Switching (to) Batteries
HYBRID PROPULSION & BATTERY SYSTEMS

AN UNMANNED FIRST
SHIPBOARD AUTOMATION & MARINE ELECTRONICS

Showcasing the Next Generation
ELECTRIC & HYBRID MARINE WORLD EXPO AMSTERDAM
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Videotec’s ULISSE EVO PTZ camera is another technologically innovative step forward in the pursuit of increasingly high-performance and reliable video surveillance products. This new versatile PTZ camera offers performance, competitiveness and design at an unprecedented level.
Going Electric

IN LIGHT OF THE NEW IMO REGULATIONS THAT WILL COME INTO EFFECT IN 2020, THE SHIPBUILDING INDUSTRY IS LOOKING FOR WAYS TO LOWER EMISSIONS IN THE MOST COST-EFFECTIVE WAY. I believe going electric will offer a genuine, viable solution — and it’s a timely idea as this issue shows.

In our special about hybrid propulsion and battery systems, it is clear that the industry is hybrid-ready, with smaller vessels, such as ferries, as frontrunners. In this issue we discover, for instance, another milestone in Stena Line’s E-Flexer series and we take to the water with the world’s first electric lifeboat.

Larger vessels are also picking up the pace and discovering hybrid technology as a viable propulsion solution. On a short-term basis, battery systems seem to be the best option. In full battery mode, zero-emissions-sailing can be achieved and is therefore ideal for vessels operating within harbours or close to shoreside communities. We talk more about the advantages of these systems with Wärtsilä Marine, and visit the start-up Skoon Energy, who have developed swappable batteries especially for the shipping industry.

Furthermore, this issue covers other smart technology, such as autonomous shipping, and homes in on the upcoming trade shows, including the Electric & Hybrid Marine World Expo in Amsterdam. This show is dedicated to showcasing the very latest and next-generation electric and hybrid marine charging and propulsion technologies, components and solutions.

We, the entire editorial team of ShipBuilding Industry, are excited to see which products will take off and what the future will hold for the marine sector. One thing is for sure: it is going to be electric!

Grace Schouteren
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INNOVATIVE HYBRID POWER

Shipyard De Hoop concentrates on designing, engineering and building custom vessels, for both the inland and seagoing markets. The yard has all the core disciplines in house to provide clients with creative and innovative solutions, both in design and production. De Hoop is committed to a customer-oriented, goal-based approach in which quality and flexibility are paramount.

Shipyard De Hoop
Designers & Builders since 1889
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ON THE COVER
Acta Marine’s latest Construction Support Vessel (CSV) offers state-of-the-art hotel facilities to accommodate up to 120 persons, and an ample 1,000m² of deck space for cargo storage. Read more on page 48 – Photo courtesy of Acta Marine.
New Relationship Damen and De Beers Marine Namibia

Recently, Damen Shipyards Group and De Beers Marine Namibia participated in a special steel-cutting ceremony to mark the beginning of construction on a new offshore vessel. In February 2019, De Beers Marine Namibia awarded a contract to Damen to build a new crawler diamond-recovery vessel for offshore operations in Namibia. At 177m long, the new vessel will be slightly larger than the current largest vessel in the De Beers Marine Namibia fleet, Mafuta (174m). Constructed from a Marin Teknik design, the MT 6027 will be the most technologically advanced marine diamond recovery vessel in the world. This is the first time Damen has interacted with De Beers Marine Namibia as clients, and the new opportunity is one of several generated by Damen’s shipyard in Mangalia, Romania.

