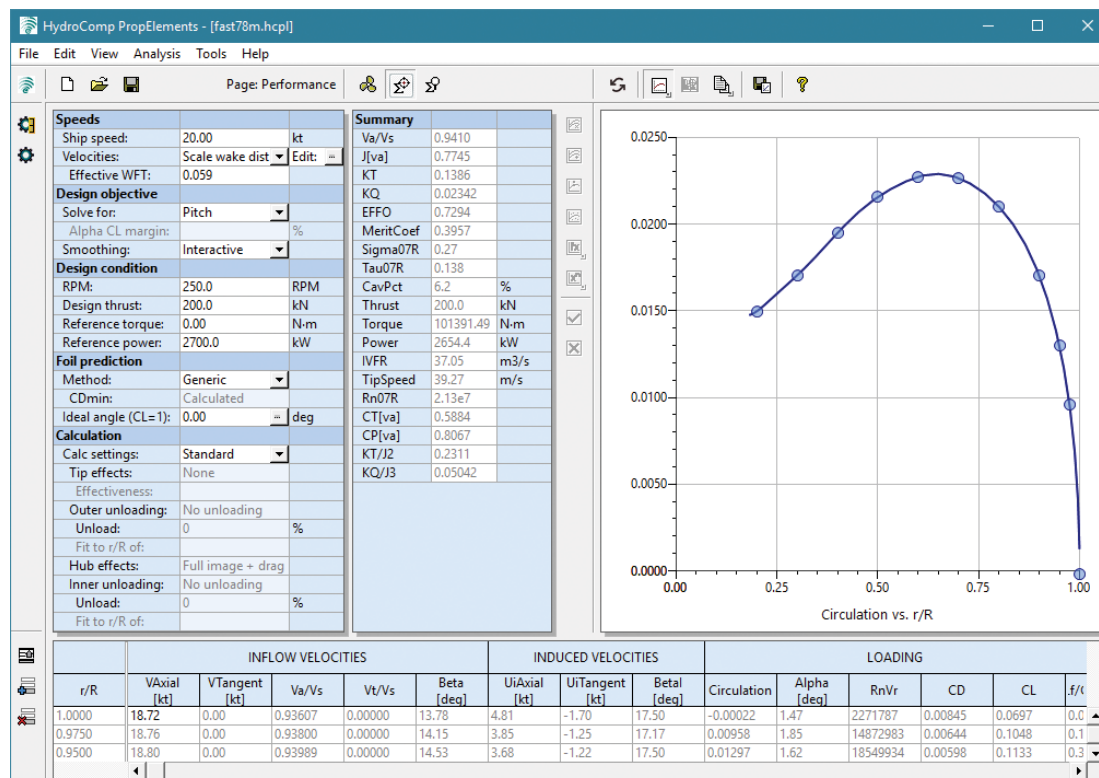
▲ Figure 1: an example of averaged axial and tangential velocities

to development of the final design, as well as to confirm and check these designs.

In wake-adapted propeller design, a custom propeller is optimally matched to the unique inflow properties of the vessel, or its ‘wake field’. (See Figure 1 for an example of radial averaged velocities derived from the wake field.)

PropElements is able to consider axial and tangential inflow properties, and ascertain optimised distributions of pitch and camber for prescribed foil characteristics.

This process takes into account blade strength, tip and hub loading, and cavitation. Its calculation pages include propeller, performance and strength, along with supplemental calculations such as for the creation of KT-KQ curves (see Figure 2).



◀ Figure 2: an example of a PropElements screen shot

The foundation of *PropElements* is a unique distributed blade foil code, with empirical connections that allow analyses to be viscous and fully-scalable. (These corrections are made possible through HydroComp's experience in hybrid empirical-numerical hydrodynamics). The code also supports standard nozzle styles (such as 19A, 33 and 37), with optional support for contemporary high-efficiency nozzles and tunnel thrusters.

The code can also be applied to analysis, as well as design. The ability to investigate radial values of foil lift and cavitation number, for example, can help identify potential sources of root cavitation or blade impulse excitation.

It can also help evaluate tip loading (for hydroacoustics), and also be employed in forensic investigations of blade failure.

Export of KT-KQ curves can be applied to system level calculations in replacement of direct propeller series predictions. For example, KT-KQ curves from the 2017 code can be exported in a form that can be used with HydroComp NavCad for propulsion analysis. A number of import and export

options make *PropElements* an important companion for HydroComp's NavCad and PropCad® software, as well as a pre-processor for higher-order flow codes, CFD and FEA.

For example, early-stage performance prediction is typically conducted using NavCad. One unique NavCad feature is aligned series propeller performance, where KT-KQ data can be used to correlate custom propeller performance to series calculations.

"Engine power densities will grow; fuel costs will increase; and emission reduction will become more urgent – all leading to the greater use of specialised propeller designs"

Then, when the propeller has gone through the design for performance process, its design for manufacture can be completed in PropCad. CFD and FEA calculation benefit from *PropElement's* calculation of proper body forces.

HydroComp, which was founded in 1984 and now has customers in 60 countries worldwide, conducts formal benchmark validation studies using model test data for quantitative fidelity, and CFD studies to confirm scalability and qualitative outcomes.

Engine power densities will grow; fuel costs will increase; and emission reduction will become more urgent – all leading to the greater use of specialised propeller designs.

With more propeller builders now capable of delivering made to order propellers, custom and semi-custom propellers of wake-adapted design should be considered for new construction and repowers.

The widespread installation of these propellers also suggests that naval architects need the ability to analyse their performance in greater detail than has typically been available. Whether for confirmation of propeller designs for new-build projects or the post-delivery evaluation of trial performance, HydroComp is confident that *PropElements 2017* will become a commonplace fixture in a naval architect's toolbox.

Nozzle provides significant low speed thrust

Adam Kaplan, lead project engineer at HydroComp, discusses the functionality and design of ducted propellers and how designers and engineers can best evaluate them



► Adam Kaplan

Ducted propellers are a popular choice for tugs and workboats – and for good reason. It may be obvious that the nozzle around the propeller protects the blades from damage during operation in harbours and inland rivers, but more importantly, the nozzle actually generates forward thrust.

