

International Tug & OSV

INCORPORATING SALVAGE NEWS

November/December 2017



Harbour tugs at the core of the Big Apple
Exclusive North American OSV market statistics
Island aiming to be new East Coast maritime hub

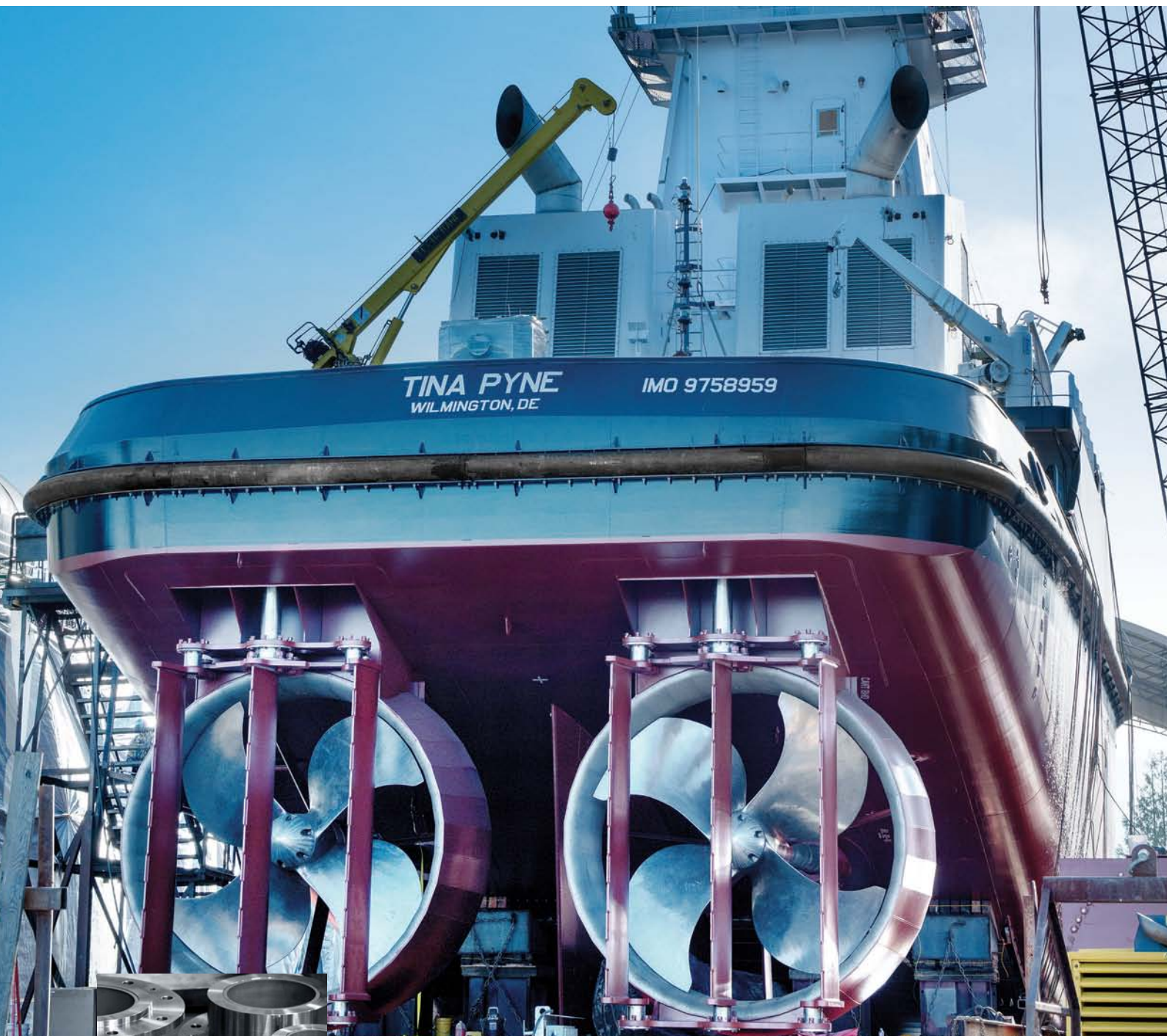
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FRONT COVER

T Roosevelt: This aerial picture, taken from a helicopter by New York-based photographer Jonathan Atkin of www.shipshooter.com, shows Moran Towing tugs assisting CMA CGM **T Roosevelt**, the largest ULCV yet to transit the Panama Canal, into New York for the inauguration of the newly-raised Bayonne Bridge linking New York and New Jersey.



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CONTENTS

- 5 Editor's Comment
- 7 International News
- 35 People in the News
- 39 News Feature
Caterpillar goes digital
- 40 New Orders & Contracts
- 47 Tug & OSV Deliveries
- 58 Salvage
- 64 At the Helm
Brandon Durar of JonRie InterTech on why he loves New York Harbor
- 67 North American Focus
- 84 Operator Profile
US West Coast-headquartered Foss Maritime
- 86 Bridge Technology
- 91 Engine Room & Propulsion
- 94 Stabilisation
- 97 Economic Operation
- 100 Training
- 105 Ballast Water Treatment
- 110 Green Technology
- 113 Products & Services
- 114 Global Directory

Inside this issue:
ITS 2018 Marseille
registration brochure



Subscriptions

IT&O is available through subscription or membership of the ITS Club. A standard annual subscription of £80 includes six issues plus a copy of the annual Tug & OSV Review (normally £30). A two-year subscription comes with a further discount – 12 issues of IT&O plus two copies of the annual Tug & OSV Review costs £120. If you wish to subscribe, or renew your subscription, go to www.tugandosv.com and click on the 'Publications and Clubs' tab. On the same page, you can find out about all the other numerous benefits that can be enjoyed by ITS Club members.



Registration Brochure

EARLY BIRD REGISTRATION DISCOUNT

DEADLINE 16 February 2018

Register online at www.tugandosv.com

The 25th International Tug, Salvage and OSV Convention and Exhibition

25–29 June 2018

Parc Chanot Convention Centre, Marseille, France

The world's largest gathering of
tug, salvage and OSV experts

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In association with

International
Tug & OSV
INCORPORATING SALVAGE NEWS

MARSEILLE



The 25th International Tug, Salvage and OSV Convention and Exhibition

MARSEILLE

25-29 JUNE 2018

Sponsors & Supporting Media:



Welcome

As the saying goes, time flies when you're having fun, but it is still hard to believe that the hugely successful *International Tug, Salvage & OSV Convention and Exhibition (ITS)* is now in its 50th year! We are delighted to be celebrating this landmark event in 2018, by holding our 25th *ITS* convention in France for the first time, in the beautiful southern port city of Marseille.

The second largest city in France after Paris, Marseille has been a crossroads of migration and trade since its founding by the Greeks circa 600 BC. At its heart is the Vieux-Port (Old Port), which was the most important trading centre in the region and the main commercial port of the French Empire. In fact, Marseille is still France's largest port for commerce, freight and cruise ships, with more than 890,000 visitors arriving by cruise ship each year. Fishmongers still sell their catch along the boat-lined quay, and with its beaches, history, architecture and culture (there are 24 museums and 42 theatres) and its wonderful Mediterranean climate, Marseille is one of the most visited cities in France.

ITS is a much-anticipated conference and exhibition, firmly established as a must-attend event in the industry's calendar. It attracts top level executives and decision-makers from across the globe, providing a unique opportunity once every two years to meet, learn and do business – a lot of business. To this end, we go to great lengths to ensure that delegates and exhibitors have every available opportunity to network and forge new ties. Coffee and tea breaks take place in the exhibition area, and exhibitors can take lunch with the delegates, providing ample opportunity for discussion.

ITS 2018 Marseille will celebrate the innovation, invention and forward-thinking that, even in an uncertain economy (or perhaps because of it), is driving our industry forward, along with the traditional values

that continue to enrich and sustain it. This *ITS* convention promises to be more relevant and engaging than ever, merging compelling papers with business opportunities and exciting social events, all in a location which continues to play a powerful role in the maritime sector.

The venue

ITS 2018 Marseille will take place at Parc Chanot Convention Centre, conveniently located in central Marseille and just 4.5km from the port. The convention centre is easy to access – it is just five metro stops on a direct line from Saint Charles TGV station, and Marseille Provence international airport is only 30 minutes away with links to more than 100 destinations, 38 of which are on direct routes. The versatile layout of the convention centre provides excellent space for the *ITS* conference and exhibition, and visitors and participants alike will find it easy to access and navigate.



The exhibition

Since it first began, the exhibition has grown enormously, with an anticipated 100+ exhibitors expected in Marseille. Those exhibitors who wish to register for the conference are offered a substantial discount on the registration fee (only one discounted registration per stand and no other discounts are applicable to this fee). In addition, the usual Early Bird, *ITS Club* and multiple delegate registration discounts are available for additional registrations. Stands vary in size and price, but each includes a hard-wall shell scheme, carpeting, an electrical socket, lighting, furniture (table and chairs), a name sign, a set of lunch, tea and coffee vouchers, one Gala Dinner ticket (or two for larger stands) and invitations to the various social networking events which will take place throughout the week.

The spouses' programme

A special selection of tours is being organised for spouses and partners. This programme has yet to be finalised, but will include many of the most popular attractions Marseille has to offer. Details will be made available closer to the event. Spouses/partners are invited to the Welcome Cocktail Party on Monday 25 June, spectacular Gala Dinner on Thursday 28 June (ticket purchase required) and the Friday social programme.



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CONFERENCE PROGRAMME

The conference programme reflects the key areas covered by *International Tug and OSV* magazine, with papers delving into subjects which are sculpting the offshore industry, hotly-debated salvage issues, tug innovations and more. *ITS* conventions are renowned for their groundbreaking papers, high-profile speakers, audience discussions, and business opportunities. Synopses of the papers below can be found at www.tugandosv.com.

Best Practice Recommendations for Ocean Towing of MODUs

BARTLEY ECKHARDT, President and CEO, Robson Forensic Inc, USA and

CAPT ERIC JOHANSSON, Professor of Marine Transportation, Maritime College, State University of New York, USA

Smart Thinking, Smartlinking

MARINUS JANSEN, Technical Innovations Manager, Rotortug BV, The Netherlands

Ship's Deck Fittings Utilised for Towage

CAPT NEIL SADLER, Managing Director Americas & Middle East, SeaWays Global, UK

A Holistic Approach to the Optimised Design of Marine Hybrid Power Solutions for Workboat Applications

PIERPAOLO DA FIENO, Sales & Sales Support Engineer, MAN Diesel & Turbo SE, Germany,

JAN GLAS, Team Manager Application & Engineering Support, Schottel GmbH, Germany and

JASON ASPIN, Chief Executive Officer, Aspin Kemp & Associates, Canada

An Approach to Escort Performance Particulars by Semi-Empirical Formulation

AINARA MARTIN, Assistant Technical Manager, Cintrana Ship Design, Spain

The Carousel Rave Tug: Meeting Global Shipping Challenges by Eliminating Specific Tug Stability Risks

JULIAN OGGEL, Counsellor, Novatug BV, The Netherlands

Quantum Physics Says There's Life After Marseille

BALDO DIELEN, Partner, EDDY Tug, Brazil

The Role of Effective Stakeholder Engagement in the Management of Major Marine Incidents

JAMES HERBERT, Managing Director and ISU Communications Adviser, Gem Communications Limited, UK

Improving Safety and Reliability with Holistic Towline System Design

BERNABE GALLARDO, Application Engineer, Samson Rope Technologies, USA

World Port Tug Market - The Current View from Marseille

ALEC LAING, Managing Director, ACL Shipbrokers Ltd, UK

Preventive and Predictive Maintenance Methods for Azimuthing Thrusters in Tugs

ROLAND SCHWANDT, Sales Director Tug & Offshore Energy, Schottel GmbH, Germany

Case Study - The Assessment of Salvage Awards

SIMON TATHAM, Partner, TugAdvise/Tatham Macinnes, UK

Tug Design Through *ITS* Eyes

ROBERT ALLAN, Executive Chairman, Robert Allan Ltd, Canada

The Application of Salvor-Tude (Salvors' Problem-Solving Attitude) to Innovation in the Oil & Gas Sector

MOYA CRAWFORD, Managing Director, Deep Tek Ltd, UK

Collaborative Effort Yields Innovative RASAR 4000DF Dual-fuel Escort Tug Design for Challenging Charterer Requirements

TODD BARBER, Senior Naval Architect, Robert Allan Ltd, Canada and

ALLAN TURNER, Mechanical Engineer, Robert Allan Ltd, Canada

The Digital Transformation of Tugs

DIRK DEGROOTE, Product Manager - Tugs, Damen Shipyards, The Netherlands and

ROBERT VAN KOPEREN, Development Team Leader Tugs, Damen Shipyards, The Netherlands

Hronn: An Automated, Unmanned OSV - Update on Design, Construction and Classification

BRETT PHANEUF, Managing Director, Automated Ships Limited, UK

The Wärtsilä HYTug Concept

AY HWA NGOH, Sales Manager/Naval Architect, Wärtsilä Singapore Pte Ltd, Singapore and

JOOST VAN EIJNATTEN, Manager Application Engineering, Wärtsilä Netherlands BV, The Netherlands

Regulatory Developments to Support Innovation in the Towing Industry

EVA PENO, Global Market Leader, OSVs & Tugs, Bureau Veritas Marine & Offshore, France

Automation - What will be the Impact on the Insurance Sector?

SIMON SWALLOW, Chief Executive, The Shipowners' Protection Limited, UK

An Assessment of the Current State of the Marine Salvage Industry

CHARO COLL, President, International Salvage Union, UK

Delegate feedback from previous conventions:

"Very good papers and presentations. Good networking opportunities"

Nicolás Solano
Panama Canal Authority

"Great event, wonderful networking opportunities and very worthwhile speakers"

Michael Thomas
Seabulk Towing

"The papers were really good, with an emphasis on safety... this set the scene perfectly"

Tom Woolley
Targe Towing Ltd

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ABOUT THE AREA

Delegate feedback from previous conventions:

"Fantastic networking opportunities. Very good diverse group of technical displays"

Mark Houghton
Ledcor Group of Companies

"Great networking as always. Considering the depressed market, support from exhibitors/sponsors was exemplary"

Simon Swallow
The Shipowners' Protection Limited

"As usual, well organised and managed. Great social interaction."

Capt Ken Edgar
Marine Response Consultants

There are many reasons, besides business, for visiting the city of Marseille, where style and history meet in perfect harmony. The city has been a crossroads of immigration and trade since its founding by the Greeks circa 600 BC. Known to the ancient Greeks and Romans as "Massalia" Marseille was the most important trading centre in the region and the main commercial port of the French Republic.



The Bay of Marseille, flanked by Fort Saint-Nicolas and Fort Saint-Jean, shelters the Château d'If, made famous by Dumas' novel *The Count of Monte Cristo*. Watched over by the basilica Notre-Dame-de-la-Garde, a Roman Catholic basilica with an unmissable gold statue of the Madonna and Child, the city's historical sites mix with pedestrian zones and shopping areas, including the colourful French-African quarter. The city's main thoroughfare, a wide boulevard called the Canebière, stretches eastward from the Old Port (Vieux-Port) to the Réformés quarter and the main shopping mall, the Centre Bourse. Marseille is a regional centre for entertainment in the south of France, with a high concentration of museums, cinemas, theatres, clubs, bars, restaurants, shops, hotels and art galleries.

The Old Port, the thriving heart of Marseille, is the prettiest part of town and a must-see for all visitors. Why not make use of the free ferry to cross the harbour, book a boat tour, or just sit back and soak up the atmosphere? If you would like to enjoy a wonderful view of the harbour from higher up, then catch the train up the hill to the beautiful Cathédrale de la Major, one of the best sightseeing spots in the city. Also not to be missed is the Palais Longchamp, a grand monument housing the French Natural History Museum and the Musée d'Beaux-arts.



To the east of Marseille is the Calanques, a rugged coastal area interspersed with small fjord-like inlets; to the north, beyond the low Garlaban and Étoile mountain ranges, is the 1,011m Mont Sainte-Victoire; to the west is the former artists' colony of l'Estaque, and further west the Côte Bleue, Gulf of Lion and the Camargue region.

While we cannot guarantee the weather, Marseille is officially the sunniest place in France, where June temperatures average a very pleasant mid-20 degrees C.





HOTELS

Due to the style and layout of Marseille, it is not possible on this occasion to accommodate all delegates, exhibitors and visitors to *ITS 2018* in just one hotel. However, we have been able to source an excellent selection of desirable hotels, offering rooms and apartments that should suit everyone's budgets and requirements. With a mixture of three, four and five-star hotels, the majority are just a short walk from Parc Chanot Convention Centre, but for some of the hotels we will also be arranging transport to and from the convention centre each morning and evening.

Information on how to book your hotel accommodation is available from our website, www.tugandosv.com, where you will find a dedicated link to our booking agents.

Due to the high number of delegates and exhibitors expected to attend *ITS 2018* and the fact that June is the beginning of peak season, it is highly recommended that you make your room reservations as soon as possible.

Hotel Ibis Budget Marseille Prado Parc des Expositions ***

Located just a short walk (approx. 7 minutes) from the Parc Chanot Convention Centre. The rooms are comfortable and compact, and the hotel offers 24-hour front desk service and a terrace to catch some fresh air.

Hotel Ibis Marseille Centre Prado Vélodrome ***

Located in the heart of the city and a 15 minute walk from the convention centre. The hotel offers a French restaurant and bar, and neat breakfast area. The rooms have a fresh and modern design and offer all the comfort you need.

Citadines Castellane Marseille ***

A modern apart-hotel offering self-catered apartments, with the option to order breakfast and enjoy it on the terraces. All the rooms offer an equipped kitchen, free wifi, and a lounge area. Approx. 15 minutes by public transport from the convention centre.

Citadines Prado Chanot Marseille ***

A self-catering apart-hotel with a private garden and the option to order breakfast. The studios and apartments are equipped with a kitchenette and free wifi, and are just a 10 minute walk from the convention centre.

Residhotel Le Grand Prado Marseille ***

Centrally located and offering furnished apartments and studios with a kitchenette. The famous Vieux Port is just a short walk away and the convention centre is approx. 17 minutes by foot or 10 minutes by public transport. This apart-hotel also offers a buffet breakfast in the lunch room.

Holiday Inn Express Marseille – Saint Charles ***

Ideally located opposite the train station, and only a 10 minute walk from the famous Vieux Port. The rooms have a modern and light design, and breakfast can be served on the quiet terrace. Approx. 17 minutes by public transport from the convention centre.

Mercure Marseille Centre Prado Hotel Vélodrome ****

A four-star hotel with a contemporary feel, offering a comfortable terrace and lounge area. Located in the centre of Marseille, within a short walking distance from the convention centre (approx. 12 minutes).

Hotel Novotel Marseille Centre Prado Vélodrome ****

Located in the business district of Marseille, this four-star hotel offers an atmospheric restaurant and modern designed rooms with all the comforts you could wish for. Approx. 18 minutes by foot or 9 minutes by public transport from the convention centre.

AC Hotel by Marriott Marseille Vélodrome ****

This four-star hotel is located in the Prado area, within a short walking distance (approx. 10 minutes) from the convention centre. The rooms are stylish with a contemporary design and offer great comfort and multiple facilities. The hotel also offers an inviting lounge area and extensive breakfast buffet.

Hotel Sofitel Marseille Vieux Port *****

If five-star accommodation is your preference, then Hotel Sofitel Marseille Vieux Port is located in the centre of Marseille, offering great views over the harbour. The rooms are classic and very comfortable. The hotel offers a fitness centre, spa and three terraces overlooking the Old Port. Approx. 30 minutes by public transport from the convention centre.



Delegate feedback from previous conventions:

"I have been to many ITS Conventions, the first being Southampton 1994. It is difficult to keep getting better but the high standards have been maintained and it is still the premier show for the industry"
Mark Hoddinott
International Salvage Union

"Interesting and thought-provoking selection of papers"
Capt Gary Dockerty
Sanmar Shipyards

"I felt that there were many opportunities for networking at both the classroom sessions and the outside events"
Thomas Guldner
Marine Firefighting Inc

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REGISTRATION TERMS AND CONDITIONS

Delegate feedback from previous conventions:

"I could meet many key customers as well as ship designers, suppliers, etc. This was very helpful in concentration on market strategy"

Stefan Buch
Schottel

"It was a good opportunity to understand trends and concerns in the industry and to network with many key players"

Corey Parker
Caterpillar Marine

"As always, smoothly organised and focussed on the key tug-industry drivers. Not to miss!"

Baldo Dielen
EDDY Tug

The ITS 2018 Conference qualifies for 5 CPD credits



The delegate registration fee is €2,800

The fee includes coffee, lunch and tea for three days, admittance to all conference sessions, exhibition, Gala Dinner, social and extra-mural activities and conference pre-prints, which will be made available approximately three weeks prior to the convention. The fee does not include hotel accommodation. Additional tickets for the Gala Dinner for spouses/partners are available at €150 each and include a drinks reception and four-course dinner with wine and cabaret.

Please note that your registration is not confirmed and final until all monies due, relating to the registration, are paid in full.

Any registrations made after 15 May 2018 must be accompanied by valid credit card details. Cancellations must be received in writing before 15 May 2018, before which date, the fees will be refunded in full less an administration charge of €150. Due to the organisers' commitments to the hotel, conference centre, caterers, etc, no refunds will be made after 15 May 2018. However, delegates may be substituted.

Delegates accept sole responsibility for ensuring that they have adequate health and travel insurance in place to cover the event of such delegate(s) not being able to attend the convention or of the convention not taking place due to events beyond the control of The ABR Company Ltd.

If for any reason beyond the control of, and not resulting from any act or default of, The ABR Company Ltd, it shall become impossible or impractical to hold the Convention or necessary to interrupt it or close it permanently, the delegates shall not be entitled to any compensation or to the return of monies paid or deposited. These terms and conditions are subject to English Law.

Discounts

To work out your fee(s) please make your calculation in the following order:

- First deduct 5 per cent from the standard fee if you are an *ITS Club* member (discount applicable to fully paid members only).
- Next, deduct 10 per cent if you are registering and paying before **16 February 2018**.
- Next, deduct a further 10 per cent if two to four delegates are registering from the same company **OR** deduct 12.5 per cent if five or more delegates are registering from the same company.
- Finally, to that total add €100 (plus p&p) if you require a *Book of Papers* and/or €150 per ticket for any additional Gala Dinner tickets required.

Exchange rates

At the time of going to press with this brochure (November 2017) the approximate exchange rates were:

EUR 1.00 = GBP 0.87

EUR 1.00 = USD 1.16 (for indication purposes only)

Fees may be paid with the following credit cards only: American Express, Mastercard and VISA.

... or by bank transfer in Euros to either:

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Account Name: The ABR Company Ltd

ABN AMRO Bank, 2514 en Den Haag, The Netherlands
Account No: 97.28.97.259

IBAN: NL33 ABNA 0972897259

BIC or SWIFTBIC: ABNANL2A

Account Name: The ABR Company Ltd

ITS Club – discount for club members

If you are planning on attending as a delegate and are not already a member you should seriously consider joining the *ITS Club*. As a member you will qualify for 5 per cent discount on the delegate registration fee – nearly the same as a one-year membership of the *ITS Club*, so effectively you are getting your money back. In addition you will receive the following benefits:

- Priority subscription to *IT&O* magazine.
- Complimentary copy of the *Tug & OSV Review* (normally £30), published annually in January.
- Discount on a wide range of tug, salvage & OSV titles.
- Discount on advertising in *IT&O* magazine.
- Discounts for two and three-year memberships.
- A personal online directory of members (available to members only).
- Membership certificate and membership card.
- A smart but discreet club tie for men, silk scarf for women.

To join simply add this option to your registration online at www.tugandosv.com

ITS 2018 Book of Papers

Pre-prints of the majority of the papers will be made available via our website to registered delegates approximately three weeks prior to the convention. However, the complete proceedings, including discussions and names of all participants, will be available as a hardback book three months after the event. If you order and pay for the book when you register as a delegate you qualify for the discounted price of €100 (plus p&p) as opposed to the £125 published price.





DELEGATE REGISTRATION FORM

One form per delegate (See terms and conditions of registration, a copy of which should be kept for your own records)

Name (as you would like it to appear on your name badge)

(Mr / Mrs / Ms / Capt / Other)

Position/Job Title

Company

Address

Postcode

Country

Website

Tel

Mobile

Email

Date

Signature

VAT Number (European Union Only)

ITS Club number (if applicable)

(tick box as necessary)

☐ **Please charge my credit card the sum of Euros €** _____

Name of Cardholder as it appears on the card _____

Card number

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Security code on back of card:

Last 3 numbers on Visa and Mastercard and last 4 numbers of American Express.

--	--	--	--	--

Expiry Date:

--	--	--	--	--	--

☐ **or bank transfer of Euros €** _____

Please answer all the following questions (tick ✓ boxes as necessary)

Yes No

Will you be accompanied by your spouse/partner/guest?

--	--

Name of spouse/partner/guest _____

Would you like an extra ticket for the Gala Dinner for above spouse/partner/guest? (€150)

--	--

Would you like to go on the Friday social programme?

--	--

Would your spouse/partner/guest like to join you on Friday?

--	--

*Do you require a copy of the *Book of Papers*?

--	--

Do you require display space in the exhibition?

--	--

Would you like to join the *ITS Club*?

--	--

Are you interested in advertising in the Convention Handbook?

--	--

Are other representatives from your company attending?

--	--

If so, what are their names _____

*Copies of the *ITS 2018* bound volume of papers (published approximately three months after the event), which will contain the names of all participants, as well as the discussions, are available to registered delegates at the special price of €100 plus €15 p&p (normally £125 plus p&p) if ordered and paid for prior to the Convention. This will be charged with your registration fee.

ITS 2018

(For office use only)

**COMPLETED
REGISTRATION FORMS
SHOULD BE SENT BY
POST OR EMAIL TO:**

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or
register online at
www.tugandosv.com

**EARLY BIRD
REGISTRATION
DISCOUNT
DEADLINE
Friday
16 February 2018**

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25th ITS CONVENTION & EXHIBITION



EXHIBITOR LIST

50 successful years!

2018 Marseille
2016 Boston
2014 Hamburg
2012 Barcelona
2010 Vancouver
2008 Singapore
2006 Rotterdam
2004 Miami
2002 Bilbao
2000 Jersey
1998 Cape Town
1996 Seattle
1994 Southampton
1992 Genoa
1990 Halifax NS
1988 Sydney
1986 London
1984 Singapore
1982 London
1979 Hamburg
1977 Rotterdam
1975 New Orleans
1973 Vancouver
1971 London
1969 London

Confirmed exhibitors as of November 2017

Alphatron Marine, The Netherlands
 Alu Design & Services, Norway
 Anglo Belgian Corporation, Belgium
 Armon Shipyards, Spain
 Azcue Pumps, Spain
 Bexco, Belgium
 Bogazici, Turkey
 Brusselle Carral Marine, Belgium
 CC Jensen, Denmark
 Cardama Shipyard, Spain
 Caterpillar, Germany
 Cheoy Lee, Hong Kong - China
 Cortland, USA
 Counterfire, UK
 C-Sense Ship Management, France
 Cummins, USA
 Damen Shipyards, The Netherlands
 Data Hidrolik, Turkey
 Deno Compressors, The Netherlands
 DMT Marine Equipment, Romania
 EDDY Tug, The Netherlands
 Fire Fighting Systems, Norway
 Force Technology, Denmark
 Fuji Kaiji, Japan
 Gleistein Ropes, Germany
 Ibercisa Deck Machinery, Spain
 International Maritime Services, Australia
 Jason Engineering, Norway
 JBR Strategy, The Netherlands
 JonRie InterTech, USA
 Karmøy Winch, Norway
 Kohler Power Systems, France
 Kraaijeveld Winches, The Netherlands
 Kumera, Norway
 Lankhorst Ropes, The Netherlands
 Logan Clutch, USA
 Logic Vision, The Netherlands
 Maintenance Application Projets, France
 Mampaey Offshore Industries, The Netherlands
 Markey Machinery, USA

Marlow Ropes, UK
 Marsis, Turkey
 Med Marine, Turkey
 Moteurs Baudouin, France
 MTU, Germany
 Nautican Research and Development, Canada
 Neptune Shipyards, The Netherlands
 Niigata, Japan
 Nodosa Shipyard, Spain
 Novatug, The Netherlands
 Offshore Ship Designers, The Netherlands
 On Site Alignment, The Netherlands
 Piriou, France
 RW Fernstrum & Company, USA
 Radio Holland, France
 Rapp Marine, USA
 Redwise Maritime Services, The Netherlands
 Robert Allan Ltd, Canada
 Rosetti Marino/Purple Sea, Italy
 Rotortug, The Netherlands
 Samson, USA
 Sanmar, Turkey
 Schottel, Germany
 Seatrade, UK
 SeaWays Global, UK
 SEC Groningen, The Netherlands
 Simwave, The Netherlands
 Shandong Nanhai Airbag Engineering, China
 Stone Marine Propulsion NGC, UK
 Straightpoint, UK
 The Grab Specialist, The Netherlands
 TOS, The Netherlands
 Twin Disc, Belgium
 Uzmar Workboat and Tug Factory, Turkey
 Veth Propulsions, The Netherlands
 Voith, Germany
 WKM Cornelisse, The Netherlands
 Wärtsilä, Finland
 Yong Choo Kui Shipyard, Malaysia
 ZF Friedrichshafen, Germany

Visit <http://www.tugandosv.com/its2018-floorplan> for the up-to-date floorplan

ITS 2018 is organised and promoted by The ABR Company Ltd headed by Managing Director Garth Manson. The ABR Company Ltd also publishes **International Tug & OSV** and the annual **Tug & OSV Review**

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IT Services Manager **David Norman**

Shedding a little light

Is that light at the end of the tunnel or another train crash hurtling towards us? Well, without wanting to jinx anything, I think the time could be right to think the former, rather than the latter. That's not, of course, to say that it is now full steam ahead into the recovery. No, it's still pretty grim, but more and more people are saying that it is much less grim than it was. Dare I say there is even a touch of optimism in the air? This is borne out by the latest shipping industry confidence survey from Moore Stephens which finds that confidence levels are the highest for three years. Confidence in the mid-to-long term future is also reflected in a number of other articles in this issue. For example, the drive by Canada's Prince Edward Island to establish itself as a maritime hub by actively attracting forward-looking marine industries, shows that business and local government on the island see the maritime industry as a good bet. In the UK, Secretary of State for International Trade, Liam Fox, told the London International Shipping Week conference that our industry, which he called one of the most innovative on the planet, will shape the coming century by ensuring both prosperity and security. This innovative spirit and 'can do' attitude is also reflected throughout this issue, for example in naval architects Robert Allan Ltd incorporating the latest emission control systems into its tug designs and technology group Wärtsilä stepping on the digital accelerator by opening a series of centres around the world to speed up the creation of new business models and solutions, including the industry's most advanced intelligent vessel to date. Meanwhile, the drive towards remotely-controlled and autonomous vessels continues at a pace with, for example, Boston-based Sea Machines Robotics' autonomous control system for commercial vessels now a reality and on the market, having left the drawing board way behind. My colleagues and I were pondering the other day on how long it would be before remote-controlled and autonomous vessels ceased in themselves to be news.

As usual this issue looks back as well as forward, an example of which is Robert Kessler of San Diego-based Oceaneering International's article reflecting on what a difference a decade makes – it was 10 years ago that the first web-based vessel-tracking tools emerged – and how what were once seen as amazing pieces of science fiction made fact, are now regarded as everyday tools of the trade. Again, how long before crewless vessels are seen this way? Special features include our North American Focus pages, which celebrate success and highlight a wide and diverse range of news and views from the continent. Our training section looks at the latest simulator technology, and in our Ballast Water Treatment pages we consider the initial impact of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, the landmark piece of eco-legislation now in force.

Inside this issue you will also find the registration brochure for next year's ITS 2018 Marseille. The much-anticipated industry-leading biennial event will be celebrating its 50th year with its first visit to France. I am very much looking forward to meeting many of you there. More information about ITS 2018 Marseille can be found on our website – www.tugandosv.com



John McCready, Editor



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SMART MOVE



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ITS 2018 paper presentations now selected



The selection committee that chooses the papers to be presented at next year's *International Tug, Salvage and OSV Convention (ITS)* in Marseille, France, has met to finalise the programme of speakers at the much-anticipated industry-leading biennial event.

ITS 2018 Marseille will take place at the Parc Chanot convention centre in the heart of the port city from 25-29 June.

Garth Manson, managing director of The ABR Company, which publishes *IT&O* and organises the convention, said: "We have been absolutely delighted with the high standard and wide subject range of the papers submitted to us for consideration. It has made the task faced by our panel more difficult, but also extremely rewarding."

"We have been able to put together a programme of presentations that go to the heart of the issues and opportunities being faced by those in the tug, salvage and offshore business. Latest ideas will be discussed and advances driven forward. *ITS* has a well-deserved reputation for being the gold standard convention and next year looks set to raise the bar even higher."

The paper selection committee members are: chairman of The ABR Company Ltd, Nigel Brunton-Reed, consultant Allan Brunton-Reed, managing director Garth Manson, *ITS* conference chairman Mike



"One of the many attractions of ITS is that it focuses solely on our sector and is attended by key people who have the power to make decisions"

**Garth Manson,
MD, The ABR Company**

Allen, ISU general manager Mark Hoddinott, *IT&O* editor John McCready, contributing editor Andy Smith and special projects editor Chris Wraight.

Among the subject matters to be presented are the digital transformation of tugs, dual-fuel design and advances in hybrid technology, the design and construction of an automated, unmanned OSV, preventative and predictive maintenance of key components and the changing face of salvage awards.

A synopsis of all the papers to be presented at the convention will be posted on our website – www.tugandosv.com – along with further details



▲ Delegates show their appreciation of a presentation at a previous ITS convention. Next year's conference sessions will once again be kept in order by chairman Mike Allen, left

of the event and the accompanying exhibition by companies eager to showcase their products and innovations to the top-level executives and technical experts attending the event.

ITS will be celebrating its 50th year in Marseille, and a series of social events, including a gala dinner, will reflect this remarkable milestone. Manson said: "As usual, we're planning a good mix of business and pleasure, with plenty of social events and informal networking opportunities built into the programme."

Coffee and tea breaks will take place within the exhibition area, and exhibitors can take lunch with the delegates, providing ample opportunity for discussions.

Manson added: "One of the many attractions of *ITS* is that it focuses solely on our sector and is attended by key people who have the power to make decisions."

Since the first *ITS* convention, more than 8,000 delegates and 1,200 exhibitors from more than 50 countries have taken part, with a repeat attendance rate of more than 75 per cent. *ITS* has been held in different port locations around the world. *ITS 2018 Marseille* will be the first time that it has taken place in France.

Manson said: "We're delighted to be visiting such a beautiful and historic city and look forward to welcoming friends old and new to the event."

• The *ITS 2018 Marseille* registration brochure, along with the conference programme, is included in this issue of *IT&O*.



◀ Historic and beautiful Marseille harbour

Technology giant launches new tug series



Technology group Wärtsilä has introduced a new portfolio of tug designs, known as the Wärtsilä HYTug series, with the emphasis on environmental sustainability. The company says that since they typically operate in or close to harbours and populated areas, tugs are particularly affected by environmental considerations, and the need for regulatory compliance is an increasing concern for tug owners and operators worldwide.

It has already introduced tug designs featuring LNG fuel technology as an efficient means for complying with environmental legislation. The company has long been at the forefront in developing technologies that have enabled LNG to become a viable marine fuel, and the Wärtsilä LNGTug designs reflect this experience.

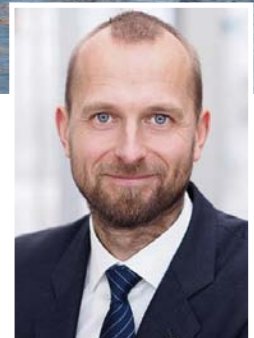
These latest designs have been developed

utilising Wärtsilä's strong competences in hybrid propulsion technology, along with the company's extensive experience, with more than 1,000 tugs built based on its designs.

The recently introduced Wärtsilä HY hybrid propulsion solution forms the basis of the new designs, the benefits of which the company says include the flexibility and efficiency provided by the technology. Notably, the enhanced efficiency enables the total installed main engine power to be less than with conventional designs. Using less engine power also decreases exhaust emission levels and, therefore, the environmental impact. It also reduces the fuel bill and lessens the amount of engine maintenance needed, which again adds to the cost savings.

Riku-Pekka Hägg, vice president, ship design, Wärtsilä Marine Solutions, said: "We

▲ An artist's view of the new Wärtsilä HYTug series and, right, Riku-Pekka Hägg



believe that new tugs will in future rely more and more on battery and hybrid propulsion, which very well complements today's operational requirements.

"As a total solutions provider with unmatched in-house capabilities combining ship design, engine technology, propulsion, and electrical and automation systems, Wärtsilä is uniquely qualified to produce tug designs that fully meet the needs of the industry, and this we have now done."

The designs feature a very distinctive outlook while providing the power and manoeuvrability for practical tug operations. They have been optimised for low hull resistance, high towing/escort performance, sea-keeping, crew safety and comfort, as well as for easy maintenance.

Each design has the option to select either diesel mechanical hybrid, or diesel electric hybrid propulsion, and the designs cover a 40 to 90-tonne bollard pull range with the appropriate Wärtsilä equipment.

The new tugs are designed with thrusters from the Wärtsilä WST series featuring large propeller diameters for efficient and high performance propulsion. In addition to their excellent hydrodynamics and reliability, these thrusters are also easy to install, operate and maintain.

The development work has been carried out in close co-operation with the ABS, BV and Lloyd's Register classification societies, and the designs have received Approval-in-Principle (AiP) certification. This certification means that the design complies with class safety regulations and will be class approved in actual projects. The Wärtsilä HY solution has itself received AiP certification from Lloyd's Register. The new designs were launched in September.

Changes at top for OSV operator

French OSV operator Bourbon has reorganised its group executive team with Jacques de Chateaufieux, formerly chairman and CEO, confirmed by the board of directors as executive chairman, and Gaël Bodénès, formerly executive vice president, named as CEO. The board also decided that Astrid de Bréon, as chief financial officer, would be an integral part of the executive team.