DNV GL and NTU Singapore Collaborate to Support Advances in 3D Printing

DNV GL and Nanyang Technological University, Singapore (NTU Singapore) are supporting academic advances in additive manufacturing — the process of 3D printing — for the maritime, oil & gas and other industries, through a four-year research collaboration agreement. Two new doctoral student (PhD) positions are being created through the Industrial Postgraduate Programme, supported by the Singapore Economic Development Board (EDB) and DNV GL. A further full-time Research Fellow post is also being created at NTU’s Singapore Centre for 3D Printing. The research agreement will focus on developing industry standards, quality assurance processes, certification and supply chain tracking for the additive manufacturing sector. It was signed by Dr Pierre C Gomes, Senior Vice President (Infrastructure & Programmes), NTU Singapore.
**Wind of Change Showcases Range of SCHOTTEL Propulsion Solutions**

The newly built Wind of Change service operation vessel (SOV) is equipped with a broad range of SCHOTTEL propulsion systems. The propulsion system of the vessel is powered by four diesel generators, each with 1,600kW, driving the electric motors of the SCHOTTEL propulsion package. Two SCHOTTEL Rudderpropellers type SRP 430 FP with an input power of 1,660kW each and a propeller diameter of 2.40m are installed at the stern. At the bow, two SCHOTTEL Transverse Thrusters type STT 6 FP (1,400kW each) and one SCHOTTEL Retractable Rudderpropeller type SRP 260 R FP (800kW) provide optimal manoeuvrability and full dynamic positioning to DP 2 standards. Wind of Change is the first windfarm support vessel to be added to the fleet of Louis Dreyfus Armateurs. It will operate under a long-term contract with the Danish company Ørsted at the windfarms of Borkum Riffgrund 1 and 2 as well as at Gode Wind 1 and 2 off the German coast. SCHOTTEL also secured a contract to provide the propulsion units for the sister vessel. The second SOV will be deployed on Ørsted’s Hornsea Project Two windfarm off the coast of England.

**Wärtsilä 20DF Engines Will Power China’s First LNG Fuelled PSVs**

The technology group Wärtsilä has won the contract to supply 40 generating sets for twelve new LNG-fuelled platform supply vessels (PSVs), the first such vessels to be built for a Chinese owner. The multiple benefits of the Wärtsilä 20DF dual-fuel engines were cited as the reason why the contract was awarded to Wärtsilä over strong competitive bids. The ships are being built for China Offshore Oilfield Services (COSL) at the Wuchang Shipbuilding Heavy Industry yard and the Lianyan Shipyard in China. The order with Wärtsilä was signed in March 2019. Among the value-adding advantages cited in choosing the Wärtsilä 20DF engine were its high fuel efficiency, low operating costs and good environmental performance, as well as its low-load operating ability and proven reliability and durability. The engines are scheduled to be delivered to the shipyards at the end of 2019.

**Coral Expeditions Orders Second Expedition Cruise Ship from VARD**

VARD is cementing its relationship with Australia’s Coral Expeditions following the success of the recently delivered Coral Adventurer vessel, built at Vard Yung Tau in Vietnam. Delivered in April, the 93.4m ship, of VARD 6 01 design, has commenced commercial operations in the Asia-Pacific region. Its on-time delivery, high-quality finish and excellent feedback has resulted in the contract for a second vessel with Coral Expeditions – Coral Geographer. Coral Adventurer and Coral Geographer have been tailored to meet growing demand for Coral Expeditions’ expedition product in the Australian cruise market. Vard Yung Tau constructed the Coral Adventurer hull, while also carrying out all outfitting, installation, testing and finalising. Vard Accommodation delivered the interior.

Read more on shipbuilding-industry.eu
Vital Underwater Stern Tube Seal Repair

Last month, a Hydreco team carried out an underwater stern tube seal repair on a tanker berthed in Algeciras. The ship was suffering from an oil leak and no dry-dock was available close by. The divers replaced the damaged seals underwater using one of the company’s flexible mob docks. This saved the owner an expensive and time-consuming trip to a dry-dock further away. The operation began with a thorough underwater inspection of the stern tube seal assembly. This revealed that a rope had become entangled around the assembly. The divers removed the rope but unfortunately it had already damaged the seals and caused an oil leak. The team then removed the rope guard and installed the flexible mob dock, allowing them to work in dry conditions. During the operation, the divers removed the three damaged seals and replaced them with new ones. Working together with the OEM allowed Hydreco to provide the customer with original spare parts, guaranteeing the best-quality material. A technician of the seal manufacturer was also present during the operation.