This contribution can be very significant at low speeds – as much as half of the total thrust at the zero-speed/bollard condition comes from the nozzle itself.

The presence of the nozzle also affects the radial loading and inflow into the propeller; therefore, the sizing and selection of a ducted propeller unit must be conducted carefully in order to ensure that the vessel's towing and bollard pull requirements are met.

How can we as designers, engineers and propulsion providers accurately evaluate, select and analyse ducted propeller systems?

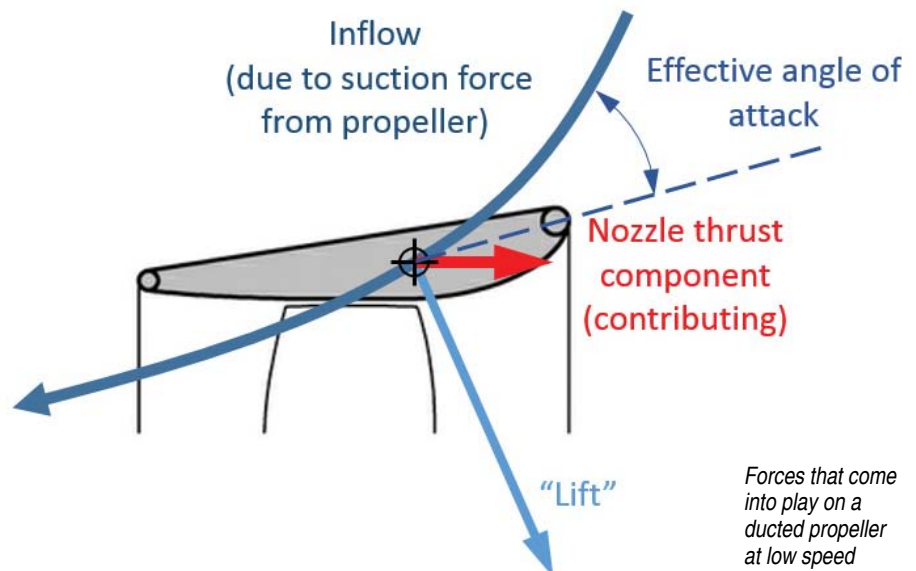
The fundamental source for determining propeller performance are charts of thrust, torque and efficiency for systematically tested propeller series such as the Kaplan 19A and Kaplan 37 developed by the Netherlands' NSMB (now MARIN).

These series are the basis for the parametric calculations in HydroComp's NavCad software, which is commercial software for the evaluation of ship resistance and propulsion. Unlike fundamental charts however, NavCad can analyse many other important conditions: interactions with the hull, additional nozzle profiles (Kaplan

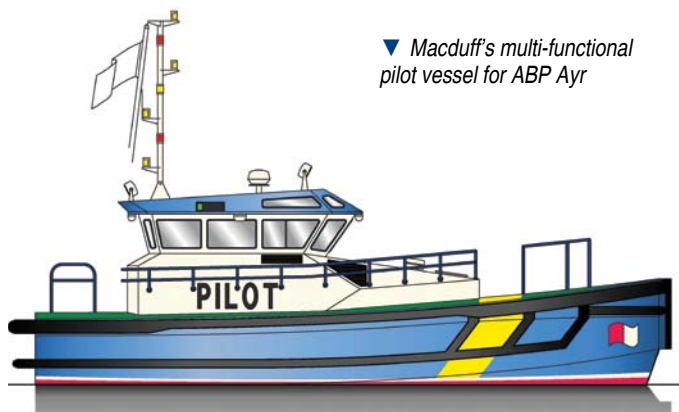
33), non-standard nozzle lengths, effects of oblique shaft angles and cavitation.

HydroComp has recently released *PropElements 2017*, a propeller 'design for performance' code that allows detailed optimisation of the propeller pitch and camber distribution based on the vessel's wake field. *PropElements* allows us to explore ducted propellers in even more detail.

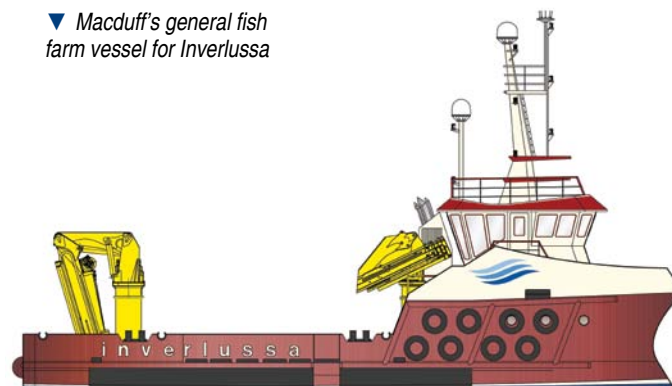
The software includes the 19A, 37 and 33 profiles in addition to the 34 profile, a circular tunnel profile and a high efficiency profile representative of contemporary designs.



Firm celebrates diverse range of contracts



▼ Macduff's multi-functional pilot vessel for ABP Ayr



▼ Macduff's general fish farm vessel for Inverlussa

Macduff Ship Design, based in Aberdeenshire, Scotland, finished 2016 and started 2017 on a high note with the signing of four new contracts for international and UK waters, continuing its tradition of delivering bespoke designs for growing markets at home and abroad.

The contracts include the design of a 16m harbour tug for Shoreham Port Authority on the UK's south coast.

With a beam of 5.4m and depth of 2.9m, the vessel will be a multi-purpose tug suitable for towing, pushing, plough-dredging, surveying and lifting.

Meanwhile, in November 2016, Macduff signed a contract for a new pilot boat design for ABP Ayr, Scotland.

The new vessel is designed to face the challenges of operating in a smaller port, and is to be built by Macduff Shipyards. The robustly designed vessel will feature a semi-planing steel hull form to reach speeds of 12 knots, as well as a MOB recovery system. It will operate with a complement of two pilots and two crew.