The changes, which are described as an evolution by the company, follow Christian Lefèvre's appointment as CEO of JACCAR Holdings, a private investment company; he consequently leaves his executive position at Bourbon.

The board paid tribute to Lefèvre's critical contribution to Bourbon over the past 30 years. A statement read: "Thanks to his foresight regarding market trends and innovation in ship design, he implemented a high-growth strategy, unique in our industry that turned Bourbon into a global leader in offshore

► Jacques de Chateaufieux, executive chairman of Bourbon



oil & gas marine services. He will remain a board member and continue to bring his experience to the company."

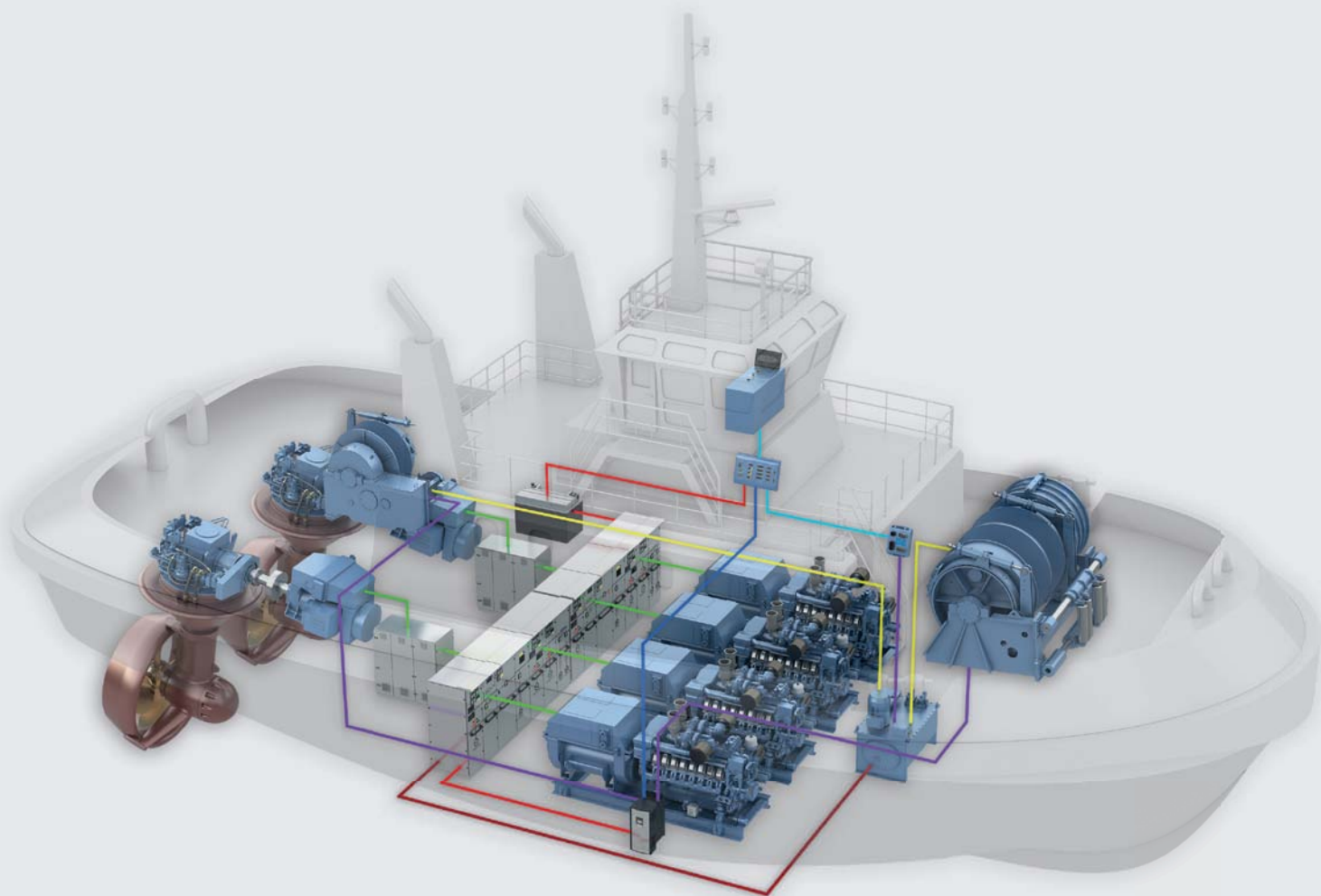
De Chateaufieux said: "As Bourbon implements its transformation plan, I am happy to see Gaël Bodénès, who successfully handled new customer expectations in his previous operational roles, take on this new responsibility. With Astrid de Bréon fully empowered as part of the executive team, the group has an able and committed management team, at this critical time, to build a new milestone in its history."

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Crewless ships pose legal questions

Legal journalist and honorary QC, Joshua Rozenberg, outlined some of the impact that autonomous and remotely-controlled vessels will have on maritime laws and conventions in a keynote address to the London International Shipping Week conference.

Shipping laws can be divided into two types, the first involve agreed relationships between states and the second are created by individual states. Rozenberg argued that aspects of both are woefully inadequate for autonomous and remotely controlled vessels.

He said: "For example, every vessel is required to maintain a look-out at all times. Can that requirement be attained by a television camera, radar or sensors? Is it sufficient for a ship's master to maintain a look-out from a shore-based bridge?"

"What about casualties? It is the duty of a master to go to the aid of those in peril and SOLAS requires a ship to proceed at speed to those in need of rescue, but does that

apply to a vessel without a crew? Is there, or should there be, a requirement to steam towards a marooned ship and send back information? Might the autonomous vessel need to be equipped with life rafts which can be launched remotely?"

Rozenberg said these and many more issues could be addressed by drawing up a completely new legal regime for autonomous vessels, but that this would be a huge and time consuming undertaking.

He said: "I think the existing regulations should continue to apply to things such as hull construction and seaworthiness regardless of how the vessel is controlled, so I don't detect any support for the view that an autonomous vessel or remotely-controlled vessel isn't really a ship at all. English common law works by adapting established principles to technological advances."

Rozenberg said a good place to start to avoid a potential legal minefield was to look at the objectives of shipping law – which are

► Journalist and honorary QC Joshua Rozenberg



to protect life and preserve the environment while supporting navigation – and to apply those objectives to unmanned vessels.

He said fundamental questions needed to be answered, such as who is the master of, and therefore legally responsible for, an autonomous or remotely-controlled vessel?

He said: "It could be the person actually in control of the ship's movement at any one time, or it could be a more senior officer. If the ship is fully autonomous, the master could be the person who initially programmed it, but even the most sophisticated hands-off ship will presumably be monitored by a shore-based team with powers to ultimately override the programme, making responsibility lie with the officer of the watch or the most senior member of the monitoring team."

"Although I can imagine autonomous cargo ships travelling back and forth, I find it hard to believe that a busy port will ever allow an entirely-unmanned foreign-owned vessel to approach the harbour."

Other considerations include agreed training standards required for sea-going crews, which could be taken not to apply to land-based controllers. A further issue is that a shore-based bridge would be subject to the laws of the country from which it operates, but control is likely to be handed over to centres in different parts of the world as a vessel's journey progresses, with controllers in various geographical locations all working daytime shifts. Rozenberg suggested that the IMO may have to establish a global record of which jurisdiction a vessel was under at any one time.

Autonomous and remotely-controlled vessels would also have a major impact on the marine insurance industry in terms of risk and who or what needs to be covered. For example, would a computer program creator need to be covered in case anything malfunctioned at a later date?

Rozenberg said: "Autonomous ships will have no crew on board for pirates to take hostage, but on the other hand there will be nobody on board to repel intruders. Just as thieves have learned to clone electronic car keys, pirates will attempt to seize control of computer-operated shipping."

There would also be a social sea-change throughout the industry. He concluded: "Mariners will no longer see the world, but will go home to their family every night."

Minister says maritime sector vital to economy

UK Secretary of State for International Trade, Liam Fox, told the London International Shipping Week (LISW) conference that shipping is an industry that will help shape the coming century.

Calling the maritime industry one of the most innovative on the planet, he said it will play a crucial part in ensuring the UK's continued prosperity and security. Responsible for 95 per cent of the country's imports and exports, shipping and ports contribute £22bn to the national economy.

Responding to questions about Brexit, the UK's coming departure from the European Union (EU), he said: "The task is to make sure that economics and trade and the prosperity and well-being of our people takes precedence over political ideology. If you look at the bigger picture – if you look at Brexit from Singapore, it looks a relatively small and limited debate. The optimal solution for the whole of Europe is an open and free market which is more outward looking from a global perspective."

IMO secretary general, Kitack Lim



◀ IMO secretary general Kitack Lim

► UK International Trade Secretary Liam Fox



Lim, also addressed the conference, which was attended by more than 500 people, and praised the UK government for its support for the shipping industry. He said: "Investment in shipping is a sign of success," adding that one of the IMO's main roles continued to be to help the free flow of trade in a rapidly changing world.

LISW 2017 saw 160 official events with initial estimates placing the number of UK and international visitors at more than 15,000. Visitors from more than 50 countries attended including 15 ministers from governments such as Saudi Arabia, Nigeria and Ghana.

The UK government used the week to host bilateral meetings with politicians and senior industry figures to explore partnerships, future opportunities outside the EU and examine how to help significantly boost maritime exports.

Jeremy Penn, chairman of the LISW 2017 steering group, said: "The week reflected not only the importance of government and industry co-operation in helping to promote London and the UK's prominent role in world shipping, but also the realisation by shipping that London is firmly at the heart of this global industry."

Unmanned vessels to dominate next decade

Maritime activity over the next decade will be dominated by unmanned surface and underwater vessels, according to a report on the future of autonomous maritime systems launched during London International Shipping Week.

Written and researched by Lloyd's Register (LR), QinetiQ and the University of Southampton in the UK, the report is a follow-up to *Global Marine Technology Trends 2030*, looking at how technology trends will have an impact on the regulatory and social aspects of maritime operations.

"Crew members of the future may become shore based, managing vessels remotely from the office, creating the need for new training and skill sets"

Prof Ajit Sheno, director, Southampton Marine and Maritime Institute

Tim Kent, technical director, marine and offshore at LR, said: "Networks of autonomous surface and underwater vessels are set to radically change the nature of maritime operations. Developments widely reported in the media, such as those in autonomous shipping, are happening with greater pace than expected as little as two years ago. These developments, enabled by technology, provide new opportunities and potential for disruptive business models. However, the principal challenges will be the integration of these autonomous systems into current maritime operations, legal and regulatory requirements, and not least the impact upon seafarers."

Bill Biggs, senior campaign leader for autonomy, QinetiQ, said: "Applied artificial intelligence, low-cost low-size sensors, increased connectivity, improved cyber security and better energy management are all likely to drive rapid and disruptive change."

Professor Ajit Sheno, director of the Southampton Marine and Maritime Institute at the University of Southampton, said: "The report recognises that autonomous systems and associated technologies will require people to learn to work seamlessly with them. Crew members of the future may become shore based, managing vessels remotely from the office or the sea, creating the need for new training and skill sets."

David Dingle CBE, chairman of Maritime UK said: "This thought leadership from three world-leading companies and educational institutions, coupled with exciting developments from leading manufacturers such as Rolls-Royce, ASV and a wealth of small and medium-size players, mean that the UK, the world's maritime centre, really is leading the autonomy revolution."

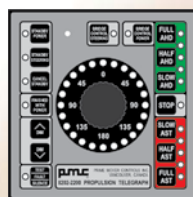


Rolls-Royce's vision of an autonomous OSV



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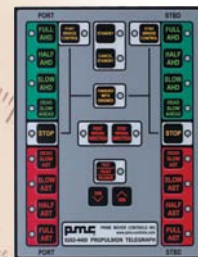
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Industry confidence at its highest level for three years

Shipping confidence reached its highest rating in the past three years in the three months to the end of August, according to the latest Shipping Confidence Survey from international accountant and shipping adviser Moore Stephens.

The average confidence level expressed by respondents to the survey was up slightly from the 6.1 out of 10 recorded in the previous survey in May to a three-year high of 6.2. The improved rating was attributable mainly to increased confidence on the part of owners, up from 6.1 to 6.5.

Confidence levels on the part of brokers, meanwhile, fell from 6.4 to 6.3, while managers and charterers recorded more substantial drops – from 6.2 to 5.8 and from 6.4 to 4.7 respectively, the lowest levels in both cases since May 2016. The survey was launched in May 2008 with an overall confidence rating of 6.8.

On a regional basis, confidence levels were significantly up in Asia from 5.6 to 6.4, their highest level since May 2014. Confidence was also up in Europe, from 6.2 to 6.3, but down in North America, from 6.4 to 5.8.

Despite familiar concerns about excess tonnage capacity in many trades and continuing uncertainty over Brexit – the UK's pending departure from the European Union – several respondents saw reasons for optimism over the coming 12 months, not least as a result of what one described as "some green shoots of a relatively broad-based rebound in economic activity".

► Richard Greiner



This helped maintain, at a three-year high, expectations of major investments being made over the next 12 months. Concern, however, persisted over political instability, the incipient cost of increased legislation, and the probable entry into the market of low-cost newbuildings. One respondent said: "The future of the maritime industry will certainly be interesting, but will it also be enjoyable?"

The likelihood of respondents making a major investment or significant development over the next 12 months was unchanged from the previous survey at 5.4 out of a maximum possible score of 10. This represents the highest level achieved since August 2014, and this despite a slight fall this time (from 5.9 to 5.8) in the expectations of owners, and a much larger one (from 6.3 to 4.0) by charterers. The expectations of respondents in Asia were up, from 5.1 to 5.9, but down in Europe, from 5.4 to 5.2.

Richard Greiner, Moore Stephens partner, shipping and transport, said: "Confidence has been increasing steadily over the past 15 months, and industry players are more confident of making a major investment over the coming year than they have been at any time in the past three years. Moreover, net sentiment in all three main tonnage categories is positive, having almost doubled in the tanker sector over the past quarter."

In brief

The Marine Accident Investigation Bureau (MAIB) received 1,190 reports of accidents (casualties and incidents) to UK-registered vessels or vessels in UK coastal waters in 2016, according to the organisation's annual report. This was a 12.5 per cent increase on the 1,057 accidents reported in 2015 and included 12 incidents that resulted in 18 fatalities. Current investigations include an engine fire on a 16m crew transfer vessel operating in the Lincs Wind Farm off Skegness, UK.

The Shipowners' Club recorded a combined ratio (the sum of incurred losses and expenses divided by earned premium) of 99.3 per cent, generated an overall surplus of US\$25m and increased its free reserves to US\$319m in the six months to the end of June. Chief executive, Simon Swallow, said: "The challenging shipping environment has seen the laying up of tonnage and a slowdown in membership growth in many sectors."

Classification society Korean Register has launched the industry's first *Survey & Audit Preparation Guide* which enables shipowners to check exactly what items need to be prepared for their next vessel survey audit.

Maritime charity Sailors' Society has opened a new seafarers' centre in Southampton, on the UK's south coast. It gives seafarers docking in the city's port, which handles around 14m tonnes of cargo annually, the opportunity to access support services and free wi-fi.

The UK's largest independent ship repairer and marine engineering services provider Burgess Marine, in partnership with Portsmouth City Council, has opened a new ship repair facility in the Port of Portsmouth.

Representatives of the UK and Hong Kong maritime business sectors agreed to forge a closer working relationship during London International Shipping Week.

The International Maritime Rescue Federation has been awarded US\$450,000 by the TK Foundation to support its work building maritime search and rescue capability in Africa.



Powerful duo assist jack-up rig safely into harbour

Swire Pacific's AHTSs *Pacific Vulcan* and *Pacific Centurion* are seen assisting the jack-up rig *Noble Tom Processor* into Darwin Harbour in Australia's Northern Territory in this photograph taken by Capt Arie Nygh, managing director of SeaWays Consultants.

Both Singapore-registered, the 86m LOA *Pacific Centurion* was built by Sekwang Heavy Industries of South Korea in 2015 and has a bollard pull (BP) of 190 tonnes; while the 66m LOA *Pacific Vulcan* was built at Labroy Shipyard, Batam, Indonesia, in 2010 and has a BP of 126 tonnes.



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Powerful tugs in dual escort towage tests



Two high performance tugs undertook a dual escort towage operation as part of an on-going extensive training and technical research programme at Port Hedland, in Western Australia.

The vessels involved were the latest RASAR85 escort ASD tugs designed by

Robert Allan Ltd of Vancouver, Canada. With a 35m LOA, 14m beam and 34m² hydrodynamic keel, both tugs can achieve a bollard pull of 85 tonnes.

They are owned by mining giant BHP and operated at Port Hedland, the world's largest bulk export port, by Australian tug company RivTow Marine.

Australia-based training provider SeaWays Consultants has been overseeing tugmaster training at the port for active escort and dynamic assist towage, including live on board trials using a Capesize ship to research the pros and cons of dual escort towage operations.

▲ *The dual escort towage operation seen from the Capesize ship and, above left, the view from the tugs* Photos: Capt Heath Daniel and Capt Arie Nygh

Capt Arie Nygh, managing director of SeaWays Australia who was on board one of the tugs, said: "At the time of these photos being taken the ship was at 8 knots and the tugs were each generating an 80-tonne towline force.

"Interestingly, the tugs each achieved this towline force through the hydrodynamic lift of their keel, the actual tug engine power settings were at less than half power."

In brief

Beatrice Offshore Windfarm has contracted Seacat Services' specialist 26m catamarans, *Intrepid* and *Courageous*, to support the construction of a new deep-water wind farm at the Outer Moray Firth in the north of Scotland.

Bureau Veritas has joined the Remote evaluation of coatings/corrosion on offshore machinery and marine structures/ships joint investment project to develop drones to inspect steel structures in enclosed spaces.

Unique Group has signed a deal with Kongsberg Maritime (KM) under which its Cape Town office will offer KM's underwater mapping and navigation solutions to customers in Nigeria and Kenya.

MacGregor has signed a five-year Mframe agreement with Teekay Shipping including spare parts, maintenance, training and project support, for Teekay's 115 vessels.

Storfjorden and its associated Harbours will become Norway's second area used for testing autonomous vessels.

Company reunited with old friend for 775 nautical mile tow

Netherlands-based global ship delivery and professional crewing company, Redwise, provided the full crew for the 775 nautical mile tow of the transshipment station *Lena* from Batam to Vietnam.

It was not the first time that the company has been contracted by dry bulk carrier firm Oldendorff for the specialised service of mobilising an experienced crew for a relocation voyage.

Redwise previously towed *Lena* from West Africa to South America using the Stan Tug 3509 *Christopher* and again from New Amsterdam to Trinidad, to be loaded on a Dockwise semi-submersible vessel.

This time the towing tug mobilised was Oldendorff's own Stan Tug 2208 *Kiev*. As well as providing the crew, Redwise arranged the charts, voyage plan and duplicate Iridium voice and data communication set, which enabled good communication between the tug and its tow and land-based stakeholders.

► *The Stan Tug Kiev with its tow Lena*
Photo: Jacob Versteeg, chief officer, Redwise



Digital solutions: technology giant steps on accelerator

Technology group Wärtsilä has opened the first of four digital acceleration centres (DACs) to speed up the innovation and co-creation with customers on a range of new business models and solutions, including the industry's most advanced intelligent vessel and other ground-breaking projects.

Wärtsilä says it is "changing the clock speed of the company" by using DACs to accelerate new business ideas. The first launched in October in Helsinki, Finland, with the second due to open in December in Singapore. Two further centres, one in Central Europe and one in North America, are anticipated during 2018. In addition, 'pop-up' DACs will be tested with customers around the globe.

Opening DACs is an integral part of Wärtsilä's digital transformation, which will shift the company towards a data-driven, insights led, smart technology company that enables sustainable societies.

Wärtsilä's chief digital officer, Marco Ryan, said: "The digital acceleration centre is all about getting business outcomes at pace. By adopting a start-up mind-set, we can rapidly prototype ideas with customers; including the use of emerging technologies such as artificial intelligence, machine

learning, block chain and virtual reality."

Wärtsilä's first DAC had been running as a beta version for a couple of months before launch. One of the greatest successes incubated so far in the Helsinki DAC is Wärtsilä's intelligent vessel strategy.

Ryan said: "The digital acceleration centre shows its true power in complex concepts such as intelligent vessels. In a matter of weeks we created an aligned strategy, concepts, roadmaps and technology requirements that would have previously taken months or years. Each concept can be cut into smaller projects which are incubated and developed into minimal viable products far quicker than ever before. Even if occasionally an idea fails in the incubation phase, we see that as a learning opportunity and a valuable insight into building a better solution. In the old days, partly due to our proud engineering tradition, we would not have wanted to reveal a new product until it was perfect and fully tested. But now, with the DACs, we keep that focus on quality and outcomes, yet achieve it through a more agile, disruptive and rapid prototyping approach. The intelligent vessel successes show that we can transform Wärtsilä at pace."

Experts on hand at workboat festival



Around 200 guests explored stands and interactive exhibits at Damen's second annual workboat festival, pictured above, held at Gorinchem in the Netherlands.

Clients, industry partners and media representatives were not only invited to experience a selection of smaller tugs, pilot boats, fast crew suppliers and a high-powered inflatable, but also given the opportunity to explore themes at the forefront of the industry.

These included environmental responsibility, digitalisation, safety and security, and operations and maintenance. In addition to the sizeable Damen team, led by COO Arnout Damen, 10 Damen suppliers also had stands on the waterfront.

OSV operator targeting UK for on-going expansion

After focused efforts, OSV operator Esvagt is strongly established in the UK sector of the North Sea, where it now has 14 vessels on contract. Almost every third vessel in its fleet is currently working in the sector.

The latest move was Esvagt securing a two-

year contract for *Esvagt Cobra* with Petrofac Facilities Management in the Kittiwake field in the UK sector, starting in the middle of October with an option for a further year. This represents a long-term contract in an important production segment.

Chief commercial officer Søren Karas said: "Building up our presence in the British market has been a focused effort that is now bearing fruit. It is part of our strategy to gain market share in the UK."

The UK has the world's largest standby market and is strategically important for Esvagt. Efforts to increase market share have meant that the company has progressed from a very modest presence to having 14 vessels in the UK, an office in the port of Aberdeen and an appetite for continued growth.

Chartering manager Jens Bagger said: "The British sector of the North Sea is particularly active, with many strong players and tough competition.

"We have won market share by focusing on the competences that set us ahead of the competition: our uncompromising attitude to safety, our high quality and our innovative approach. And that is how we will continue to drive our growth in the UK."

The Denmark-headquartered company was founded in 1981 and has a fleet of more than 40 vessels and approximately 900 employees on and offshore. It is now the third largest independent operator in the UK central North Sea.



◀ *Esvagt Cobra* has a two-year contract in the UK North Sea

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In brief

Apprentices at the Nobiskrug Shipyard in Germany have designed, built and launched the 12m-long and 4m-wide tugboat **Bagalut** as part of their training. With propulsion provided by a Volvo Penta DH9 and front drive by a Schottel Rudder Propeller SRP320, **Bagalut** can achieve a 3.2-tonnes bollard pull. The project took 17 months to complete from scratch.

Oil & gas will be crucial components of the world's energy future, according to DNV GL's inaugural *Energy Transition Outlook*. While renewable energy will grow its share of the energy mix, DNV-GL's independent model predicting the energy mix to 2050, shows that oil & gas will account for 44 per cent of world energy supply in 2050, compared to 53 per cent today.

Classification society ClassNK has expanded the scope of the world's first comprehensive electronic certificate service for classification and statutory certificates to include the flag states of Panama, Singapore, and the Marshall Islands. The service was already available to Liberian-flagged vessels and will now be available to approximately 60 per cent of vessels on the ClassNK register.

Maritime Cook Islands, the International ship registry, has celebrated 20 years of diplomatic relations between the Cook Islands and People's Republic of China. China's President Xi Jinping and his excellency Tom Marsters, the Queen's representative to the Cook Islands, exchanged congratulatory messages.

K-Fleet Voyage, Kongsberg's digital application for monitoring vessel fuel consumption and emissions, has been verified by Ecoxy AS for use under the EU emission trading scheme and the new EU monitoring, reporting and verification for maritime transport regulation (2015/757).

Classification society Bureau Veritas has published a new Rule (NR645) for the classification of Floating Storage and Regasification Units (FSRUs) in response to industry demand and following close engagement with FSU stakeholders.

Tugboat lost rig tow in storm



A report by the Marine Accident Investigation Branch (MAIB) following its investigation into the grounding of the semi-submersible rig **Transocean Winner** on the Isle of Lewis, Scotland, following the loss of tow from the tug **ALP Forward** recommends that operator ALP Maritime Services reviews its procedures with regard to the production of towing manuals.

The tug and tow were on passage from Stavanger, Norway, to Valletta, Malta, in August last year when they encountered severe weather west of the Hebrides. The effect of the wind and waves on **Transocean Winner** led to the loss of **ALP Forward**'s ability to control the direction and speed of the tug and tow.

The MAIB report adds that after being dragged backwards by the tow for more than 24 hours, the tow line, weakened by the repeated sudden loadings, parted and the tug was unable to pick up the emergency towline.

The effect of the wind on **Transocean Winner** led to **ALP Forward** being incapable of controlling the wind and tow in the severe weather conditions. Without the necessary information, it was not possible for the master to predict the tug's inability to hold the rig and change his passage plan in time to seek shelter.

The planning of a passage so close to the coast left little sea room for the tug and tow to drift. When **ALP Forward** lost control of the tug and tow, it was very likely that

▲ **Transocean Winner** aground and, left, the operation to salvage the semi-submersible rig

Transocean Winner would have grounded even if the tow line had not parted.

MAIB also found that the tow line was in a generally poor condition, there was insufficient catenary in the deployed tow line which led, in the weather conditions, to repeated sudden loadings resulting in the tow line parting. It is quite possible that a new tow line would have also parted under the same circumstances and conditions.

The report recommends that ALP Maritime reviews its procedures with regard to the production of towing manuals to ensure that the guidance provided in them complies with the guidelines issued by the IMO in MSC/Circ.884 of 1998 and provides those responsible for the safety of the tow with all the necessary information, including:

- tow-specific guidance on the need to consider sea room and lee shores during passage planning
- the provision of an adequate catenary
- the need to report when control of the tow is lost
- the limitations/functionality of the emergency towing arrangement when in adverse weather.

The report also says the company should provide its crews and maintenance staff with comprehensive guidance on the maintenance, inspection and discard of tow lines.

Three AHTSs sold to Brazil navy

Norway-headquartered OSV operator SolstadFarstad has sold three AHTS vessels to the Brazilian Navy for a combined price of BRL82.8m (US\$24m). **Sea Fox**, **Sea Vixen** and **Sea Stoa** were scheduled to be delivered to their new owner in the final quarter of this year.

Built by ABG Shipyard in India in 2011, all three vessels are 63m long, have a moulded breadth of 16m and are powered by 2,500kW main engines. The vessels' bollard pull ranges from 88 tonnes to 92 tonnes.



▲ **Sea Vixen**, one of three AHTS vessels sold to the Brazilian Navy by SolstadFarstad

Engine overhaul for Royal Navy support tug

Royston Diesel Power has successfully completed the specialist overhaul and maintenance of engine systems and components for a specialist Royal Navy support vessel operated by Serco Marine Services.

Serco's *SD Faithful* is a twin tractor unit tug based at Devonport, on the UK's south coast, where it is used for a range of 'push-

pull' ship handling operations.

Working to tight timescales to reduce service downtime for the vessel, diesel engineering specialist Royston, which has bases in Newcastle upon Tyne in the UK and Perth, Western Australia, recently completed the top end overhaul on its two Royston 6RRCM main engines and the full overhaul of a Cummins 6CT8.3D(M) generator.

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

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

With the Cummins generator, a full strip down enabled the cylinder head to be sent to the Royston workshop for reconditioning, which included the fitting of new valves and valve guides. In addition, the seawater pump and cooler were also cleaned and reconditioned. On site, all major generator components were renewed using genuine Cummins parts. This included new pistons, cylinder liners, main bearings, oil pump and water pump, as well as new seals and gaskets.

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

◀ Serco Marine Services' Devonport-based Royal Navy support twin tractor tug *SD Faithful*



Transfer vessels are designed to set new benchmark

Shipbuilder Austal's expanding range of Offshore Express large crew transfer vessels has been designed to create a new benchmark for safety and comfort. Servicing offshore platforms in the Middle East region, they were a feature of the company's exhibition at Seatrade 2017 in Abu Dhabi in September.

Offshore Express range vessel *MV Rashid Behbudov*, designed by Incat Crowther and built by Austal, has completed its first

year's operation with owner Caspian Marine Services Ltd (CMS).

Speaking at Seatrade, CMS chairman Carl Rolaston said: "We have had excellent customer feedback and recognise the integrated continuous walk to work system is the new industry benchmark for safety and comfort in crew transfers."

Rashid Behbudov is a 70m long, all-aluminium, high-speed catamaran that features advanced technology such as DP-2

(DYNPOS-AUTR) dynamic positioning and an Ampelmann heave compensated gangway.

The Offshore Express 70 design features more than 400m² of cargo deck area and the ability to carry 150 passengers, plus 16 crew, 400 nautical miles at 30 knots. The vessel is providing CMS customers, including BP, with greater safety, reliability and economy than alternative offshore transportation modes, such as helicopters.

Austal worked closely with CMS and Incat Crowther to integrate Marinelink, Austal's control and monitoring system; and Austal's ride control technology with T-foils and interceptors that improve the vessel's seakeeping characteristics and crew comfort. The company says these systems are delivering real benefits to CMS and its customers, with enhanced on-board and on-shore monitoring and smoother journeys.

Austal won the A\$44.5m contract to build the sister ship to CMS' *Muslim Magomayev* in June 2015 and construction was completed in just over 12 months, utilising the skilled and experienced teams from Austal's Australian and Philippines shipyards.

◀ *Rashid Behbudov*, constructed by Austal for Caspian Marine Services of Azerbaijan

Photo: Austal



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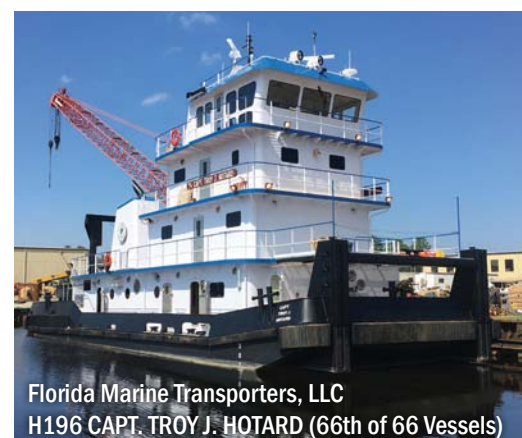
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OSV retrofit a milestone in battery power

Technology group Wärtsilä reached a new milestone in its battery technology development as the company completed the installation of a hybrid energy system on board *Viking Princess*.

The Norwegian vessel is now the first OSV in which batteries reduce the number of generators aboard the ship. The new energy storage solution will improve engine efficiency, generate fuel savings and reduce greenhouse gas emissions.

Viking Princess completed sea trials and the system was handed over to customer Eidesvik Offshore on 9 October.

Wärtsilä says there is significant potential to save fuel through improved engine efficiency, as the operating profile of supply vessels is highly variable. When using the Wärtsilä installed energy storage system on board *Viking Princess*, the fuel saving potential can be up to 30 per cent in various operations and the CO₂ emissions can be reduced by up to approximately 13-18 per cent per year, depending on operational conditions and requirements.



Furthermore, the hybrid solution will provide a more optimal load on the engines, while the intervals between engine maintenance can be extended.

Viking Princess now runs on a combination of a battery pack for energy storage and three LNG-fuelled Wärtsilä engines. The new energy storage solution provides balancing energy to cover the demand peaks, resulting in a more stable load on the engines.

The technology is similar to that used in hybrid vehicles: it prevents the engine load from dipping, and uses the surplus to re-energise the battery, which can be charged as needed. Wärtsilä's remote monitoring and operational advisory services support the daily operation of the vessel, ensuring

► **Viking Princess** runs on a battery pack for energy storage and three LNG-fuelled engines

efficient and optimised operations.

The contract to replace one of the four engines on *Viking Princess* with battery power was signed in May.

Sindre Utne, manager projects and operations, Wärtsilä Norway, said: "This is a truly forward-looking solution, and we congratulate Eidesvik Offshore for having the vision to appreciate the benefits that a hybrid energy system offers."

Vermund Hjelland, president technical department, Eidesvik Offshore, said: "We are grateful to Wärtsilä for providing the technology to make this possible."

Integrated DP solution aims to up efficiency and safety

Norway-headquartered marine technology company Kongsberg has fused its decades of experience in the development of in-house global navigation satellite systems (GNSS) and inertial technology to create a cutting-edge integrated solution for dynamic positioning (DP) reference applications.

DPS i2 and DPS i4 are fully scalable and future-proof DP reference solutions that Kongsberg says significantly improve operational efficiency and safety for high-precision applications. The new integrated solution has been in operation aboard the OSV *Bourbon Arctic* in northern Norway for the past seven months.

DPS i2 and DPS i4 utilise Kongsberg's unique motion gyro compass (MGC) and motion reference unit (MRU) technology. They offer an optimal integration of multi-GNSS and inertial sensors, which ensures high availability and integrity of the accurate position data. The company says, when choosing the DPS i2 or DPS i4 with MGC as the inertial sensor, customers benefit from a high-quality WheelMark gyro compass with no scheduled maintenance as an integral part of the solution, which can also serve other onboard systems with attitude data.

DPS i2 utilises GPS and GLONASS while DPS i4 adds Galileo and Beidou as supported GNSS systems. By combining its

► **Kongsberg's** DPS i2 and DPS i4 integrate GNSS and inertial technology



class leading inertial technology with the latest multi-constellation GNSS technology, Kongsberg provides a cost efficient and reliable position reference solution, where no additional augmentation service is required. DPS i2 and DPS i4 are fully prepared to utilise differential corrections and satellite-based augmentation system services where required.

The flexible design of the new product line ensures a scalable and expandable reference solution that can adapt to the specific requirements of individual vessels. For the more demanding applications, a combination of DPS i2, DPS i4 and MRU/

MGC sensors will, in addition to increased redundancy and integrity, enable precise heading determination and spoofing detection capabilities. DPS i2 and DPS i4 may utilise existing or dedicated MGC or MRU sensors for the integration on board.

Vidar Bjørkedal, VP sales and customer support, Kongsberg Seatex, said: "By integrating our MGC technology with our established differential positioning technology, DPS i2 and DPS i4 deliver operational improvements and economic benefits that can help offshore service companies to completely rethink their approach to DP reference systems."



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Charioteer to carry technical teams to work in comfort



An artist's view
of Acta Auriga

Acta Marine's new Ulstein SX195 walk-to-work (W2W) vessel, under construction at Crist shipyard in Poland, will sail under the name Acta Auriga.

On delivery, due in the first quarter of 2018, *Acta Auriga* will become the second vessel in the Acta fleet dedicated for W2W, offshore logistics and accommodation services in the offshore renewable industry.

The new-build is named after the constellation Auriga, meaning 'the charioteer' in Latin. Acta says the name was chosen because the charioteer played a crucial role in logistics and support and is

therefore indispensable in battle, and that this will also be the new vessel's role in offshore wind construction projects and related markets such as decommissioning and oil & gas services. It says *Acta Auriga* will break new ground in workability, in-field agility, offshore logistics, comfort for the 120 people on board and low fuel consumption.

The vessel's completed hull was due to be towed from Crist to Ulsteinvik, Norway, in early November for outfitting and the installation of the SMST-provided mission equipment – a motion compensated gangway and crane.

Terminal tugboat

A crew from Hyderabad-headquartered tug operator Ocean Sparkle have been operating *Reltug Eleven* at Reliance Industries' terminal at Jamnagar in India.

The India-flagged 53-tonne bollard pull ATD, pictured right, was built in 2003 and has been servicing oil and product tankers at the terminal. Reliance has a fleet of 18 tugs. Its Jamnagar refinery is the largest chemical refinery in the world.

The image of the 31m long by 10m wide 296gt tug was captured by Capt Arie Nygh, managing director of SeaWays Consultants, which has been engaged to review Reliance's three towage and port operations in India.



Diesel to remain dominant in gen set market

The global market for marine gen sets is expected to grow by 20 per cent over the next five years to be worth US\$5.4bn by 2021, up from US\$4.5bn in 2016.

The latest report from US-headquartered statistical research company MarketsandMarkets indicates that while increasingly stringent emissions regulations will reduce the market share of diesel as a fuel type, it will continue to dominate the market.

MarketsandMarkets said that diesel fuel gen sets are still in high demand as they offer distinct operational advantages

over other fuel types – such as longer engine lifespan, lower maintenance costs and safe fuel storage.

The Asia-Pacific region will not only remain the largest market for marine gen sets, but will also show the fastest growth throughout the period, fuelled by increased shipbuilding in China, Japan and South Korea.

Key players in the industry will continue to be Caterpillar and Cummins from the US, MAN Diesel & Turbo in Germany, Finland-headquartered Wärtsilä and Mitsubishi Heavy Industries from Japan.

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Specialist vessel completes new wind farm



China-built specialist vessel *Sea Challenger* has installed the last of 67 turbines on the new Dudgeon wind farm off the UK's Norfolk coast, which was due to provide 410,000 homes in England with electricity from October.

Operated by Danish wind farm transportation, installation and servicing company A2SEA, the US\$155m *Sea Challenger* was built by COSCO Shipyard Group in 2014 and is the twin of sister ship *Sea Installer*.

The 132m-long, 39m-wide vessel, which has accommodation for 60 people, is powered

by six 3,020kW main engines. Propulsion is provided by three Voith Schneider propellers with three bow propellers for manual side-thrust during harbour manoeuvring and satellite positioning. The vessel can manoeuvre with 25cm precision during optimum weather conditions.

The wind farm, located 32km off the North Sea coast, has grown gradually since the first turbine was installed at the beginning of the year. It was completed at the agreed time and below its budget of £1.5bn.

Irene Rummelhoff, executive vice president for new energy solutions at Statoil,

▲ *Sea Challenger* at the Dudgeon wind farm off the UK's east coast

said: "Dudgeon offshore wind farm is part of Statoil's strategy of gradually supplementing our oil & gas portfolio with profitable renewable energy.