Spirit of Discovery Left Building Dock I at Meyer Werft

Spirit of Discovery, the first of two new cruise ships for the British cruise line Saga Cruises, left the covered building dock I at Meyer Werft shipyard on 12 May 2019. The Spirit of Discovery is the first of two ships for the successful British cruise line. The ships each have an overall length of 236m, a width of 31.2m and a tonnage measurement of 58,250GT. The sister ship, Spirit of Adventure, will be completed by Meyer Werft in summer 2020. The new ships will be tailored to the British market with a completely new design.
AIDAcara First Cruiseship Reference for Aquaterras Biocide-free Antifouling

Nippon Paint Marine has successfully applied its novel Aquaterras hull coating to AIDA Cruises' cruise vessel AIDAcara. It is the first-ever full application of the biocide-free, self-polishing (SPC) antifouling coating to a cruise ship. AIDA Cruises' decision to use the coating follows the success of test patches on a number of Carnival Corporation cruise ships. Nippon Paint's research has shown that use of Aquaterras can potentially reduce fuel consumption by more than 10% compared to standard SPCs, due to the coating's ultra-smooth surface and low friction attributes. After carrying out surface preparation by full hydro-blasting during the vessel's scheduled dry-docking in February at CNDM Marseille, France, all underwater areas of AIDAcara's hull were coated with Aquaterras. The coating was applied using standard equipment and without complicated masking, a process that often extends the application time for silicone-type foul-release coatings.

New White Paper on Scrubber Technology and Wash-water Monitoring

Ahead of the incoming Global Sulphur Cap restrictions that will impose a ban on all marine fuels with >0.5% sulphur content from January 1, 2020, Rivertrace Limited have published a technical white paper that focuses on scrubber technology options and wash-water monitoring. Entitled "To Scrub or not to Scrub?", the white paper provides the industry with a need-to-know guide to all options for compliance, with particular focus on scrubbers and IMO wash-water monitoring guidelines. The paper also explores the impact of sulphur emissions from ships, the chemistry of scrubbing sulphur from exhaust gases and the benefits associated with scrubber use.

The World's Largest Aluminium Vessel

Australian shipbuilder Incat has secured a contract to build the world's largest aluminium vessel. Incat Tasmania will build the 130m ship for long-standing customer Buquebus to operate between Argentina and Uruguay. The completed vessel will be the largest aluminium ferry ever built and the ninth vessel for Incat's valued South American customer. The ferry will join the other Incat ships already serving various ports on the River Plate (Río Plata) between Argentina and Uruguay. At a probable 13,000GT the vessel will carry 2,100 passengers and 220 cars. Work is underway on design and engineering, the physical construction will commence as soon as the detail design drawings are completed and approved by the customer. The new Buquebus ship, Incat hull 096, is predicted to have a maximum speed of over 40knots, powered by four dual fuel engines that will burn environmentally friendly LNG.
Last year's edition of the event welcomed over 4,500 visitors and 130 exhibitors.

Electric & Hybrid Marine World Expo 2019

Venue
Hall 18, RAI Amsterdam
Europaplein 24, 1078 GZ Amsterdam
the Netherlands

Opening hours
Wednesday 25 June 10:30 AM – 6 PM
Thursday 26 June 10:30 AM – 7 PM*
Friday 27 June 10 AM – 4 PM

*free drinks party from 5:30-7 PM
Showcasing the Next-Generation


This international trade fair focusses solely on these green propulsion technologies and components, which have gained great momentum in recent years. With exhibitors from all over the world, a visit to Electric & Hybrid Marine World Expo is a must for propulsion-system designers, ship owners and operators, boat builders, engine manufacturers, naval architects and military fleet operators and chiefs.

High Expectations

Electric & Hybrid Marine World Expo is the largest exhibition and conference worldwide exclusively dedicated to showcasing the very latest and next-generation electric and hybrid marine charging and propulsion technologies, components and solutions, with this year’s event expected to welcome more product launches than ever before.

With leading vendors set to exhibit, including Kawasaki Heavy Industries, ABB, Wärtsilä, Mitsubishi Turbocharger and Engine Europe, as well as industry-leading technology and component suppliers such as HBM, Torqeedo, and more, the show offers something for everyone in the electric and hybrid industry.