The design combines the requirements for

pilot duties along with a robust character to allow it to conduct vessel assist operations and workboat duties, which are of utmost importance in smaller ports with only one harbour vessel.

The design is the result of a long development process to ensure a vessel that suits the varied requirements of a busy small port operation and will be based at the Port of Ayr while also providing pilotage support to neighbouring Troon.

The vessel, due to be handed over in November 2017, will measure 12.75m LOA x 4.5m beam and 2.55m depth. It will be fitted with a twin John Deere engine package with main engines coupled to ZF gearboxes, driving fixed-pitch propellers supplied by Teignbridge. The steering system is to be supplied by Wills Ridley.

All three parties involved in the contract are delighted that the contract, won through competitive tender, is being both designed and built by Scottish companies, showing a huge vote of confidence in the Scottish shipbuilding industry.

Meanwhile, Macduff was awarded a

contract for the design of a new 25m general fish farm vessel for Inverlussa Marine Services, which is based on the island of Mull, off the remote west coast of Scotland.

The vessel is being built by Havyard Shipyard in Norway. The third vessel of its kind for Inverlussa, it will be equipped with two heavy-duty HS Marine supply cranes, a twin screw propulsion system with Caterpillar C18 engines and also features design improvements such as automatic guide pins on the aft deck.

Macduff said in a statement that it is happy to be forging a new relationship with Havyard by working together on this project, as well as building on its existing relationship with Inverlussa.

Internationally, the company is currently working on an exciting new design for a 27.4m fishing vessel for Canadian waters. The vessel is the first vessel of its kind for Newfoundland, and is to be BV classed.

The vessel design is unique in its versatility, being able to operate as a potter and a stern trawler, while also having the capability for other methods of fishing.

Design boss: attention to detail is essential

UK-based APB Marine has recently been working on a new design of Rotor® tug for a large mining company in Australia.

The proposal was to build tugs suitable for berthing and un-berthing and to include a render/recovery winch facility with escort capability to work with vessels of 200,000dwt.

Simon Evans, APB Marine managing director, explained the company's approach to projects such as this. He said: "We advocate a policy of designers to design, builders to build and owners to use external expertise to ensure the overall build is to the proposed specification.

"There appears to be limited expertise in ensuring that tugs are constructed to the design criteria approved by class and ensuring that the builder is as efficient as possible.

"We feel the builder generally neglects this part of the build phase, in an effort to

reduce build costs." He stressed the need for attention to design detail when building a tugboat: "During the development process, designers are contracted to design a tug by developing the shape, power and operational parameters required by owners.

"The attention to detail concentrates heavily on the stability, escort load and the tug's loss potential, while trying to avoid deck edge immersion. The design package is then developed from the supplied Class-approved drawings into a 3D model.

"Our skill is in selecting and applying the right approach to each project, from contract to delivery. Clients can either miss opportunities or get caught up in too high or low a level of detail.

"Our approach to managing these projects is based on a real understanding of shipbuilding and clients' needs. We can therefore reduce build costs considerably."

► Simon Evans, managing director of APB Marine



Evans, a chartered marine engineer also qualified in naval architecture with more than 30 years' experience in the maritime industry, formed APB Marine in 2008.

He said: "Many tug owners have small management teams, and when new tonnage is required staff are unable to devote adequate time to managing the project efficiently as costs generally escalate. We can manage this on the owner's behalf."

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In the Spotlight



On a regular basis, we put one ITS Club member under the spotlight. This time, we talk to Govinder Singh Chopra, director of naval architects, engineering analysts and consultants SeaTech Solutions

How long have you been an ITS Club member?
It is seven years now, since 2010.

How many ITS conventions have you attended?

Four, the first was Vancouver in 2010. I also attended the conventions in Barcelona in 2012, Hamburg in 2014 and Boston last year. I have also attended three *Tugology* conferences, the first was in Amsterdam in 2009, then Antwerp in 2011 and London in 2013.

What is your most memorable moment from an ITS convention?

My good friend, the late Richard Lim, convinced me to attend my first *Tugology*. We landed in Amsterdam, checked into our hotel and soon after that proceeded to the cocktail reception hosted by Sanmar. We were late and the room was already packed, but we were immediately engulfed in the happy spirits and camaraderie. Though this was my first *Tugology* gathering, there were many known faces and we were quickly made to feel welcome and became a part of the group. This first impression and feeling of the warm and friendly spirit of ITS has been most memorable and unforgettable. Needless to add, I soon filled in the form for ITS membership.

Which one person has so far had the biggest influence on you during your career?

Ken Nagy asked me to buy his design firm Kenton Marine in 1996. At that time I was employed as a senior naval architect

with Kenton Marine in Singapore. From being an employee, overnight I became an employer, and that was the greatest turning point in my career. Later in 2000, I sold Kenton Marine to the Dutch group CIG and started SeaTech Solutions in Singapore.

What is the most important piece of advice you would give to anyone entering the industry today?

This may not be the best time for entering this industry as it is probably at its lowest. However, this industry is cyclical and will surely bounce back. So anyone entering this industry today must have a love for the sea and be prepared to come in for the long haul. My advice would be to enjoy whatever your work is. This industry is transforming and the digital revolution and smart ships are coming. There is a very bright future for the passionate and persevering youngsters. In fact at SeaTech we are constantly looking for such young engineers and designers to join us.

If you could invent one thing that would make life in your segment of the maritime world easier, what would it be?

I would like a change in mind-set in our industry. Uncertainties and risks are quite high in the marine industry. As a result, tug owners and operators have become a conservative group – and we often come across the requirement for ‘proven’ designs. Perhaps this gives the operators a (false) sense of comfort. The problem with this is the fact that the conditions in which the

tug operates may not be the same in which it was proven. At SeaTech, we advocate a tailored or fit-for-purpose design where we listen to the operators and the design is customised to suit the intended operations. In today’s world, technology is changing very rapidly and older models are being replaced much sooner, making a strong case for newer creative and better designs as well as a case for the design life of vessels to be shorter, say 10 to 12 years.