"Offshore wind has been a natural place to start, as we can build on our maritime expertise, experience from complex projects and our supplier chain. With Dudgeon in full production Statoil is well on its way to providing more than a million households in Europe with renewable electricity."

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Blast leaves one dead and one missing

The US Coast Guard (USCG) has suspended its search for a crew member reported missing by the captain of the tugboat *Buster Bouchard* following an explosion on barge *B255* while it was attached to his tug. Another crew member died during the incident.

The body of Dujour Vanterpool, 26, of Houston, was found on Padre Island following the explosion, local news organisations reported.

The other crewman, Zachariah Jackson, remains missing after the forward section of the barge exploded and caught fire three miles off the jetties of Port Aransas, Texas. The barge was carrying some 133,000 barrels of crude oil.

The other six members of the eight person crew were rescued and did not suffer any serious injury. The USCG completed a comprehensive search for Jackson over two days. Multiple oil discharge recovery and USCG vessels and air crews were still attending the scene as *IT&O* went to press.

Tony Hahn, sector commander of USCG sector/air station Corpus Christi, said: "We want to convey our deepest condolences to the families of the two crew members. Our crews performed an exhaustive search and will continue to remain vigilant and monitor the area closely."

The USCG, Texas general office and Bouchard Transportation representatives responded to an oil discharge from the barge in a bid to minimise impact to the environment and the maritime community.

Discharge from the barge cargo tanks appears to have stopped following the removal of 2,500 barrels of oil-water mix from the barge through lightering operations.

A containment boom remains in place



▲ Clockwise from top left, barge *B255* ablaze following the explosion, two images of a fire-fighting tug tackling the flames, and the on-going beach pollution clean-up operation

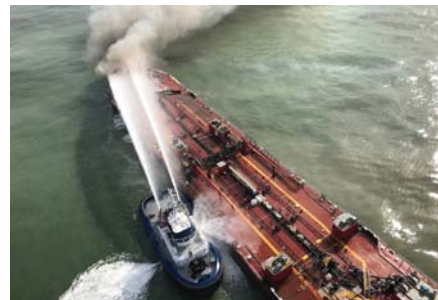
around the vessel, though sheening from the barge and the boom is present. USCG air overflights found no oil in the vicinity of the port entrance and jetty channels.

The port is now fully open with the exception of the restrictions outlined in marine safety information broadcast 16-17 regarding the aftermath of *Hurricane Harvey*.

Skimming boats have responded to the discharge, including the 210ft (64m), 1,335gt pollution response vessel *Southern Responder*, which is based at Corpus Christi.

Discharged oil has made shoreline impact on Mustang Island and North Padre Island. Three beach clean-up crews are actively cleaning the impacted shoreline.

Two wildlife response teams have been deployed between the Padre Island National Seashore and Port Aransas, where they are actively engaged in assessing any impacted wildlife.



In brief

Large self-lubricating Vesconite marine bearings and bushings from South Africa-headquartered international firm VescoPlastics are now available for immediate dispatch from Buenos Aires, Argentina. Vesconite is a very strong, wear-resistant, low-friction, ultraviolet-stable engineered polymer that is also dimensionally stable in water. The bushings have been successfully fitted to 20 tugs working on the Paraná River.

Svitzer has named its new ASD tug *Svitzer Adira*, an 80-tonne bollard pull vessel, built in Turkey by Sanmar, at a ceremony in the port of Southampton, UK, that took place on board *Princess Caroline* cruising the Southampton harbour and was attended by Svitzer Europe managing director, Kasper Nilaus and *Adira's* godmother, Andry Watermann.

Rolls-Royce Power Systems and Japanese company Tominaga are to work closely in future on serving the marine market and other sectors. Tominaga, previously a service partner for MTU products, will now be supporting subsidiary MTU Japan as a distributor.

MacGregor has established its head office in Singapore, ending a period of more than three years where it has operated with a virtual head office. Company president Michel van Roozendaal has now relocated to Singapore.

Family group MD dies at age of 77

Günter Baumüller, managing director of Baumüller Holding, has died after a short but serious illness, surrounded by his family. He was 77 years old.

Baumüller was until recently actively involved in the Nuremberg, Germany-headquartered company's activities through his role on the board of advisors, and held honorary positions with numerous committees and trade associations. Under his leadership, the Baumüller firm grew from a local company to a global, independent group of companies. Today, it employs more than 1,800 people.

His children Karin Baumüller-Söder and Andreas Baumüller have been responsible

for the group's management for many years.

Günter Baumüller was born in 1940 in Nuremberg. He took over the company from his parents in 1973 and expanded it to become one of the leading suppliers of drive and automation systems.

Baumüller was for many years a director of the Zentralverband Elektrotechnik-und Elektroindustrie where he was awarded its golden badge of honour.



► Günter Baumüller

Tugboat retrofit gets firm's seal of approval

Offshore Towing Inc (OTI) has successfully completed the extensive refurbishment of its 1974-built 9,000hp tug *Zion M Falgout* at the Conrad Deepwater shipyard, in Morgan City, Louisiana, US.

The milestone project involved the retrofitting of TG100 seals in what marks OTI's first mechanical shaft seal installation and the largest diameter TG100 series seals ever supplied by Canada-headquartered Thordon Bearings. An 11.75in (298mm) diameter seal was installed to each propeller shaft of the 67-tonne bollard pull twin-screw workhorse tug.

Jim Bright, business development manager at Thordon Bearings, said: "A primary factor in OTI specifying the Thordon solution was to eliminate the need for stuffing/packing

boxes. This really is an out-dated system for preventing water ingress to the engine room. If the packing box is not adjusted correctly the amount of water ingress to the vessel can be catastrophic. Packing can also result in excessive wear of the propeller shaft, which could require drydocking to remove the shaft and repair the damage. A TG100 seal turns with the shaft, causing no damage or wear."

During the retrofit, Thordon Bearings worked with E J Fields Machine Works and Conrad Deepwater, both in Morgan City, to expedite the installation. The forward end of the shaft line was undercut and then clad-welded with stainless steel to prevent corrosion, after which the shaft was returned to its original size. This gave the seal a smooth corrosion-free surface on which to operate. E J Fields also manufactured a mounting plate which the shipyard then welded to the stern tube.

Henry Bailey, operations manager at Offshore Towing, said: "We were introduced to the TG100 seal by United Tugs, which has operated the system for a number of years without problem. So we thought we'd give it a try."

"The TG100 seal has been operating successfully so far and although too early to provide a full appraisal, we are very satisfied and don't anticipate any problems."

Depending on the performance of the TG100 over the coming months, Bailey said it is likely that other vessels in OTI's fleet of tugs and supply vessels will be retrofitted with the Thordon arrangement.

The TG100 is a mechanical seal specially developed for 86mm (3.5in) to 305mm (12in) water lubricated propeller shafts typical of workboats, dredgers, tugs, yachts, patrol craft and other coastal vessels operating in either clean or dirty, abrasive waters.

The primary seal uses hard wearing, silicon carbide faces and Thordon's proprietary elastomeric bellows to provide an unlimited shelf life compared to rubber-based bellows.

It also features a unique secondary seal with 'Return to Port' capability for use in the unlikely event of the seal being damaged.



◀ Built in 1974, *Zion M Falgout* has recently undergone extensive refurbishment

£200m of cocaine hidden on tug

An international law enforcement operation has resulted in the seizure of close to four tonnes of cocaine from a tug in the mid-Atlantic.

Acting on UK National Crime Agency (NCA) intelligence, Spanish authorities intercepted the 34m long, 9m wide, 278grt *Thorán* on 1 October, approximately 400 miles from the Spanish coast at a point between Madeira and the Azores islands.

An extensive search resulted in the discovery of 165 individual packages of cocaine, hidden in a sophisticated concealment beneath the galley floor. Each package contained around 23 kilos of powder, amounting to a total of

approximately 3,700 kilos of cocaine seized. If cut and sold in European countries, the cocaine could have fetched more than £200m.

The seven crew, six men from Turkey and one from Azerbaijan, were arrested by Spanish officers, and the Comoros-flagged vessel towed into the Spanish port of Cadiz.

The operation was jointly conducted by the NCA, Spanish Customs, the Spanish National Police and the Spanish Civil Guard, and was co-ordinated by the multi-national Maritime Analysis and Operations Centre – Narcotics based in Lisbon, Portugal.

Booklet advises on avoiding loss of propulsion

Classification society Bureau Veritas and TMC Marine, a Bureau Veritas Group company since 2016, have co-operated again with the London P&I Club to produce the second booklet in a series on loss prevention issues.

The publication focuses on the marine engineering issues and procedures related to loss of propulsion incidents – and best

practice for avoiding them.

Blackouts, propulsion limitations, total loss of propulsion and loss of steering capability are all serious incidents when they occur during navigation in non-congested waters.

However, when incidents such as these occur during manoeuvring in restricted areas, the risk to the vessel and personnel is critical and may result in a major casualty.

In brief

Technology group Wärtsilä has acquired Guidance Marine Ltd, a privately owned company with offices in the UK, Singapore and US. Guidance Marine is recognised as a technology leader in the marine industry for sensor solutions relating to dynamic positioning and other vessel control systems, such as collision avoidance and remote control.

The Palau International Ship Registry says it has recently seen a strong increase in its fleet size as more shipowners and operators look to become a part of the new breed of smart registries. At the end of September the Palau flag fleet stood at 380 ships with a total of 3m gross tonnage.

International Union of Marine Insurance president, Dieter Berg, told its annual conference that he predicted an impending shake-up in the marine insurance sector driven by technology and business innovation.

Britannia P&I Club has agreed to sponsor the Wellness at Sea app from the maritime welfare charity Sailors' Society.

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Executive chairman given prestigious award

Robert Allan, executive chairman of Vancouver-based naval architects Robert Allan Ltd, was presented with the meritorious achievement award as one of the president's awards conferred by Engineers & Geoscientists British Columbia (EGBC) at its annual award gala. It is given to a member of the association who has achieved distinction and outstanding goals associated with his or her profession.

Allan has more than 45 years of experience in the design of commercial workboats of all types, but especially high-performance tugboats for tanker escort and offshore terminal operations. From 1981 until 2008, when company ownership was transferred to a cadre of senior employees, he led Robert Allan Ltd to a position of international prominence in this field.

Notable achievements under his leadership include major ice-breaking vessels for the Beaufort Sea and more recently the Caspian Sea and offshore Sakhalin; the Red Dot Award-winning Z-Tech ship-handling tug concept and the development of the RAsstar concept of escort tug, which has revolutionised the conduct of tanker escort operations.

In the course of his career, Allan has written many dozens of papers for international industry technical conferences, and contributed chapters on tug and workboat design to the major textbooks of the Society of Naval Architects and Marine Engineers (SNAME).



▲ Robert Allan, right, is presented with the award by Bob Stewart, president of the EGBC
Photo: Mike Crane Photography

He is the recipient of the Small Craft Group Medal from the Royal Institution of Naval Architects (UK) for significant lifetime achievements in naval architecture; the Beaver Medal for significant contributions to the maritime industry of British Columbia; and he is the only Canadian to have been awarded the David W Taylor Medal from SNAME for notable achievement in naval architecture.

Accepting the award, Allan paid tribute to the many talented employees of Robert Allan Ltd, past and present, whose hard work and commitment have enabled the company's success. In particular, he acknowledged the

significant contributions to the company of long-time colleagues Hans Muhlert and Ken Harford.

The receipt of this major award from EGBC caps a significant and fulfilling career, as Allan announced his retirement from full employment in June of this year. He remains executive chairman of the board and 'ambassador at large' for Robert Allan Ltd, the company founded by his grandfather in 1930.

In brief

Dutch conglomerate Pon Holdings (Pon) has strengthened its footprint in the global maritime industry with the acquisition of RH Marine, the leading player in maritime electric and automation systems. The company complements the operations of Pon subsidiary Bakker Slidrecht. Both RH Marine and Bakker Slidrecht will operate autonomously within the Pon organisation.

StatOil has named the offshore wind site located off the southern coast of Long Island, New York, Empire Wind. The site spans 79,350 acres (321km²). At full operation it could include enough turbines to power roughly one million homes.

LOC has opened an office in Kuala Lumpur, Malaysia – its 12th in the Asia Pacific region and its 35th globally.

Aluminium workboat builder wins crew transfer vessel contract

UK-based Alicat Workboats, builder of aluminium workboats, has signed a contract with Renewable Energy Support (RES) for the construction of *MCS Swath 2*, a 26m-long Typhoon Swath crew transfer vessel.

It is understood RES has signed a contract with Maritime Craft Services (Clyde) to manage and market the vessel.

MCS Swath 2 is being designed by Ad-Hoc Marine Designs and is a development of the company's existing vessel *MCS Swath 1* delivered from the Far East last year. Alicat Workboats won the order through a competitive tender process and, despite not being the cheapest, offered the most compliant technical and commercial proposal. Peter Curtis of DS Leasing has provided the financial solution that RES needed to facilitate the order. Construction started in October 2017 with delivery scheduled for October 2018.

The vessel is to be powered by four Scania DI16-076M 600kW main engines coupled to Hundested marine gears, driving two shafts



▲ An artist's drawing of *MCS Swath 2*

to controllable pitch propellers that will drive it to speeds in excess of 25 knots in 2.5m Hs. The sophisticated craft will also have active ballast management and an active ride/motion control system to ensure extremely comfortable sea-keeping and fuel efficiency. While loitering in the field, two engines can be disengaged to save fuel and there is a lot of redundancy with the quad engine set-up.

Tugs take on wind turbine challenge

Boluda France tugboats *VB Croisic* and *VB Ouragan* assured the shifting operation of France's first floating wind turbine.

The company said that the highly successful manoeuvre, carried out at Nantes Saint Nazaire, corroborated its strategy to invest in multi-functional tugs capable of answering the high demands of marine renewable energy project developers in France.

Built in 2015, *Ouragan's* main engines are two box-cooled ABC medium speed turbocharged four-stroke diesel engines, each developing 1,945kW at 1,000 rev/min. The 30m-long, 10m-wide, 375gt, 70-tonne bollard pull vessel's propulsion is provided by Schottel type SRP 1515 Rudderpropeller units. The 28m-long, 8m-wide, 60-tonne bollard pull *VB Croisic* was built in 2004.

With its extraordinary dimensions of 36m by 36m, its depth of 7.5m and its weight of 5,000 tons, shifting the complex structure of the Floatgen wind turbine constituted a technical and maritime challenge which made it necessary for the operator to adapt its usual towage manoeuvres – a challenge it



adds that its team met with flawless ease.

Boluda France says the success of the operation, carried out in October, confirms the know-how of its on-shore teams and tug crews, and strengthens the group's experience in preparing and conducting transportation and installation projects of marine renewable

▲ Boluda France tugs *VB Croisic*, left, and *VB Ouragan* shifting the Floatgen wind turbine

energy (MRE) structures. The growing demand for this type of towage operation has encouraged the group to research and develop solutions for the MRE sector.



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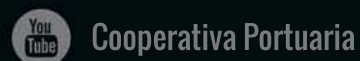
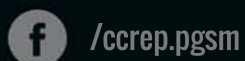
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Tugmaster recalls half a century at sea

“There are three kinds of people: those who are alive, those who are dead, and those who are at sea.” The aphorism is variously attributed to Aristotle, Diogenes and someone known as Anacharsis the Scythian – but whoever said it recognised that mariners are master storytellers, with extraordinary stories to tell. Charlie Noble – or to give him his full title, Capt Charles Noble MBE – is just such a raconteur and *From Galley Boy to Tugmaster*, his memoir of a life at sea, makes fascinating reading.

Noble was born in Hull, the UK’s largest east coast port, left school at 14 and – just at the end of World War II – more or less accidentally landed a job as galley boy aboard the veteran steam tug *Merman*, working for United Towing Company out of Hull’s Alexandra Dock.

It was a tough job for a young lad: a 90-minute walk to work, with a 2am start so he could trim and light the navigation lights, light the galley fire and brew up a gallon of tea for the rest of the crew who came onboard at 3am. Noble recalls: “I must say those early days were very rough indeed, but then again to me, at 14, it was a great adventure – that was to last the next 50 years.”

Working his way up through United Towing’s ranks, with many hair-raising incidents along the way, Noble was master of the steam tug *Norman* by the time he was 25. He worked in the salvage business during the early 1970s, principally as towing master aboard the salvage tug *Statesman* – a vessel that was to see him through numerous adventures around the world.



▲ Capt Charlie Noble aboard the tug *Tradesman* in May 1967, attending the salvage of Greek freighter *Enesis*, and inset left

Noble provides a gripping account of the 1973-76 Icelandic Cod Wars from the point of view of the tugboat crews whose job was to protect British trawlers from Iceland’s gunboats. It was for his service in that conflict that Noble was awarded the MBE.

He also saw action in the Falklands War in 1982, as master of *Irishman*, one of a fleet of tugs that provided support for the naval task force in the South Atlantic.

Noble’s straightforward, often very humorous, writing style and great powers of recall, along with dozens of well-chosen photographs, make this book a thoroughly entertaining read.

From Galley Boy to Tugmaster, by Capt Charles Noble MBE, is published by the United Towing & Salvage Society (UTSS) at £9.99 for UTSS members, £13.99 non-members, plus £2 UK postage, £5 overseas postage. For ordering details please email UTSS treasurer Eddie Barker at skeckling@skeckling.karoo.co.uk

People in the news



Anne Hasuly

The Shearer Group, Inc (TSGI), of Houston, Texas, has appointed Anne Hasuly as a naval architect. A licensed professional engineer in the state of Texas, she holds a degree in naval architecture and marine engineering, and is a member of the Society of Naval Architects & Marine Engineers and the Louisiana Engineering Society. Before joining TSGI, Hasuly worked for Aqualis Offshore as a senior naval architect.



Gwynneth Hall

Stone Marine Services has promoted Gwynneth Hall to the position of operations manager. Hall, who has a degree in business and finance, has been with the company for 14 years. She will be responsible for operations across all the Stone Marine Services group companies and report to the directors.

Transas CEO Frank Coles has won ‘gold’ in the Most Influential People of the Year

category of the 2017 Golden Bridge Business and Innovations Awards in San Francisco.

Liv Hovem is the new CEO of **DNV GL**’s oil & gas business area, which provides integrated technical assurance and advisory services to operators, suppliers and regulators across the oil & gas value chain. Based at the DNV GL – Oil & Gas headquarters in Høvik, Norway, she will be a member of the DNV GL Group’s executive committee. Hovem succeeds Elisabeth Tørstad, who has been appointed CEO of DNV GL’s new digital solutions business area.



Liv Hovem

Robert Allan Ltd has announced the return of Evan Gatehouse, an experienced mechanical engineer and naval architect who began with the company in 1989. He and his family have recently returned from eight years’ sailing around the world.

People in the news



Rune Østergaard

Rune Østergaard has joined Danish safety and support services provider **Esvagt** as head of commercial wind. Østergaard has extensive experience as a supplier for wind turbine producers both in Denmark and in the US. He joins Esvagt from Siemens Wind Power, where he held the post of head of strategic customer management.

Cassie Stetkiewicz has been appointed as the new marketing, communications and relationship manager at **FarSounder**, the marine electronics manufacturer, reporting to the company's CEO and its director of global sales.

Bjorn Giaever, the newly appointed chief financial officer (CFO) of offshore shipping company **Nordic American Offshore**, joined the company in mid-October, from Oslo-based Fearnley Securities. Apart from Nordic American Offshore, Giaever will also take on the CFO role in Bermuda-based tanker owner Nordic American Tankers.



Lars Ljungström

Lars Ljungström has been appointed as vice president of finance and CFO for **Volvo Penta of the Americas**. He will provide strategic leadership over finance, planning, budgeting and reporting for North, South and Central America and the Caribbean. He will also oversee co-ordination of IT systems and services, as well as legal and sales operations. Prior to this appointment, Ljungström was CFO at GKN Aerospace Engine Systems.



Sami Uotinen

Sami Uotinen has joined Canadian naval architects **Robert Allan Ltd**, with effect from 1 October. Operating from his home base in Turku, Finland, he will be responsible for European business development initiatives. A graduate naval architect, with wide experience in the propulsion sector, Uotinen joins Robert Allan Ltd from Rolls-Royce, where he has worked since 2000. His most recent role was as North American sales manager for Z-drive propulsion.

The board of directors of the **International Chamber of Shipping (ICS)** has appointed Martin Cresswell, technical director of the Hong Kong Shipowners Association, as the new chairman of the ICS marine committee. He succeeds Peter Bond (Cyprus Shipping Chamber), who recently stood down following four years of service as chairman of ICS's principal technical committee.

Sander van der Meer has taken up his post as the new commercial manager Indonesia

at international service provider **TOS**, charged with improving and expanding services in the region. He will also be responsible for improving and optimising the crewing operation at the Netherlands-based company's Jakarta office.

Christopher Deschenes has joined the US' **Bouchard Transportation** as vice president of maintenance and repairs. He will be responsible for the day-to-day operation of the maintenance and repair department, fleet capital projects and new construction efforts, reporting directly to company president and CEO Morton S Bouchard III.



Christopher Deschenes

David Hammond, founder of **Human Rights at Sea**, has retired from his role as CEO and become a trustee of the charity with effect from October. The charity will also be appointing a new COO and expanding its trustees to bring in further expertise in support of the charity's continuing growth.

Voith Management GmbH has announced the successor to Dr Hubert Lienhard, long-standing president and CEO of the management board. Stephan Schaller, currently a member of Voith shareholders' committee and head of the global motorcycle division of BMW Group, will take over on 1 April 2018. Lienhard will be appointed to the committee with effect from 1 April, taking Schaller's place.



Stephan Schaller

France-based water microbiology specialist **aqua-tools** has appointed Carine Magdo as business development manager in a new role aimed at strengthening the company's position in the ballast water monitoring market. Magdo, a microbiology and water quality management specialist, joins aqua-tools from renewable energy producer Albioma, where she provided technical support to its industrial water and environmental operations.



Carine Magdo

The **Palau International Ship Registry** office in Panama has appointed Melyssa Alejandra Barrios as deputy registrar, serving ship owners and operators in the developing region of Central Americas.

Finland's **Evac Group** has appointed Tomas Michelsson as president, offshore and merchant business, with effect from January 2018. He will replace former president, Claes Rudling, who retired during the summer. Michelsson has worked as a global sales manager at ABB Marine, and as director, marine and offshore business, with Marihoff.



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Only connect: customer support goes digital

Technology is changing the way companies and their customers interact. With its newly launched range of digital services, Caterpillar is looking to develop deeper and more integrated relationships with its customers over the life-cycle of its products

In a world where digitalisation, connectivity and the development of the Industrial Internet of Things are transforming industry at a rapid pace, Caterpillar has launched a new portfolio of technologies and services: Cat® Connect for Energy and Transportation. The aim is to create solutions that help customers improve their business operations and better manage risk.

These digital services enable Caterpillar customers to remotely monitor, locate and manage their critical assets – from vessels to generator sets to natural gas compressor stations, and beyond.

“Within the Energy and Transportation businesses, Caterpillar has been active in honing its capabilities, partnering with customers to refine technologies, and developing digital services to deliver real business results,” said Terri Lewis, the company’s energy and transportation director of digital and technology. Introducing the Cat Connect concept at a symposium held in Paris in September, she explained: “Digital technologies are becoming commercially viable for our industries, and there is growing acceptance by users, so we’re seeing an acceleration of deployment. It’s no longer a question of why, or when, but more about here and now. Any businesses that do not adopt quickly will not be competitive for very long.”

Caterpillar as a whole is supporting many customers over many applications. With more than 500,000 connected assets, it has the largest connected industrial fleet in the world, and performs upwards of 200,000 electronic inspections a year through the Cat Inspect mobile app. More than 6m fluid samples are analysed annually and 10 industry-specific apps have been launched, with more on the way.

The company is also working to retrofit older machinery with sensors and analytics technology, with a whole line of AssetIQ™ kits to make older equipment smarter.

Lewis said: “Each of our industry groups has a dedicated digital organisation whose people combine deep expertise in the industry and in digital. We’ve complemented that foundational capability with investments. We’ve invested in R&D, made acquisitions of best-in-class companies and strengthened



▲ Cat Connect's digital services will enable Caterpillar customers to remotely monitor, locate and manage their critical assets. Inset, Terri Lewis, energy and transport director of digital and technology

our partnerships. There is a particular emphasis being given to data management and cyber security. Our data principles can be summarised as ‘Your Data, Our Values’.”

For Caterpillar, digital is a new way of delivering services, improving equipment management, increasing productivity, and improving safety and sustainability – in the marine industry, alongside other industrial sectors, as Leslie Bell-Friedel, global business manager for Caterpillar Marine Asset Intelligence told the Paris symposium.

“It’s no longer a question of why, or when, but more about here and now. Any businesses that do not adopt quickly will not be competitive for very long”

Terri Lewis, Caterpillar

While data has been available for some time, the ability to efficiently and effectively analyse and use data to support decision making has only recently become a day-to-day reality.

Bell-Friedel said: “What many may not realise is how much the approach to technology adoption can impact customers’ return on [their] investment. Marine companies, like those that have come before them on the digital journey, are on the one hand failing to capitalise on the true benefit of data and analytics, and on the other hand

are experiencing higher than expected costs of implementing technology.

“Sub-optimal actions can have a negative impact on ROI – reducing the potential value while increasing potential costs substantially.”

Bell-Friedel explained that many solutions are being marketed in the industry, causing some owners and operators to struggle with understanding how one solution differs from another and which will actually drive value, as well as avoid obsolescence in the near future. This confusion leads many marine companies to continue focusing on capturing data, rather than capturing value.

Caterpillar’s solution is to bring together all of the digital solutions and services, across different value propositions and multiple industries, for one comprehensive view. At 500,000 connected assets and counting, the company is already ‘connecting’ to its customers and is committed to providing digital technologies and services to companies in the marine, as well as other, industries. It is focused on not just providing data, but tailoring advanced analytics to automatically analyse data and provide information that can be translated into action.

With more than 40m hours of analytics refinement, and 100-plus different brands of equipment from multiple manufacturers monitored across thousands of assets, Caterpillar has significant experience in the marine industry. It is using that experience to solidify partnerships by providing digital solutions and services, as well as guiding marine companies in the practical application of that technology, now and in the future.

Technology firm outsources marine gearbox production

Wärtsilä and Siemens Mechanical Drives have reached an agreement regarding the contract manufacturing of Wärtsilä's marine gearbox portfolio. With immediate effect, the assembly and testing of the gearboxes will be moved to the Siemens facilities in Voerde, Germany.

The companies say by taking advantage of synergies with processes developed at the Siemens plant, the new arrangement will secure the quality and delivery punctuality of the Wärtsilä gearboxes, and will thus

provide greater customer value. The design and technical specifications, as well as the delivery arrangements, project management, and interfacing with shipyards and owners will continue to be Wärtsilä's responsibility.

Arto Lehtinen, vice president, propulsion, Wärtsilä Marine Solutions, said: "We believe that we have found the best possible partner for ensuring that our gearbox offering is of the expected quality, and for being able to serve our customers in an efficient, reliable and on-time way.

"We wish to emphasise that it is only the production arrangements that are being revised; all the terms and conditions of our contracts with customers remain unchanged."

Felix Henseler, executive vice president, applications, Siemens Mechanical Drives, said: "We are pleased to be co-operating with Wärtsilä in the production of their marine gearboxes. The products are excellent and they fit well with our manufacturing programme at this facility."

The gearbox is an essential link between a vessel's main propulsion engine and the controllable pitch propeller. Wärtsilä's gearboxes come in both single and two-speed variants, the latter being of particular benefit to enhance the performance of certain types of vessels.



◀ A Wärtsilä marine gearbox

MoU aims to increase efficiency

Inmarsat has signed a memorandum of understanding (MoU) with Samsung Heavy Industries (SHI), establishing a relationship to leverage the connectivity offered by Fleet Xpress at the vessel construction stage.

The strategic agreement envisages the South Korean yard installing Inmarsat-approved terminal hardware and offering applications to cover remote machinery diagnostics and CCTV services, to leverage the satellite communications platform's capabilities from the moment a vessel is delivered.

The new service, which has been christened Smart Ship by SHI, will allow owners to enhance efficiency by harvesting data from hull monitors and equipment sensors on board in real time, utilising Inmarsat's dedicated bandwidth for certified application providers (CAPs).

Inmarsat Maritime president, Ronald Spithout, said: "The Fleet Xpress service allows SHI to build in new levels of vessel

▶ Inmarsat Marine president Ronald Spithout



efficiency. This agreement demonstrates that the most forward-looking shipbuilders recognise collaboration as the key to shipping's exploitation of the Internet of Things. It is also further evidence that Inmarsat and its partners are driving shipping towards value-added applications that are set to digitalise the industry and modes of operation."

Subject to a definitive agreement, SHI will retain remote connections to vessels, while Inmarsat will support its services through a dedicated CAP subscription.

Deal gives monitoring system enhanced preventative power

UK-based companies Reygar and Gill Sensors & Controls have formed a strategic partnership enabling Gill's extensive range of specialist sensors to be integrated into Reygar's BareFLEET fleet monitoring system.

The Reygar system gathers comprehensive vessel data on engine health and performance, fuel economy, heave motion, vibration, structural loading and turbine transfer activity among other parameters. Concise daily reports present this information remotely to fleet operators and their customers in a simple, easy-to-understand format across their entire fleet. Gill Sensors and Controls offers a range of specialist sensors including oil condition, ultrasonic fuel flow rate, fuel and black water tank level sensors. Integrating these into the Reygar system provides the opportunity for condition monitoring of gearboxes, non-intrusive measurements of fuel efficiency and comprehensive monitoring of bunker levels – all achieved remotely and reported automatically.

Chris Huxley-Reynard, managing director of Reygar, said "Our system is all about improving fuel efficiency and identifying machinery problems early. Integrating Gill Control's sensors enhances the preventative maintenance capabilities of BareFLEET and provides our customers with an accurate, non-intrusive option to meter fuel flow."

Middle East and south east Asia targeted

Unique Group, a leading provider of integrated subsea and offshore solutions, has entered into a co-operation agreement with UK-based company Innovo.

As part of the agreement, the two engineering and manufacturing companies will collaborate to provide sales and rental equipment and engineering solutions for the marine and oil & gas market sectors in the Middle East and Southeast Asia.

Headquartered in Aberdeen, Innovo provides high value professional services and high technology equipment for renewables, oil & gas and marine business sectors. The company is best known for designing the first fully electric-drive cable laying system.

It also offers a wide range of products, including jack-up systems that are designed and built in-house, modular pontoons and cable laying equipment, such as a powered reel drive system, spooler and modular carousel system.

The firm also provides specialised engineering solutions for subsea and offshore applications.

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Spanish yard wins new ice tug contract

A new hybrid-powered icebreaking escort tug designed by Robert Allan Ltd of Vancouver, Canada, will be built by Astilleros Gondán shipyard in Spain which was selected as the result of international competition among qualified shipyards.

The new vessel is a TundRA 3600-H class ice-breaking tug which reflects the generations of experience in the design of Ice Class vessels by Robert Allan Ltd. It is fully customised for the Swedish port of Lulea's operational requirements and is designed to perform ice-breaking, ice management, escort, ship-assist, coastal towing, fire-fighting and navigation aids service duties.

The new tug has been designed as a compact vessel capable of breaking 1m of ice at a speed of up to 3 knots. Special consideration was made for operation in the extreme climate conditions and ice-infested waters of the northern Gulf of Bothnia.

Design customisation of the tug was accomplished in close and very productive co-operation with Port of Lulea management, specialists and operators.



The hull form of this new vessel is a direct development of previous similar ice-breaking tugs developed by Robert Allan Ltd for Svitzer for service in Sakhalin, an island off the Pacific coast of Russia, and for Group Ocean of Quebec City, for service in eastern Canada's severe winter conditions. The hull structure is designed in excess of Finnish-Swedish Ice Class Rules to ensure safety during ice-breaking operations.

The vessel will be equipped with an innovative hybrid propulsion system featuring diesel main engines, shaft motor/generators, and electrical battery energy storage. The tug, which will accommodate 10 people, will be capable of operating on the electrical battery power only in transit, or utilising a single main engine in the hybrid

▲ A drawing of the new TundRA 3600-H to be built at Astilleros Gondán shipyard in Spain

diesel-electrical mode for various missions including ship assist with a bollard pull of up to 55 tonnes, or 90 tonnes on two main engines in diesel-mechanical mode, with 100 tonnes available when including battery boost capacity. The tug is designed to be connected and heated by the city district heating system and also use the shore electrical connection for recharging the batteries when at the quay. The resulting operational flexibility will yield significant fuel, emissions and maintenance cost savings. The tug will have an overall length of 36m, moulded breadth of 13m and least moulded depth of 6.7m.



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Internet giant joins drive for crewless ships



Rolls-Royce has signed a deal with Google to develop further its intelligent awareness systems which are making existing vessels safer and are essential to making autonomous ships a reality.

The agreement, believed to be the first in the marine sector, was signed at the Google Cloud Summit in Sweden. It allows Rolls-Royce to use Google's Cloud Machine Learning Engine to further train the company's artificial intelligence (AI) based object classification system for detecting, identifying and tracking the objects a vessel can encounter at sea.

Karno Tenovuo, Rolls-Royce SVP ship intelligence, said: "While intelligent awareness systems will help to facilitate an autonomous future, they can benefit maritime businesses right now making vessels and their crews safer and more efficient. By working with Google Cloud we can make these systems better faster, saving lives."

Eva Fors, head of Google Cloud sales Nordics, said: "By exploring the possibilities presented by machine learning, Rolls-

Royce can combine the latest technology advancements with its deep knowledge of the maritime industry, ultimately bringing significant improvements to the sector."

The Google Cloud machine learning engine uses the same neural net-based machine intelligence software which powers many of Google's products including image and voice search.

Machine learning is a set of algorithms, tools and techniques that mimic human learning to solve specific problems. Machine learning methods analyse existing data sets with the objective of learning to recognise patterns in training data, making predictions from previously unseen data. The bigger the data set the more complex the patterns the model can recognise and the more accurate the predictions. Today, well trained machine learning models can perform predictive analytics faster and better than a human.

Rolls-Royce will use Google Cloud's software to create bespoke machine learning models which can interpret the large and diverse marine data sets it has created.

▲ *An intelligent awareness system in action and, right, Karno Tenovuo, Rolls-Royce SVP ship intelligence*



Rolls-Royce's expertise in the maritime sector will be used to prepare the data to train models, ensuring that it is relevant and in sufficient quantity to create statistical significance. As part of the machine learning process, the models' predictions are evaluated in practical marine applications, allowing the models to be further refined.

By accessing this software through the Cloud, the models can be developed from anywhere in the world and are immediately accessible globally allowing thousands of users. Models can therefore be trained on large quantities (terabytes) of data. This will be essential as autonomous ships become commonplace.

In the longer term, Rolls-Royce and Google intend to undertake joint research on unsupervised and multimodal learning. The two companies will also test whether speech recognition and synthesis are viable solutions for human-machine interfaces in marine applications. They will also work on optimising the performance of local neural network computing on board ships using open source machine intelligence software libraries such as Google's TensorFlow.

Rolls-Royce says intelligent awareness systems will make vessels safer, easier and more efficient to operate by providing crew with an enhanced understanding of their vessel's surroundings. This will be achieved by fusing data from a range of sensors with information from existing ship systems, such as the automatic identification system and radar. Data from other sources, including global databases, will also have a role.

Important deal for OSV operator

UAE-headquartered OSV company Topaz Energy and Marine has signed a new contract with global energy giant, Total to support its operations in the Azerbaijani market.

Topaz will supply its anchor-handling vessel *Topaz Triumph* to Total E&P Absheron to service one work-over and one development well in the Absheron offshore field. It is estimated that the work will take more than a year.

First discovered in 2011, the Absheron field is being developed under an early production scheme, reflected in the development programme agreed by

State Oil Company of the Republic of Azerbaijan and contractor parties.

Topaz already has a global relationship with Total which has been established through successfully supporting the oil giant's operations in West Africa and the Middle East. Azerbaijan has also been an important market for Topaz.

Topaz CEO, René Kofod-Olsen, said: "This is a significant contract for Topaz. Our record of providing solutions with focus on safety and value across our operations has helped us secure this nomination and we look forward to delivering."

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Ecuadorian Navy vessels include innovative technological projects developed with national talent.



With a history of more than 40 years in the shipping market, ASTINAVE EP, the leading national shipyard in the construction of ships for defence, security and the maritime industrial sector, has contributed efficient support to the armed forces, enhancing the work of the Naval High Command.

In 2005, the Ecuadorian Navy made an important step in the process of strengthening the defence industry. The incorporation of the Directorate of Naval Research and Development (DINDES) into the organisational structure of ASTINAVE,

which was constituted as a public company in 2012, allowed the creation in 2007 of an 'Electronic Solutions' division, which endowed the shipyard with the full capacity to cover the modernisation and production of naval defence units.

The installed capacity of ASTINAVE EP and the efficient use of it, has enabled it since its creation, to build more than one hundred ships for the Ecuadorian Navy; in the commercial field, it is allied to 11 projects involving the recovery and modernisation of naval units as well as the implementation of electronic solutions for the armed forces.

In a progressive way, ships of greater tonnage and complexity have been built, with the execution of construction projects of coastguard vessels ranging from 13m through to 26m and now surpassing 50m. Added to all this, are a significant number of non-military vessels.

The main characteristic of ASTINAVE EP's production is the personalisation of each product and service for the client, subject to the methodology engineering to order that allows the achievement of the highest satisfaction and quality in every detail.

Since 2007, Electronic Solutions constitutes one of the leading shipyard business lines in the naval market, from which the ORION CMS products and services family was created. This has operated since 2014, functioning as a command and control solution, conceptualised, designed and implemented in the company, allowing re-creation and simulation of scenarios, for detailed evaluation and training purposes, thus contributing to the improvement of operational performance at all levels.

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Pusher gains elevated view of the Caspian

Thecla Bodewes Shipyard in Kampen, the Netherlands, has delivered an Ice-classed multi-purpose shallow draft pusher tug to owners Silverburn Ltd. Named *Wenna*, the owner-designed vessel is the leader in a series of three destined for the Caspian Sea, where it will be the first to feature a wheelhouse which can be elevated by some 3m for ease of viewing over high cargo barges.