Full Conference Programme

As was the case at previous editions, Electric & Hybrid Marine World Expo also features a three-day conference programme with hundreds of delegates and more than 40 well-known engineering speakers. Numerous leading maritime academic institutions in North America, Europe, and Asia are also expected to attend. Various elements of electric and hybrid propulsion will be discussed, such as thermal battery management, new class notations regarding electric and hybrid propulsion, improved safety of lithium-ion batteries, optimal energy management, and efficient fuel-cell systems.

Marine Maintenance and Autonomous Ship Technology

Furthermore, the Expo also hosts the Marine Maintenance World Expo and Conference, as well as the Autonomous Ship Technology Symposium, which brings together ship designers, fleet owners, naval architects, classification societies, equipment suppliers, and research organisations to discuss the legal, technological, and regulatory developments necessary to make autonomous ships a reality.

Marine Maintenance World Expo and Conference is hosted as an integral part of Electric & Hybrid Marine World Expo, so visitors and delegates will also be able to see more next-gen maintenance and repair technologies than ever before.

Successful Previous Edition

During last year’s edition, over 4,500 attendees descended on Electric & Hybrid Marine World Expo in Amsterdam to see the latest innovations from more than 130 exhibitors, as well as learn from some 50 conference papers presented by some of the industry’s leading lights. The show, which last year welcomed more attendees, delegates and exhibitors than ever before, has established itself as the world’s largest dedicated marine propulsion exhibition and conference; and visitors to the fifth edition of the event were treated to a wide range of exciting new product launches and key announcements throughout all three days.

Torqeedo’s range of electric and hybrid drives, for example, from 0.5 to 100kW for commercial applications and recreational use, generated
Maritime technology ... lower costs

600 kg/m load, lighter than steel ... E4.350 e-chain®
certified cables, 4H x DNV GL ... chainflex® cables

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strong interest, after the company announced live at the show that the range would be part of an integrated electric propulsion system for a new aluminium solar-electric passenger ferry due to enter service on Spain’s Mediterranean coast later this summer.

Elsewhere on the show floor, Japanese engine manufacturer Yanmar unveiled a working prototype of its new marine generator set, which is designed as a total electrical power and propulsion solution for workboats, small ferries and other vessels measuring up to approximately 24m length. More news came from Canadian energy storage system manufacturer Corvus Energy, which used Electric & Hybrid Marine World Expo to showcase its latest-generation Orca Energy ESS and revealed that the product will be used to power shore stations in Brekstad and Valser in Norway for a fleet of new hybrid-electric ferries operated by Fjord1.

**Unique Focus and Diversity**

Attendees were united in the belief that now is the time to start making the transition to more efficient power. They were also unanimous in their praise of the diversity of products on display at Electric & Hybrid Marine World Expo. "The show was very well organised and meets the needs of anyone requiring new and future electrical systems," says Isaac Avital, CEO of MarTech Marine Systems, an Israeli design company looking to install hybrid systems on board new vessels to help reduce emissions and fuel consumption, as well as increase the efficiencies of conventional diesel and gasoline engines. "We travelled far to be here and it was incredibly useful to have so many relevant companies in the same place at the same time. In just a day or two we met the key players operating in this sector of the industry."

**Great Networking Opportunities**

Meanwhile, others were impressed with the networking opportunities that the expo presented. "It is great to see so much competition in this sector now and to meet so many people who are all pulling in the same direction," says Paul Radford, Engineering Superintendent at BC Ferries, whose current projects include time-based operations for full-electric ferries operating off the west coast of Canada and large double-ended ferries utilising a hybrid spinning reserve. "Just a few years ago, only a handful of companies were developing electric and hybrid propulsion technologies, but now there are lots of options out there, many of which are on display here." Exhibitors were also extremely happy with the number and quality of visitors in attendance. "The profile of people here – mainly engineers and corporate management – means we have benefited from opportunities we typically would not have been able to find through conventional channels," said Michael Ruscigno, co-founder of Bakuor Electronics Industries. Others were pleased by the fact that the expo provided a platform for them to do business with their fellow exhibitors. "We have signed three contracts in the last three days, one of which is for an all-electric fishing vessel," reveals Halvard Hauso, Executive Vice President for Sales and Marketing at Canadian energy storage system developer Corvus Energy. "This is why we are here and why we always come back each year."