What would you like to be remembered for within the industry?

Allow me to rephrase the question to what would be my contribution to the industry? I have been designing ships and boats since 1975. I am extremely grateful to the industry for the extensive depth and breadth of knowledge and experience and also the trust it has placed in me. I wish the hundreds of vessels and assets designed by our team in SeaTech continue to perform safely and efficiently all over the world.

The ITS Club

ITS Club membership has many benefits, including a discount on registration for ITS conventions and *Tugology* conferences, a discount on a wide range of *Tug & OSV* titles, and an airmail subscription to the magazine, ensuring that you never miss a copy. To become a member, go to www.tugandosv.com



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TUGNOLOGY '17



The *Tugology* ethos – a ‘no frills’, two-day technical conference, dealing solely with tugs – continues to be as popular as ever, and we are delighted to be holding our 6th biennial event in 2017. The *Tugology* conference started in 2007 due to popular demand and has so far been held in Southampton, Amsterdam, Antwerp and London, with ever-increasing numbers of delegates at each event.

Concentrating on the design, construction, operation and economics of tugs, the conference is just what our delegates asked for, and the lively forum sessions and subsequent feedback tell us we have got it right. Alongside the conference are simple, to-the-point tabletop displays, which are also extremely popular with delegates.

CONFERENCE

The paper selection committee has now completed the process of choosing the papers that will make up the final programme. As with previous *Tugology* events, committee members were presented with a large number of submissions. The result of these deliberations can be seen in the table on the right, showing the papers chosen and who will be presenting them. A more detailed synopsis for each paper is available on the Conference Programme pages of the *Tugology* '17 section of www.tugandosv.com.

Focusing on tugs and tugs alone, *Tugology* is very much a technical conference which concentrates on the latest advances and operational best practice in the tug world. The papers reflect the experience, research and knowledge of some of the leaders of our industry, and the emphasis at the event will be on discussion of the ideas, initiatives and technical developments they highlight. To this end, pre-prints of the majority of papers will be made available to registered delegates via www.tugandosv.com two weeks prior to the start of the conference, so they can prepare questions in advance if they so wish. Delegates can also print out hard copies of the papers that most interest them. Folders containing complete print-outs of all the papers will be supplied when delegates register and collect their name badge at the event.

Topics covered in this year's conference include regulatory developments in tug stability, including an in-depth look at recent IMO rules and their implications for the industry, developments in azimuth thruster and propulsion technology, and the latest techniques in remote engine monitoring. A number of papers address efficiency and environmental issues, with updates on hybrid, dual-fuel and battery advances, as well as a look at lubrication oil issues and techniques for engine

lifecycle costs. Naval architecture is also addressed, with papers on CFD and stern-flow stabilisation.

In addition to these presentations, the first day of the conference will see a forum discussion on tug safety chaired by Robert Allan of Robert Allan Ltd and featuring major players in the industry. More than 50 companies from all sectors of the industry will be represented on stands at the event, giving an invaluable opportunity to gauge industry trends and developments, and, as ever, editorial staff from *International Tug & OSV* magazine will be on hand to cover all the breaking news.

As well as providing an insight into the latest technological advances, and the chance to discuss these with leading industry experts, *Tugology* provides an unrivalled opportunity for networking, whether this involves meeting up with old friends or making new ones.

The conference will be chaired by Mike Allen, longstanding regular chairman of the influential and highly-respected biennial *ITS* conventions, and the inaugural address will be given by René J de Vries, Harbour Master, the Port of Rotterdam Authority.

VENUE

Tugology '17 will take place at the World Trade Centre (WTC), Beursplein 37, 3011 AA Rotterdam, The Netherlands, in the vibrant heart of Rotterdam. WTC Convention Centre is located in the city centre, with excellent transport links, both by car and public transport – the Metro station is just a few minutes' walk away. On the WTC's doorstep you will find plenty of restaurants, a wide variety of shops and an art gallery. There is also ample car parking space available.

ACCOMMODATION

We have chosen six hotels that are all no more than a short walk from the World Trade Centre and will offer preferential rates to delegates. Room prices vary for each hotel so there should be something to suit all budgets – from €99 to €179 per night. You can view further details of the hotels via our dedicated booking link, which can be found on our website – please visit the *Tugology* '17 section of www.tugandosv.com and click on the 'Accommodation' page.



PAPERS AND SPEAKERS

Title	Author/Speaker	Company	Country
Official Opening and Inaugural Paper	René J de Vries Harbour Master	Port of Rotterdam Authority	The Netherlands
Enhancing Tug Safety Through Internationally Harmonised Stability Regulations	Gijsbert de Jong	Bureau Veritas	The Netherlands
Future-oriented Developments in Azimuth Thruster Technologies	Jacob Bryja	Schottel GmbH	Germany
Using CFD in the Design of Modern Ship Handling Tugs at Damen	Jochem de Jong Joost Schot	Damen Shipyards	The Netherlands
Remote Engine Monitoring - Bridging the Technology Gap Between Tugboat Operations and Other Industries	Dr Matthias Schlipf Mark Watson	MAN Diesel & Turbo	Germany
The Introduction into Service of New Propulsion Solutions for Tugboat Applications	Edgar Snelders	Wärtsilä Netherlands	The Netherlands
Forum Session: The Challenges of Tug Safety	Robert Allan Dirk de Groote Carsten Nygaard Arie Nygh	Robert Allan Ltd Damen Shipyards Svitzer SeaWays Consultants	Canada The Netherlands Denmark Australia
The Advantages of a Low-emission Hybrid E-tug Driven by a Revolutionary Podded Drive with Flexible and Green Diesel-electric Configuration	Haijo van der Werf Walter van der Pennen	Offshore Ship Designers BV RH Marine Netherlands BV	The Netherlands
CellSwap - Battery Re-coring to Reduce the Cost, System Size and Environmental Footprint of Hybrid and Electric Vessels	Brent Perry	PBES	Canada
A World-first Configuration - a Dual Fuel Engine Direct Coupled with a FPP Z-Peller on a Harbour Tug	Hideyuki Takahashi Daiki Ikeda	Niigata Power Systems	Japan Singapore
Increased Safety and Reduced Lifecycle Costs with Electronic Diesel Engine Management	Cyrill Halbauer Sebastian Schwarz	MTU Friedrichshafen GmbH	Germany
Stern Flow Stabilisation to Improve Directional Stability of Tugs with Low Length-to-beam Ratios	Barton Stockdill	Robert Allan Ltd	Canada
Next Generation Performance-linked Tug Stability	Govinder Singh Chopra	SeaTech Solutions International (S) Pte Ltd	Singapore
Staying Green While Keeping Lean	Jonas Nyberg	Caterpillar Propulsion International Pte Ltd	Singapore
Your Oil is Talking - But Are You Listening?	Kim Kjaer Steffen D Nyman	CC Jensen AS	Denmark