The fitting of a waterfall configuration winch with capacity for 2 x 750m of wire, towing pins and a crane justifies the multi-purpose description. The vessels will be operated by the Moscow-headquartered Morwenna Shipping.

Classed by Bureau Veritas for unrestricted navigation with Ice Class and anchor-handling notation, *Wenna* measures 40.6m LOA with a beam of 13m and a maximum draft of 2.6m. It is powered by a pair of Cummins QSK-60 main engines, each developing 1,268kW. These turn 1,800mm diameter four-bladed propellers inside steering nozzles – all manufactured by Dutch company Sip Marine BV. The design bollard pull was 35 tonnes but the actual performance is believed to be nearer 40 tonnes.

The maximum speed is quoted as being 14 knots. Other below deck items include two 248kW Cummins auxiliary generator sets powered by QSK50 diesels and a Veth VT-180 bow thruster. An emergency generator is located on main deck.

The accommodation is to a high standard and provides quarters for 20 people in 10 en-suite cabins, although the normal crew is stated by the owners as 12. Two mess rooms are provided, each located either side of the central galley; one is for the officers, the other for the crew.

The wheelhouse is well equipped with items by JRC including two radars, echo sounder, Navtex and log. The plotter and GPS are from Sailor, while Raytheon provided the autopilot. Sailor also supplied the VHF, MF transceiver and the GMDSS.

The deck machinery items include the



main 35-tonne winch from C-Nautical of the Netherlands and a 10-tonne tugger winch by the same manufacturer. Each drum of the main winch is capable of holding 750m of 40mm wire. The deck crane is by Heila and is capable of lifting 13.5 tonnes at 5m or 3 tonnes at 16.9m. The vessel has a stern roller and Karm forks are available.

Each of the pusher tugs has capacity for 228m³ of fuel oil, 34m³ of potable water and has a deck area of 140m² of 5 tonnes/m² strength.

The construction methods employed by TB Shipyards are the most modern available with an extensive building hall to ensure fast construction unaffected by the weather and guaranteeing a better quality of welding, construction and painting. The yard expects the second vessel in the series to be delivered shortly.

Silverburn Shipping Group's activities include towages of all kinds through (but not exclusively) the Russian inland waterways

and seas such as the Caspian, Baltic, Black and Azov. At present it operates a fleet of 17 tugs, 19 barges, two tankers and two accommodation vessels.

Commercial manager Jon Townley said of the company's newest arrival: "We are very pleased with her, and her sister is due for delivery in spring with the third one to be started in 2018, all going well. This depends on the market and other projects needing the finance, but we have an intention to build a series of these to replace our ageing river fleet over time.

"Our intended use is in the Caspian Sea and any other shallow draft areas where there is ice risk as this gives us the best rates of return. The design criteria was a multi-role ice-classed pusher tug so she is designed to operate in the Russian river system, has anchor-handling notation and unlimited navigation, so as time goes by we can explore all possibilities for future business."

Andy Smith





ISA Towage (formerly known as VOF Sleepboot ISA) has taken delivery of a Shoalbuster 3209 from Damen Shipyard Hardinxveld. The vessel was already in stock at the yard and was handed over to the client within four weeks of the order being agreed.

Measuring 32.27m overall by 9.35m with a draft aft of 3.3m, the new vessel, which has been named *Isa*, is powered by a pair of Caterpillar type 3512C TA/HD main engines, each developing 1,305bkW at 1,600 rev/min. These turn Promarin fixed pitch Optima propellers inside 2,250mm diameter Van der Giessen nozzles via Reintjes type WAF773 gearboxes with a 6.44:1 reduction ratio. The generator sets are twin C4.4s also from Caterpillar. A 275kW bow thruster is also fitted. On trials the vessel attained a bollard pull of 52 tonnes and a maximum speed of 11 knots. The Bureau Veritas-classed vessel has capacity to carry 220m³ of fuel oil and 40m³ of fresh water.

The purchase of the 3209 by ISA Towage marks the swift return of the Dutch towage and marine assistance company to Damen

Increased bollard pull opens up further contract options

following the delivery of a smaller version in December 2016, its first purchase from this builder.

This new larger vessel is now working on a contract in Germany and is suitable for operations such as towing, mooring, pushing, anchor-handling and dredging support, thanks to an equipment package specified by the client that includes an HS Marine deck crane giving eight tonnes of lift at 16m, and a 50-tonne towing winch from DMT Marine Equipment, a 12-tonne tugger winch by Dromec and towing pins from WK Hydraulics.

The fully air-conditioned interior has comfortable accommodation for up to seven crew (including a single en suite cabin for the captain), all on the main deck with the galley and mess on the forecabin deck.

The wheelhouse is well equipped and features a horseshoe shaped console forward and additional bench-type seating for crew or passengers in the rear starboard quarter. The electronics fit-out is comprehensive and includes watch alarm, radar, DGPS, PC ECDIS, AIS and Navtex, echo sounder and speed log from Furuno, an SSB pair of VHF's and two Inmarsat Cs by Sailor. The gyrocompass is from Anschutz and the autopilot is a Seapilot 75.

"We're delighted that ISA Towage has returned to us so soon," said Jos van Woerkum, managing director of Damen Shipyards Hardinxveld. "Willem-Harm Mastenbroek, owner and managing director of ISA Towage, was able to take advantage of a great deal and immediate availability to provide an enhanced capability to his clients,



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and it is very gratifying to welcome back him and ISA Towage BV to the Damen family.”

Mastenbroek said: “When in July, Jos van Woerkum offered us the opportunity to upgrade to a Shoalbuster 3209 that had just been completed and completely outfitted at the shipyard, it was just too good to miss.

Our current client at the time had recently informed us that our existing vessel did not have sufficient bollard pull for their next contract and that 50 tonnes of bollard pull would be needed. So the decision to make the step up to a bigger vessel with more capabilities was easily made. The new 3209

has now replaced its predecessor in the Baltic Sea, and we look forward to the new and better opportunities and different types of contracts that will open up for us.”

Based in Wijk bij Duurstede in the Netherlands, ISA Towage undertakes projects across Europe and into Asia. **AS**

Final Silver Bullet duo fired into operation at UK ports

The powerful terminal support/escort tugs *Svitzer Avon* and *Svitzer Marton* departed one of Sanmar's Turkish, custom-built shipyards in rapid succession to head for ports in the UK – the former for Bristol, the latter for Middlesbrough. These two vessels are the final pair in a six tug construction contract for customised Robert Allan Ltd RAstar 2800 class designs for Svitzer's 'Silver Bullet' fleet replenishment programme which began with *Svitzer Hermod* (pictured above).

All six vessels have been fully adapted to suit Svitzer's very specific operational requirement, and have been ABS classed with an LOA of 28.2m, an extreme moulded beam of 12.6m and a maximum draft of 4.12m. In common with all the RAstar designs, the tugs feature a sponsoned hull form which has proven in both full-scale and model testing to provide specifically enhanced escort performance and seakeeping performance, particularly in weather exposed areas. Roll motions and accelerations are claimed to be significantly less than those of comparable sized standard tug hulls.

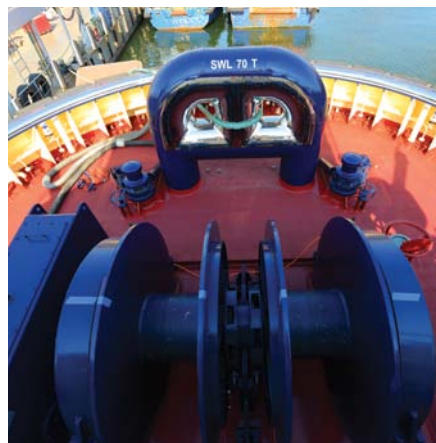
Main propulsion for both tugs comprises a pair of MTU 16V4000 M63 diesel engines, each developing 2,000kW at 1,800 rev/min and each driving a Schottel SRP 460

(formerly known as SRP 1515) fixed pitch Rudderpropeller unit with slipping clutch, in conventional ASD configuration. The 2,700mm diameter propellers are surrounded by Kort nozzles with stainless steel inner faces. A carbon composite shafting system designed specifically for these vessels has been employed. The resultant bollard pull is in excess of 70 tonnes ahead and the maximum free-running speed is 13.5 knots. The electrical plant comprises two identical Caterpillar C4.4 diesel generator sets, each with a power output of 86ekW.

The vessels have been arranged and outfitted to a high standard with eight crew berths in total. All cabins benefit from having en suite facilities. The two single officer cabins are located on the main deck and three double crew cabins are located on the lower accommodation deck, as is the laundry. A fully-appointed mess/lounge and a modern fully-equipped galley are also positioned on the main deck.

The tugs are designed to provide ship handling and ship assist work performed over the bow utilising a DMT double drum hawser winch with a brake holding load of 170 tonnes. Each drum carries 150m of 76mm rope. Towing operations are carried out off the aft deck using a Data Hidrolik quick release towing hook. A 5-tonne capstan from the same manufacturer is mounted on the tow post. A Palfinger deck crane with a 1 tonne at 18m lifting capacity is also fitted on the aft deck.

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. Furuno supplied the bulk of the electronics including satellite compass, two X-band ARPA displays, echosounder, speed log, DGPS, AIS, ECDIS, BNWAS, VHF/DSC, Navtex and Mini-C Inmarsat. Exceptions comprise a Raytheon Anschütz autopilot, Sailor GMDSS, EPIRB and SART.



Trelleborg, which is Svitzer's preferred manufacturer, supplied the fendering to the vessels. At the bow this consists of one row of cylindrical fender at the main deck level, 800mm OD x 400 mm ID. A 300mm thick W block fender is arranged below the cylindrical fender. Two strakes of 300mm x 300mm hollow D fender provide protection at the main and forecastle deck sheer lines, and a 300mm thick W-fender is used at the stern.

Sanmar has adjusted the tank capacities

on this project to meet the customer's requirement to allow for 112m³ of fuel oil, 14m³ of potable water and 4m³ of foam.

During the course of executing this contract, Sanmar reached a significant milestone by completing its 150th tug designed by Robert Allan Ltd. Furthermore the company has announced that it has received an additional order to build four slightly larger, more powerful ASDs for a Svitzer operation in Morocco. AS



Versatile performer designed to cope in ice



The Atlas Shipyard in Turkey has delivered a shallow-draft anchor-handling tug supply vessel designed by Offshore Ship Designers (OSD) to Russian inland waterways operator and offshore logistics service provider, Ark Shipping.

The AHTS, which has been named *Antarctic*, was designed in close co-operation with the owner, but is partly based on the design of another OSD-designed ship, *Arctic*, which was delivered to Ark Shipping in 2012. The DP1 vessel has a Bureau Veritas Ice Class notation, and is fully equipped to operate in the challenging and extreme conditions of the Caspian Sea, where ice formation of around 80cm during the winter period is not exceptional.

Construction of the hull from special-grade steel will enable the new vessel to endure minimum temperatures of -25 to -30 degrees C. Hull construction, meanwhile, has been optimised to create a relatively low-weight hull for an Ice Class 1A vessel.

Measuring 66.29m x 16.5m with a design draft of 3.8m, *Antarctic*'s large breadth forms a stable platform for standby rescue, supply and anchor-handling operations under extreme conditions.

The vessel can supply and load different cargoes such as cement, liquid mud, fuel oil, fresh water and black water. The minimum

draft in a light operating condition of approximately 2.5m facilitates access to the shallower parts of the Caspian Sea.

Power is derived from a triple engine, gearbox and propeller system, each line comprising a 1,864kW Cummins QSK60-M diesel, Reintjes type LAF 873 gear and Caterpillar Propulsion CP propeller of 2,100mm diameter. Kort nozzles are fitted to all three. The resultant bollard pull is 70 tonnes and the maximum free-running speed is 12 knots. Other engine room systems include a trio of Cummins QSM11-driven generator sets, each of 250kW, and a 370kW bow thruster from Caterpillar Propulsion.

Antarctic has a Standby Rescue Vessel class notation for 100 survivors. An innovative accommodation design offers sufficient room for survivors and ensures proper sanitary facilities. Additional space for these survivors is provided by using the gymnasium (with attached sauna). En suite cabins are incorporated for up to 21 crew and passengers in 10 cabins alongside a hospital, two mess rooms (officers and crew), galley and laundry. In addition, a generous changing room has its own shower and toilet facilities with easy access from the main deck.

The deck machinery items include a Cargotec main winch with a brake load of 170 tonnes and two drums in waterfall

configuration holding 750m and 500m of 52mm wire. Cargotec also manufactured the stern roller which has an SWL of 170 tonnes. The vessel is also fitted with a Heila type HLRM 200/18-4SL marine crane having the capability to lift 6 tonnes at 18m.

The vessel has capacity for 250 tonnes of deck cargo and tanks for 560m³ of fuel oil, 160m³ of fresh water and 180m³ of bulk/mud/recovered oil. Some 300m³ of ballast water can also be accommodated.

OSD managing director Michiel Wijsmuller said: "Ark Shipping has been operating vessels in the Caspian Sea for almost 30 years, establishing a reputation for excellence and innovation. It must meet the requirements of the major oil & gas companies in the area, so it is always looking to push the boundaries of orthodox technology to provide high-quality vessels which operate in an efficient and safe manner in difficult environments. We are delighted that Ark returned to OSD for its latest vessel, which adds to our continually expanding design portfolio."

Established in 1913, Atlas Shipyards has a long tradition in manufacturing, building and repairs, technical experience and know-how, combined with robust, high-end shipyard construction. The yard has 1,000m² of land and 250m length of quay. AS

Novel pushers aiding bridge construction

Quebec, Canada-based marine services company Ocean Group has built for itself at its own yard, two innovative aluminium catamaran pusher tug/workboats with 16.16m long hulls. Designed in-house to assist in marine construction projects, including those where the water may be relatively shallow, *Ocean Catatug 1* and *Ocean Catatug 2* have an effective maximum beam of 9.46m and a working draft in the region of 1.7m.

Despite the compact size and very shallow draft, the tugs pack a considerable punch, as each hull houses a Caterpillar C18 diesel engine developing 715hp at 2,100 rev/min to give a bollard pull of 12 tonnes and a maximum free-running speed of 16 knots. The auxiliary is a 13.5kW Caterpillar engine. The main engines drive 1,118mm diameter Michigan Wheel propellers via Twin Disc reverse reduction gearboxes.

Originally conceived to provide barge handling and other support work for the multi-billion dollar Champlain Bridge project to improve access to Montreal across the St Lawrence River, other features include strengthened hulls to enable work to carry on in light ice, a raised wheelhouse



for greater visibility over laden barges and a shaped and offset wheelhouse support tower to leave deck space for cargo (3 tonnes/m² to a maximum of 15 tonnes). As well as

featuring lifting eyes for dry-docking in one piece, the vessels can be 'un-bolted' into five sections for easy transportation by road or rail. This attribute may be important when the Champlain Bridge – one of Canada's largest ever civil engineering projects – is completed in late 2018.

Deck machinery items include a Palfinger PK6500m crane with a lifting capacity of 1.5 tonnes, two Rotzler 3-tonne winches and a Mampaey towing hook. The hulls are protected by D-shaped fendering by Lion Rubber Industries.

The boats have a full array of electronic equipment mainly from Raymarine, including AIS and two sets of radar. The VHF is by Icom.

Ocean's Philippe Filion told *IT&O* that the design was: "Essentially to keep, as much as possible, its bollard pull capacity in the high current as compared to a single hull. Furthermore, the width provides better manoeuvrability and stability. The lighter weight of aluminium enables it to draw less water." AS



First of four for Ohio and Mississippi Rivers

Alabama-based Master Marine Inc has delivered the first of four 67ft x 28ft (20.5m x 8.5m) tow boats to Waterfront Services Co, which is headquartered on the bank of the Ohio River at Cairo, Illinois, near its confluence with the Mississippi. The vessels have been designed by Entech Designs of Kenner, Louisiana.

The new boat, named *Miss Deborah*, and its subsequent sisters are powered by a pair of type S6R2-Y3MPTAW Mitsubishi Tier III diesel marine engines supplied by Laborde Products from its Louisiana base. These units

each develop 803hp at 1,400 rev/min and are coupled to MG 5321 gearboxes with a reduction ratio of 5:1 and EC300 electronic controls – both supplied by Twin Disc. Fernstrum furnished the keel coolers for both the main engines and the two 65kW Northern Lights type M65C13.2S Tier III electronic controlled generator sets.

A pair of Sound Propeller Services 70in (1,780mm) diameter four-bladed stainless steel propellers provided thrust through propeller shafts with Thordon bearings. Gulf Coast Air & Hydraulics provided the

steering system and a pair of Quincy F325 reciprocating air compressors.

Schuyler Maritime provided the rubber fendering around the entire perimeter of the vessel and the push knees. Dickson Marine Supply supplied a pair of Wintech 40-tonne deck winches and New World provided all of the electronics and communications for the vessel.

All of the boats will be set up with 39.4m³ of fuel, 16.5m³ of potable water and 35m³ of ballast water along with providing a maximum 7.75ft (2.36m) working draft.

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Bayou la Batre, Alabama-based Master Marine has delivered some 336 vessels to marine industry companies, individuals, and government agencies on the east, west and Gulf coasts of the US, as well as Alaska, the northern coast of South America, and the west coast of Africa. The reference list covers commercial vessels large and small, with special project and government vessels in steel and aluminium, including offshore

utility vessels and tug boats, inland towboats, lugger tugs, and barges working the Gulf of Mexico, the Intracoastal Waterway and Inland River System.

The company's business development and sales manager, Steve Authement, said that his company is very happy to be teaming up with Waterfront Services Co, providing them with their latest fleet boats with the best heavy-duty equipment available for these vessels

while meeting Subchapter M requirements.

He explained to *IT&O*: "Some vessels, such as *Miss Deborah*, will be arranged as a fleet boat with a smaller galley and a locker room; the others will have three crew staterooms for five to six crew members for conventional towboat services. This vessel has a partial galley and the rest will have a conventional galley for full crew services."

AS

Second of quartet made in Brazil for Brazil

SAAM Smit Towage in Brazil has taken delivery of the second of four new Damen-design tugs being built in country by Wilson Sons shipyard. SST Aruá has entered service with the joint venture operator, joining SST Aimoré, which was delivered in June.

Built in Guarujá, near São Paulo, the Damen ASD 2411 vessel measures 24m x 11m and boasts a bollard pull of 71 tonnes

and a free-running speed of 13.2 knots. Main propulsion comprises twin Caterpillar 3616C engines, each delivering 2,100kW at 1,600 rev/min and driving Rolls-Royce US255 azimuth thrusters.

Adalberto Souza, director of Wilson Sons shipyard, said: "It took just over 18 months to deliver the second tugboat from the moment of signing the contract. In a challenging time for the shipbuilding industry, Wilson, Sons

shipyard could again show their strength and resilience."

For SAAM Smit Towage Brazil, CEO Pieter van Stein said: "Again, we are very satisfied with this co-operation, with the quality of the vessel and with the commitment of Wilson, Sons shipyard in the anticipation of these deliveries, which will begin to operate in the port of Santos."

In addition to the further two ASD 2411 tugs for SAAM Smit Towage Brazil, the yard also has orders for two tugboats for delivery by 2019 for sister company Wilson, Sons Rebocadores.

John Oliver



Tier 4 not Tier 3

Our report on the delivery of the tug *Capt Brian A McAllister*, in the September/October issue of *IT&O*, included details of the Caterpillar auxiliary engines and stated that EPA Tier 3 were the highest level currently available for that size of Caterpillar engine. In fact, the dedicated fire pump diesels fitted to the vessel are Tier 4. We apologise for the inaccuracy.

Deliveries in brief

The Robert Allan Ltd-designed Rampart 3200CL vessels **CMM Cordobés** and **CMM Chapulín** sailed through the Panama Canal en route from **Cheoy Lee Shipyard** in Hong Kong to their new home port of Coatzacoalcos on Mexico's Gulf coast. Towing company Boluda Group has taken delivery of the two new vessels through its Mexican subsidiary, Compañía Marítima Mexicana (CMM).

Both the 32m x 12.4m berthing terminal ASD tugs feature twin Caterpillar 3516C main engines delivering 2,682hp at 1,600 rev/min and driving Schottel Rudderpropeller 1515 fixed pitch thrusters. Auxiliary power is provided by two 118kW-rated Caterpillar C7.1s. Free running speed is 13 knots and bollard pull is 78 tonnes.

Forward and aft single drum towing winches are from MacGregor, while Palfinger supplied the deck crane. The tugs have a Lloyd's Register FiFi1 notation thanks to a 2,400m³/hour FFS fire-fighting system comprising two monitors and a single pump, the latter driven by the starboard main engine.

Accommodation for 10 crew comprises two single cabins with shared facilities on the main deck – which also houses the galley and mess room – while below deck are four twin cabins with shared facilities, plus a laundry room and provisions store.



US offshore support operator Harvey Gulf International has taken delivery of its fourth LNG-powered OSV, which immediately went to work on a five-year charter with a major oil & gas company in the Gulf of Mexico.

Harvey Freedom, built by **Gulf Coast Shipyard** in Gulfport, Mississippi, measures 310ft x 64ft (94.5m x 19.5m) and has an all-Wärtsilä dual-fuel propulsion system comprising three Wärtsilä 6L34 main engines and two Wärtsilä FS3000-S/WN azimuthing propellers in nozzles delivering 7,241hp. Twin Wärtsilä bow thrusters provide 1,992hp. Maximum speed is given as 14 knots with a cruising speed of 12 knots.

A 974.1m² deck area can take 4,537.5 tonnes of cargo. The vessel has a DP-2



notation with a Kongsberg K-Pos dynamic positioning system. Other onboard electronics are mainly provided by Furuno. Accommodation for 42 people is in 19 air-conditioned cabins – two single berths, 14 twin-berths and three four-berths.

In addition to running on LNG, the **Harvey Freedom** is ENVIRO+, Green Passport certified by ABS, making the vessels and sister ships the most environmentally-friendly OSVs in the Gulf of Mexico, according to the company.

"The delivery of **Harvey Freedom** and commencement of her five-year charter shows Harvey Gulf's continued commitment to the environment and the success of LNG power in our industry," said chairman and CEO, Shane Guidry.

The arrival of two new **Damen ASD 2913** tugs has boosted capacity in two ports for European tug operator Kotug Smit Towage. **Rotterdam** is operating in the Port of Rotterdam in the Netherlands while **Southampton** has started work in the Belgian port of Zeebrugge.

Both 29.1m x 13.2m vessels are powered by twin Caterpillar 3516C main engines delivering 6,772hp at 1,800 rev/min. These are driving two Rolls-Royce US255 thrusters linked to 2,800mm diameter fixed-pitch propellers. The combination gives the two tugs a top speed of 13.6 knots and a bollard pull of 80 tonnes. **Southampton** is also fitted with a FiFi1 system.

Rotterdam and **Southampton** were delivered from stock and bring the number of Damen-built vessels in Kotug Smit's



fleet to 21 out of a total of 69. A 22nd tug is due to enter service by the end of the year with the arrival of a 70-tonne bollard pull Damen ATD 2412.



DOF's new multi-purpose vessel **Skandi Vinland** went straight off to work on a long-term contract on delivery from **Vard Langsten** in Norway, where it was fitted out following hull construction at the **Vard Braila** yard in Romania.

The 93.2m Vard 3 08-design vessel was built to fulfil a 10-year contract with Husky Energy and is now working off the east coast of Canada supporting subsea intervention, repair and maintenance programmes.

Its six main engines deliver a total of 13,360kW of power, capable of achieving 115 tonnes of bollard pull. Onboard equipment includes an offshore crane with 100-ton capacity and two deck cranes each with a 3-ton capacity. The 715m² of deck space has a capacity of 1,400 tonnes, while below deck there is accommodation for 55 personnel.

Skandi Vinland is Canadian-flagged and its notation includes Ice Class 1C, Oil Recovery and FiFi1. The vessel is owned by Canadian Subsea Shipping Company, a wholly-owned subsidiary of DOF Subsea.

Commenting on the contract – which includes options for Husky to extend it for a further 10 years – DOF Subsea CEO Mons S Aase said: "This is a cornerstone contract for the group with high strategic importance through the strengthened presence in the North America subsea region."

French offshore energy support contractor Jifmar Offshore Services has taken delivery of a new multi-purpose workboat from Dutch shipyard **Neptune**. **Jif Marlin** is a versatile EuroCarrier 2712 capable of carrying out pushing, mooring, anchor and hose handling, dredger service, towing and survey work.

The 27m x 12.6m vessel is powered by two Caterpillar C32 main engines each producing 970kW at 1,800 rev/min, linked to a Twin Disc MGX 5321 gearbox and giving a cruising speed of 8 knots. Generators, also by Caterpillar, comprise three C9s delivering 200kW at 1,500 rev/min and a single 83kW-rated C4.4. Single thrusters at the bow and stern generate 300kW and 250kW respectively and are attached to 1,850mm diameter propellers. Bollard pull is in excess of 35 tonnes.

Deck equipment includes an anchor handling winch, towing winch and tugger winch plus two Heila hydraulic cranes. The 138m² free deck area can take 8.5 tonnes/m² with a maximum deck load of 95 tonnes.

Modifications to Neptune's standard EuroCarrier 2712 design for Jifmar include increasing the accommodation capacity from seven to 16, including crew, with shared facilities.



Canadian offshore operator Horizon Maritime is now the proud owner of its first vessel. **Horizon Star**, a 102.8m-long subsea intervention and offshore field support vessel, has been delivered to the company and has started work operating out of the Newfoundland port of St John's on Canada's Atlantic coast.

The MT-6015 design by Norwegian design company Marin Teknisk was built at **Kleven Verft** in Norway. The ship is capable of 14.6 knots and has accommodation for 60 people. Equipment includes two high-speed rescue vessels, an iceberg and emergency towing winch, helicopter pad, a crane with a capacity to reach 3,000m depths and a lifting capacity



of 150 tonnes, and a moon pool. Roles include oil spill recovery and fire-fighting.

Formed in 2015, Horizon Maritime until now has crewed and operated vessels for other owners. The purchase of **Horizon Star** is the next stage of the company's growth plan. Graham Curren, VP of business development, said the new arrival is "the most versatile, capable, modern vessel in the market".



Saudi Arabia-based Murjan Al Sharq Marine Services has added dredging to the capabilities of its newest vessel, a versatile Damen Multi Cat 1908 called **Murjan 40**. The 19m x 8m workboat is also capable of towing, pushing and anchor-handling duties, while its dredging potential is particularly suited to shallow water operations.

Murjan provides marine construction and maintenance, dredging, diving and subsea services in its home country as well as elsewhere in the Middle East. The contract for **Murjan 40**, the company's first Damen vessel, included the installation of a Damen DOP 250 submersible dredge pump – with a 1,250m³/hour capacity – and a spud system that removes the need for a complex 4-point mooring system when dredging in shallow waters.

The Multi Cat 1908 has Caterpillar main engines and generator sets, Reintjes gearboxes and Kaplan fixed pitch propellers in Van de Giessen 1,350mm diameter Optima nozzles. The combination gives **Murjan 40** a maximum speed of 9.2 knots and a bollard pull of 12.3 tonnes. A Heila hydraulic deck crane, with a 6.7-ton lifting capacity at 10.7m, will be used to lower the DOP pump into the water and handle the spuds.

Speaking at the vessel's handover at **Damen Shipyards Hardinxveld**, Murjan chairman Abdullah Natheer said: "By adding a DOP pump to a Multi Cat, we instantly have a dredger – but a dredger which can also undertake the full range of tasks the Multi Cat can do as well."

OSVs **MMA Prestige** and **MMA Pinnacle** have been earning their keep for Australia-headquartered owner MMA Offshore since entering service earlier this year. The sister vessels – designated DP2 ROV subsea operation vessels – were built

at the **JAS** shipyard in Batam, Indonesia.

With an LOA of 87.8m, the OSVs both feature a Rolls-Royce propulsion system comprising four 2,560kW main engines, three 1,000kW tunnel bow thrusters and two 2,050kW azimuth thrusters. These combine to give the vessels a maximum speed of 12 knots and an economic sailing speed of 10.5 knots.

Deck equipment includes an AHD hydraulic knuckleboom main deck crane supplied by MacGregor – with a 100-ton capacity on **MMA Prestige** and 150 tons on **MMA Pinnacle**. MacGregor also supplied two tugger winches and two capstans, while TTS provided an auxiliary deck crane. The helideck – suitable for a Sikorsky S92 helicopter – was supplied by Aluminium Offshore.

Onboard sleeping accommodation is provided for 100 people in a range of single-berth, twin-berth, three-berth and four-berth cabins, all fully air-conditioned and with attached washrooms. Other facilities include gym and recreation room – with a cinema – operations room, offices and a workshop.

A total 1,100m² of deck space can accommodate 1,400 tonnes of deck cargo with a maximum loading of 10 tonnes/m².



Fincantieri Bay Shipbuilding (FBS) has delivered the second of two articulated tug barge (ATB) units to Kirby Corporation, the largest tank barge operator in the US. **Paul McLernan** is a 6,000hp tug measuring 123ft x 38ft (38.7m x 11.7m) and equipped with state-of-the-art navigation and communications technology.

Its role is towing the 155,000bbl barge **155-02**, purpose-built to carry petroleum or chemical cargoes domestically.

Kirby transports bulk liquid products throughout the Mississippi River System, the Gulf Intracoastal Waterway, along all three US coasts and in Alaska and Hawaii.

US-based FBS is a subsidiary of Italy's Fincantieri Marine Group and delivered the first of this latest two-unit order to Kirby late last year, having previously built several in the mid-2000s.

John Oliver



New ISU president takes over helm at AGM

General manager of the offshore and salvage division of Spanish company Boluda Corporación Marítima, Charo Coll, was elected as the new president of the ISU at its annual meeting in Singapore.

She succeeds John Witte, who will continue as a member of the organisation's executive committee. Witte said: "It has been a privilege to be the president of ISU and to represent the interests of all our members as we have tackled the major issues facing our industry. The ISU's own statistics show that our members are facing difficult economic times and there is little expectation of rapid improvement. However, we are a vibrant industry and we continue to provide vital services. I am pleased to hand over the presidency to Charo and I know she will be a strong leader."

Coll said: "I would like to thank John Witte for all that he has done for the ISU over the past two years: he has shown great dedication to the role. For my part it is a great honour to be the president of the ISU and I look forward to leading the association as it continues to address the current challenges, in particular, enhancing the reputation of the industry and strengthening further our relationships with ship owners and insurers."

Coll has more than 25 years' experience in the industry, co-ordinating the salvage division of Boluda Corporation. In this role she managed the Boluda tugs engaged with the Spanish Maritime Safety Agency for 15 years. She also manages the chartering



and sales and purchase departments of the corporation.

Coll grew up in Valencia, Spain. She holds a specialist degree in international maritime law from the Comillas Pontifical University of Madrid and a ship management diploma from the International Ship Managers' Association at the National Sea Training Centre in the UK. She has also attended numerous seminars at the Lloyd's Maritime Training Programme as well others at the Instituto Marítimo Español.

A former president of the European Tugowners Association, Coll has been a member of the Valencian Chamber of Commerce and the Women's International Shipping and Trading Association.

She was recently honoured with the Valencian Government Business and Social Achievement Award, presented by the

▲ Left to right, Charo Coll, Richard Janssen and John Witte

president of the Valencian government.

At the same ISU meeting, Richard Janssen, managing director of Smit Salvage, was elected vice president. Janssen has 20 years' experience of the marine salvage, towage, offshore and energy sectors, including involvement in many well-known salvage and wreck removal cases such as *Kursk*, *Tricolor*, *MSC Chitra*, *Troll*, *PN6* and *Modern Express*. Janssen studied business in Rotterdam and has undertaken a number of international commercial, contracting, subsea engineering and management courses. He was a member of the ISU's salvage sub-committee and has been a member of its executive committee since 2015.

'Operators need strong, professional salvage industry'

Outgoing ISU president, John Witte, told the organisation's annual meeting that its members represent the best way for ship owners and insurers to limit their losses from marine casualties.

He said: "It is no secret that the salvage industry is experiencing significant commercial pressures. ISU's most recent industry statistics (2016) show a fall in revenues from all sources of nearly 50 per cent on the previous year. Nevertheless, it is absolutely clear to me from the discussions

we have had here in Singapore that this remains a vibrant industry.

"Many of our members have substantial assets and experienced personnel at their disposal and are willing to take on the financial risk of providing services in dangerous and uncertain circumstances."

The ISU has 58 full members from all around the world, many of them represented at the annual meeting held in Singapore in September. All ISU members have to demonstrate a track record in salvage as a

lead contractor. ISU also has more than 80 associate and affiliate members representing a range of supporting industries and professions.

Witte said: "We know our members are not only competing against each other but also against more opportunistic operators; the under-utilised offshore sector and so-called consultants who might assemble a team and gear on a case by case basis.

"However, ISU believes that ship owners and their insurers benefit in individual cases – and in general – by supporting a strong, professional salvage industry and members of the ISU."

Witte noted, for example, recent cases of giant containerships grounded in the approaches to both Hamburg and Antwerp and in which ISU members were able to use their experience and assets to refloat the casualties, avoiding potentially huge interruptions to trade in those key ports.

He said: "There is a point of difference between our members and others offering salvage services, and ISU will continue to work with ship owners and property and liability underwriters to ensure that the value of this vital industry is properly recognised."



◀ The successful refloating and salvage of the stricken car and truck carrier *Hoegh Osaka*, grounded after leaving the Port of Southampton, UK, in 2016, is an example of the need for a strong, professional salvage industry



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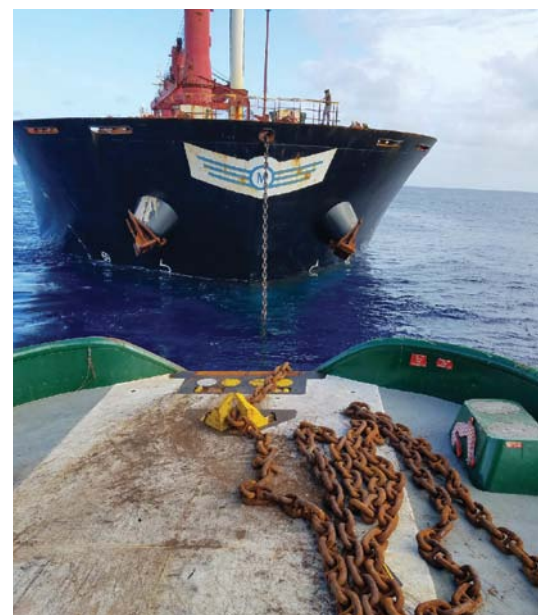
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Salvors come to aid of immobilised bulkers



Greece-headquartered Tsavlis Salvage assisted several bulkers and a general cargo ship immobilised due to engine or generator failure during the third quarter of the year, its latest activity report reveals.

Its AHTS vessel *Uos Explorer* was dispatched from Limbe, Cameroon, to come to the aid of the 22,456gt bulk carrier *Rainbow Harmony* which was immobilised around 300 miles west of Luanda, Angola, on 14 June by the failure of its generators. On passage from Panjang, Indonesia, to Brake, Germany, it was laden with 32,000 tonnes of palm kernel expeller.

The salvors arrived at the scene on 22 June and established a towline, which meant towage to Walvis Bay, Namibia, could start the same day. On arrival the salvage tug provided standby services while the bulker's generators were repaired.

Tsavlis dispatched the 103-tonne bollard pull 8,046bhp tug *Hispania* from Ceuta, Spain, to assist the 39,727gt bulk carrier *Navios Orbiter* which was immobilised 64 nautical miles off the coast of Portugal after



suffering a mechanical failure on 12 July.

After picking up the vessel owners' superintendents at Gibraltar, the tug arrived at the casualty scene and connected a towline. The stricken bulker was towed to Lisbon where two port tugs assisted it into the inner anchorage.

Meanwhile, the 5,469gt general cargo vessel *Mistral* encountered problems with its main engines while transiting the Dover Strait on 20 July and anchored in the English

▲ Clockwise from top left, the bulk carrier *Navios Orbiter* is assisted by *Hispania*, the bulk carrier *Triumph* is towed by *Michelle Foss* and *Rainbow Harmony* is towed by the AHTS *Uos Explorer*

Channel 19 miles north east of Dover. It had been en route from Constantza, Romania, to Hamburg, Germany, and was laden with 5,000 tonnes of corn.

Tsavlis was contracted to provide assistance and established direct contact with the UK Coastguard and the 62-tonne bollard pull 4,000bhp tug *Lingestroom* was dispatched from off Cherbourg, France, to assist. On arrival, the tug established tow connection and commenced towage to Hamburg, arriving that evening at Elbe pilot station, where a pilot boarded and a stern tug was connected. The convoy arrived at Hamburg on 24 July where *Mistral* was berthed with the assistance of port tugs.

A main engine malfunction was also the cause of the 40,357gt bulk carrier *VSC Poseidon* having to anchor north of Salvador, Brazil, while laden with 54,000 tonnes of shoal creek coking coal.

Tsavlis was contracted to provide assistance and the 60-tonne bollard pull tugs *TS Merito* and *TS Favorito* were sent to assist the casualty. Towlines were established, but 40 knot winds and 4m waves forced both tugs to disconnect and stand by.

Towage commenced four days later despite on-going difficulties and interruptions due to the prevailing weather conditions.

In another incident involving engine problems, Tsavlis called on Seattle-based tug *Michelle Foss* to assist the 30,661gt bulk carrier *Triumph*, which was immobilised 1,050 miles west of Port of Ensenada, Mexico, on 27 July while on a voyage from Port Rhoades, Jamaica, to Longkou, China, laden with 47,000 tonnes of bulk bauxite.

Concern over container ship fires

With the growing size of container vessels, and a recent spate of fires on board these ships, the International Union of Marine Insurance (IUMI) is concerned that current fire-fighting provisions are insufficient. It has published a position paper calling for better on board fire-fighting systems for container vessels.

While the IUMI welcomes the 2014 amendment to SOLAS to increase the effectiveness of fire-fighting, it believes more should be done.

Helle Hammer, IUMI political forum chair, said: "Recent amendments to SOLAS are a move in the right direction but they do not go far enough. The legal requirements prescribed by SOLAS were originally developed for fires on board general cargo vessels and these ships are structurally very different to a container

vessel; and cargo is stored differently.

"We believe the mode of fire-fighting set out in SOLAS is not suitable for a modern containership."