Anthony Baro, Managing Partner of first-time US exhibitor PowerDock, says, "Just by being here, in front of so many other exhibitors, we have actually had discussions with one European company who previously did not know anything about us, but now wants to work with us on a project."

The dates for the 2019 show are 25-27 June. Exhibition entrance is free, but there is a fee for the conference.

1. electricandhybridmarineworldexpo.com

**Electric & Hybrid Marine World Expo covers the following components and technologies:**

- Test and measurement tools
- Simulation software
- Energy storage solutions, including lithium-ion technology
- Electric motors
- Permanent magnet motors
- Microturbines
- Electric outboards
- Cooling systems
- Drive control systems
- Brushless motors
- AC/DC motors
- Super-capacitors
- Converters
- Inverters
- Diesel/electric generators
- Gen-sets
- Emission reduction technology
- Exhaust gas cleaning systems / scrubbers
- Waste heat recovery systems
- Electric/hybrid control systems
- Electric pod/bow/side thrusters
- Electric/hybrid propulsion technology and systems
- Electric/hybrid crane, winch, cargo door systems
- Hybrid-electric drive systems
- Systems integration
- Ship-to-shore power
- Battery charging systems
- Fuel cell technology
- LNG/hybrid propulsion
A Green Future and a Sustainable Partnership

Damen Shipyards has teamed up with Emission Control Technology Company, Emigreen, to manufacture a standard series of NOx reduction systems for Damen vessels. This solution enables the maritime sector to be ready to meet the latest IMO Tier III emissions rules and regulations.

Together, these two companies guarantee not only that emission targets will be met, but also that solutions can be installed which ensure that the future of the maritime sector is green. In a recent interview, ShipBuilding Industry spoke with Jeffrey Jacobs, Technical Manager Tugs at Damen and Jelle Westerhof, Sales Manager at Emigreen, about their successful partnership.

"Why the need for a standardised after-treatment system!"
Mr Jacobs: "Being part of the Maritime industry, Damen feels the obligation to contribute to achieving the sustainable goals of the near future and beyond. That means we have to provide our customers with the latest technologies and products to reduce the emissions of their operations. The introduction of IMO Tier III NOx regulations represents a significant step towards cleaner and greener operations. Improving air quality in harbours is an important issue, especially when taking their proximity to urban locations into account. Damen has a large number of tug-owning clients in the North Sea and Baltic Sea, Emission Control Areas. Therefore, the significance of IMO Tier III cannot be overstated. We started brainstorming sessions on this subject back in 2012. Looking for the best NOx emission reduction systems on the market, we came up against technical challenges, and space was one of the limiting factors. We needed to combine an exhaust emission reduction system with our engine silencers. To support our Damen philosophy by giving our customers the option of choosing a green product with short delivery times or deciding to easily upgrade their vessels when needed, we had set another requirement which was difficult to meet. Being able to meet these requirements and provide our customers with Damen-quality products, suitable for multiple marine diesel engines, we decided to develop our own Damen after-treatment systems."

Partnership
"How does the partnership between Damen and Emigreen work?"
Mr Jacobs: "In our search for a partner to develop such a system according the requirements we set, and still have all the flexibility we required, Emigreen emerged as the company that suits us best. They are willing to work together with us to contribute the best solutions for our vessels. This requires both knowledge and experience of systems, vessels and its operational profile. Both companies are technology-driven and strive to have the best solutions available in the market. They challenge each other to find the perfect fit and raise the bar to the next level. This partnership joins more than twenty years of knowledge, research & development and experience of after-treatment systems with"
Damen Shipyards teamed up with Emission Control Technology company, Emigreen, to manufacture a standard series of NOx reduction systems for Damen vessels.
“Looking for the best NOx emissions reduction systems on the market, we came up against technical challenges, and space was one of the limiting factors."

90 years of experience in designing and building vessels.”