Detailed synopses of all the papers can be found in the *Tugology* section online at www.tugandosv.com



Simulator centre sets a new standard for vessel training



A world-class marine simulator training facility, equipped with state-of-the-art marine simulators from Kongsberg Maritime, is opening this spring at the UK's Modal Training.

Based in Immingham, on the south bank of the Humber, Modal Training is the first independent training organisation in the UK to offer such a comprehensive range of integrated Kongsberg ship, offshore vessel, engine and control room, high voltage, DP, radar and vessel traffic service (VTS) simulators. Powered by Kongsberg's latest K-Sim full picture technology, they will allow training to be provided on all vessel types from offshore vessels, tugs and tankers, to deep sea vessels and cruise liners.

In pride of place is a Class A full bridge K-Sim offshore vessel simulator, with a fore and aft bridge, DP2 dynamic positioning with K-Pos interface, and anchor handling. It is one of just three in the world to be configured in this way for offshore training. Others are located in Norway and Singapore.

In addition to meeting the training needs of individuals and businesses in the Humber estuary, it is expected that the new facilities will attract learners from throughout the UK and around the world.

Sam Whitaker, of Modal Training, said: "As well as being Europe's fourth largest trading estuary and the UK's largest and busiest multi-purpose ports complex, the Humber is home to the UK's rapidly developing wind energy sector.

"Our aim therefore is to meet the training needs of the many global businesses which are establishing themselves around the Humber, as well as providing a new and valuable opportunity for individuals and existing businesses to train locally.

"We are also keen to play our part in

▲ *Modal Training's new Kongsberg simulators will allow training to be provided on all vessel types*

addressing the anticipated shortfall in qualified British seafarers, which is expected to grow to more than 4,000 in the next seven years – as recently predicted by *The UK Seafarer Projections Report*."

This equipment will allow Modal Training to offer training for a wide range of maritime roles, including deck and engineering officers and crew, marine pilots and VTS operators.

In addition to providing the opportunity to acquire basic skills and learn standard operating procedures, simulator training can accelerate learning because key environmental factors can be changed at the flick of a switch. Wind direction, sea state, weather conditions and light levels can all be adjusted to make the exercise more challenging. Obstacles and difficulties can be introduced to test individual responses and team work, while dangerous scenarios can be created for emergency response training.

Each part of the simulator system can be operated independently, or be interconnected to provide full vessel operation exercises for an entire crew.

When the accreditation process is complete, the new Kongsberg simulation suite will be used to deliver a wide range of courses including: Bridge Resource and Team Management, Dynamic Positioning, ECDIS, Navigation and Radar (NARS), Global Maritime Distress and Safety System (GMDSS), Human Element, Leadership & Management (HELM), High Voltage, Engine Room and VTS.

In the meantime, the facility can be hired either for bespoke training or process development work.

In brief

Dropped object risks account for a significant number – about 55 per cent – of serious accidents in the offshore industry, according to the UK Health & Safety Executive Offshore Division. Westmark BV's new website offers simple solutions to prevent such accidents and improve safety. The website – www.preventdrops.com – provides the necessary tools for safety engineers to prevent and mitigate against the risk of dropped objects. The online platform offers safety advice for people working at multi-level worksites.

The importance of adequate training around ECDIS and navigation has been highlighted by UK P&I Club. While ECDIS is an extremely useful aid for seafarer navigation, it is not a replacement for all navigational skill. The club's loss prevention executive advises that seafarers should continue to be trained in a variety of navigational techniques, hold a paper chart 'back up' portfolio, and run exercises to maintain their familiarity with paper charts and proper position fixing routines, in order to keep up these traditional skills.

Seagull Maritime has significantly upgraded the Seagull Training App, the mobile software solution that has revolutionised the way seafarers track their training records and receive critical safety alerts. Available in both Android and iOS formats, the newly enhanced app can be used across a range of mobile devices, including tablets. Seagull Training App v2.0 is available free of charge to all Seagull customers.

HR Wallingford has opened the Australia Ship Simulation Centre in new premises in Fremantle, Western Australia, for navigation, tug master and pilot training. The company has developed bespoke simulator-based systems and training courses to support harbour authorities, and provides simulator training services to the Pilbara Ports Authority, which operates Port Hedland, one of the world's largest bulk export ports.

Latvia-based Novikontas Maritime College is to introduce Global Wind Organisation (GWO) Basic Safety and Basic Maintenance training courses in the first half of 2017. A GWO certificate-holder is accepted as competent and knowledgeable in basic safety in the wind industry.



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Regulation creates training needs

Subchapter M has been in force in the United States for almost a year, but still poses a dilemma for many small and medium-sized tug firms about how best to train their crews and manage their compliance. Classification group RINA has some advice



► *Stefano Socci, COO RINA Americas*

After more than a decade, Subchapter M finally came into force last year and now it is time for the industry to take action on how to comply with this new legislation, which has the main purpose of improving safety within the towing industry by focusing specifically on safety management requirements – but embracing the new regulation is not proving to be plain sailing.