IUMI supports as best practice a proposal presented by the German Insurance Association GDV that sets out an improved concept for fire-fighting facilities on board a containership.

Uwe-Peter Schieder, marine and loss prevention, GDV, said: "We believe a new technical solution is needed to improve current firefighting practice on container vessels, particularly as these ships are continuing to grow in size."

IUMI believes that it is necessary for further steps to be taken to improve the safety of the crew, the cargo and the ships themselves. It plans further discussions with the IMO, flag states, class and relevant industry stakeholders.

Multiple collision: who has to pay?

Regular columnist Simon Tatham looks at the complexities of blameworthiness after a harbour assist operation collision – and adds a cowboy lawyer to the heady mix



Happily, if that is the right expression, most collision incidents are relatively straightforward, in the sense that two vessels are manoeuvring and come into contact. AIS or VTS records will often provide speeds and courses and so allow the developing incident to be plotted.

The acts and omissions of either ship can then be dissected by reference to the Colregs, cause and blameworthiness considered and liability apportioned according to relative fault. This is often done with an eye to previous decisions of the courts, if one can be found, or at least with features comparable with the case in question.

Introduce, however, a tug and its tow into the mix, and a yet more complicated mix it certainly will be. In the September/October 2016 issue of *IT&O* I looked at possibly the simplest situation: where a dumb barge, or similar tow not able to manoeuvre of its own accord, is damaged in collision with a third vessel and we worked through the likely outcomes both in relation to blame as between the convoy and that vessel as well as how the claims between tugowner and hirer would then be settled according to the terms of the industry standard contracts.

This was simple in the sense that the tow, assuming in no way to blame because of deficient lights or marks, cannot be negligent: the tug being the navigating unit and responsible for the speed and direction of the tow.

Consider, however, a harbour towage operation where, say, one tug while assisting a vessel with its tow wire attached forward, manoeuvres astern into the path of a passing vessel, striking it, but not before that vessel, rather than seeking to slow or stop, turns sharply and seconds later runs into a berthed vessel on the side of the waterway. That vessel is hit in way of open hatch no.2 and the hold starts flooding while the impact meanwhile causes it to surge a few metres

forward, enough to break its aft springs and partially topple the shoreside crane which is discharging it.

The crane driver escapes with cuts and bruises but as he is sitting in the hospital accident and emergency department he picks up a leaflet left by personal injury lawyers offering a fee-free claims service.

He then takes three weeks off work on account of shock during which he takes advice and asserts a large claim against his employer, the berthed ship which is still undergoing repairs, the colliding ship, likewise repairing locally, and the tug. He might have threatened the assisted ship as well but it has sailed.

“Harbour towage terms of engagement historically have been tug favourable – the UK Standard Conditions of Towage, which model has been adopted in other jurisdictions, being a good example”

All of a sudden we have four vessels involved, a cargo receiver nursing a shortage and facing a GA claim, a port operator whose crane is beyond repair and a stevedore with a cowboy lawyer.

As to what happened, the wind might have been up with a very strong gust making the assisted manoeuvre tricky and requiring a lot of power and perhaps the tug, concentrating on the task, then applied more power than requested by the pilot who failed to warn that a vessel was approaching.

The starting point as between a ship and a tug in attributing blame in these cases is to consider who was in control. Typically the assisted vessel will be manoeuvring, capable of using its main engines and thrusters, assisted by the tug which is following the pilot's orders.

At its simplest it's a master and servant situation, the blame lying with the assisted vessel and its bridge team – who are in command of the situation and directing the tug, which cannot always be expected to maintain an adequate lookout: the tug may be entitled to assume that if asked to push or pull, the pilot deems it safe to do so. Only if the over-enthusiastic use of the tug's engines is blameworthy might some contribution attach to the tug. Both the tug and assisted vessel argue that blame for the first collision should be apportioned to take into account the contributory negligence of the passing vessel. Let's assume that ultimately the court agrees and finds the assisted vessel 80 per cent to blame with the tug and passing vessel each 10 per cent to blame.

Unless there are contracts agreed which say otherwise, the port operator and cargo receiver cannot pursue the berthed vessel because it was innocent of any negligence. They decide simply to go after the passing vessel. The passing vessel owner sensibly takes it on the chin, pays for the collision damage to berthed vessel and crane and pays off the personal injury claimant who threatens otherwise to create a hornets' nest of proceedings. He then seeks an indemnity from the assisted vessel and tug, accepting that he must absorb 10 per cent of his own loss (and liabilities) and pay 10 per cent of the tug's damage.

As between the tug and assisted vessel, harbour towage terms of engagement historically have been tug favourable – the UK Standard Conditions of Towage, which model has been adopted in other jurisdictions, being a good example. These reflect the fact that the assisted vessel is the one in control, vicariously liable for the actions of the tug, and allow the tug to claim an indemnity in respect of both damage to the tug itself and third party claims.

If these applied in our case above, arguably they could also be invoked in aid of the defence of the tug to the claim of the passing vessel, the argument being that the tug was merely the servant of the tow which should take the blame in full.

Unfortunately, I regret to say, things do not always go quite so smoothly.

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

Fire hampers bid to refloat ship

Seattle-based salvage company Foss Maritime has been called in by owners of *Pacific Paradise* to remove the fishing vessel, which has grounded off Waikiki, Hawaii, after repeated earlier attempts to free it failed.

Pacific Paradise ran aground in shallow water less than 400 yards off Waikiki. During one earlier attempt to dislodge the vessel, gasoline used to fuel a dewatering

pump splashed on hot surfaces causing it to ignite and force the salvage team to abandon ship.

Foss Maritime is working under a plan approved by the US Coast Guard and state authorities to move the derelict vessel away from the reef to prevent further environmental damage.

The operation was continuing as *IT&O* went to press.

'Salvage and investigation process should be streamlined' insurers told

International marine and engineering consultancy and survey company LOC Group has called for greater international co-operation to better manage maritime casualties.

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

Capt Walker said there was a need to help streamline the salvage and investigative process immediately following a major maritime casualty and to protect innocent seafarers from being criminalised.

He said: "We recognise, absolutely, the rights of sovereign states and the need to comply with all national laws, but we would like to see a process, most likely driven by the IMO, that requires sovereign states to clarify their jurisdictions within their governments

prior to an incident. In the immediate aftermath of a major incident, it is essential to understand which authority we are dealing with. Similarly, those authorities need to retain experts who understand the maritime sector and the implications of a shipping casualty.

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

"IMO, together with the International Labour Organisation and International Transport Workers' Federation, should develop early release procedures for seafarers under investigation by member countries.

"There are many cases where seafarers have been detained for many months, even though immediate investigations had shown them to be completely without fault. The industry should not allow mariners to be criminalised in this way."

Walker pointed out that only 35 IMO member states had signed the Nairobi

► Capt Jonathan Walker of LOC



International Convention on the Removal of Wrecks 2007, which clearly detailed how wrecks should be removed. Significantly, the convention stated that actions should be "proportionate to the hazard" and that activities "should not go beyond what is reasonably necessary".

Walker said if this was agreed internationally, then the requirement by some authorities to remove wrecks, whatever the cost and environmental impact, would be eliminated.

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



Secretary General, International Salvage Union (ISU)

The ISU is the trade association representing the interests of marine salvors worldwide.

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Harbour tugs at the core of the Big Apple

Brandon Durar, president of marine deck equipment company JonRie InterTech, talks to editor John McCready about his love of New York Harbor and its tugboats

Although he has lived most of his life on the US East Coast's Jersey Shore, Brandon Durar became involved in the maritime industry almost by chance. As a young man he was not looking for a job in the marine sector. He was just looking for a job.

Born in the Bronx district of New York in the 1950s, Durar said: "I never had an early desire to work on the sea; it was a simple decision to find a job in northern Jersey so I could finish my engineering degree and be accepted at the New Jersey Institute of Technology."

Nor was there a family connection with the maritime industry. His father was a lithographer in the print trade whose only connection with the sea was crossing the Atlantic when he was stationed in London during the later stages of World War II.

Durar says his childhood was very different from that experienced by today's generation of children and young people. He said: "Our favourite activities were just being outdoors. From camping, skiing, baseball to riding motorbikes, playing football or playing kick the can. Just being out of the house with friends is what we liked most."

Although he had various earlier jobs, Durar says his career and interest in the world of tugboats stems from the 1980s, a period he looks back on fondly.

He said: "I found a home at Almon A Johnson (AAJ), a deck equipment company, in 1980, and was hired as a designer/draughtsman. AAJ would eventually support and pay for my undergraduate and graduate degrees in mechanical engineering."

"I was hired to support their new contract to design and install the towing and traction winch systems on the new US Navy salvage ships or ARS-50 programme. After my 90-

day review with AAJ, I was promoted to full designer and worked under the direction of chief engineer Harold Moser. He was my teacher and mentor.

"Most of my efforts at the time were to support the ARS-50 programme, but there were also a few side trips to support tugs in New York Harbor. My first commercial tug project was the design and installation of the towing winch on the *Mary Turecamo*, built at Matton shipyard, Cohoes, New York.

"The late 1980s were the most enjoyable experiences in my career for two reasons. Firstly, I became a project engineer. This meant taking a project from inception to commissioning.

"I jumped at the chance to spend more time on the tugs overseeing repairs, training and equipment modifications. For about two years I spent a good part of every week on the waterfront"

"You were given a task and you did the detail design and engineering, purchasing, scheduling, shop testing and finally field commissioning. At AAJ at the time we had a core business of tugboat winches and US Navy salvage ships, old and new.

"It was then we were approached by Uniroyal Marine Hose to design and build hose reels for a US Navy contract. Along with the new naval business came work for them in the offshore sector, which meant projects in Norway, Greenland, Singapore and many other places throughout the world, along with the usual travel in North America. The projects to Greenland were most memorable as the sites were some of the most remote places on the planet."

Durar still spends around 60 per cent of his time out of the office, often travelling the world to oversee projects, meet contacts and attend trade events.

◀ Durar has fond memories of working at deck machinery company AAJ during the 1980s and 1990s, and is pictured here, second left, in 1981 with Almon A Johnson, Harold Moser, Chuck Boswick and, in front, Raj Mcaajhune

▶ JonRie InterTech president Brandon Durar



"I hate office work," he said. "I know it has to be done and I do it, but I'd much rather be out testing a new winch or finalising a new deal."

The second reason that the late 1980s were memorable for Durar were the New York Harbor tug strikes taking place at that time.

He explained: "Companies such as McAllister, Moran and Turecamo were asking the unions to reduce crews from as much as seven for a harbour tug to four-man crews, eliminating the cook and some deckhands. As the crews went out on strike their replacements had more mishaps with the tugs, and equipment was damaged more often, which led to the need for more field engineering in the New York Harbor.

"I jumped at the chance to spend more time on the tugs overseeing repairs, training and equipment modifications. For about two years I spent a good part of every week on the waterfront, gaining a better understanding of how the equipment is used on tugs.

"The strike finally came to an end and union employees went back to work alongside the non-union employees."

However fondly he remembers the '80s, it was the following decade that saw a major turning point for both AAJ and Durar. He says that the death of Almon A Johnson in the mid-1980s and the retirement of many key people left a void in the company. Betty Johnson and her son David Heskin, the then company president, asked him to take on the role of general manager while keeping his existing duties as chief engineer.

Durar said: "It was with reluctance that I accepted the offer, but with a young family to support, the extra income came at just the right time."

The company expanded in several new directions, in both the military and commercial sectors, and by the end of the '90s Durar was vice president of all operations and manufacturing for the company. However, Betty Johnson's health was in decline and Heskin wanted to change the direction and focus in his life. An offer was made by a Canadian investment group to buy the assets





of AAJ and the company was sold. Part of the deal was that Durar would stay on.

He said: "I spent the next 23 months managing this new profit centre which, for the lack of better words, was not my cup of tea."

By the year 2000 both deck equipment companies on the East Coast of the US had been sold, along with two on the Gulf Coast and another on the West Coast. Durar saw this as an opportunity for a new deck equipment company dedicated to the tug industry.

He decided to go it alone and set up JonRie – named after his children John and Marie. The company's building blocks were engineering, deck equipment and service to support the marine industry or tug and barge community. Its approach is to offer a turnkey winch system, comprised of engineering, fabrication, install commissioning and training.

Durar said: "When we hand over a JonRie system to the customer it is fully functional and the crews are fully trained. This turnkey approach is the key to our success."

In 2000 it was uncommon for US tugs to have bow winches, but that changed with the arrival of ASD tugs.

The company grew in the early 2000s, building hawser winches and towing winches for tugs all over the US. The company also

designed and built many dredging systems.

In 2008 JonRie, along with the rest of the world, faced the start of the 'great recession' when growth in the industry came to an abrupt halt. However, thanks to a good backlog, it found that it had enough work to weather the storm.

"To be on New York Harbor when at any one time there may be 100 tugboats out there, it's like a city in front of you – a city with its own character and characters that few people know about"

Durar said: "The biggest challenge during my watch at the helm has been to keep my eye on the ball and keep a balance within the company: to ensure we are keeping up with technology and in the same breath be conservative."

He says his past self would be surprised by the direction the business has taken. He said: "I would never have thought that a deck equipment company would be doing tug master simulation, tank testing and scale ship escorting."

"The industry has come a long way in the past 40 years and with technology advancing

▲ A tug passes the Statue of Liberty while at work in Durar's beloved New York Harbor

Photo by Jonathan Atkin, www.shipshooter.com

at the speed of light, the future should be quite challenging."

On the few occasions when he is not working, Durar likes to be on his boat in the Manahawkin Bay for some light fishing with his son. Like many a native New Yorker, he is an avid fan of New York Giants football team. He also follows Formula 1 motor racing and attends Grands Prix around the world whenever he can.

Asked who he would choose as a dining companion, either from the present day or from history, he chose New York tug royalty Brian McAllister, saying: "Brian is the patriarch of our industry and a historian in the stories he tells. Ask a question and you will not get a short answer, but a story of a place and time in the tugboat business."

Looking to the future, Durar said: "The buzz word is 'unmanned' but before we see that on tugs, I believe we will see the winch systems tied into a central computer on a tug. I believe this will be linked to the tug's propulsion system to increase or decrease the amount of force it applies to the vessel it is assisting. Also, a big challenge during the next 10 years will be getting young people into the industry. Will there be enough trained mariners?"

Whatever the future holds, the world of tugs and the people who operate them will always be special, even magical, for Durar. He said: "To be on New York Harbor when at any one time there may be 100 tugboats out there, it's like a city in front of you – a city with its own character and characters that few people know about. I still get a kick out of it, not sitting in an office, but being out there on the boats."

◀ Definitely not a fan of office work, Durar tries to spend as much time as possible out at the sharp end of his business



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Investors hold out for better offshore market

Latest figures suggest that the bulk of OSV market consolidation in North America in response to the low price of oil was completed last year, according to a report by international firm of analysts VesselsValue, commissioned by IT&O.

Unsurprisingly, the US OSV sector is by far the largest with its fleet of 1,391 OSVs judged to be worth US\$6.845bn as opposed to Mexico's fleet of 171 (US\$365m) and Canada's fleet of 37 (US\$178m).

Senior analyst, Charlie Hockless, said: "The US OSV fleet is a behemoth in comparison to the Canadian and Mexican fleets. Although this is not a surprise, it is interesting to see just how significant the US OSV fleet is."

"Regarding the sale and purchase data regarding the North American market, the number of transactions has fallen significantly from 2016 (from 29 to two) which would suggest that the bulk of market consolidation was more or less completed last year. The low number of sales this year

signifies the extreme lack of buyers in the market, as vessel owners and investors alike hold out for better market conditions in the offshore sector."

Asked whether the hurricanes that caused havoc across the Gulf this autumn would have impacted on the figures, Hockless said: "I don't believe we will see the impact of the harsh hurricane season in the Gulf for a number of months."

"The situation is ongoing and we will assess once the dust has settled. I don't doubt, however, that a number of vessel owners (whether they admit it or not) are hoping the storms wash away their laid up ships."

The survey was carried out in September, when a further 31 OSVs worth a total of US\$639m were on order in the US and four, worth a total of US\$14m, were on order in Mexico, although whether all or any vessels on order would be delivered in the present economic climate was not certain. There were no outstanding orders for OSVs in Canada.

London-based VesselsValue defines PSVs,

AHTS vessels, anchor-handlers, fast support vessels (FSVs), ocean tugs, and emergency rescue and recovery vessels (ERRVs) as OSVs. The vast majority of vessels in the survey were PSVs with AHTS vessels second and FSVs third. The report also showed that just under half (47 per cent) of all OSVs in the Gulf of Mexico were currently laid up, with the figure rising to 58 per cent when only considering AHTSs. VesselsValue also looked at the age of vessels in the North American OSV fleets and found that while the majority (1,114) were under 20 years old, a significant number (317) were between 35 and 44 years old and 32 between 45 and 54 years old. Two were more than 55 years old.

The North American figures are generally reflected in other regions, for example the Middle East, where the total spend on purchasing OSVs has dropped from US\$257m in 2014 to US\$22m so far this year – although 2015 was the worst year for purchases with just two vessels bought compared to 11 so far this year.

OSV operator joins hurricane disaster relief operation

Seattle-headquartered Foss Maritime has contracted with the US Department of Homeland Security's Federal Emergency Management Agency (FEMA) to support the relief and rebuilding efforts in Puerto Rico and the US Virgin Islands following the devastation caused by Hurricane Irma and Hurricane Maria.

Three accommodation vessels have been utilised and will serve as floating hotels, providing safe housing and warm meals for responders. With these vessels, Foss will be able to help feed and temporarily house 729 people.

Foss CCO, Will Roberts, said: "We have the ability and the commitment to serve the wide range of needs of hurricane victims in Puerto Rico and the US Virgin Islands, and are prepared to offer additional services, as needed, to FEMA and other federal agencies throughout all relief efforts."

"For Foss, this type of project is at the heart of what we do. We are glad to do our part to help the families affected by this devastating disaster by enlisting the skills of our finest operators and providing needed equipment."

Foss has deployed a multi-discipline team consisting of operations, fleet engineering, project management, safety, marine assurance, supply chain, legal and finance. Its sister companies, Tropical Shipping and Tote Maritime Puerto Rico, employ 42 people in Puerto Rico and 115 in the US Virgin Islands.

Thousands of FEMA personnel and partners continue to provide life-sustaining resources while working around the clock to restore power and return daily routine.

Despite the complex challenges posed by hurricanes, FEMA and its federal partners



are restoring access to ports, airports and roadways, saving lives during search and rescue operations, assessing hospitals, and moving food, water and medical supplies.

Meanwhile, as IT&O went to press, around 9 per cent of oil production and 13 per cent of natural gas production remained shut-in in the Gulf of Mexico following Hurricane

▲ *National Guard personnel distribute supplies in Puerto Rico and, above left, a Foss Maritime accommodation vessel*

Harvey, according to the Bureau of Safety and Environmental Enforcement, with the US Coast Guard overseeing clean-up operations.

● **Operator profile, page 84**

Rescuers' own homes destroyed by Harvey

The Coast Guard Foundation, a non-profit organisation committed to the education and welfare of all US Coast Guard (USCG) members and their families, has activated its disaster relief and response fund to assist USCG members affected by the destruction caused by Hurricane Harvey.

Foundation president, Susan Ludwig, said: "As we see the hurricane rescue efforts unfold, we bear witness to the skill

and expertise of members of the USCG. These brave men and women have been working around the clock in high winds and torrential rains to help those in the Houston and surrounding areas to higher ground. While they have worked tirelessly to rescue more than 4,000 people so far, many of their own homes and possessions have been destroyed by the most dangerous hurricane to hit the US in over a decade."

Island harbours maritime hub ambitions

Doug MacDonald of Innovation PEI looks at how Prince Edward Island, the smallest of Canada's provinces, is attracting big-name marine companies to its picturesque shores



◀ *Agriculture and fisheries are the major drivers of the PEI economy*

▶ *Doug MacDonald*

Prince Edward Island (PEI) does not house a major port of call, nor does it figure prominently on a world shipping map, but it is making its name known internationally by attracting world class marine companies to grow their businesses within Canada's smallest province.

PEI is located approximately 850 miles north of New York City, has a population of almost 150,000 people and is the largest producer of potatoes and cultured blue mussels in Canada. The province's largest economic drivers are at present agriculture (potatoes), fisheries (mussels, oysters and lobster) and aerospace.

PEI is centrally located between the west coast of North America and Central Europe, making it a great location for companies looking to do business in Europe and North America. The province boasts the warmest waters north of the Carolinas and is home to four year-round ports.

The island has a long shipbuilding history, from the early days of wooden sailing vessels, to the construction of modern tugboats. The province is working hard to regain its momentum in the marine industry and is viewing the entire world as its marketplace.

The marine industry is competitive, challenging and demanding of products and people, but the province has the goal

of seeing shipbuilding being re-established on PEI. Between 1962 and 2011, the island was home to a yard that built tugs, trawlers, lifeboats and ferries. The infrastructure and skilled workers are available and the economic environment is very positive in this sector. PEI boasts one of the highest employee retention rates in North America, with employees staying with the same company for more than nine years.

"We have been welcomed and encouraged by island businesses and government stakeholders, local government and our newly established local supply network"

Elizabeth Boyd, Nautican owner and president

Two of the companies leading the re-growth of the advanced marine technology sector on PEI are Aspin Kemp and Associates and Nautican Research and Development. Both companies started their operations elsewhere, but chose to expand and move to PEI for a variety of reasons.

Jason Aspin is the CEO of Aspin Kemp and Associates, a marine electrical integration company that has offices around the world. He moved his company headquarters to Montague, PEI, in 2013. The company recently partnered with MAN Diesel and looks forward

to growing its sales with its new partner.

Aspin said: "Our company operates around the globe and has a choice on where we base our operations. We moved to PEI after consideration of many options and it has proven to be a perfect fit for our company; providing us with a dedicated, skilled and motivated local work force and a location that is open and inviting to attract talent from around the world. Our company works from a low inertia dynamic business model that is mirrored within the island's economy and government.

"We have been able to develop and deliver world class innovative marine solutions from the island that are competitive technically and commercially in the global economy. Local government has provided the company with extensive business-smart support for our operations and in promotion of our organisation, both at home and on the road.

"We are proud and excited to be part of a team that is building a world class marine technology sector here."

Nautican Research and Development is owned by Elizabeth Boyd, a marine professional who has worked around the world, but who chose to move her marine propulsion system manufacturing to PEI. This was done to better manage and control the company's operations and made her production costs and scheduling more predictable.

Boyd, who is president as well as owner of Nautican, said: "The short time since we established our manufacturing facility in Prince Edward Island has already proven that this was a positive and game changing decision for our company.

"We have exceeded even our most optimistic expectations with respect to building a top notch team and establishing a strong and efficient manufacturing capability. We have been welcomed and encouraged by island businesses and government stakeholders, local government and our newly established local supply network."

Both she and Aspin state that they chose to set up on PEI because of the strong business case to do so. The provincial government has provided incentives to both companies to assist in their start up and ongoing growth through a variety of programmes designed to



◀ *Nautican started production at its new facility at Summerside, Prince Edward Island, in December 2016*

help companies grow their export sales and staffing. With a small population, PEI relies heavily on export sales for its companies and regularly schedules international trade missions for PEI-based companies to sell outside of Canada's borders.

The province also provides an advanced marine technology tax rebate programme to eligible companies which rebates provincial corporate income taxes back to qualifying PEI-based marine companies.

While the province is actively attracting marine companies to the island, it has not forgotten those businesses that already call it home. Sales for six of the existing PEI-based marine companies exceed Can\$50m per year and are quickly growing.

Training for the marine industry is supported through two major training institutions on PEI. Holland College is the vocational institute for the province, has five campuses on PEI and offers a wide range of programmes that are suited to the needs of industry, including master mariner training.

The University of Prince Edward Island provides advanced training and recently opened a sustainable design engineering school that offers companies the opportunity to bring their engineering challenges to the



school to be solved by students and staff who work on the projects in real labs. Companies from outside PEI are frequently surprised at how easy it is to get key stakeholders from all levels of government in one room to discuss business development.

▲ Nautican propellers on APT Kim M Bouchard

A small location can be a real benefit for a growing business as it is not challenged with the logistics and time constraints of larger locations.

Contract to build two ocean-going tugboats confirms long-term relationship with yard

Conrad Shipyard of Morgan City, Louisiana, has been awarded a contract to build two 3,000hp ocean service tugboats for Harley Marine Services of Seattle, Washington state.

The two new vessels will be 100ft (30.5m) in length, with a beam of 34ft (10m) and a moulded draft of 15ft 3in (5m). They will be powered by Caterpillar 3512C Tier 4 A-rated diesel marine engines, and equipped with two Caterpillar C4.4 99kW at 1,800rev/min generators. The tug design was developed by Entech Designs of Kenner, Louisiana.

The first hull is scheduled for delivery in the fourth quarter of 2018, and the second hull in the first quarter of 2019. Conrad has previously delivered 19 vessels to Harley and currently has three under construction.

Conrad president, chairman and CEO, Johnny Conrad, said: "This is an extraordinary number of vessels to be awarded from one customer over the years, and is validation of the Conrad commitment to quality, craftsmanship, integrity and service. It is a compliment to the exceptional talents of our entire shipbuilding team."

Harley Marine Services provides marine transportation services in every major US West Coast port as well as in Alaska, New York and the Gulf of Mexico. In addition, the company provides tank storage and product transfer, ship assist, rescue and general towing services.

Chairman and CEO Harley Franco said:

► A drawing of the Entech Designs' tugs that will be built at Conrad's Morgan City Shipyard for Harley Marine Services



"We are a highly safe, environmentally responsible, efficient, and customer service oriented company with a high regard for safe operations.

"We strive every day to improve the

communities in which we live and operate. My friend, Johnny Conrad, has the same business philosophy and his team delivers quality. It's a good match and we value our relationship."

Shipbuilding pioneer dies at home aged 101

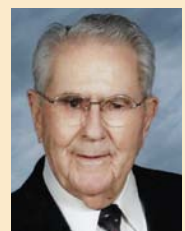
Conrad Shipyard founder, John Parker Conrad Sr, died peacefully earlier this year at the age of 101 at his home in Morgan City.

A shipbuilding pioneer and a legend along the Gulf Coast and beyond, he founded Conrad Industries in 1948. He supported many charitable and community

causes in South Louisiana, and received numerous awards for his accomplishments and philanthropy.

An avid hunter and outdoorsman, he was a conservationist with a profound respect for the environment.

Conrad and his wife Shirley were happily married for 64 years, until her death in 2006.



▲ John Parker Conrad Sr

Autonomous workboat system on market

Boston-based autonomous and remote controlled vessel innovator Sea Machines Robotics has released its first product, an autonomous control system for commercial marine vessels. The Sea Machines 300 is the world's first industrial-grade control system standardised for workboats.

The technology provides an immediate upgrade in vessel operations by enabling remote and autonomous control of conventional boats, moving the marine sector into a new era of control by enabling:

- Direct remote command: remote joystick control of a boat with a 1km (0.6 mile) range that the company says gives an operator the flexibility of not being confined to a vessel during operations; and boosts productivity and safety of many traditional marine tasks.
- Autonomous command: Sea Machines' computer control, which pilots a boat in pre-planned or routine long duration missions with real-time self-awareness to keep the vessel on plan, on course, away from obstacles, while giving increased capability, predictability, amplified safety and operator peace of mind.

The company is going to market offering the Sea Machines 300 system to offshore and nearshore vessel operators, boat builders and a network of retrofit partners.

CEO Michael G Johnson said: "This opens a new world of on-water operations providing multi-fold increases in workboat safety, efficiency and productivity. Sea Machines technology gives companies the ability to get ahead of the marine technology curve. We are making autonomous and remote command a standardised product that soon will be as commonly deployed as radar or chart plotter systems."

Sea Machines 300 is built on Siemens components and computers. It interfaces with vessel instruments and systems and is



▲ A Sea Machines vessel test in Boston harbour

ready to integrate with an array of propulsion configurations. It takes data from typical navigation sensors for real-time awareness and perception, including DGPS, AIS and radar. The system is supplied with a user interface, called Sea Machines TALOS, which provides computer-controlled autonomy options, or direct joystick control. TALOS can also control multiple vessels from a single station.

In autonomy mode, the user can select from programmable commands such as planned waypoint tracking/grids and collaborative navigation with other vessels, while incorporating multi-objective decision making. The system features embedded collision avoidance algorithms and abides by parts of IMO's Colregs navigation rules.

Building confidence in technologies

With the evolution towards 'smarter' ships gaining pace in the offshore sector, Houston-headquartered ABS, the US' leading provider of classification and technical services, is offering a new programme to help confirm that new technologies will perform as intended.

ABS Guidance Notes on Qualifying New Technologies provides manufacturers with a five-step programme that will help build market confidence that their equipment, systems, software or components will function as intended.

Ken Richardson, executive vice president, global offshore, at ABS, said: "Governing industry codes and regulations rarely develop at the same pace as technology, so many new products have little or no precedent from a regulatory or class rules perspective. This qualification process contributes to verifying

safety and suitability, which helps justify for both internal and external audiences the often considerable investment required to stay at the forefront of technological innovation."

The rapid evolution of OSVs has put the sector at the forefront of clean energy and 'smart' technology developments, through initiatives such as increased adoption of hybrid battery-based energy storage systems, or development of remotely operated supply vessel programmes, currently being tested. Such complex engineering projects often feature multiple new component technologies that require integration, so the ABS programme offers a five-stage process that aligns with the typical product-development phases, including feasibility, concept verification, prototype validation, system integration, and operational verification and validation.

In brief

The US Bureau of Ocean Energy Management (BOEM) has issued its first approval of an offshore wind site assessment plan to Bay State Wind, a joint venture between DONG Energy and Eversource, which aims to build a 1,000MW wind farm in the Atlantic Ocean, 15 nautical miles south of Martha's Vineyard. Approval means BOEM will press ahead with measuring wave and wind speeds.

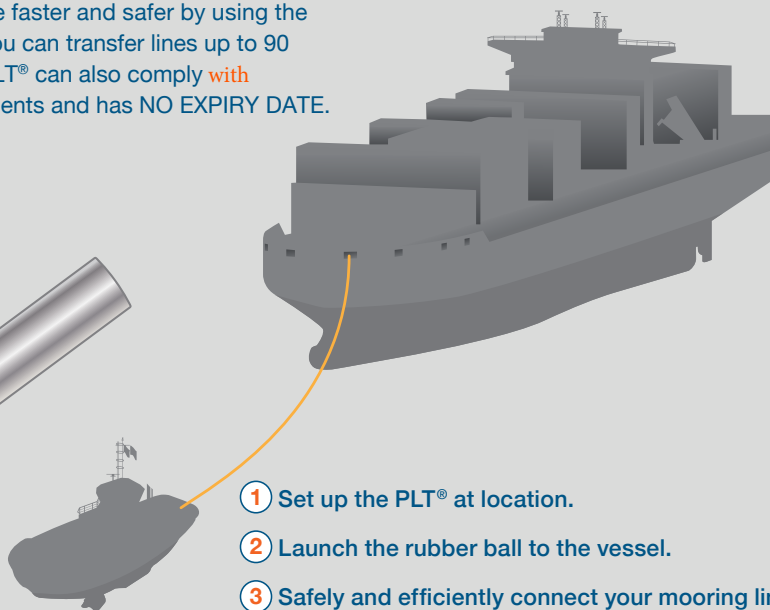
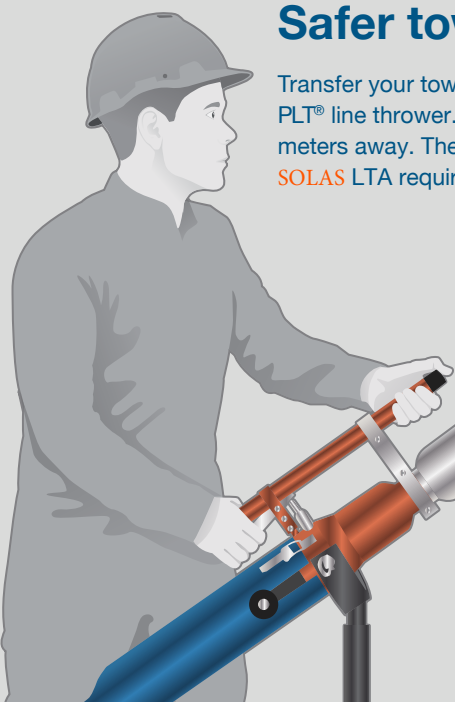
World Marine, a leader in shipyard services on the US Gulf Coast, completed a transaction earlier this year divesting its Pascagoula shipyard. The yard has historically focused on offshore rig repair and conversions and the downturn in the offshore oil exploration market has resulted in the strategic decision to sell the facility.

Vestdavit, the supplier of davits and other boat launching equipment, has responded to a sustained positive trend in its North American business levels by opening its first office in the US in Seattle.

Canada-based Climate Technical Gear has started distributing its Sevaen (pronounced Sa-Vay-In) range of waterproof clothing for workboat crews in the UK and Irish Republic through a partnership with retailer Swan Net Gundry.

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Three vessels designed to combat pollution

Western Canada Marine Response Corporation (WCMRC) has awarded a construction contract to ASL Shipyards, Singapore, for three of Robert Allan Ltd's BRAvo 2500 pollution response vessels (PRVs) designed to protect Canada's west coast.

The project builds on a strong relationship between the two Canadian companies, which included providing guidance to assess recently built spill response skimming vessels and providing technical assistance to bring these into Canadian registry. Recently, this also included providing market studies evaluating available existing vessels which could be converted for spill response duties, and the design of two large spill response barges, for which the construction contracts are expected to be awarded later this year.

With WCMRC's aim to increase its offshore spill response capability for the

trans-mountain pipeline expansion project, Vancouver-based Robert Allan Ltd was awarded a design contract by WCMRC in late 2016 for the BRAvo 2500 vessels. Through a highly collaborative process working in person with WCMRC, the best possible solution to meet their response requirements was assessed and incorporated into the design of these vessels. Identified as coastal response vessels by WCMRC – which is based in Burnaby, British Columbia – these modern pollution response platforms were custom designed to meet the formidable environmental conditions and demanding requirements of Canada's exposed west coast.

They will act as a mothership to other smaller vessels during training exercises and in the response to a spill, should it occur. They will also be capable of deploying leading containment technologies and transferring equipment between vessels, and will give WCMRC the flexibility of utilising the vessels' internal tankage or offloading any oil into WCMRC's barges.

The BRAvo 2500 PRVs are 25m long and 10.25m wide with a depth of 3.8m. They can carry 53m³ of fuel oil, 12m³ of fresh water and 26m³ of recovery oil. The vessel's hull form, which features a bulbous bow, was

extensively studied by Robert Allan Ltd with computational fluid dynamics and will allow the resiliently mounted EPA Tier 3 compliant Caterpillar C9.3 main engines to propel the vessel at a speed of at least 10 knots. Two Caterpillar C4.4 ship service gen sets, in sound enclosures, will provide electrical power for vessel services, including the deck machinery.

A spacious deck aft is equipped with 760m (2,500ft) of Kepner self-inflating offshore containment boom stored on a large powered reel and a NOFI Current Buster 4 sweep system, which can be deployed and towed by the vessel to capture oil in current and waves. These booms are deployable over an aft roller to minimise wear during training exercises and an aft swim platform allows easy access to the water surface for recovering and deploying equipment with the vessel's crane. This platform will also ease the transfer of spill responders from small workboats with limited freeboard.

On the main deck, large lockers for handling loose spill response equipment are provided along with a large wet gear entry space to deal with the west coast's extremely wet climate. The entry space can be used as an internal decontamination area during a spill.

Crew accommodation is also arranged on this level, featuring a generously sized mess, galley and crew rooms. With the deckhouse above, which includes two large cabins and an office, the vessel is designed to accommodate eight people in quiet MLC-compliant cabins, satisfying all Transport Canada regulations. The wheelhouse provides exceptional all around visibility, especially to the aft deck to allow the master to actively manoeuvre the vessel using its twin screw propulsion and the bow thruster while still supervising the deployment and recovery of spill response equipment. Due to the harsh environmental conditions, significant effort was spent during the design to reduce the vessel's motions in waves to the maximum extent possible. This included implementing Robert Allan Ltd's unique hull sponson technology from the successful RAstar series of offshore escort tugs, as well as large bilge keels, twin skegs and a bulbous bow. The vessel's stability was also assessed to optimise rolling period and not only satisfy regulatory requirements, but also implement Robert Allan Ltd's recommendation for one compartment damage survivability.

WCMRC selected Lloyd's Register (LR) as the classification society for the vessels, with Robert Allan Ltd contracted to co-ordinate plan approval to LR's rules as well as Transport Canada requirements. The vessels are designed to the following notation: LR #100A1 SSC, Workboat, Mono, G4, UMS, IWS – Oil Recovery Workboat with Occasional Towing Duties.



◀ An artist's view of the Robert Allan Ltd designed BRAvo 2500

Systems gain excellence awards

Rhode Island-headquartered KVH Industries is celebrating after the top marine electronics professionals in the US honoured two of its marine satellite antenna systems for their outstanding performance and reliability.

KVH's TracPhone V3-IP received the National Marine Electronics Association's (NMEA) 2017 product of excellence award in the satellite communications antenna category, while the TracVision TV3 received the 2017 product of excellence award in the satellite TV antenna category.

This is the 20th consecutive year that KVH has achieved the NMEA distinction for its TracVision satellite television antenna systems and the 15th time that

its TracPhone satellite communications antenna systems have been recognised.

The NMEA awards are presented annually to recognise excellence in design, performance and reliability in marine electronics products. The winners are selected by a vote of the members of NMEA, an industry group made up of more than 600 companies, including manufacturers, dealers, and boat builders.

KVH CEO, Martin Kits van Heyningen, said: "We are thrilled to receive this recognition from NMEA, knowing that it represents the opinion of skilled professionals who have first-hand experience with the installation and performance of our products, as well as those of our competitors."

Year marked by technical innovation

Vancouver-based naval architects Robert Allan Ltd has been very successful in North America during the past year, with several new and significant vessels delivered. Its design team has been busy incorporating the latest in emission control systems into its tug designs – which the company admits is no easy feat given the already cramped engine rooms of today's modern tug.