Mr Westerhof: “Emigreen specialises in making emission reduction systems. The company was founded in 1999 by Mr Niko Dalpis and around 2003 Mr Dalpis decided to expand the market towards the maritime industry. Emigreen’s first systems were installed on superyacht engines. The next step for Emigreen was commercial vessels. Being selected by Damen to share our expertise and work together with the international shipyard is an honour. Not only do we communicate quickly and well, our partnership is very important when it comes to optimising these types of systems together. We can help them with our expertise.”

Mr Jacobs: “We started collaborating with Emigreen to provide a solution for our tugboats in 2016. The cooperation with Emigreen was fruitful, leading to an in-house designed and developed system which has been tested on multiple test benches. The resulting Damen Marine NOx reduction system is a fully certified and type-approved IMO Tier III system, reducing NOx emissions by 80% compared with IMO Tier II requirements. Today, the first vessels with a fully certified and working Selective Catalytic Reduction system (SCR) have been delivered and are in operation.”

**Standard Solution**

“How can you create one standard solution for all the different kinds of vessels that Damen builds?”

Mr Jacobs: “We want to prepare for a standard series of after-treatment systems that will cover a range of our vessels, meanwhile keeping our designs as flexible..."
as possible so we can cater to various vessels with different types of engines. The challenging part of standardisation is that all types of vessels have different requirements; the available space, for instance, is different on each vessel. Standardisation is also about making choices and seeking the solution that fits all vessels best. From 2018, we started preparing our new-generation tugs with this optional NOx reduction system. The RSD tug 2513, the ASD tug 2312, the ASD tug 2811, the ASD tug 2813 and the ASD tug 3212 are all prepared for this optional system and ready to be delivered from stock with short delivery times.

For owners of Damen’s new generation of tugs wanting to switch to IMO Tier III, the process will be straightforward. Mr Jacobs: “You can compare it to what we have been doing for years with firefighting systems. We prepare the vessel as much as possible and then we can install the optional additional equipment within a matter of weeks - a plug-and-play technique. We deliver vessels all over the world and the emissions regulations vary. With this solution, we enable the customer to decide what suits them best. This option can be installed in four weeks’ time.”

**Certification**

“Are the standardised solutions certified as yet?”

Mr Jacobs: “The system was certified in early 2018. Today, two tugs with the standard SCR system in place have been delivered to a customer and multiple other types of vessels are now in the final stages of construction. Due to the certification, we can apply the system without the need for tests or measurements.

Mr Westerhof inserts: “That is the beauty of standardisation. You can switch very quickly within a certain bandwidth. Damen now knows exactly what needs to be done. So, without too much input from us, they can quickly implement what the customer needs.”

**Future**

“Will Damen and Emigreen’s partnership continue in the future?”

Mr Westerhof: “Yes, still more stringent regulations are coming and we have to be ready. Take inland waterway vessels Euro Stage V regulations as an example. A combination of soot filter and SCR technology is required to meet these new requirements.

Mr Jacobs interjects: “We do not look solely at the upcoming regulations. Damen wants to ensure that the possibility exists in the maritime sector to be as green as possible. If we are committed to the Paris Agreement on Climate Change, then we should also look at the technology possibilities. We consider it our obligation to offer sustainable solutions to the customer.”

Mr Westerhof agrees: “This is not required by the regulations as yet but why not be greener than required? We need to look ahead!”

i. www.damen.com

i. www.emigreen.com
An Efficient Chase/Guard Vessel

ON WEDNESDAY 24 APRIL, REDERIJ GROEN’S NEWEST VESSEL WAS CHRISTENED IN SCHEVENINGEN, THE NETHERLANDS. NAMED LINDE-G, the newbuild will be used as a chase vessel providing support and crew transfers to seismic research vessels.

ALL PHOTOS COURTESY OF SHIPYARD DE HOOP

Erik Groen, Operations Manager of Rederij Groen, comments, “We already have several chase vessels in our fleet, which provide assistance to seismic research vessels. They basically make sure that the large seismic vessels, which tow a wide array of expensive cables with kilometres of length, can sail their track undisturbed by other vessels, or without having to make a detour for buoys, fishing nets or other obstacles. A lot of these vessels are former fishing trawlers, but we have also built dedicated chase vessels. Linde-G is the first one which adds a capability to this, which is the possibility to carry out crew transfers. We expect this to be in high demand, to reduce the cost of helicopter transfers.”