The regulation targets towing vessels operating within the US, with the objective of bringing them in line with the same levels of inspection already in place for ocean going vessels in terms of safety record keeping and manning. The main reason that Subchapter M has been introduced is because of the growing safety and environmental concerns related to the inland towing sector.

According to the US Coast Guard (USCG), in the five-year period from 2010 to 2014, towing vessels and their tows accounted for 67.5 per cent of the number of vessels involved in collisions and groundings, almost 30 per cent of the commercial mariner deaths and injuries, and just over 30 per cent of all chemical discharge incidents and oil spills greater than 378.5ltr into navigable waters within the US.

The principal authority behind the implementation of Subchapter M is the USCG, which has authorised a number

of entities to act on its behalf as a third party organisation (TPO). TPOs are both recognised organisations and independent companies with different organisation and exposures.

Stefano Socci, COO of Registro Italiano Navale (RINA) Americas, said: “I believe, taking into account RINA’s historical expertise in the area of quality systems evaluation, that there will continue to be a degree of uncertainty on procedural and technical verification requirements for some time; certainly that is what we are seeing in the market. I think RINA is in a good position to provide certification services as we can muster more extensive resources, provide better coverage and response and make use of past experience with ocean going towing vessels.”

He said the dilemma or challenge facing operators is to choose their best route to compliance, either through the USCG option or through the towing safety management systems (TSMS) option, both of them bringing fundamental changes in the safety awareness of operators and involved crew.

The Subchapter M regulation focuses on the integrity of the vessel hull and machinery, therefore operators will need to decide which vessels can effectively comply with the requirements before proceeding.

If the operators choose the TSMS option, they will be able to develop a tailored solution for their own business by formalising a set of procedures for the company and the vessels. If, on the other hand, they choose the USCG option, they will need to undergo an annual inspection by USCG personnel.

It should be emphasised that one of the main points and goals of Subchapter M is the change in safety awareness, which can be a big issue, particularly in the area of record-keeping, where the operators need to get their crews accustomed to new working practices and regulations.

RINA Services, one of the appointed TPOs, has developed through RINA Academy a series of training courses tailored to the operator’s TSMS. These courses will help the management companies and their shipboard personnel to comply with the new regulations. This initiative will fast track an enhanced understanding of the regulations and the overall compliance issues from an operator standpoint.

Socci said: “Many towing operators in the US have a fleet of five vessels or less. Such companies could find it a challenge to put suitable systems in place and to maintain them. RINA’s partnership with Tug and Barge Solutions, of Daphne, Alabama, can provide the key to a reliable, easy-to-understand and user-friendly implementation of a company TSMS.

“We can provide both the document system and procedural path, as well as the resources required to ensure that the TSMS is correctly and effectively implemented on board.

“In our endeavour to become a major player in the US towing industry, RINA has joined the American Waterways Operators (AWO). We are actively participating in a number of working committees with the intent of sharing our experience with the industry, improving co-operation among the involved parties and increasing the common knowledge base through a close relationship with some of the recognised players.

“In this regard, it is worth mentioning our close co-operation with the Towing Vessel National Center of Expertize (TVNCOE) in Paducah, Kentucky, aimed to develop the necessary working tools for the clear and smooth implementation of the new regulations.”

Seafarers to get learning support

The Institute of Marine Engineering, Science and Technology (IMarEST), the world’s largest global marine and maritime professional body, has announced that it has signed a memorandum of understanding (MOU) with the Maritime Industry Authority (Marina), an agency of the Philippine government.

The MOU aims to further support the recognition of seafarers through routes to registration, providing a pathway for seafarers to use their certificates of competency and experience gained, to work towards an international qualification, Chartered Marine Engineer (CMarEng) for engineers and Chartered Marine Technologist (CMarTech) for deck officers. The programme will also see Marina and IMarEST support seafarers with access to information and professional development support, as well as sharing and confirming outcomes

of activities that both organisations are involved in. A programme of technical activity will also be initiated.

Marina administrator Marcial Quirico C Amaro III, said: “This is just the sort of programme that we are delighted to work on to support the professional development of our seafarers in response to disruptive technologies.”

IMarEST also offers a number of online and distance learning courses in a range of maritime topics via its learning business, MLA College, which seafarers can access at sea, to support their career development.

It is also running a bursary scheme to support seafarers who want to study while at sea. Bursaries comprising up to 75 per cent off course fees are available for anyone wishing to undertake a BSc, BSc (Hons), PGCert, PGDip, MSc or simply an access course in sustainable maritime operations.

UK tugs refitted for West African operator

A pair of former UK Ministry of Defence tugs have been refitted with state-of-the-art air conditioning units in preparation for their new role operating off the coast of West Africa.

Both vessels are owned by Togo Oil and Marine, a maritime services provider based in Togo's capital, Lomé. The firm runs a fleet of 15 vessels offering deep sea towing and salvage, crew transfers and offshore delivery of ship spares.

The UK's Flynn Refrigeration was charged with sourcing and installing brand new cooling systems on board the tugs. Neither boat was originally equipped with any form of air conditioning, a necessity for crews working in West Africa's tropical climate.

The Birkenhead-based company has more than 30 years' experience supplying marine air conditioning and refrigeration products, and works closely with specialist manufacturers including Danfoss, Bitzer, Copeland, Bock, Grasso and Gram.

Alex Flynn, managing director of Flynn Refrigeration, said his team faced a tight timeframe to complete the refit and quickly concluded that an off-the-shelf solution was not the answer.

He said: "A large number of air conditioning and split-range units were considered as part of the initial audit. This included systems manufactured by French firm Airva that are particularly suited to vessels working in the offshore wind farm sector. Airva's systems are specifically designed for boats operating in humid conditions, as these tugs will be, but space restrictions on board and the compact



◀ Togo Oil and Marine's tug *Nimble* at work in West African coastal waters

nature of the two tugs meant a bespoke solution was the best option."