Among the highlights of a year that saw its 1,000th tug delivered, were *Gladys B* delivered to EN Bisso & Son. Well-received by crews, the vessel is based on previous RApport 2400 designs, but with an increased beam and modified skeg and bilge keels to enhance its escort capability.

Meanwhile, the first US-built Rotor®tugs, designated as ART 80-98US, are now in service. Built by Master Boat Builders in Bayou La Batre, Alabama, *ART Trident* and *ART Triton* are further examples of the exceptionally manoeuvrable and reliable Rotortug configuration in operation throughout the world.



Built, owned and operated by Ocean Group, two powerful new ice-breaking escort tugs, *Ocean Taiga* and *Ocean Tundra*, have entered service in Quebec, Canada. These innovative vessels will provide ice management and escort services to ships transiting the St Lawrence Seaway.

Earlier this year Bay-Houston Towing Co and Suderman & Young Towing Company each awarded construction contracts to Gulf Island Shipyards for four Z-Tech 30-80 class terminal/escort tugboats. The newly developed Z-Tech 30-80 class introduces

▲ *Gladys B*, designed with enhanced escort capability

characteristics from the high-performance RAsstar series, expanding the operational duties from its established role as primarily a port/terminal ship-handling design to include escort duties.

With sponsors designed to suit the Z-Tech hull form, CFD simulations demonstrate escort capability of the Z-Tech 30-80 will increase by 15 per cent in comparison to the original Z-Tech 30-75.

Market conditions driving need for fuel monitoring

Current market conditions for upstream production have increased the focus on fuel efficiency and accountability for vessel owners and managers who charter with exploration and production operators globally.

Charter agreements now require the installation of electronic fuel monitoring systems such as Fueltrax®. Saving costs and increasing efficiencies are paramount in all maritime operations but, as Anthony George, CEO and founder of Houston, Texas-based Fueltrax, says, that is just part of the story.

He said: "Fuel is one of the largest variable costs for owners and charterers. Now it's more important than ever to understand and address fuel management, with an increased

focus on collecting accurate, reliable data, storing it securely, and making it easily accessible to all invested in vessel reporting and optimisation."

Fueltrax is a leading real-time solution for marine fuel management, with its associated web reporting service Fuelnet™. It has been installed on more than 50 vessels in 2017 alone, and is trusted by mariners and operators since its launch in 2003, with more than 500 installations worldwide.

The updated charter agreements are prominent in regions such as Gulf of Mexico, West Africa, Caspian Sea and Asia-Pacific islands where fuel use is high and increased reconciliation of fuel delivered against fuel utilised is needed.

George says using Fueltrax means all fuel activities can be monitored transparently by each party involved in the vessel operations – including owners, managers and charterers – through access granted in the charter agreements.

Fueltrax provides this visibility with automatic uploads of data to Fuelnet, a single-view, user-friendly web portal updated live every 15 minutes, that allows for easy fuel management across entire fleets.

All data is collected on board through a closed-loop system with direct measurements taken with Coriolis smart metering technology, which the company says is superior to volumetric meters, improving data accuracy and reliability

Platt steps down following completion of restructuring

Jeffrey Platt has retired from his roles as CEO, president, and a director of New Orleans-headquartered OSV operator Tidewater following the completion of the company's financial restructuring.

Tidewater's board of directors has appointed Larry Rigdon as interim CEO and president and as *IT&O* went to press it had formed a search committee to identify a permanent successor for the role.

Platt said: "Having successfully completed the financial restructuring of Tidewater at the end of July, which positioned the company to weather current industry conditions and achieve success in the future, the board and I have agreed that the time is appropriate to transition the leadership of the company. It has been an honour and a privilege to lead the hardworking employees of this company."

▶ Jeffrey Platt



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Family firm to celebrate its first century

Tug and barge operator Bouchard Transportation Co Inc, which marks its 100th anniversary next year, puts its success down to keeping safety at its core

Bouchard Transportation Co, Inc, was founded in 1918 in New York Harbor by Capt Frederick Bouchard. The company's first cargo was a shipment of coal, and its first oil barge was acquired in 1931. The third generation of the Bouchard family joined the company in 1955, and in 1992 the fourth generation took the helm.

For nearly a century, Bouchard has remained family-owned and operated, with the fifth generation now actively involved in the day-to day-operations. Today, Bouchard is notably the largest privately-owned petroleum barge company in the US.

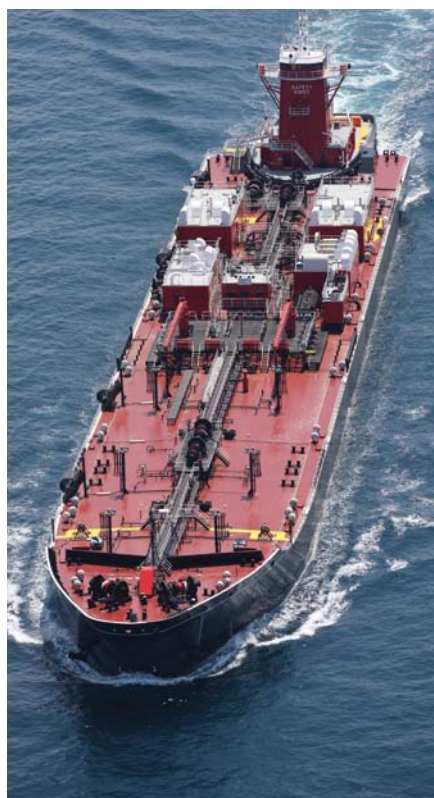
The foundation of Bouchard's core business philosophy has always firmly focused around safety, while consistently maintaining and advancing its equipment at the highest standards. As a result, the company says its customers are provided with a safe, reliable, and efficient service at the most premier level.

President and CEO, Morton S Bouchard III, said: "A safe and reliable operation is the only formula that leads to profitability. We have a dedicated commitment to our customers and the safety of our operation, and we will continue to lead the market by investing our profits into innovative advancements in order to continue operating in the safest and most efficient manner."

Over the past five years, Bouchard has made significant advancements to its fleet, including the investment in a major fleet expansion plan, which recently produced the most impressive and state-of-the-art ATB units currently in the industry: *M/V Kim M Bouchard* & *Barge No 270* and *M/V Donna J Bouchard* & *Barge No 272*.

These Jones Act vessels include the newest modifications to the Intercon and pin system, as well as the most technologically-advanced equipment in various spaces that are designed to reduce total emissions, thus ensuring a more eco-friendly vessel.

The expansion also included four new ATB tugs: *M/V Evening Star* (delivered in September 2012), *M/V Denise A Bouchard* (delivered in May, 2014), *M/V Morton S Bouchard Jr* (delivered in February 2016),



▲ State-of-the-art ATBs Morton S Bouchard Jr, above, and Kim M Bouchard, left, at work

and be equipped with an Intercon Coupler System. *Barge No 252* is being constructed by Louisiana-based Bollinger Shipyards and is sister to the *Barge No 250*. It will measure 317ft (96.5m) by 70ft (21m) and have a draft of 28ft (8.5m). The barge will have a 55,000 barrel capacity, and be used to transport liquid petroleum products throughout the Jones Act market.

These recent investments have increased the fleet's fuel-efficiency, capacity and speed, resulting in an overall operation that continues to perform well above industry standards.

While Bouchard's fleet includes the most top-line and fuel-efficient technologies, its safety management system requires each vessel to be routinely vetted and evaluated twice a year. In addition, each vessel is continuously assigned routine maintenance and repair schedules to guarantee that the equipment is always operating at the most optimal level.

Bouchard said: "Our safety and vetting procedures, as well as the technological advancements consistently being made to our fleet, allow for an efficient operation that limits risk by providing environmental protection, a safe work environment for the crew and a reliable service for customers."

As the company celebrates its major milestone in 2018, it will look back on the journey that has fuelled its growth and expansion since its founding. Most importantly, it will celebrate 100 years of barging experience and family pride, and look towards the future with further growth and expansion in mind.

and *M/V Frederick E Bouchard* (delivered in June 2016).

Additionally, Bouchard's expansion continues with another state-of-the-art ATB unit currently under construction, *M/V Evening Breeze* and *Barge No 252*. *Evening Breeze* is being constructed by VT Halter Marine, of Pascagoula, Mississippi, and is the sister vessel to *Denise A Bouchard* and *Evening Star*. The 4,000hp *Evening Breeze* will measure 112ft (34m) long and 35ft (10.5m) wide with a depth of 17ft (5m)

Firm introduces new e-series escort winch

New Jersey-based JonRie InterTech has introduced its new e-series of electric escort winches. The main drum and independent level wind are driven by electric motors.

The winch incorporates ABB's Smart Winch system, whereby the drive acts as a brake with the line pull being limited while the line scope is being maintained.

During an escort, the winch is constantly trying to maintain the set scope. The system automatically lets the winch heave back to the setting whenever the tension is within operator set limit and pays out line when the limits are exceeded.

When the system is matched with the line pull, the winch motor is acting as a brake and an external brake is not required.

The system also features a slack line mode used when the tug is tethered to a vessel. When this feature is activated, and the line tension falls below a set point, the winch starts winding the line in to maintain a minimum tension. If the line tension is above the set point, the winch stops winding the line and maintains a minimum tension.

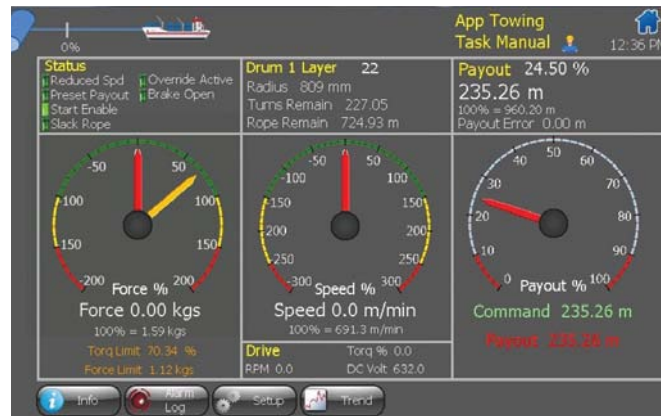
Also part of the system is a roll alarm used when escorting, which will let the master know the tug is unstable. During escort operation the line will be at an angle that is relatively large with respect to the staple. The vector dynamics of the forces that act

▶ *JonRie's application towing screen increases safety by keeping the tug master apprised of the forces at work during the tow at all times*

on the tug because of this rope angle mean the operator's tension setting may end up producing an angular force that may be too high relative to the tug's roll handling capability and cause the vessel roll angle to increase beyond safe operating limits. The roll alarm feature can be used to alert the operator to this condition for manual intervention.

A touch screen displaying line tension, line scope, data logging and set points is also included. The system also features joystick and foot control for winch speed and direction. The level wind is an independent drive and runs automatically when the winch drum is turning. The level wind can also be controlled in the manual mode to stop, reposition and move backwards to cross spool the line to prevent pull down.

The winch is also supplied with a static



drum brake that allows the master to run the winch in the manual mode. The winch has the capacity to spool 656ft (200m) of 3in (75mm) hawser and has a maximum line pull of 100 tons, a line haul speed of 164ft/min (50m), a controlled render speed of 330ft/min (100m), a static brake of 300 tons and dynamic braking of 100 tons.

As on all JonRie escort winches, it features a hands-free foot control.

Workhorse tug has a powerful pull



The third in a series of 60-tonne bollard pull ASD tugs built for Bisso Towboat of Luling, Louisiana, by Main Iron Works of Houma, Louisiana, *Liz Healy* has a new brown water workhorse Series 230 assist winch by JonRie InterTech of Manahawkin, New Jersey.

The 100ft (30.5m) long, 38ft (11.5m) wide tug is powered by two Caterpillar 3516C Tier 3 main engines each producing 2,240hp at 1,600 rev/min. Propulsion is by two Rolls-Royce US 205 FP Z-drives.

The winch features JonRie's innovative independent drive level wind with a Logan clutch also installed. When the winch is heaving or paying out hawser the level wind

▲ *Liz Healy built by Main Iron Works for Bisso Towboat of Louisiana*

drive is engaged and when the tug is working under heavy ship assist loads the level wind is unclutched. The independent level wind will allow the spooler carriage to move faster than the drum to cross weave rope or adjusted to any speed required; the unit can be stopped and run in manual to any position on the drum. The controls are all at hand's length in the pilot house to be used by the master.

The JonRie Series 230 winch also features a larger drum to accommodate more hawser – 500ft (152m) of 8in (200mm) – and has a brake rated at 300 tons.

In brief

Taryn Loutit, a fourth year mechanical engineering student at the University of Victoria, Canada, pictured below, who wants to pursue a career in naval architecture and marine engineering, has been awarded the Robert Allan Memorial Scholarship for 2017. The scholarship was set up in 1982 from a bequest by the late Robert F Allan. Visit the design company's website www.ral.ca/scholarships to find out more about the annual award.



Oregon-based tug owner and operator Harley Marine Services has welcomed Sterling Adlakha to its executive team in the role of chief financial officer. A graduate of the US Coast Guard (USCG) Academy, Sterling served for 10 years in the USCG, later gaining business qualifications from the McDonough School of Business at Georgetown University. Following his coast guard career, Sterling held positions in investment banking and equity research before returning to his maritime roots at the Kirby Corporation.

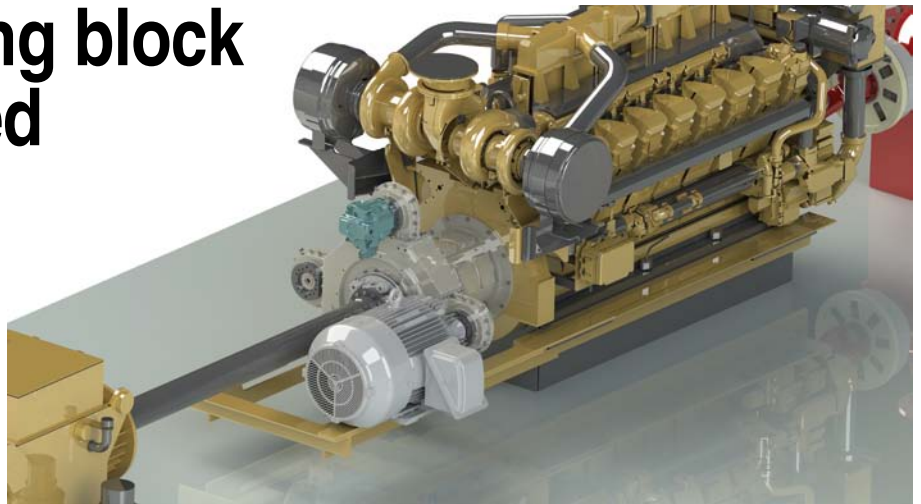
Motor is building block for standardised electric power conversion

Ohio-based Logan's new FlexaGen™ is a variable speed motor/generator, typically driven by the main propulsion engines, through Logan's innovative FlexaDrive™ multi-drive gearbox system.

The FlexaGen is designed to be a standardised power conversion building block that permits operators to select pre-integrated, plug and play units of electrical power for their vessels. The systems are supplied with all necessary power conversion and control equipment, and can be used to support the vessel's electrical bus, displace an auxiliary diesel generator, or to power specific consumers directly such as bow thrusters or cargo handling equipment.

With standard configurations of 50kW, 75kW and 100kW available, FlexaGen is both scalable and, where required, customisable in both size and configuration.

FlexaGen delivers cost-effective power generation solutions for clients and is suitable



either for new build or retrofit projects. The company says its systems are a smart choice for vessel designers as they accommodate the consolidation of multiple functionalities into a single, small footprint, low cost and expandable platform. In addition to motor/generators, FlexaDrive PTOs can be added, as required, to power vessel services including fuel and hydraulic pumps, steering gears and cooling pumps.

It adds that the products can also serve as the platform for a 'right-sized' hybrid propulsion system. The FlexaDrive HT (hybrid technology) system is a full featured alternative to more expensive systems that

▲ A Logan FlexaGen 100kW scalable, variable speed, shaft generator

are currently being marketed in the marine industry. Depending on vessel requirements, the FlexaDrive HT system can provide a wide range of operational modes including electric only, diesel electric, mechanical only and bollard boost.

Logan says the challenge when selecting technologies to be deployed is to "efficiently facilitate efficiency". Overly complex and costly systems, that do not provide optimised operational functionality and commercial advantages, cannot be justified.

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Water-cooled variable-slip winches praised

After two seasons of use, a special feature included in the Markey towing winches on board three Foss Arctic-class tugs has proven to be very useful for operations requiring a ‘tight leash’ on the tow.

The three most recent additions to the Seattle-headquartered Foss fleet, the Arctic-class tugs *Michele Foss*, *Denise Foss* and *Nicole Foss*, are all equipped with Markey model TDSD-40UL towing winches including a water-cooled variable-slip (WCVS) braking feature.

Operating similarly to a ‘star drag’ setting on a sports fishing reel, the WCVS allows the captain to set a tension slip-point to compensate for the lack of catenary when a tow is pulled close to a tug. This technology has proven extremely useful for crossing a bar or operating in confined waterways.

Based on water-cooled brake and clutch technology proven through years of use in the company’s high-response electric escort and ship-assist hawser winches, these were the first Markey towing winches to incorporate this option. The use of a WCVS brake was also driven by Seattle-based Markey’s familiarity with previous methods used to achieve some level of controllable slip using band brakes, having offered such a system on Class II hydraulic hawser winches for more than 25 years. The new system Markey now offers has a number of clear advantages:

- The WCVS brake is integrated into the winch design as a secondary brake. If a problem develops with one of the standard drum band brakes, this brake will act as a fully functional back-up, regardless of the scope of wire deployed.



▲ Above, right and below left, *Denise Foss* towing *SS El Yunque* through the Panama Canal
Pictures: Foss Maritime

- The WCVS brake offers fine control and high repeatability with a minimum of readjustment.

Due to the nature of band brakes, brake materials, and the environmental conditions in which they operate, it is very difficult to establish a reliable and repeatable tension set point using that type of system. This is not the case with WCVS brakes due to the unique combination of materials and water cooling, which results in an exceptionally smooth transition from static to dynamic operation.

As with any innovation, both Markey and Foss encountered a learning curve during initial deployment. Since then, the WCVS systems have been accruing operating hours in a variety of difficult towing conditions. When asked about the variable-slip feature of the winches, the captains and a chief engineer of the three tugs gave positive reviews of their experience so far.

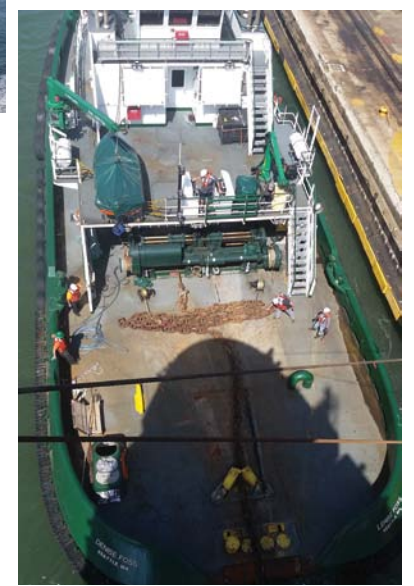
Capt Justin Earl said: “I think the brake is great when used in applications like short wire ocean towing/bar crossing or something like a Panama Canal transit with a heavy load or without much surge gear.”

Capt Raymond ‘Todd’ Zacke said: “I love those slip brakes. And in heavy seas that

system is worth its weight in gold for letting out wire safely.”

Capt Donald ‘Dwayne’ Whitney said: “Works great from my side. Nothing I would change, all great stuff.”

Chief engineer Daniel Kimball added: “They are perfect for West Coast bar crossings in heavy weather, never putting too much tension on the wire or letting too much wire slip at a time. I personally used it to slowly let wire out in shallow water departing Panama Canal on the east side of the *El Yunque* tow. It worked great with minimal adjustments. Never dragged the wire and never got too tight. I find the brake is easy to operate.”



Planned maintenance software gains class approval

After a detailed review process, Canada-based maritime software company, Helm Operations has gained class type approval from ClassNK for its planned maintenance software, Helm Connect.

Helm founder and CEO, Ron deBruyne, said: “This is a historic moment for our organisation. For many years we have been the market leader in maritime software for the global tug and barge industry. This type approval now makes it possible for us to expand into the much larger blue water shipping industry, regardless of which

classification society the ship owner uses. We are looking forward to working with blue water operators all over the world.”

Since 1999 Helm Operations (formerly Edoc Systems Group) has been developing operations software for the commercial maritime industry.

Helm Connect is the flagship product of Helm Operations. Whether it is managing safety and compliance, planned maintenance, billing, or jobs, the system is designed to give operators the information they need to do their job efficiently.

It is the workboat industry’s first software system designed through user experience principles, which Helm says makes it intuitive for use by everyone in a workboat company, from the crew right up to the CEO.

With more than 1,700 vessels currently using Helm Connect, Helm Operations works with some of the largest and most respected workboat companies in the world, including Svitzer, Kirby, Ingram Barge, Artco, McAllister, Saam Smit, Florida Marine Transporters and Blessey Marine.



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AIS: what a difference a decade makes

Robert Kessler, programme manager, maritime global data solutions at San Diego-based Oceaneering International, looks at the continuing impact of online vessel tracking



► Robert Kessler

When the first web-based vessel-tracking tools emerged 10 years ago, they quickly proved their worth for enhancing vessel, port and terminal efficiency while also reducing costs and improving safety and security.

Leveraging real-time and historical Automatic Identification System (AIS) data and, later, radar and other data inputs, the tools were used to centralise logistics management in the oil & gas industry, and they have enabled tug and OSV operators to significantly reduce standby time at docks and terminals.

These accomplishments were achieved during a period of unprecedented growth in crude oil transportation traffic – and now, as the industry enters its next wave of traffic growth and evolution, these same tools are poised to deliver new and better ways to improve visibility and efficiency, while also protecting vessels and the assets that they navigate around.

In some areas, such as the Panama Canal, a shortage of tugs, OSVs and trained crews has created the need to do significantly more with fewer resources.

Don Marcus, president of the International Organisation of Masters, Mates & Pilots, commented in May 2017 that the region was operating at just half capacity because of a tug shortage, saying it was "... like building a massive office tower without enough elevators to get workers to their offices".

Other areas, such as the Gulf of Mexico, may have excess OSV capacity, thanks to structural market changes since the 2014 downturn at the peak of US OSV construction, but everything on the water is contending with rapid growth in overall vessel traffic.

This traffic was driven at first by crude oil finds in locations that included the Bakken shale fields in west Texas, and Mexico. This crude was initially banned from export, so it was used as cheap feedstock, and refineries ran to capacity as they transported growing

volumes of refined product by water between ports and for export.

There was eventually a shift in the balance between imports and exports, pushing midstream providers to build new terminals and an associated infrastructure of trains and barges transporting product primarily between the Bakken fields and Gulf Coast refineries. As the crude oil export ban was gradually lifted beginning in 2015, ultra-light US crude shipments to the rest of the world grew to a million barrels a day.

Vessel-tracking tools augmented with specialised dock and terminal process management capabilities have helped to accommodate this traffic by improving a number of widely monitored key performance indicators (KPI).

"Before the advent of vessel-tracking tools, tug and OSV operators often differed with terminal owners about the root causes of delays that contribute to demurrage costs, and who was responsible for the penalties"

As an example, many major operators have reduced average delay time per dock by as much as 35 per cent after the first few months of using a vessel-tracking tool, while increasing the number of monthly vessel calls by as much as 10 per cent within the first year.

Now, the industry is entering what looks to be a new period of even faster traffic growth, characterised by unique dynamics.

As midstream operators added more terminals to accommodate very large crude carriers (VLCCs) that are moving exports away from US ports, this is accelerating traffic growth while also introducing more complex loading dynamics, including partial VLCC loading at the dock followed by a second loading event nearby, using a smaller

tanker and a ship-to-ship transfer in the deeper Gulf waters.

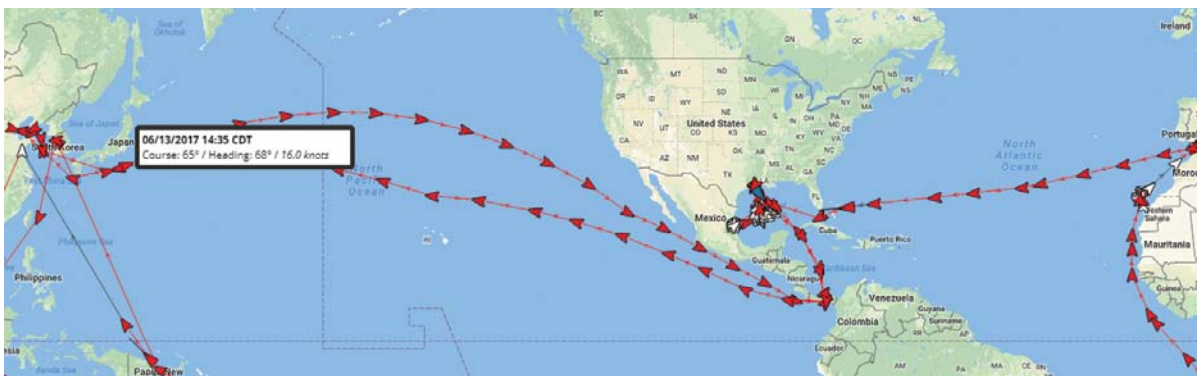
Gulf ports are also seeing a new stage of traffic growth and flow changes, following the Panama Canal widening, with a new flow. In addition, they are supporting newly deregulated Mexican exports, LNG trade to Asia, and bigger container ships arriving from the Far East whose movements often create restrictions for other traffic.

Over the past 10 years, AIS-based vessel-tracking tools have also introduced greater transparency and collaboration into the process of managing vessel traffic and protecting assets.

One area where this has been especially true is demurrage. Before the advent of vessel-tracking tools, tug and OSV operators often differed with terminal owners about the root causes of delays that contribute to demurrage costs, and who was responsible for the penalties. Now, these issues are discussed and disputed by using the same information about real-time and historical vessel movements, which also improves collaboration for identifying and correcting the root causes of delays.

Today's collaborative tools also enable terminal and rig operators to more proactively manage the risks that tugs and OSVs pose to pipelines and offshore assets and infrastructure.

Before the advent of AIS-based vessel-tracking tools, asset operators generally set a radar 'guard ring' and associated alerting mechanisms so there would be a notification when vessels drew to within a set distance



◀ AIS tracking all over the world

from the asset. Unfortunately, false radar alarms from the asset's own support vessels often desensitised watch teams to what can become a high volume of alarms. Plus, radar guard rings could not provide information about the approaching vessel's speed, so there was the risk of setting an alarm that was so large it could account for fast-approaching vessels but overwhelm watchstanders with false alarms – or so small as to provide inadequate mitigation notice.

Today's tools eliminate these challenges. They ingest all required GPS positions from AIS transmitters, radar targets and other sensors, and integrate with a satellite AIS to deliver a complete offshore picture.

The tools can be configured to issue automated alerts that support predetermined parameters associated with each asset's unique risk profiles. They are often also augmented by shore-based monitoring services that provide asset owners with a round-the-clock 'virtual watch team' for assessing threats from vessels anywhere in the world.

Disparate data sets can be aggregated and transported to shore to deliver centralised visualisation and actionable intelligence, so that these watch teams have everything they need to know about a vessel, a point of interest, or a user-defined zone. Meanwhile, the solutions filter out false-negative alarms so they can send alerts only about vessels' interactions with the identified assets.

Throughout the monitoring process,



▲ A wheelhouse receiving the AIS safety alert that the vessel is in a pipeline area

the collected data is also used to optimise operational efficiency and emergency response. With easy access to data about historical vessel movements and triggered alerts, operators can establish and report KPIs on a regular basis.

Operators can also use historical data to

target specific fleets or individual vessels for outreach and education, especially those that consistently appear to trigger alerts or that fail to comply or communicate with the asset watch team.

Rising vessel volumes and changing traffic patterns over the past decade have created a growing need for improved visibility and transparency, stronger safety and security, and better ways for tug and OSV operators to work with those managing terminals and offshore assets.

Collaborative AIS-based vessel-tracking tools and services have met these challenges while creating new opportunities to improve efficiencies and to operate against measurable KPIs in ways that benefit all stakeholders.



◀ AIS has improved efficiency and safety



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Green energy system gains type approval

British Columbia-headquartered Corvus Energy has received type approval by classification society DNV GL for its Orca Energy energy storage system (ESS) for use in battery-powered or hybrid vessels and offshore units.

DNV GL approval confirms that the latest generation of ESS from Corvus Energy has been found in compliance with international standards, regulations and recognised DNV GL rules. The company says the approval also confirms the high quality and safety standards that Corvus has designed into Orca Energy.

COO Neil Lang said: "Orca Energy was designed and built to exceed all industry

standards and customer expectations. As a result, Orca has become the industry's number one choice for energy storage systems."

A leading manufacturer of energy storage systems for maritime applications, Corvus now has 90-plus installations utilising a Corvus ESS, totalling more than 50MWh and 1.5m operating hours.

Corvus' batteries will be integrated with Norwegian Electric Systems' Quest®-2 energy storage system being installed on two PSVs – *Havila Foresight* and *Havila Charisma* – being retrofitted with hybrid power systems.

It is expected the re-fit will deliver average

energy savings of 15-20 per cent across three operating modes – 5-10 per cent in transit, 15-20 per cent in standby/harbour and 25-30 per cent in DP mode.

The two Havila-owned vessels are part of a larger group of PSVs that were awarded long-term charter contracts by Statoil, under the condition that they convert to hybrid power operations using batteries.

The two vessels, along with Ugland's *Juanita*, have secured three-year firm contracts, with three further one-year options. Another four PSVs have been awarded five-year firm contracts, with five further one-year options: Skansi Offshore's *Sjoberg*, Solstad Farstad's *Far Searcher*, and DOF's *Skandi Flora* and *Skandi Mongstad*.

The hybridisation of *Havila Foresight* and *Havila Charisma* is part of Statoil's ambition of being a leading company in carbon-efficient oil & gas production.

Roger Rosvold, sales manager of Corvus Energy, said: "Corvus is proud to be part of Statoil's commitment to the environment and their goal of becoming a leader in cleaner oil & gas production as they leverage renewable energy technologies such as the Orca ESS."

◀ *Havila Foresight* is being retrofitted with hybrid battery propulsion



Bearings company grows customer support network

Thordon Bearings of Ontario, Canada, has expanded its global service and support (GSS) division to meet market demand for installation and maintenance support of its entire product portfolio.

GSS now offers more services to assist ship owners, shipbuilders and repair yards with the installation, commissioning, maintenance and shaft/stern tube alignment services for the full range of oil and grease-free Thordon propeller shaft, rudder and deck bearing products.

Thordon GSS manager, Carl Sykes, said: "We have seen a marked increase in the number of projects GSS teams have been

involved in this year and have therefore increased our service and support personnel to meet this demand."

In the 2017 period to date, GSS teams have seen a steady rise in the number of different projects around the world, the majority of which were installation projects.

Andy Edwards, Thordon Bearings' commercial director, said: "We have experienced unprecedented demand for our technologies over the past two to three years. But as the market moves away from traditional oil and grease lubricated bearing systems, with operators increasingly opting for more cost-effective, environmentally

sustainable solutions, a comprehensive service network has to be in place to support this growing customer base. We are pleased that the GSS department has been able to meet market demand in such a relatively short timeframe."

The Thordon GSS network offers a full scope of bearing installation and commissioning services, oil to water-lubricated bearing conversion management, shaft coating and shaft seal installation and commissioning. GSS will also offer shaft and stern tube measurement and geometrical alignment services for correct positioning of stern tube and bearings.



Signet tugs assist Anne

Powerful array of tugs

The mammoth 299,533-ton VLCC Anne is the largest tanker to date to arrive at Port Corpus Christi, Texas. The vessel is 1,093ft (333m) long and boasts a 2.2m barrel capacity.

Signet Maritime Corporation, the 41-year-old marine services company based in Ingleside, Texas, sent in a fleet of Robert Allan Ltd-designed tugboats for the formidable task of assisting the tanker into the port. The tugs comprised a pair of RAmports 3200s, a pair of RAstar 3100s, and a RAport 2400 MkII, together totalling more than 388 tonnes of bollard pull.



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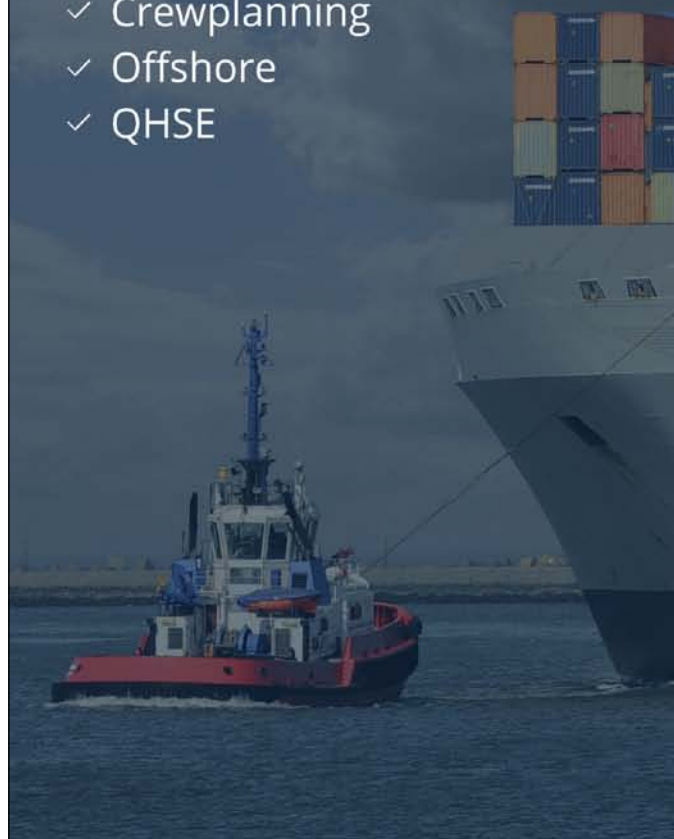


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From 'Tugboat Annie' to global operator

What started with a single rowing boat 128 years ago is now one of the largest coastal tug and barge fleets in the US. Foss Maritime provides a broad range of green-and-blue-water marine services across the globe – but is still a family business at heart. Contributing editor John Oliver reports

When Norwegian immigrant Thea Foss bought a rowing boat in 1889 to help out with the family finances, she could scarcely have envisaged that her simple enterprise would grow into a major maritime operation serving much of the US coastline as well as supporting customers all over the world.

Not that Thea – and carpenter husband Andrew – weren't ambitious or successful in those early years. The initial rowing boat – painted in the pristine white with green trim that still adorns the company's vessels – was soon sold at a profit and the proceeds used to acquire several more boats that Thea rented to local fishermen and others wanting to traverse the myriad waterways in and around Tacoma, Washington: she had a fleet!

While Thea continued to buy more rowboats and launches, Andrew began building them. She then expanded the business by transporting logs with towboats, under the name Foss Launch and Tug Company. By 1904, the company boasted 10 launches, a shipyard, a 60-passenger oil-powered boat and a small rescue craft.

When Thea died in 1927, the day before her 70th birthday, members of the Foss family – including her three sons – continued to operate and grow Foss Maritime for several decades. Other aspects of her legacy include the city of Tacoma naming the Thea Foss Waterway in her honour, while she was



▲ Anchor-handling tug **Corbin Foss** tows a jacket to an oil & gas field in West Africa

also the inspiration for the character, Tugboat Annie, who featured in several Hollywood films of the 1930s and '40s, as well as a Canadian TV series in the 1950s – but that is literally a whole other story.

In 1987, Foss Maritime was bought by another Pacific Northwest family operation, Saltchuk Resources, a privately-owned investment company focused on transportation, primarily maritime.

Today's Foss Maritime – along with its own subsidiaries in Alaska, Hawaii and the US West Coast – provides harbour services and transportation operations from and along much of the US coastline, while international operations cover the Pacific Rim, Europe, South America and the Arctic. Customers include the world's largest oil & gas companies, international shipping companies and a variety of governmental and non-governmental agencies.

Additionally, the two Foss shipyards – in Seattle, Washington, and Rainier,

Oregon – provide naval architecture, marine engineering services, repairs and maintenance.

A major recent project at the Rainier yard has been the construction of the newest arrivals to Foss's own fleet in the shape of a trio of Arctic Class tugs that stake a strong claim to be among the most capable and environmentally responsible tugs certainly operating in the US and possibly anywhere in the world. All three vessels have a bollard pull of 100 tonnes and can carry enough fuel to operate for 30 days or 3,000 miles. Main engine power comes from two fuel-efficient Caterpillar C280-8s; the elimination of ballast tanks means there is no chance of transporting invasive species; holding tanks for black and grey water allow for operations in no-discharge zones such as parts of Alaska and California; and the hydraulic oil systems are compatible with biodegradable oil.

First to take to the water in 2015 was **Michele Foss**, followed by **Denise Foss** last year and **Nicole Foss** earlier this year. All three have been busy earning their keep handling tough jobs from day one. Operations include towing oil field equipment from Korea to Alaska's North Slope, towing drilling rigs thousands of miles around the globe to the Siberian Arctic and another to the North Slope, as well as joining in Foss's ongoing operations at Red Dog Mine – a zinc mine 200 miles beyond the Arctic Circle for which the company has transported tens of millions of tons of concentrated ore.

Not that the company's longer-established vessels are not also making a valuable contribution: Foss recently transported three



◀ Foss Maritime's Rainier shipyard in Oregon – where the company's three latest, Arctic Class tugs were built

320ft steel bridge sections, each weighing 700 tons, along with two 100-ton beams to New Jersey where they will form part of the new Wittpen Bridge across the Hackensack River. They were loaded on to Foss's barge *American Trader* on the Columbia River and towed by *Lauren Foss* down the West Coast and through the Panama Canal before heading up the East Coast.

In addition to these planned activities, Foss tugs are available for unscheduled work – for example, earlier this year *Michele Foss* executed an emergency rescue of a 751ft, 81,882dwt bulk carrier in the Gulf of Alaska.

“Foss has built a reputation as an industry leader, and to maintain that position we must constantly be ahead of the curve: finding new and innovative solutions and having the infrastructure in place to take on any challenge”

John Parrott, president and CEO, Foss Maritime

And in the wake of the devastating hurricanes *Irma* and *Maria*, Foss is supporting the ongoing relief efforts for Puerto Rico and the US Virgin Islands with three accommodation vessels serving as floating hotels providing housing and warm meals for responders – helping to feed and temporarily house 729 people (see page 67).