Focus on Efficiency
Linde-G was built by Shipyard De Hoop as one of its SSFm Fast Support Intervention Vessel (FSIV) series. The series was developed as a versatile and exceptionally efficient platform, with a strong focus on
seakeeping. One of the main contributors to this the vessel's steel hull; most crew boats have an aluminium hull. Anyone who has spent time at sea in rough water on both an aluminium and a steel vessel can vouch for the difference: a heavier steel hull ploughs better through the waves than a lighter aluminium hull, which feels more like a cork, bouncing on the water. So while aluminium, the lighter metal, has an advantage when it comes to fuel consumption, it has its downsides as well.

Steel also has better fatigue strength properties, is more ductile and hence less prone to water ingestion in the case of impact, is more fire-resistant and can be repaired easily in even the most remote regions. Equally important for the seakeeping is the hull shape. Linde-G has a very fine entry on the waterline, which means that she is less agitated in pitch motions and less prone to slamming than ships with a fuller bow. Above the waterline, the raked stem and reserve buoyancy mean that there is a limit to the motions, and shipping green water on deck is avoided in all but the worst cases.

Linde-G has a small wave breaker on top of the shelter deck in case of necessity. Finally, both the bulbous bow and the Hull Vane contribute to pitch damping, in the same way that the bilge keels contribute to roll damping. This means fewer vertical accelerations onboard, leading to less seasickness and less exhausted crew and passengers after a trip in rough weather.
Linde-G is developed for applications with a wide speed range.

In the design of the vessel, the accommodation is placed further aft than on most crew boats, again with the goal of reducing the ship motions felt by the passengers.

**Fewer Waves, Less Energy**

Fré Drenth, Technical Director of Shipyard De Hoop, comments, "For us, efficiency starts with a low-resistance hull. This is extremely important for a vessel like this, which we offer with a maximum speed of 25 knots. At speeds above 10 knots, for a vessel with a waterline of 50m, the wave-making resistance starts to become dominant, and we went to great lengths to reduce this as much as possible. The hull is a double-chine displacement hull with a fine entry on the waterline and excellent volume distribution. To reduce the bow wave, we asked the hydrodynamic specialists from Van Oossanen Huid Dynamics to optimise a bulbous bow. This bulbous bow reduces the resistance by almost 9%.”

During the development of the vessel’s model in 2013, Van Oossanen also proposed trying out the Hull Vane, a hydrofoil-like appendage at the stern of the ship. The company optimised the Hull Vane specifically for this model, which was deployed during sea trial with and without Hull Vane, while measuring the fuel consumption. The tests showed a reduction in fuel consumption of 20% at 12 knots, increasing to 15% at the top speed. The difference in generated wave patterns was also clearly noticeable.

Mr. Drenth adds, “Our goal initially was to offer the bulbous bow and the Hull Vane as options on the vessel, so clients could choose. At Shipyard De Hoop, we are strong proponents of the KISS principle: Keep it Simple, Stupid. However, the results of both the bulbous bow and Hull Vane were so good, that it would have been stupid not to apply them from the design, so they are now both standard and all five vessels in the series have a bulbous bow and Hull Vane.”

**Speedy Crew Transfers**

To be able to effectively carry out crew transfer, the speed of Linde-G also comes into play. The distances to be crossed can be a large as hundreds of kilometres, which takes an eternity on a normal chase vessel or platform-supply vessel, which typically cruises at 12 knots. Another proviso is, of course, the passenger compartment, which provides comfortable and spacious seating for up to 55 passengers.

Last but not least, Linde-G is equipped with a large davit on the aft deck. The davit normally doesn’t carry a boat, but this one is dimensioned to pick up the crew transfer vessels from the seismic ships, fully loaded with passengers. This means that the passengers can embark and disembark on deck of the Linde-G (and on the seismic vessel), and not have to undergo a more dangerous ship-to-boat transfer, which can be hazardous in heavy seas.