With the decision taken to install custom-made cooling systems aboard each tug, Flynn Refrigeration's technicians at Duke Street Dock in Birkenhead set about using a combination of compressors, seawater coolers and condensers to achieve the desired result.

Flynn added: "Our engineers had to call on all their expertise and experience to re-engineer a workable solution. As a quick turnaround was critical, the team also needed to work quickly across all areas. The surveying process, product sourcing and supply, engineering and final fit all had to happen fast.

"Making the project even more complex was the fact penetrations into the vessels' hulls had to be made while the tugs were afloat. The fact the project was carried out safely, efficiently and delivered on time is a testament to the breadth of skills on which Flynn Refrigeration is able to call."

The two tugs, *Nimble* and *Agility*, were built in 1986 at the Richard Dunston shipyard in the north of England. Each is 39m long and capable of carrying a crew of 12. As soon as air conditioning units went operational on both vessels, the tugs were free to join the rest of Togo Oil and Marine's fleet, which comprises four additional tug boats, three launch boats, three crew vessels, two mini tractor tugs and a 1,000-ton barge.

Contract for Nigerian tug charter attracts 50 bids

Fifty companies have submitted bids to provide chartered tugs to the Nigerian National Petroleum Corporation (NNPC) for the state-owned organisation's maritime operational requirements in Lagos, Warri and Port Harcourt.

Commercial evaluation of the bids – each for a maximum of two tugs – began after the

closing of the bid process at the beginning of January, following an invitation to tender (ITT) from NNPC last year. The corporation's timetable laid out in the ITT requires successful bidders to begin operations by the end of the first quarter of 2017 – initially for two years, but with an option of renewal for a further year.

Winners are expected to provide services including aiding the berthing and un-berthing of all ships operating at NNPC jetties/buoys and logistics support for safe ship-to-ship operations covering movement of fenders, hoses, documents and rigging and unrigging of fenders.

A public event to open the bids was held in early January at NNPC's headquarters in Abuja.

As well as representatives from the bidding companies, the event was attended by officials of Nigeria's Bureau of Public Procurement, Department of Petroleum Resources, Nigerian Extractive Industries Transparency Initiative, Nigerian Content Development and Monitoring Board and Nigerian civilians as observers.

Speaking at the public bid opening, Dalhatu Makama – NNPC group general manager, marine logistics division – said the essence of the bid process was to ensure that companies with the requisite experience in maritime operations are given the opportunity to compete for the available services in a fair and transparent manner.

Zulu name maintains bird tradition

South Africa's Transnet National Ports Authority (TNPA) has taken delivery of the fifth tug from an ongoing order for nine being built by the Durban facility of South African Shipyards.

The new tug, named *Ukhozi*, will operate out of the Port of Richards Bay in Kwa-Zulu Natal province on South Africa's east coast – one of the country's eight commercial seaports, all operated by TNPA. *Ukhozi* is the Zulu word for eagle as the port has a tradition of naming vessels in its fleet after South African birds.

Each of the nine vessels in the TNPA order – which represents a R1.4bn investment by the company in its tug fleet – are 31m long with a bollard pull of 70 tons, considerably higher than the 32.5-40-ton bollard pulls of its older fleet of 29 tugs.

Of the first four tugs delivered, *Mvezo* and *Qunu* are operating in Port Elizabeth, while *Cormorant* and *Osprey* are based at Saldanha. Deliveries of the remaining four tugs are on track to be completed by early next year. All nine vessels are fitted with Voith Schneider propulsion.



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Putting Africa on the marine map – by way of Norway

The growing importance of Africa as a global market will be a key feature at this year's Nor-Shipping maritime trade fair in Oslo, Norway.

The programme, officially dubbed Africa@Nor-Shipping 2017, represents the first time that the biennial Nor-Shipping event has featured a platform promoting mutually-beneficial business opportunities between Africa and Europe in the maritime and ocean industries. Africa@Nor-Shipping 2017 will feature a dedicated conference, Africa pavilion and a social programme throughout the wider Nor-Shipping event, which runs from 30 May to 2 June.

Birgit Liudden, Nor-Shipping director, said: "The goal is to create a high-quality platform for leading European and African maritime industry players to investigate business opportunities on the continent that represents the second-biggest growth market in the world."

Speakers so far confirmed include Prasheen Maharaj, CEO of South African Shipyard, and Akinwale Omobariwo II, CEO of Genesis Electricity, which has operations in several African countries. Themes to be covered during a range of plenary, break-out



▲ Left to right, Birgit Liudden, Prasheen Maharaj and Akinwale Omobariwo II

and networking sessions include capacity building and modernising the fleets of African regions; industrialisation of Africa – impact on the maritime and ocean industries; investors' perspective; and ocean spatial planning – industries co-existing in a long-term perspective.

The African Pavilion will be a 100m² area offering a prime location for companies and organisations from the continent to promote their businesses. Nor-Shipping's focus on Africa has come about through the co-operation of Norwegian Africa Business Association and AO Consulting as organising partners, and an MoU with South Africa's maritime administration, SAMSA.

Lake's potential to become 'Saudi Arabia of wind'

A six-turbine wind farm due to go live next year will make the US Lake Erie the first freshwater offshore wind energy arena.

Backed by US\$50m in federal support, the Lake Erie Energy Development Company (LEEDCo) is building the Icebreaker wind farm as a demonstration project located eight miles off the Cleveland shoreline.

Pundits, politicians and industry leaders have been touting Lake Erie's potential to supply clean energy to tens of thousands of homes and thousands of businesses, leading to it being dubbed the 'Saudi Arabia of wind'.

One of the many Ohio-based suppliers likely to benefit from this new market is the Great Lakes Towing Company (GLT), which has operated on the lake since 1899.

GLT owns and operates a fleet of tugboats and a full-service shipyard, and has been pursuing multiple market opportunities in offshore wind, including manufacturing and repair.