More generally, Foss's extensive tug fleet is hard at work in harbours along the West Coast, Hawaii and Alaska on a daily basis. In addition to ship assist and escort services for the ships calling on ports, the company

▼ *Foss Maritime's extensive port operations include Hawaii*



Arctic Class tug Denise Foss has been hard at work since entering service late last year

also provides a vital link within the oil & gas industry, both in shipping and upstream development. Foss transports bunkers, refined products and raw materials between supplier, seller and buyer. Currently being built to join the Foss fleet in the near future is a state-of-the-art LNG bunkering barge that will re-liquefy the fuel as well as transport it.

That innovative approach to developing the business is not restricted to the water. Foss has recently opened a fleet monitoring centre in Oregon that uses real-time tracking, not only for the entire Foss fleet but also vessels of sister companies and customers. The imminent purchase of a new marine operating system will greatly improve the connectivity of fleet and shore, while in Hawaii, Honolulu-based subsidiary, Young Brothers, is about to take delivery of the first of four new Kapena Class (Hawaiian for Captain Class) tugs.

For Foss president and CEO John Parrott, that continual drive to improve is what has kept the company at the forefront of an ever-changing maritime scene. “Foss has built a reputation as an industry leader, and to maintain that position we must constantly be ahead of the curve: finding new and innovative solutions, and having the infrastructure in place to take on any challenge,” he said.

“Therefore, one of our core values is continual improvement. We invest in our people and equipment; in furthering

► *Foss Maritime president and CEO, John Parrott*



green technologies; enhancing our safety procedures, training and resources; and growing our long-standing relationships with our customers, vendors and supply chain.

“As an industry, we are collectively facing some headwinds, yet we see a lot of opportunities as the world moves more towards renewable energy and as technology changes how services are or can be provided.”

That desire to adapt and exploit new opportunities reflects perfectly the approach of Thea Foss all those years ago. And wherever those opportunities arise, the distinctive green-and-white livery that adorned that first Foss vessel will almost certainly be right there.

Key facts

Company name: **Foss Maritime Company (part of Saltchuk Resources, Inc)**

Company HQ: **Seattle, Washington, US**

Website: **www.foss.com**

Established: **1889**

Number of employees: **1,700+, working in offices and ports along US West Coast, Gulf Coast, Alaska and Hawaii**

Fleet: **more than 200 vessels comprising:**

Dolphin tugs and hybrid dolphin tug (5,080hp)

Voith Schneider tractor tugs (3,000-8,000hp)

ASD tractor tugs (3,000-6,250hp)

High-performance tugs (4,300-8,200hp)

Conventional tugs (1,800-3,500hp)

Integrated tugs & barges (7,500dwt)

Ocean deck barges (up to 425ft x 100ft)

Petroleum transport barges (up to 35,000bbls)

New motion forecast technology launched

New company MO4, powered by Siri Marine and Mocean Offshore, has introduced a new vessel motion forecasting technology aimed at enabling captains and offshore installation managers to use the full potential of their vessels.

MO4 provides the bridge with periodic and accurate forecasts of the vessel's motions, in addition to the metocean forecast. The service provides clear decision support for routing and weather sensitive operations.

Launched at Offshore Energy 2017 in Amsterdam, Siri and Mocean describe MO4 as a disruptive technology because it out-performs other systems in accuracy, is available both online and on board and is extremely cost-effective.

They say with this technology, vessels can navigate through complex weather situations and that studies have shown that with MO4, a 20 per cent workability increase can be obtained for all weather critical operations.

Mark Paalvast from MO4 said: "MO4 uses 2D wave spectra and a detailed hydrodynamic database. Combining these two leads to greater accuracy in ship motion predictions. Weather forecasts are conventionally compared with allowable

► A mock-up of the MO4 interface as demonstrated at Offshore Energy in Amsterdam



wave height criteria. But these criteria are based on strongly simplified weather assumptions, based upon, for example, just one single weather system. In reality, vessels are often confronted with wind and swell seas spreading over various directions.

"This traditional method of predicting is generally very conservative. MO4 takes everything into account, bridging the gap between ship motion desk studies and wave forecasting."

Marleen Lenting from MO4 said: "In 90 per cent of the cases, our system increases workability. In approximately 10 per cent of the cases we have analysed we found that

conventional cases were too optimistic. In those cases the MO4 system enhances the level of safety of the operation. A second gap bridged is between the theoretical models used and the operation at sea. A higher level of accuracy and confidence is achieved by training ship motion models with measured data. In doing so, the ever-present error between practice and theory is minimised."

The company says the key to being successful is having an interface that is comprehensive to all. People need to be confident with choices they make when using technology. This is just as important as the algorithms behind calculations.

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Simplified design targets medium-sized and small vessels

JRC and Alpatron Marine introduced a new and simplified AlphaBridge design solution, targeted at medium and small vessels, at Kormarine in Busan, South Korea, in October. Also on show was the companies' unique and fully integrated AlphaBridge tugboat bridge.

The design of the new AlphaBridge for medium to small-sized vessels enables optimised viewing in the wheelhouse and full control from a sitting position.

The bridge features a central command chair facing three 26in navigational displays in the front consoles. The bridge is fitted with JRC's latest black box JMR-5400 marine radar and a new conning system. Within



arm's reach, the operator can control the main displays, and other equipment integrated in the bridge, including autopilot, VHF and a propulsion system.

The AlphaBridge tugboat bridge comprises two ergonomic and dynamically designed consoles with a central captain's chair mounted on rails. It is distinguished by the best all-round visibility offered from a sitting position. There are more than 50 tugboat bridges currently in operation,



▲ JRC and Alpatron Marine bridge equipment, which was on display at Kormarine

offering a solution which Alpatron and JRC say ensures uncompromised command and control at all times during intensive towage operations. This tug bridge concept has been fully equipped with a high quality, rugged Alpatron Marine and JRC navigation and communication package.

New autopilot controller is tailor-made for workboats

Marine electronics firm Navico has announced the new Simrad A2004, a dedicated autopilot controller designed to meet the needs of workboat, commercial fishing and passenger vessels.

The A2004 is designed for vessels that do not require SOLAS heading control systems but do require a proven autopilot interface

backed by Continuum software for accuracy and ease of use. The autopilot's information is presented on a wide-angle and zero-fog colour display, and is engineered for responsiveness with a precision rotary control dial and dedicated buttons for instant access to steering modes, a custom-configurable work mode and automated turn patterns.

The A2004 autopilot includes updated features compatible with the latest generation of Simrad radar, sonar and ECDIS displays. A large aluminium rotary control dial enables quick but precise steering adjustments, while dedicated keys offer instant access to steering modes. All built-in controls are designed for ease of use with wet or gloved hands. The A2004 also supports a wide range of Simrad autopilot remote controls and steering levers.

To ensure visibility in all conditions, the A2004's colour LCD panel is optically bonded to its protective glass covering – eliminating the possibility of internal condensation. An ultra-wide 170 degree viewing angle means key autopilot information is clearly visible at a glance, from anywhere in sight of the display. Autopilot settings can be tuned for ideal performance in separate low-speed, high-speed and work modes. The user-configurable work mode allows the autopilot system to be configured for optimal response in a specific situation, such as a fully-laden vessel.

▼ The Simrad A2004 autopilot controller



Flexible ECDIS reflects firm's focus on users

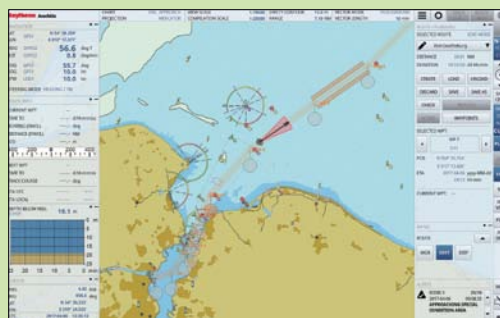
Navigation technology company Raytheon Anschütz has introduced Synopsis ECDIS NX software, a new product based on direct input from the company's customers.

The software features a state-of-the-art design, an intuitive user interface, a clearly structured display, consistent operational concepts and modern interaction patterns such as touch operation, 'drag and drop', pins and handles, and context-sensitive help dialogue. The system is flexible and can adapt to new use cases or integrate new functions without overloading the display or overwhelming the user.

Björn Schröder, product manager for ECDIS, said: "The new ECDIS demonstrates the effectiveness of our agile software development and active user participation. Raytheon Anschütz's engineering team provided the technical base, but the support and feedback from our

customers and professional seafarers made ECDIS NX a uniquely powerful tool."

Synopsis ECDIS NX is designed to be intuitive, and effectively supports users while contributing to safe ECDIS operation and navigation. The system also includes multi-user setting options as well as smart functions such as guided route planning with a self-explaining route manager, ETA assistant, curved heading line, or look-ahead zones with graphical danger indicators. It complies with all current standards, including the new IEC 61174 Ed 4.0 and the IHO ECDIS S-52 Presentation Library.



► Screenshot of the Synopsis ECDIS NX software

Huge demand for fuel monitoring systems

Growing global demand for advanced technology marine fuel monitoring systems from UK-headquartered Royston has prompted an expansion of the company's dedicated engine support team.

The move comes after the recent installation of more than 30 new engine fuel optimisation systems in Nigeria, primarily in OSVs and pilot boats, in response to the growing requirement by the international oil majors that contracted vessels have accurate onboard fuel monitoring data systems installed. This takes the total number of engine installations completed in Nigeria to more than 80 in the past couple of years.

As well as encouraging better emissions control and vessel operational efficiencies, the engine system also incorporates the automatic monitoring of bunkering activity, fuel inventory and consumption data to protect against fuel security issues.

Reflecting this growth in demand, and an increasing focus on the development of effective engine data collection and interpretation systems, Royston has expanded its dedicated engine support team. The specialist team now brings together marine, mechanical engineering, data analysis and software development experts. A local sales unit has also been established, and the company has expanded its system build, test, installation and commissioning capabilities, as well as the technical support available to customers.

In particular, Royston's expanding engine team now incorporates a specialist software development unit that is focusing on the introduction of new digital systems to monitor and manage complete vessel performance, energy use and emissions.

As part of the engine capability, the team has already developed a new software-based system that automatically detects a vessel's operational mode; similar work is underway on new digital systems for emissions monitoring and compliance with environmental performance.

Damian McCann, product manager for



engine fuel management systems, said: "With vessel performance measurement, reporting and verification issues very much at the top of the marine agenda, our advanced engine fuel management system is attracting considerable global interest.

"The expansion of our team will ensure that we can both respond effectively to current demand and also continue to develop and enhance the engine system capability

▲ An engine bridge display

to meet the constantly evolving needs of the international marine sector."

The engine system provides comprehensive fuel data analysis and reporting options to provide vessel owners and operators with detailed engine performance, fuel consumption and emissions information.

Upgrade gives chart compatibility

FarSounder's SonaSoft software's latest release has been upgraded to be compatible with S-57 and S-63 charts. Anyone using these chart formats is now able to overlay real-time data on their charts using the software and reap the many benefits of its innovative Forward Looking Sonar.

CEO, Cheryl M Zimmerman, said: "The operators of those ships preferring to use S-57 and S-63 charts are important to us. Our team has worked diligently,

with the user in mind, to make this option a reality for them. The software upgrade will provide many more ships the safety of real-time 3D sonar data and the luxury of creating historical bathymetric maps.

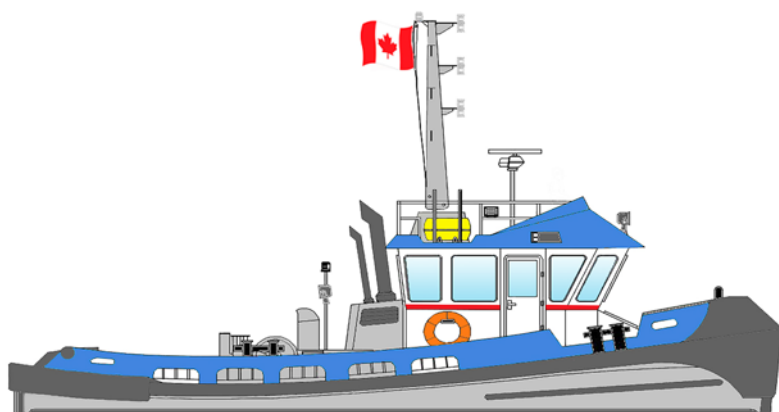
"This will give them a significant amount of navigational awareness that they never had before.

"It is a game-changer for mariners to compare what their chart says is ahead of them to what a FarSounder sonar sees in real time, updating with every ping."



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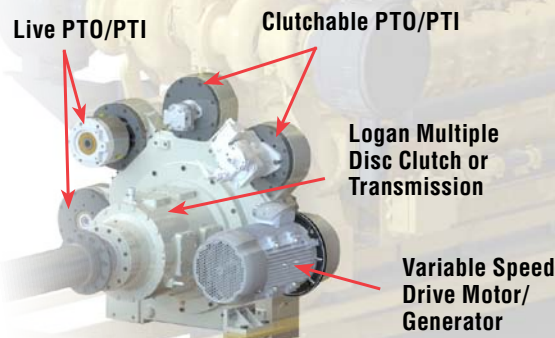


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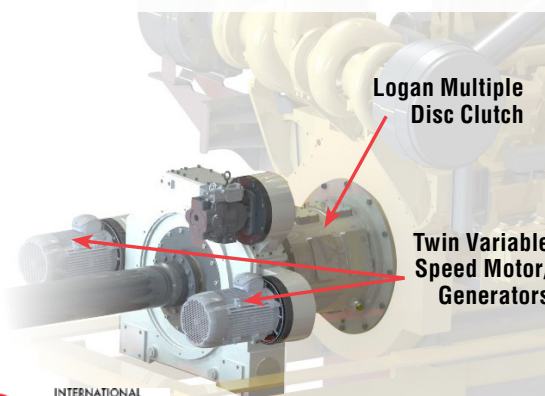
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Conventional FlexaDrive™/ FlexaGen™ installation showing multiple input/output options



Logan FlexaDrive™ configured for hybrid applications

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Press Ctrl-P for latest in prop technology

A prototype of the world's first class-approved ship's propeller from 3D printing techniques has been produced. The 1,350mm diameter component – named WAAMPeller – was made from a nickel-aluminium-bronze alloy and has undergone significant materials testing, while a second prototype is in production for installation on a Damen Stan tug 1606 by the end of this year.

Damen Shipyards Group is part of the international consortium developing the WAAMPeller. Others involved include RAMLAB in the Port of Rotterdam where the prototype was fabricated using the wire arc additive manufacturing (WAAM) method; Germany-headquartered propeller manufacturer Promarin; US-based software specialist Autodesk, and France-headquartered classification society Bureau Veritas.

The prototype three-bladed 3D-printed propeller represents a steep learning curve of the understanding of material properties. "This is because 3D printed materials are built up layer by layer," explained Kees Custers, project engineer in Damen's R&D department. "As a consequence, they display different physical properties in different directions – a characteristic known as anisotropy. Steel or cast materials, on the other hand, are isotropic – they have the same properties in all directions."

Because of this critical difference, one of the first steps was to carry out extensive testing of the material properties of the printed material to ensure compliance to Bureau Veritas standards. "This involved printing two straightforward walls of material – then using a milling machine to produce

► The prototype WAAMPeller was fabricated at RAMLAB in the Port of Rotterdam

samples for lab testing of tensile and static strengths."

The 400kg WAAMPeller also marks a milestone in terms of 3D printing techniques. "The challenge has been to translate a 3D CAD file on a computer into a physical product. This is made more complex because this propeller is a double-curved, geometric shape with some tricky overhanging sections," said Custers.

Yannick Eberhard, from Promarin's R&D department, added: "The transformation from a semi-automatic to robotic processing is the solid foundation for even more complex and reliable future propeller designs."

Pouring water over troubled oil

Lubricating propeller shafts with seawater is an effective way to meet new pollution regulations as well as reduce the need for costly seal repairs, according to an industry specialist.

Chartered marine engineer George Morrison, regional manager with Canada-headquartered Thordon Bearings, believes water-lubricated propulsion systems need to be embraced across the global shipping industry to reduce its environmental impact and save money for owners and operators.

He presented his argument in a technical lecture organised by the Institute of Marine Engineering, Science & Technology (IMarEST) as part of London International Shipping Week in September. The event was also streamed live on IMarEST TV. Morrison's paper, *Water Lubricated*

Propulsion – A Case for Full Acceptance, explored the pros and cons of current shaft lubricating methods.

He said: "The introduction of new pollution regulations has led to a return to seawater-lubricated propeller shaft bearing systems, especially for those vessels trading in US or polar waters, where the discharge of oil from any oil-to-sea interface in quantities that may be harmful to the environment is restricted."

Also according to Morrison, when seawater-lubricated propeller shaft lines are used rather than oil-lubricated shafts or pods, operating costs are reduced substantially over the life of the vessel as there is no aft seal, no lubricating oil, no storage of oil, no sampling of oil and no disposal of oil. Additionally, there are no costly seal repairs that can cost as much as US\$300,000 per aft shaft seal.



Software upgrade is valuable tool for naval architects

Performance prediction and analysis company HydroComp has released an updated version of its PropElements software package with significant new features designed for naval architects and propeller specialists.

While built on the same analytical codebase as an early version of the software, US-headquartered HydroComp said PropElements 2017 "is a novel program that tackles the component level hydrodynamic needs of naval architects".

Among upgrades in the latest version is new high blade-loading curvature correction for low J accuracy, which the company describes as 'huge'. Other improvements include the calculation of body forces for computational fluid dynamics and finite element analysis which are now a vital part of higher-order analyses, and additional data exchange with other HydroComp software packages NavCad, for initial design, and PropCad for manufacture.

The updated package will allow users to investigate cost-effectively small changes in propeller design much further in the design stage.

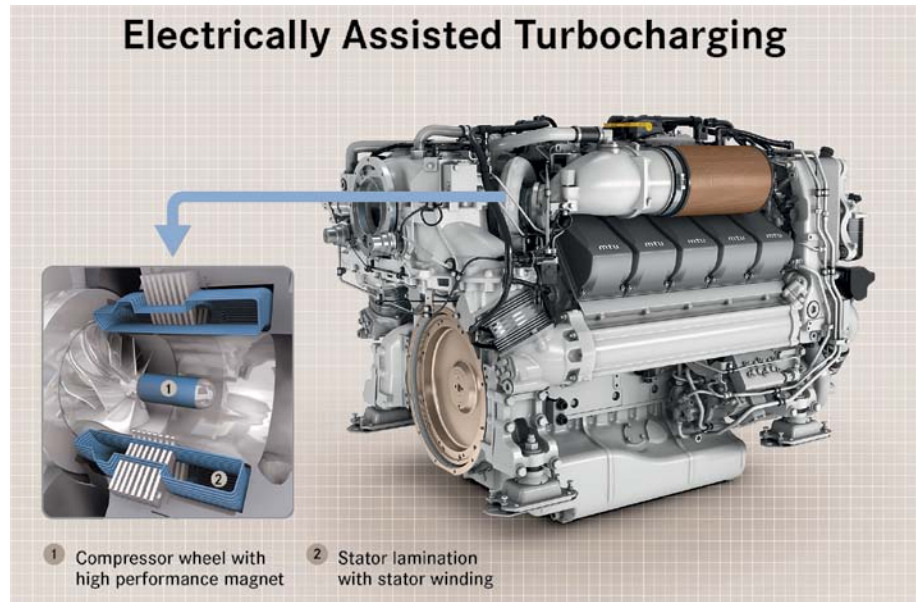
Technology deal a major milestone

Rolls-Royce has acquired the exclusive rights for a new technology developed in Germany for the electrically-assisted charging of engines. The UK-based global company will offer the engines of its MTU brand with the system from 2021.

Developed by niche technology company G+L innotec, the system comprises an electric drive combined with a traditional turbocharger produced by MTU. As a result, the turbocharger can be accelerated electrically and the charge pressure built up earlier.

In operating conditions in which the energy required for a faster charge pressure of the turbine would normally not be sufficient, it is also possible to build up with the aid of the electric drive.

Using the G+L innotec technology, MTU will be able to significantly increase the acceleration capability of its marine engines and also the load response capabilities of generator drives. Fuel consumption and emissions are likely to be improved while, thanks to the increased load response



capability, emergency standby gen sets will be able to deliver their full output faster. The technology is ideally suited to diesel and gas engines. To provide the turbocharger with electrical assistance, a permanent magnet is installed upstream of the compressor wheel and the electrical winding is integrated into the casing of the compressor. The air drawn in by the compressor is not obstructed and, simultaneously, the electrical components are cooled by the air.

Dr Johannes Kech, director of development

turbocharging and fluid systems at MTU, said: "Electrically-assisted charging is a milestone on the way to the hybridising of the engine. Using this technology, it will be possible for us to develop agile, low-consumption engines."

MTU – part of Rolls-Royce Power Systems – and G+L innotec are now working on the next stages of development of the system. The plan is to launch marine engines equipped with the new technology in the marine and other markets in 2021.



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New nozzles arrive on latest dual-fuel tugs

German marine propulsion company, Schottel, has introduced its latest nozzle to the market on board Europe's first LNG-powered dual-fuel tugs.

The trio of vessels, which have all entered service in recent weeks, feature Schottel's new VarioDuct SDV45 nozzle, designed and developed at the company's headquarters in Spay am Rhein. After extensive CFD analysis and trials, the nozzle has been modified in shape to enable high-power applications along with reduced fuel consumption.

Announcing the new arrival, Schottel said: "The SDV45 marks a substantial progress in terms of a vessel's overall efficiency compared to other nozzle products. In combination with a compatible propulsion unit, fuel savings of up to 10 per cent are possible at a certain speed, while maintaining a high rate of bollard pull. Furthermore, due

► Schottel's VarioDuct SDV45 nozzle was developed after extensive CFD analysis and trials

to the nozzle's relatively small diameter it is ideally suited for operation in shallow water."

Dux, Pax and **Audax** are 40.2m escort tugs with 107 tonnes of bollard pull. Designed by Robert Allan Ltd, the RAstar 4000-DF vessels – the first dual-fuel tugs built in Europe – came out of Spain's Gondán Shipyard and are now in service with Norwegian company Østensjø Rederi carrying out escort and berthing operations with Norway's state-owned energy company, Statoil, at its LNG gas terminal in Hammerfest.

The SDV45 nozzles are part of a Schottel propulsion system which features a pair of Rudderpropellers type SRP 630CP – powered by two 3,000kW-rated Wärtsilä 6L34DF



main engines – and a transverse thruster type STT 170FP in the bow.

The nozzles are also being fitted, along with Schottel Rudderpropellers, to a new windfarm service operation vessel being built for French firm Louis Dreyfus Armateurs at Cemre Shipyard in Turkey.

Support vessel engine 'provides unrivalled reliability'



Finning UK & Ireland has supplied twin Cat® C32 diesel propulsion engines to Mainprize Offshore's new **MO4** wind farm support vessel, which is currently providing vital support to a network of Germany's offshore wind farms.

MO4 is the latest in an ever-expanding fleet of windfarm support vessels for UK-based Mainprize Offshore, which required a reliable engine propulsion solution to carry cargo, equipment and crew to a series of German windfarms.

The engines from Finning, the sole supplier of Caterpillar equipment in the UK and Ireland, drive fixed pitch propellers, providing a service speed of 26 knots for the

► Caterpillar's C32 diesel propulsion engine, two of which are installed on Mainprize Offshore's new **MO4** wind farm support vessel, above, which is supporting several German wind farms



MO4, even when fully loaded. Mainprize Offshore also needed a solution that would hold the vessel in position when docking, offering good manoeuvrability and steady performance when a change in propulsion direction is required.

Constructed by Mainprize Offshore,

Aluminium Marine Consultants and Walker Marine Designs, **MO4** offers a 30,000ltr fuel oil capacity, 20,000ltr fresh water capacity and the provision for 30 tonnes of deck cargo and four 20ft containers. In addition to its expansive deck and cabin area, other notable features include a three-point mooring system, fuel and fresh water transfer systems, and the capability to perform seabed, bird and impact assessment surveys.

Bob Mainprize, owner of Mainprize Offshore, said: "Our relationship with Finning extends back 40 years. Having a dependable support network is vital for these offshore wind farms, and we need to be ready to respond quickly should the need arise."

Gordon Dalrymple, marine sales manager at Finning, said: "The C32 engines perfectly match Mainprize Offshore's requirements for its new **MO4** vessel, providing unrivalled engine reliability while meeting EPA Tier 3 and IMO II emissions regulations."

Meters monitoring shaft power on tugboat

Emissions and energy management specialist TecnoVeritas has installed two of its Optipower units on a UK-based tug to help monitor the performance of the vessel's propulsion system.

The Portugal-headquartered company has provided meters measuring torque and thrust on board the Svitzer tug **Ormsby Cross** in the port of Newcastle. Shaft power is being measured on the two shaft lines of the tug and the Optipower units

are integrated into a monitoring system delivered by Newcastle-based diesel power company, Royston.

By measuring the shaft power system, the units allow the propulsion system to be monitored in terms of performance, as fuel is being measured simultaneously along with other operational variables of the tug.

As well as monitoring performance, an owner can also use Optipower to optimise a vessel's operation.

Stabiliser design reflects seven years' R&D

Western Australia-headquartered VEEM Ltd has developed propeller design and manufacturing techniques that have enabled it to become a world leader in fixed pitch propeller technology. The company says its fanatical approach to its products and services has been the hallmark of its success. It has continued this approach with the new VEEM Gyro stabilisers, which it says provide a genuine step-change in performance compared to existing stabilisation systems on the market

VEEM Ltd dates from 1968 and from its early beginnings as a small machine shop specialising in the repair and dynamic balancing of drive shafts and other rotating equipment, it has grown to become a leading global manufacturer of sophisticated equipment for the defence, aerospace, marine and oil & gas industries.

The company's specialist activities extend across a wide range of industry sectors with the marine division of the business representing the largest portion. Included in this division are propellers that incorporate the patented 'in the water' Interceptor pitch changing technology. While propellers and shaft lines are the best known company products globally, not many know that the marine division also supplies significant volumes of highly sophisticated submarine components and ride control assemblies for defence contractors around the globe.

The latest state-of-the-art gyro stabilisers, VEEM Gyro, represent more than seven years of continuous research and development and many millions of dollars. Many of the elements of the design have never been explored or applied to this unique application and it has been a careful and comprehensive engineering programme that has resulted in the products that have now been released to the market.

The applications for the VEEM Gyro are almost endless and they will be a benefit for all vessels that have a roll period of between three and eight seconds. This not only includes mono-hulls which are the obvious applications, but extends to tri-hulls if they are designed to roll within this time period.

For offshore commercial applications where operability and profits can be directly affected by sea and wave conditions, heavy-duty and reliable stabilisation can significantly improve working revenue, scheduling certainty, crew endurance and client comfort. The range of gyro stabilisers has been developed to improve the critical operations of offshore work vessels while at sea and to provide these improvements at a minimum operating cost.

All the gyro models in the series, namely the VG120, VG145, VG260 and VG1000 will be manufactured on a continuous basis and kept in stock to enable rapid delivery for refits and upgrades. The VG120, VG145 and VG260 are already manufactured on this basis and the large VG1000 will go into production in March 2018. As each VG1000



is around US\$1m this represents a significant financial commitment to the marine market by VEEM.

Throughout the development phase

"For offshore commercial applications where operability and profits can be directly affected by sea and wave conditions, heavy-duty and reliable stabilisation can significantly improve working revenue, scheduling certainty, crew endurance and client comfort"

the company paid careful attention to the traditional limitations of current and historical gyrostabiliser systems. The result, it says, is that all of the significant limitations of other gyrostabiliser systems have been resolved.

The company says key features that have been developed through this comprehensive research and development phase include a significantly extended main bearing life (12,000-60,000 hours), less than half the perceived noise level of other systems

▲ A VG120 VEEM Gyro stabiliser

(66dBa), much lower vibrations and perhaps best for end-users, all maintenance tasks can be completed with the gyro installed in the vessel, including bearing changes.

The company says advantages of its system include safer docking alongside fixed and floating facilities due to significantly reduced rolling; safer, faster deck operations; increased crane operational envelope (especially for side mounted cranes); ROV tracking without having to maintain head to sea; reduction of thruster and propeller aeration due to rolling, and more options for heading when handling lines due to less rolling.

Furthermore, the system will reduce strain on sea fastenings, increase crew comfort and eliminate seasickness, decrease crew fatigue leading to better performance, and result in happier, more comfortable client teams.

VEEM says the first installations of the new stabilisers have been a total success with more than 2,500 hours being recorded so far. Units have been installed in Europe, the US, Australia and New Zealand.



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SOV Esvagt Njord at work in Statoil's Dudgeon offshore wind farm in the North Sea
Photo: Jan Arne Wold/Statoil

Dedicated SOVs deliver double the benefits

Purpose-built service operation vessels (SOVs) for servicing offshore wind farms have proven to be far more efficient than anticipated when work in the farms began in 2015, according to the company that has pioneered use of the type.

Denmark-headquartered offshore support operator Esvagt now believes that its current trio of SOVs can each service an offshore wind farm with 150-200 turbines – more than double the size of current parks.

Ole Ditlev Nielsen, business development manager for Esvagt, said: “The starting point was that an SOV needed to be able to service a wind farm with 80 turbines. That number of turbines, however, has not come close to fully using the capacity of the SOVs. After two-and-a-half years with SOVs, we can conclude that the vessels can do much more. We need to take advantage of that potential so that we can help to drive down the levelised cost of energy from offshore wind.”

Esvagt is confident that it will be able to draw on solid operational experience and several different designs in existing wind farms and in future tenders which, together with a simulation tool, will help to find optimal logistical solutions for its customers. This will enable the company to tender for servicing tasks with a far more documented and substantiated basis.

Rune Østergaard, newly-appointed head of commercial wind for Esvagt, said: “Our SOVs, equipped with a walk-to-work gangway and one or more safe transfer boats (STBs), have given us the best concept on the market. They bring efficiency and flexibility to operations, offer a wide operational radius in the wind farm and reduce costs, as crew transfer vessels can be replaced by an STB. At the same time, we are the only ones that can deliver SOV trained and SOV experienced personnel to do the job.”

Esvagt's total fleet of more than 40 vessels includes its three in-service SOVs, which



► Head of commercial wind, Rune Østergaard

provide accommodation for technicians, spare time facilities, offices and conference room, storage for small turbine parts and workshops. *Esvagt Faraday*, *Esvagt Froude* and *Esvagt Njord* are all Havyard 832 designs with a capacity of 40 technicians.

The company has also placed two orders for a new SOV design, the Havyard 831, designed as a compact, efficient and profitable vessel for smaller wind farms.

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Hybrid power boost heads for Mexico

A Mexico-based PSV will enjoy significantly improved operational efficiencies following an integrated upgrade to its hybrid power and DP system provided by marine technology company Kongsberg Maritime.

Seacor Maya is one of 15 OSVs operated by Seacor Marine's joint venture, Mantenimiento Express Marítimo (Mexmar). The turnkey contract covers delivery of the complete energy storage system and energy control system, including upgrading existing DP and automation systems.

The overall solution adds safety and efficiency beyond conventional energy storage.

Following installation of the new and upgraded system early next year, *Seacor Maya* will have reduced CO₂, NO_x and SO_x emissions and will also benefit from enhanced operational performance and efficiencies through improved fuel efficiency, lowering lifetime costs.

The contract, signed in September, includes an option for a second vessel.

Data start-up's fuel savings for oil giant's African fleet

A 15-strong fleet of OSVs and tugs operating in African waters saved US\$836,000 in fuel during a six-month trial of a key element of a new marine logistics platform developed by French start-up Opsealog.

The Toulouse-based data analytics company worked with oil giant Total E&P Angola on its proof of concept trial evaluating fuel efficiency – one element of its Marine Logistics solution that also includes environmental impact, fleet utilisation, cost control and allocation.

During the six-month evaluation period in Angola, the Opsealog solution integrated pre-defined dashboards, self-service analysis and consulting across the Total fleet of PSVs, AHTs, tugs and FSIVs. The initial target was to achieve an 8 per cent fuel saving, but the company said the final reduction reached 11.5 per cent.

"We are proud of this first success obtained thanks to the partnership with Total E&P Angola and hope it can lead to further collaboration. Our first solution, Marine Logistics, includes other valuable topics where data analytics, as a key element, can improve efficiency and generate additional

► Arnaud Dianoux, managing director of Opsealog



cost savings," said Arnaud Dianoux, managing director of Opsealog, which launched in late 2015.

Laurent Pottier, marine specialist with Total, said: "Working with start-ups like Opsealog can help Total control and reduce logistics costs. It is a right move and a step forward to our digital transformation. Their dashboards allow our teams to identify areas with room for improvement. This was highlighted with the successful proof of concept on fuel efficiency carried out in Angola, where tangible savings were generated. Opsealog goes to show that there are new solutions to be found to improve our fleet's efficiency and we're open to them."



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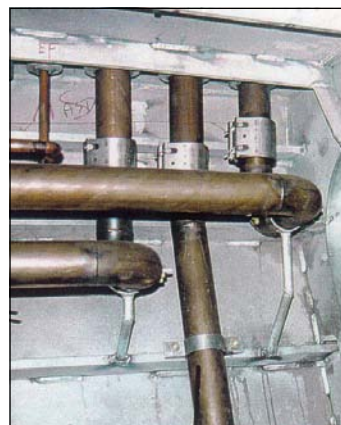
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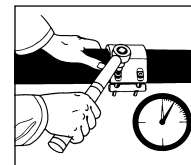
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Integrated simulators mimic real-life maritime scenarios



◀ **Marcel Kind**, Simwave managing director and co-founder, left, and **Joost van Ree**, Simwave commercial director and co-founder

One of the world's largest and most advanced maritime simulator centres is about to open on a 5,000m² site near Rotterdam, in the Netherlands.

The Simwave training centre boasts a total of 59 Kongsberg K-Sim simulators – including life-size replicas of an engine room and a tug bridge configuration corresponding to a variety of offshore and harbour tugs.

The array of K-Sim simulators will be integrated with, among others, two full mission bridge simulators with 360-degree projection.

"Kongsberg's simulators and technology play an important role in this context," said Simwave co-founder Marcel Kind.

"We offer shipping companies and other maritime organisations the opportunity to perform training sessions, assessments and research at our premises under their own name, with their own instructors and with

their own look and feel.

"However, we provide more than just facilities – we can also offer our clients extensive support from a team of training specialists, mathematical modellers and other experts. You could call it 'maritime simulation as a service'."

One of the highlights of the centre is the Kongsberg 360-degree full mission tug simulator. Simwave co-founder Joost van Ree explained: "As a tug master needs to learn to work in close co-operation with a diversity of stakeholders in the nautical chain – such as captains, pilots and port authorities – Simwave offers facilities where all the various simulators can be integrated into a single scenario."

Simwave plans to open a second centre in Southeast Asia next year, and ultimately aims to have five such centres at various maritime hotspots around the world.

Security is on training agenda

The Liberian Registry has launched a cyber and ship security computer-based training (CBT) program that provides a comprehensive overview of cyber-security issues, including concepts such as malware, network security, identity theft, risk management, and other common threats to maritime security.

Jorgen Palmbak, director of maritime security for the Liberian International Ship & Corporate Registry (LISCR), the US-based manager of the Liberian Registry, said: "Cyber-attacks have been identified as among the most serious emerging threats to the security of today's shipping industry. Over 40 per cent of crew members have reportedly sailed on a vessel that has become infected with a virus or malware – and only one in eight crew members has received cyber-security training.

"In recent years, it has become apparent that maritime companies, ships, and ports are not adequately protected against

what is clearly a rapidly evolving threat. Furthermore, IMO has issued a resolution giving shipowners and managers until 2021 to incorporate cyber-risk management into their ship safety plans. The Liberian Registry ... has accordingly taken a proactive approach to the issue."

The training fulfills the requirements of STCW security awareness training. In addition, the Liberian Registry's Seafarer Certification and Documentation Department will accept completion of the training for its security awareness special qualification.

The training is recommended for all individuals, at all levels of seniority, who require enhanced training to deal with the threats faced by all companies, vessels and crew.

The two-hour computer-based training program is divided into four modules, with ongoing evaluation through a series of questions. On successful completion of the training, a certificate is awarded.

Super-real sim takes training to next level

SeaWays Global has taken its highly successful tug training provision to a new level, with its move to a state-of-the-art simulation-based centre on the UK's south coast

Aiming to provide the best possible training experience, SeaWays Global has chosen a new training facility for its simulation-based courses.

The world-class training centre, located at the Transas Academy's facilities at Lakeside North Harbour in Portsmouth, UK, boasts first class equipment, the latest software, newest technologies and highly realistic visualisation in each of its simulators.

The training facility houses the full range of Transas simulation equipment, including full mission bridge simulators, full mission and part-task tug simulators and a full mission engine room simulator. The training suite also includes large classrooms and smaller simulation briefing rooms, where preparation and debriefing on all exercises is carried out.

All the simulators are the latest generation of the Transas Navi-Trainer Professional 5000 (NTPro 5000) and feature ship-like consoles with a complete set of dedicated hardware controls and professional displays for all bridge functions.

The tug simulator is a key element of the SeaWays Global training programmes. It has been specially developed in conjunction with Transas and features 360-degree vision via 44 LED screens, with 31 computers running the advanced software, along with the latest Rolls-Royce controls and electronics, ASD, ATD, CTS and VSP controls, and Damen-supplied winch controls.

Transas solutions manager, ship modelling, Alexander Ozersky, said: "The development of the tug models was quite challenging, because unlike larger vessels a tug moves in very different and unique motion



models – for instance, indirect towing. So Transas appreciated that the SeaWays team not only shared its expertise, but also executed full-scale tug tests to measure the vessel's manoeuvring properties and towing capabilities in different manoeuvres.

"This data helped Transas to develop the more precise tug models and effects required for the tug training, such as hull interaction, propeller wash interaction, fendering and towline simulation."

The software development involved a team of computer programmers and modelling team working with SeaWays' team of tug master trainers for more than 12 months, enabling trainees to perform 55 separate aspects of tug operations during the training.

The training sessions are set in the virtual world of 'Port SeaWays' – designed and modelled by the managing directors of the SeaWays Group, Capt Neil Sadler and Capt Steve Sandy, to provide a realistic port setting for an exhaustive series of exercises, all of which are recorded and re-viewable via the

▲ *The 360-degree tug simulator is a key element of SeaWays' training programme and has been specially developed in conjunction with Transas*

big screen playback system in the instructors' room and classroom.

Sandy, MD for Asia, Africa and Europe, said: "Our training programmes are internationally recognised and accredited. We hold accreditation from leading classification society ClassNK, placing us in the highest tier of training providers. This accreditation means it is crucial for SeaWays Global to deliver its training in a state-of-the-art facility – which we believe to be the most advanced tug sim in the world – so we can continue to provide cutting-edge training to our trainees."

By bringing expertise and technology together, SeaWays Global helps its trainees to bridge the gap between their existing and required competency levels, as well as building all-important confidence and muscle memory in a controlled and safe environment.

Currently, SeaWays Global offers a variety of simulation-based training courses. Tug masters can complete courses in ASD/ATD tug handling, ASD/ATD harbour towage, and active escort. In addition, SeaWays Global provides an 'Effective use of tugs for maritime pilots' course, which has been designed to meet the needs of pilots working with the constantly changing design of tugs. This course has already been delivered to more than 400 maritime pilots all over the world. The training is mostly conducted on the full-mission bridge simulator, enabling a wide range of basic and advanced training exercises to be carried out. SeaWays Global can also work with individual clients to provide fully customised training solutions.



◀ *SeaWays Global managing directors and trainers, Capt Neil Sadler (left) and Capt Steve Sandy, take a virtual tour around 'Port SeaWays'*

In brief

The UK Chamber of Shipping has launched *Understanding UK Shipping*, a new book that gives a comprehensive overview of the nation's maritime industry. Covering a range of topics from national and international legislation to crew employment rights and safety standards, it was originally developed to complement the chamber's Introduction to Shipping course. The book is available direct from the publisher, Witherby's, at £40.

A key theme at *Kongsberg UC 2017*, an international maritime simulation user conference held in The Hague at the end of September, was maritime digitalisation and its application to the world of simulation and training. The application of virtual reality and augmented reality in maritime training was also high on the agenda.

Southampton Solent University has opened a new £6m city centre campus for officer cadet training and first certification courses, previously taught at Warsash Maritime Academy.

Keeping crews at their peak

To help maritime operators ensure that crew are training and performing at their peak, US-based KVH Industries has introduced Videotel Performance Manager. Described as a breakthrough solution for maritime training, it combines the extensive range of award-winning training content from Videotel with the power of web-based data analytics – all from KVH.

Videotel Performance Manager is designed to help increase operational efficiency, safety and crew performance. The cloud-based software platform ensures that a crew's latest training records are accessible from any web-enabled device, while interactive, dynamically rendered reports and dashboards present easy-to-view data about crew performance, skill levels, strengths, weaknesses and training schedules.

Ship management company Thenamaris is one of the early users of Videotel Performance Manager. The company's performance and development supervisor Yannis Koudounas said: "It offers a wide range of sophisticated features and reports enabling our marine personnel team to have accurate and timely insight of the training progress per person, per vessel, per title.

"Consequently, this application becomes a valuable tool in decision-making for our

seafarers' onboard training plans. We like its simplicity and the fact that it is constantly upgraded with new features. Most of all, we have found that it is well-supported by a skilful and fast-responding team."

At the core of Videotel Performance Manager's cutting-edge training management tools is the user-friendly web application, which was developed with input from maritime training professionals. Key features include a crew management system; training reports that show what training is being carried out, and also generate evidence of compliance required during an external audit or ship inspection; a schedule builder for creating training plans, and performance monitoring – for tracking progress against a recommended training schedule.

Mark Woodhead, KVH senior vice president, EMEA, said: "The ability to quickly see the training status of all seafarers in a fleet provides important advantages for a maritime training manager.

"With an easy-to-use dashboard, the manager can assess the precise level of a crew's training, preparation and compliance, which ultimately helps to keep operating costs low, and reduce safety and financial risk. This isn't just record-keeping, it's valuable intelligence for maritime training managers."

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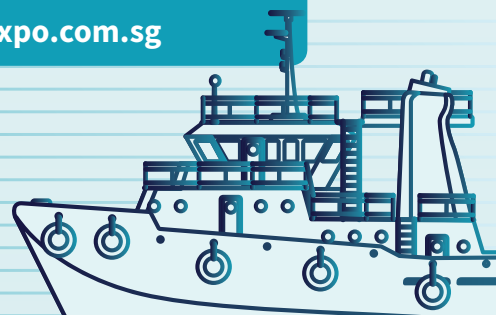
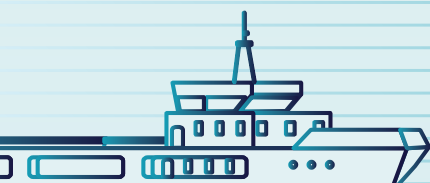


Taking place on 14 March 2018, the conference will address:

- Evolving Asian fisheries - vessel requirements and industry changes.
- Passenger vessels – the time for improved safety, reliability and efficiency.
- Tug design developments and predicted future usage and requirements in Asia.
- Marine projects - dredging, marine infrastructure and associated vessels in the Asian Century.
- Implications of South China Sea military build-up on maritime security vessel orders and tactics.

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Treaty is a 'landmark step' in eco legislation

A key international measure for environmental protection that aims to stop the spread of potentially invasive aquatic species in ships' ballast water entered into force on 8 September.

The International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention) requires ships to manage their ballast water to remove, render harmless, or avoid the uptake or discharge of aquatic organisms and pathogens within ballast water and sediments.

The BWM Convention was adopted in 2004 by the IMO, the UN specialised agency with responsibility for developing global standards for ship safety and security and for the protection of the marine environment and the atmosphere from any harmful impacts of shipping.

"This is a landmark step towards halting the spread of invasive aquatic species, which can cause havoc for local ecosystems, affect biodiversity and lead to substantial economic loss," said IMO secretary general Kitack Lim.

"The requirements which enter into force today mean that we are now addressing what has been recognised as one of the greatest threats to the ecological and the economic well-being of the planet. Invasive species are causing enormous damage to biodiversity and the valuable natural riches of the earth upon which we depend. Invasive species also cause direct and indirect health effects and the damage to the environment is often irreversible," he said.

"The entry into force of the Ballast Water Management Convention will not only

minimise the risk of invasions by alien species via ballast water, it will also provide a global level playing field for international shipping, providing clear and robust standards for the management of ballast water on ships."

Ballast water is routinely taken on by ships for stability and structural integrity. It can contain thousands of aquatic microbes, algae and animals, which are then carried across the world's oceans and released into ecosystems

"We are now addressing what has been recognised as one of the greatest threats to the ecological and the economic well-being of the planet. Invasive species are causing enormous damage to biodiversity and the valuable natural riches of the earth upon which we depend"

Kitack Lim, IMO secretary general

where they are not native.

Untreated ballast water released at a ship's destination could potentially introduce new invasive aquatic species. Expanded ship trade and traffic volume over the past few decades has increased the likelihood of invasive species being released. Hundreds of invasions have already taken place, sometimes with devastating consequences for the local ecosystem, economy and infrastructure.

The BWM Convention requires all ships in international trade to manage their ballast water and sediments, according to a ship-

specific ballast water management plan. All ships must carry a ballast water record book and an International Ballast Water Management Certificate.

All ships engaged in international trade are required to manage their ballast water so as to avoid the introduction of alien species into coastal areas, including exchanging their ballast water or treating it using an approved ballast water management system.

Initially, there will be two different standards, corresponding to two options.

The D-1 standard requires ships to exchange their ballast water in open seas, away from coastal waters. Ideally, this means at least 200 nautical miles from land and in water at least 200m deep. By doing this, fewer organisms will survive and so ships will be less likely to introduce potentially harmful species when they release the ballast water.

D-2 is a performance standard which specifies the maximum amount of viable organisms allowed to be discharged, including specified indicator microbes harmful to human health.

New ships must meet the D-2 standard immediately, while existing ships must initially meet the D-1 standard. An implementation timetable for the D-2 standard has been agreed, based on the date of the ship's International Oil Pollution Prevention Certificate (IOPPC) renewal survey, which must be undertaken at least every five years.

Eventually, all ships will have to conform to the D-2 standard. For most ships, this will involve installing special equipment.

Compliance concerns voiced at Miami conference

Ship owners attending a ballast water management conference in Miami in September were surprised to learn that once a ballast water treatment system has achieved type approval, there are no strict provisions in place for verifying the system's on-going operational efficiency.

According to water treatment specialist Aqua-tools' business development manager, Carine Magdo, who attended BWMTech North America, some ship owners present indicated concern that there is no way to check system compliance. One delegate, she said, had noted that once a ballast water system has been installed and commissioned, there is little by way of after-sales support.

"It does appear that once certified by the US Coast Guard or IMO, the ballast water treatment (BWT) system is left to run and run without anyone really knowing if it's working or not," she said.

Magdo said she was concerned that there is no protocol in place to verify system

efficiency. "This is unheard of in land-based water treatment applications, where there are mechanisms to assess the biological and chemical make-up of the treated water. This should be a mandatory requirement," she said.

Referring to conversations she had with a number of BWT manufacturers attending the conference, she said few gave testing much thought. "When I asked them about what they were doing to verify efficiency, few were sure whose responsibility it was. 'We don't carry out testing during commissioning because we are type approved' or 'we don't test because it's not our responsibility', were typical responses."

She said: "I'm really surprised that the makers don't support their customers in helping to verify the efficiency of their treatment system after commissioning and in real operational conditions, especially given the high capital expenditure ship owners are making."

Magdo added: "When you do a [land-

based] install you have to carry out a risk analysis and validate the performance of the system defined by a series of operational and environmental protocols. I find it odd that water treatment systems in the maritime sector can be supplied without any specific guarantees on operational efficiency."

With BWT efficiency dependent on so many parameters, she warned that a type approval certificate alone could not guarantee the efficiency of the system.

"All parties involved in ensuring the BWM Convention is effective need to think about testing the water, during commissioning, alongside and on board. Quick monitoring of all three factions (bacteria, 10 to 50 µm and >50µm) is by indicator-based ATP 2GTM technology and can assess treated water within 40 minutes of sampling. This provides shipowners and manufacturers with the confidence their systems are efficient and, above all, compliant," she said.

'A proactive approach to compliance is key'

The extension of the deadline for retrofitting ballast water treatment systems may have given shipowners a breathing space, but failing to follow the principles of the BWM Convention could have a negative impact on operations and profitability, according to Dr Brian Phillips, MD of the UK's Chelsea Technologies Group

It was more than a year ago that the shipping industry was finally provided with a solid timeline around the Ballast Water Management (BWM) Convention and the required installation of a ballast water treatment (BWT) system. The recent decision by the IMO to extend the deadline for the retrofitting of vessels with BWT systems will have come as a relief to many ship owners, but those looking to take advantage of this extension are operating under a real risk of reputational harm and reduced commercial opportunities.

In the offshore and support vessel community, given the nature of these vessel and platform operations, many may be less concerned about the immediate impact of the BWM Convention on their operations. But, as the convention applies to almost all vessel types – including submersibles, and floating craft and platforms – taking a proactive approach to compliance is key. Even if the BWM Convention does not require modifications to a particular vessel or its operations, it can have implications for international trade and ship movements, and it is important to recognise that failing to follow the principles of the convention can have a real impact on operations and profitability.

The revised BWM Convention introduces two standards for handling discharged ballast water. D-1 addresses the ballast water exchange standard and D-2 details the ballast water performance standard using an approved BWT system.

D-1 standard requires ships to ensure that ballast water by volume is exchanged far away from the coast where it will be released. This is due to the fact that coastal organisms

will not survive in deep oceans or open seas due to different temperatures and salinity. This can be achieved by several means. The sequential method involves emptying the ballast tank and refilling with replacement ballast water equating to at least 95 per cent volumetric exchange. The flow-through method involves pumping replacement ballast water into a ballast tank and the existing ballast escaping by overflow; at least three times the tank volume is to be pumped. The dilution method allows new ballast water to be filled from the top with simultaneous discharge from the bottom.

The D-2 standard requires ballast water management to restrict the amount and size of viable organisms allowed to be discharged and to limit the discharge of specified indicator microbes harmful to human health.

The convention applies to existing tugs and offshore vessels, as well as those being built. Ships under construction whose keel was laid on or after 8 September 2017 must conduct ballast water management that at least meets the D-2 standard from the date they are put into service. For existing ships, the date for compliance is linked with the renewal of the ship's International Oil Pollution Prevention Certificate after September 2019. Some authorities are progressing enforcement ahead of the IMO timeline. Since 21 June 2012, the US Coast Guard (USCG) ballast water regulations require vessels that discharge ballast in US waters to either install a treatment system or manage their ballast water in another approved way. In August 2017 the USCG issued a US\$5,000 fine to the operator of a vessel for unauthorised ballast water discharge into the Willamette River in Portland, Oregon. In September, the California State Lands Commission issued a letter to clarify the new requirements for vessels arriving at US ports on or after 1 October 2017, making clear its position on compliance with the convention.

Saudi Arabia is also enforcing ballast water regulations following the announcement by the world's largest oil producer, Saudi Aramco, that all vessels calling at its ports will be required to provide a ballast water sample and report. Saudi Aramco is among the highest receivers of ballast water from ships, with more than 180m tonnes of ballast water discharged during cargo operations.

Tug and OSV operators and owners must therefore consider carefully both the form and scope of operations of current and future vessels to determine how the convention

► CTG
managing director
Dr Brian Phillips



applies to them. Smaller vessels working within the same coastal waters may not be impacted directly. Large support vessels with the capacity and flexibility to work anywhere in the world need to look at their prospective markets. Training of personnel to operate a BWT system and interpret the compliance data should also not be overlooked.

There may be a further consequence for smaller support vessels, depending on the actions taken by large vessel owners who may choose to delay capital investment in BWT. Vessels without a BWT system will not be able to trade with any ports in countries that have enforced the convention, which will also impact its support vessels.

Chelsea Technologies Group (CTG) has direct experience of compliance and the high standards demanded by regulators. CTG's FastBallast Compliance Monitoring System was identified as the most accurate solution on the market for sampling ballast water by Saudi Aramco's in-house marine biology experts, and will be used to conduct spot checks on sampling undertaken by third-party sampling companies.

FastBallast is the only technology capable of operating in a flow-through mode, while providing a high degree of accuracy with a representative report on discharge compliance. It is capable of determining the phytoplankton cell density of ballast water to IMO D-2 and USCG discharge standards (10-50µm range), with a higher degree of confidence than laboratory analysis. Global Strategic Alliance Saudi Arabia, CTG's agent for Saudi Arabia and Bahrain, is working closely with the Saudi authorities to utilise FastBallast as the national benchmark for ballast water sampling.

Saudi Aramco and the USCG have set high environmental standards and are driving change ahead of regulations, and it is clear that ballast water monitoring and the issue of compliance is here to stay. Support vessel owners and operators should take steps now, both to maintain the asset value of their craft and to future-proof their operational freedom. Failure to do so may result in reduced opportunities, lower profitability, and relegation to the second division of environmental leadership.

▼ Accurate sampling: CTG's FastBallast Compliance Monitoring System



Report reveals system issues

More than 40 per cent of the ballast water management (BWM) systems installed on board vessels are inoperable or otherwise problematic, according to the American Bureau of Shipping (ABS). The US classification society has published a report providing insights into how the marine and offshore industries are progressing with BWM systems.

Based on input provided by owners and operators with BWM systems onboard their vessels, the report covers a range of topics, including installation, commissioning and operation.

ABS executive vice president for global marine, Dr Kirsi Tikka, said: "It is important to share with all stakeholders the outcome of the ABS-organised workshop on the issues and best practices with BWM systems."

"When we hear directly from owners and operators, we are better able to understand the challenges in the operation of the systems, and for those systems which are operational, what practices are being followed."

Survey results from about 30 owners and operators were aggregated to help identify trends and understand common practices. In analysing the responses, ABS learned that 57 per cent of the systems installed on the vessels were being operated. The remaining systems were either deemed 'inoperable' or considered 'problematic'.

The report reveals that some of the major challenges that shipowners and operators face with BWM systems are related to software, hardware and the crew's ability to operate the systems correctly. System operators have had to develop plans to keep up with hardware maintenance and maintain an inventory of spare parts on a vessel. A recurring concern expressed by many owners relates to the chemical consumables used for determining residual oxidants in the ballast water. Proper storage and handling is critical to the operation of systems employing total residual oxidant (TRO).

Another major finding was the importance of maintaining an effective training strategy to ensure crew members can operate these systems properly and safely. Improved training methods and system manuals will decrease the number of issues that stem from operational errors.

The full report can be downloaded from the ABS website.

Icy waters pose a challenge

Damen Green Solutions has designed a ballast water management (BWM) system for the Australian government's next-generation Antarctic supply and research vessel (ASRV).

The decision to go ahead with the project was made following careful evaluation, given the arduous conditions in which the vessel will be operating and the pristine nature of the waters surrounding the continent and its ice shelves.

The solution uses the Trojan Marinex BWT 250 to meet the exacting requirements of Damen Schelde Naval Shipbuilding (DSNS), which is responsible for the design and engineering of the project.

Given the requirements of its role and the highly sensitive nature of the environment in which it will be operating, the ASRV needs a BWM system with specific operational capabilities. These include the ability to operate effectively in very cold waters, to use no chemicals, to generate no by-products and to be as compact as possible given that space is at a premium on this complex vessel.

Following an assessment of all the available options, Damen Green Solutions recommended the Trojan Marinex BWT 250, manufactured by Trojan Technologies of Ontario, Canada. The Trojan Marinex ballast water treatment (BWT) system suite provides exceptionally compact solutions that deliver both filtration and UV treatment within a single unit. With no chemical inputs, they create no by-products and are not subject to corrosion. They are also easy to maintain, and the BWT 250 requires only 14 kW of power.

A significant additional benefit of the Trojan Marinex system is its ability to operate at 100 per cent effectiveness in water temperatures down to -2 degrees C. Few other BWM units on the market today can achieve this target – so important for polar operations. Also important is the exceptionally low UV transmittance, which is vital in the Southern



▲ Damen partnered with Trojan Marinex to come up with a workable BWM system for the icy waters of the Antarctic

Ocean. Damen design and proposal engineer Steffan van Esch said: "At Damen Green Solutions, we partnered with Trojan Marinex to design a 'plug-and-play' installation for DSNS. Together we created a bespoke design that mounts the entire BWM system on a 3m by 1m skid that can be easily and quickly fitted into the available footprint in the engine room."

"Prior to leaving the manufacturing works it will undergo a factory acceptance test, leaving DSNS with the simple matter of connecting up the power and the main pipes once it is aboard the ASRV. The Trojan Marinex BWT 250 will then be ready to disinfect and treat up to 250m³ of seawater an hour."

Construction of the 160m ASRV began in May at Damen Shipyards Galati. The BWM system will be delivered to the yard for installation later in 2017. The vessel is expected to be operational in 2020.

Saving marine ecosystems – the BWT story

During the 20th century, tiny organisms carried in the ballast water of ships began to be recognised as alien invasive species.

These aquatic species were hitching a ride across the oceans and some were embedding themselves in new areas, multiplying and becoming harmful invasive aquatic species. The impacts on native species, local ecosystems and sea-based economies have, in some cases, been devastating.

The story of how global partnerships, governments, industry, academia and other stakeholders came together to tackle this problem is told in an IMO publication, *The GloBallast Story*.

The publication outlines the key achievements of the GloBallast Partnerships Programme, carried out by IMO in

collaboration with the Global Environment Facility and the UN Development Programme. The project was launched in 2007 after an initial four-year phase and has been assisting developing countries to reduce the transfer of harmful aquatic organisms and pathogens in ships' ballast water and implement the IMO BWM Convention.

The 10 most invasive species that can be transferred through ships' ballast water – from cholera and toxic algae to mitten crabs and zebra mussels – are profiled in the publication. The book also provides infographics, diagrams and detailed case histories.

The GloBallast Story is now available to download free, from the IMO website – www.imo.org

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In brief

The Institute of Marine Engineering, Science and Technology (IMarEST) is supporting vessel owners, equipment manufacturers and other stakeholders in their collective efforts to ensure the BWM Convention is successfully implemented. Dr Bev MacKenzie, IMarEST's technical and policy director, said: "It is a major undertaking for any shipowner and one that is fraught with complex technical challenges. The IMarEST is well-placed and keen to assist vessel operators address these issues, particularly through its Ballast Water Expert Group." The group can be contacted via technical@imarest.org

Updated BWM programme guidance is available on the US Coast Guard's (USCG) public Homeport internet portal. Two slideshow presentations are available, providing a 'BWM 101' overview of the program and a 'BWM Update' on recent developments and activities. A revised FAQ document combines and updates a collection of previous FAQs, which address questions on a variety of current topics, including compliance with USCG regulations, the type approval process for BWM systems, and working with independent laboratories.

Norway-based BWT specialist OceanSaver has filed for bankruptcy, citing "significant downward pressure on equipment prices," brought about by continued low shipbuilding activity as well as the IMO's decision to extend by two years the deadline for ship owners to retrofit BWT systems. OceanSaver was among the first suppliers to be approved by IMO in 2008 and obtained USCG type approval in December 2016.

Denmark's DESMI Ocean Guard has launched a new BWM system, named CompactClean. Designed to provide reliable and compliant treatment of ballast water under all operational conditions worldwide, the system meets both IMO and US Coast Guard standards.

Jamaica and Malta have become the latest states to sign up to the IMO's BWM Convention. A total of 65 signatories now represent 73.92 per cent of the world's merchant fleet tonnage.

Chamber backs convention

Esben Poulsson, chairman of the International Chamber of Shipping (ICS), has called on ship owners, equipment manufacturers and governments to co-operate to ensure that proper implementation of the IMO Ballast Water Management (BWM) Convention will deliver maximum environmental benefit.

Speaking just before the convention entered into force on 8 September, Poulsson said: "The industry may collectively need to spend around US\$100bn in order to install the new ballast water treatment systems that will be required by law. We therefore have to get this right."

"We need to ensure, so far as practicable, that the systems installed on ships will indeed be fit for purpose in all known operating conditions worldwide. We are therefore advising shipping companies that they should make it clear to equipment manufacturers they will only consider fitting treatment systems which have been certified in accordance with the revised IMO type-approval standards adopted in 2016, even though this is not yet a mandatory requirement."

ICS has welcomed the important decision, made by IMO in July, to adjust the implementation dates of the convention, so that existing ships (ie, those constructed before 8 September) will not be required to install treatment systems until the date of their first International Oil Pollution Prevention (IOPP) renewal survey after 8 September 2019.

"We acknowledge the pragmatic approach to implementation taken by IMO member states who accepted the arguments made by ICS and other industry associations that there is little logic, from an environmental



◀ ICS chairman Esben Poulsson: "We have to get this right"

protection standpoint, in requiring thousands of ships to comply until they can be fitted with systems that have been approved under the more stringent standards," said Poulsson.

"Shipowners must make full use of this additional time to identify and invest in far more robust technology to the benefit of the environment. And in view of the significant concessions that IMO has now made in response to the industry's representations, shipping companies should not anticipate any further relaxation to the implementation schedule."

ICS believes that as a result of the industry's intensive efforts to explain its implementation challenges to regulators, shipowners will hopefully now have the clarity needed to get on with the job.

ICS was previously ambivalent about encouraging flag states to ratify the BWM Convention in advance of some serious implementation issues being fully resolved. But now that the convention is at the point of entry into force, and in recognition of the actions agreed by IMO, ICS is now encouraging all IMO member states to ratify as soon as possible.

New guide is 'practical and easily accessible'

BIMCO, the world's largest international shipping association, has launched a practical guide for shipmasters managing new BWM systems.

BIMCO's new *Shipmaster's Ballast Water Manual* provides clear, accessible information for seafarers dealing with practicalities of daily ballast water management. The manual covers all aspects of the IMO BWM Convention, including regulatory implementation, inspections by port state control and charterers and the latest guidance issued by the IMO.

There are currently numerous BWM systems that have been approved by the IMO but IMO member states and most seafarers are still unfamiliar with their operations.

Lars Robert Pedersen, deputy secretary general at BIMCO said: "Implementation of the BWM Convention has been just around the corner for a long time, but there is still a great deal of confusion over the actual realities of the operational requirements, each

ship's ballast water management plan, and the associated record keeping to demonstrate compliance.

"This new guide has been written with seafarers in mind, in a practical and easily accessible way, to be used on board at sea, helping the crew to manage the new obligations safely and effectively."

The *Shipmaster's Ballast Water Manual* links to the already established safety management system (SMS) covering the company and the ship, which includes proper plans for shipboard operations. The SMS requires crew and officers to be familiar with applicable onboard instructions and procedures, including BWM.

The manual can be ordered online on the following link: <http://www.witherbyseamanship.com/shipmasters-ballast-water-manual.html> or by emailing info@witherbys.com

The *Shipmaster's Ballast Water Manual* is priced €150, or €85 for BIMCO members.

Eco-project aims to deliver big fuel savings

Engineers are testing their new system which converts waste engine heat into electricity

The developers of a new waste heat recovery system say the project could not only deliver fuel savings of up to eight per cent for tug, OSV and SOV owners and operators, but also transform environmental standards in the sector.

The two-year £3.6m project is funded by the Energy Technologies Institute (ETI), and is being led by AVID Technology, with the benefit of assistance from Royston Power in the UK and France's Enogia.

Engineering specialist RED Engineering, formerly RED Marine, based in the UK's north east, is also providing support and input as the concept, which features technology engineered to reduce emissions and vessel operating costs by converting waste heat from the vessel engine into electricity, is developed for the marine sector.

At the heart of the waste recovery system is equipment that uses the organic rankine cycle (ORC) heat transfer process and a turbo generator power conversion system, pictured below, to convert thermal energy from the engine jacket water into electricity. Specifically, an environmentally-safe refrigerant is boiled with waste heat. This refrigerant steam is then used to drive a turbine which in turn powers a generator. The refrigerant is then cooled and pumped back around the system. This heat recovery technology is available already, but what is new, according to RED Engineering's managing director Joe Orrell, is AVID's high-power density generator and electronics,

which have been redesigned and packaged into a system that is much smaller in volume than traditional ORC systems.

Orrell says the project demonstrates the efficiency savings that are achievable using advanced engineering solutions: "This draws on technology and expertise developed for the automotive industry, taking costs out and increasing durability. The result is a system that can be adapted for OSVs, SOVs and tugboats with a lower cost per installed kW than anything on the market in a package size that meets the tight constraints imposed by marine applications."

"We are confident about the long-term success and viability of a system that could deliver major cost savings"

Ryan Maughan, MD, AVID

AVID's founder and managing director, Ryan Maughan, adds that the smaller volume of the package when compared to traditional ORC systems offers significant advantages. He said: "The ORC system is very compact and can therefore be accommodated into a much wider range of vessels. The whole system can fit into a vessel engine room as a retrospective installation, which gives some indication of its size, flexibility and impact on vessel layouts."

The system is being designed to be modular in an approach that meets the demands of the retrofit market. This will allow it to be easily broken down and transported through tight hatches and access doors, although Maughan points out that "re-assembling and installing inside the vessel is bound to throw up some interesting challenges to overcome" as the



▲ Joe Orrell



▲ Ryan Maughan

project moves towards completion.

The projected eight per cent fuel saving comes from a market study completed by the ETI but multiple systems can be connected to generate more power which, in turn, would generate a fuel saving that is dependent on how many systems are installed versus on-board engine power.

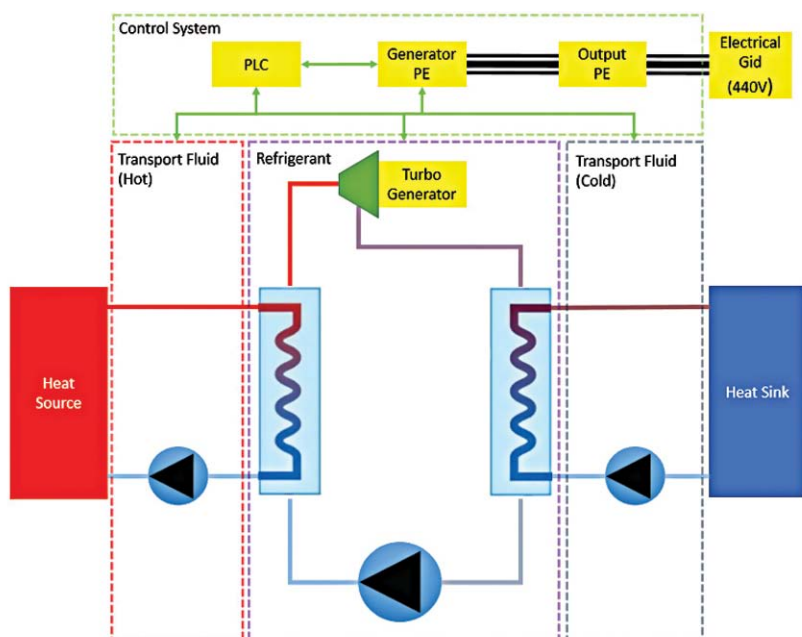
RED Engineering's role is to make sure that the equipment developed complies with the appropriate marine regulations: SOLAS requirements and the class regulation of DNV GL. This involves leveraging its expertise in safety critical marine systems engineering and working on the documentation and design rules, which will allow the technology to progress beyond the concept to the application stage.

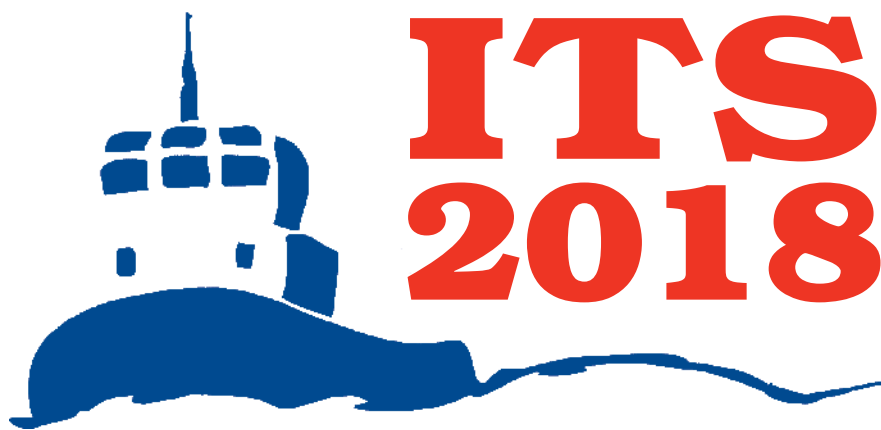
The firm's engineers are also providing technical input to support the installation of a demonstration unit in 2018, while Royston is involved in working with the vessel operator to undertake installation ahead of in-vessel testing and commissioning. Enogia is responsible for the design of the ORC turbine.

The system is being developed to ensure it meets the challenge of operating in harsh marine environments on all types of OSVs and other vessels. Work is currently underway on vessels to demonstrate the potential for the technology in the mass market of marine vessels, with rapid progress on the project from initiation to concept phases. Qualification testing and approval of key components is underway alongside the design and development of the turbo generator, system packaging and design approval from DNV GL.

Maughan said: "The system is currently in a land-based development and testing phase and we are going through the design process necessary to make the technology marine-ready and obtain class approvals. While we anticipate challenges ahead in finalising the class approval before moving to installation in an actual vessel, we are confident about the long-term success and viability of a system that could deliver major cost savings for shipowners and operators."

Testing the marine specification system at full power is the next phase, which according to both RED Engineering and AVID, will herald another milestone for the programme.





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Last resort fibre rope cutter will prevent damage to tug

Hydraulic cutting tools specialist, Webtool, has introduced a portable softline emergency deck cutter for tugs, barges and offshore vessels. Easily deployed, and operated remotely, the cutter provides an instant cut of fibre ropes up to 80mm diameter in the event the vessel gets into difficulties.

Fibre ropes are widely used in offshore applications where, the company says, their ease of handling and deployment compared with steel wire, and the rope's ability to float, are important. The fibre rope deck emergency cutter is intended as a last resort when other measures to prevent damage to the vessel have failed.

The Webtool portable softline emergency cutter is transported in a self-contained 'sack truck' containing a hydraulic accumulator and manifold with lockable control panel and a removable cutter. It is connected to the cutter's control panel via a hose.

When deployed, the cutter and its frame are lifted off the sack truck and placed over the fibre rope. The lightweight frame allows the cutter to slide on the deck without getting damaged. In the event of an emergency, the cutter connected to the control panel is activated, severing the rope instantly.

Keith Elliot, engineering director at Allspeeds Ltd, which owns the Webtool brand, said: "The fibre rope emergency cutter gives vessel operators a last resort should other measures fail to alleviate the situation. It provides an instant cut allowing the vessel to quickly recover."



Webtool also supplies a portable, emergency tow rope cutter for oil tankers to eliminate the risk of the pull-back tugboat capsizing. Attached to the steel wire tow line on the tanker's deck, the cutter, once activated, cuts a 60-70mm steel wire tow line within three seconds to prevent tug capsize.

New snake-like underwater robot lives permanently below waves

Kongsberg Maritime has launched an innovative and ground-breaking new underwater robot. A futuristic looking vehicle with a flexible and adaptable body, Eelume is designed to live permanently underwater and carry out intervention tasks that would normally require the mobilisation of expensive surface vehicles for divers or to launch and retrieve ROVs or AUVs.

Eelume's unique design allows it to access confined spaces within subsea structures. Its ability to change its shape and hold postures

allows intricate interactions using a diverse toolset including torque tools, grippers and specialised maintenance equipment.

Eelume is a highly stable sensor and actuator platform offering unmatched access to underwater structures for diverse operations. The company says using the robot will dramatically reduce costs and the environmental impact associated with having a ship overhead a traditional ROV operation. It can be installed on both existing and new fields where typical jobs include visual inspection, cleaning, and operating valves and chokes.

Eelume is a result of an agreement signed by Kongsberg Maritime and Statoil with Eelume, a Norwegian University of Science and Technology spin-off company, to accelerate technology that will significantly reduce costs related to subsea inspection, maintenance and repair operations.



► The Eelume underwater robot from Kongsberg, Statoil and NTNU

In brief

UK-based Icom has added a new VHF/DSC marine transceiver to its commercial maritime line-up. The new GM600 is designed for Class A DSC operation and provides a complete GMDSS VHF communication system, as required for commercial SOLAS-regulated vessels engaging in international voyages. The GM600 meets Marine Equipment Directive 2014/90/EU 'wheel mark' approval and is suitable, among other vessel types, for offshore tugs and salvage vessels.

Safety solution provider Survitec has expanded its Crewsaver Workvest range by launching the new Crewfit XD Fire Retardant lifejacket. The Crewfit XD offers advanced comfort and performance technologies. The fire-retardant outer cover provides an efficient choice for welders and anyone requiring protection from sparks and embers. The fire retardant outer cover also protects against flame, burning and molten metal sparks.

IMTRA, the manufacturer and importer of quality marine and commercial products, has released the Offshore and PitMaster series of LED deck lights, engineered and manufactured by Vision X, which it says are ideal for offshore vessels, oil platforms and shipyards. The Offshore series is available from 3,300 to more than 11,000 effective lumens, while PitMaster lights provide 11,000 to more than 22,000 effective lumens.

Navico has unveiled a fully integrated, Class-B AIS transponder for its Lowrance, Simrad and B&G brands – the NAIS 500. With a dedicated GPS-500 receiver, it says the lightweight, compact and fully waterproof NAIS 500 is essential for navigating busy ports and waterways.

Spinlock, the UK-based designers and manufacturers of rope holding equipment and personal safety products for commercial and leisure water users, has been presented with the Queen's Award for Enterprise: Innovation.

Stone Marine Shipcare has signed an agreement with Dubai Drydock World under which one of its mobile workshops will be permanently based there to serve Middle East customers.

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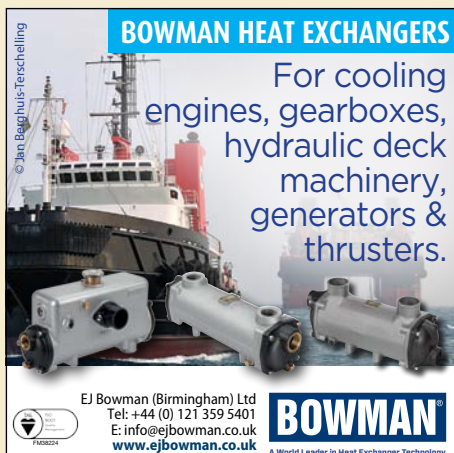
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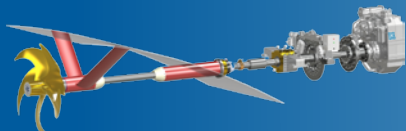
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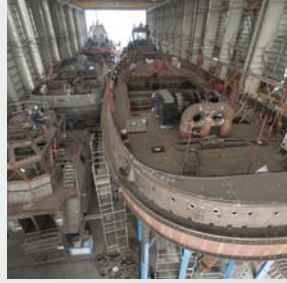
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Index of Global Directory Business Sectors

1. Agents/Representatives
2. Airbags
3. Brokers/Finance
4. Chock Abrasion/Chafe Protection
5. Consultants/Naval Architects/Marine Engineers/Surveyors
6. Deck Machinery
7. Diving/Underwater/Search Equipment & Services
8. Electric Power Solutions
9. Electronic Control & Instrumentation
10. Engines/Generating Sets/Transmissions/Spares
11. Fenders
12. Fire-Fighting
13. Heat Exchangers
14. Heating/Ventilation/Air Conditioning
15. Hybrid Power & Propulsion
16. Insurance/P&I Clubs/Underwriters
17. Law Firms/Lawyers
18. Marine Electronics/Software
19. Offshore Wind Support
20. Oil Dispersant Spray Systems
21. Propulsion
22. Rope Manufacturers/Suppliers
23. Salvage Equipment
24. Salvage Support and Incident Response
25. Scale Model Ship Builders
26. Seating/Seating Products
27. Ship Delivery/Crewing/Ship Management
28. Ship Registration
29. Shipbuilders
30. Survival Systems/Safety Equipment
31. Training/Trainers/Simulation
32. Tug/OSV Owner/Operators

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