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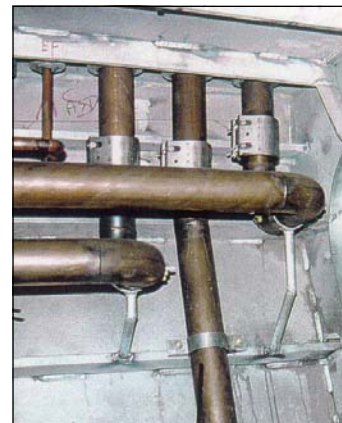
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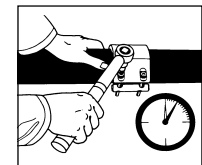
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Rope supplier ties up Dutch Navy contract

Maritime ropes producer and supplier, Lankhorst Ropes, has supplied the Dutch Royal Navy with Lankoforce pennants with Defender jackets.

The ropes will be used on Dutch Royal Navy's three new North Sea class tug boats: *Noordzee*, *Waddenzee* and *Zuiderzee*. The vessels will also utilise Strongline mainlines with Euroflex stretchers previously supplied by Lankhorst.

Lankhorst's lightweight Lankoforce rope covered with Dyneema braid is easy to handle, enabling quick mooring and towing connections. The Defender jacket provides protection against heavy abrasion from fairleads and bollards, preventing mooring and towing line damage, reducing the cost of ownership and increasing safety. The open structure of Lankhorst's Defender jacket allows the rope inside to be easily inspected and maintained.

Commenting on the new tugs, a spokesman for the Royal Dutch Navy said: "The new North Sea class tug boats feature the latest technology enabling a large improvement in towing operation performance over our previous Ling class boats.

"In addition to the tug, a key component



▲ One of the Royal Dutch Navy's new North Sea class tugs

of towing operations are the ropes connecting the vessels. Lankhorst's range provides towing ropes and covers ideally suited to each role in the towing line.

"Combining strength and ease of handling,

Lankhorst's high performance towing ropes ensure the crew are safe and do not have to work harder than necessary while excellent abrasion resistance means the ropes stay in optimal condition."

Tough new range of marine workwear

Canada-headquartered protective work garment specialist Climate Technical Gear is targeting the UK as part of a major market expansion programme.

Based in Halifax, Nova Scotia, the second generation family run business designs, builds, tests, engineers and manufactures all of its workwear in-house. Starting life as Helly Hansen Canada Ltd, the company emerged with its Sevaen brand. The company's Industrial Series is its new commercial marine showcase line of workwear.

Industrial brand garments are made from tear resistant rip-stop 420D nylon outer shell with PU coated polyester knit waterproof fabric with micro-welded seams for the lining.

A short YouTube video showing the remarkable toughness of the material, during which it is attacked with knives and power tools, can be seen at <https://www.youtube.com/watch?v=vJ6XJpwK9MU>

Marketing and global sales manager, Clinton P Desveaux, said: "We have plans to release additional innovative marine wear clothing well into 2018. Close relationships with end-users enables Climate Technical Gear to work collaboratively to develop uncompromising, relevant garments for extreme work environments."



Sevaen Industrial Series commercial marine workwear

New speed log offers easy fitting and better watertightness

The latest generation speed log from niche technology firm Consilium has been launched and the first product delivered.

The company's Sweden-based Marine & Safety division has developed its SAL R1a Easy Tank speed log, which received type approval and classification from DNV GL as a closed ended hull penetration, meaning that no additional precautions are needed to maintain watertightness.

The Easy Tank measures a vessel's relative speed through water and is available for both aluminium and steel hull construction. It has been designed to be installed easily, consisting of two parts: one flange to be welded into the hull, and one combined flange top and transducer. The top with the integrated transducer is bolted on top of the flange, creating a seal that is considered safer than a closed sea valve.

Consilium, which can trace its speed log technology back to 1912, delivered its first SAL R1a Easy Tank system in November and the product is now available worldwide.

Anders Fagergren, research and development department manager and product owner SAL speed logs at Consilium, said: "I believe we have made the first real evolution in this market for many years. Easy Tank consists of just a few parts, making it quick and easy to mount, and it exceeds IMO specifications."

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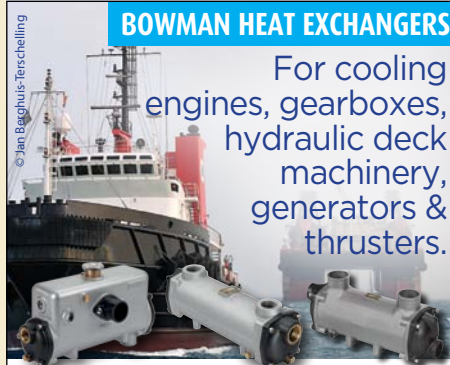
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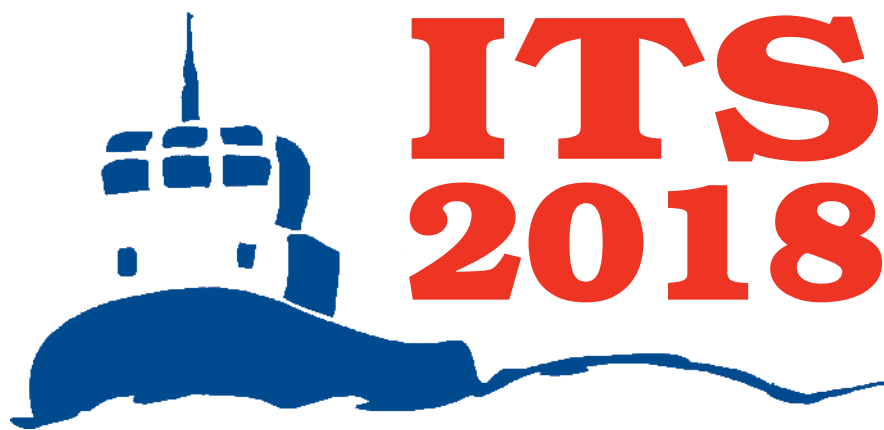
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