Linde-G’s dynamic positioning system is furthermore perfectly suited to the creation of a calm “bed” on its side, to pick up the transfer vessel. The control for the davit is placed on the starboard bridge wing, giving a very good overview. Right next to it, a removable Dynamic Positioning console can be placed, allowing for very precise joystick manoeuvring during launch and recovery of the crew transfer vessel.

Compared to the existing guard vessels in the fleet, Rederij Groen expects to have a 30% lower fuel consumption in spite of the added capabilities (speed and davit crane).

**Hybrid Modes**

The newbuild is fitted with a three-stage hybrid propulsion system. Rick Tempelman, Project Manager of Shipyard De Hoop, explains, “Linde-G is developed for applications with a wide speed range. The vessel needs to be capable of a high-top speed, but in most cases, many running hours will be spent at a much lower speed, such as on patrolling duty or when working as a chase vessel. It is known that a diesel engine does not like to be underloaded for long periods of time, it leads to sooting (visible as black smoke), inefficient combustion and a lot of NOx gas emissions. This is why we developed this series with a three-stage hybrid propulsion system, but with a minimum of components.

Up to 6 knots, the vessel can run in diesel electric mode, using only a 250kW generator which covers both the hotel load and drives the propellers through E-motors on each of the gearboxes. The control is very fluid and precise, and the newbuild is practically silent. The fuel burn in this mode is only approx. 551/h. Above 6 knots, the 250kW genset becomes too small. The portside main engine is then powered up, but kept unclutched from its gearbox. Instead of driving the gearbox, it drives an alternator on its free end at the forward side. The power of this alternator goes through variable frequency drives, for to the E-motors on each gearbox. Effectively you are sailing on one main engine, but with both propellers, the bow thrusters and the hotel load all driven electrically by one 2350kW engine in diesel-electric mode. This is also the operating mode used during dynamic positioning. The vessel can reach
13 knots in this mode with only 410kW of power and only burning approx. 1441/h.” When more speed is needed, both main engines are started up in diesel-direct mode. In this mode, the top speed of Linde-G is just above 20 knots, but it could be increased to 25 knots with different propellers. There is currently a large power margin at 20 knots, which means that the ship can maintain its speed (and schedule) regardless of the weather or loading conditions. This is the notion of ‘speed-keeping’, where the vessel is designed for an operational profile and real-life conditions rather than a top speed which is achieved only during trials. At 20 knots in calm water, Linde-G runs at 75% of her maximum power and burns approximately 600l/h of diesel. Because of the diesel-electric modes, which provide very precise speed control through the variable frequency drives, the propellers can be fixed-pitch propellers, in spite of the wide operating range. Fixed-pitch propellers have a higher efficiency than controllable pitch propellers, which lose some efficiency due to the larger propeller hub. The entire electrical installation was carried out by Tiekels Elektrotechniek.

**Stern Platform**

Shipyards De Hoop has furthermore gone to great lengths to build a quiet vessel. This includes exhaust silencers – which are standard on pretty much any vessel except for crew boats – and completely flexibly mounted accommodation. Six spacious cabins are provided, each with a private bathroom.

Another noticeable feature of Linde-G is the large stern platform, with green plastic grating on top. Easily mistaken for a driving range for golfers, it is actually intended to protect the Hull Vane which is located underneath. At the same time, it provides easy access to the waterline, which is very important as these vessels are often used as a safety/standby vessel. It is much easier to disembark from a life raft onto the stern platform than it is via a ladder. During one of the sea trials, the platform was even used for a winching exercise by the Dutch coastguard.

Linde-G is equipped with a number of other rescue devices such as a Jason’s cradle and a deck crane. The 190m2 aft deck also has container fittings for three 6m-high containers, while a fourth one can be placed on the sheltered foredeck. But perhaps the most striking feature of Linde-G is what is her efficiency: she sails competently in a very visible and audible way, from very low to very high speeds, showing almost no generated waves and no visible exhaust fumes.

[dehoop.net](http://dehoop.net)
WHEN THE UNITED KINGDOM’S ROYAL NAVY REALISED THAT THE WATER PUMPS FOR FIREFIGHTING ON A NUMBER OF ITS VESSELS were beginning to show signs of deterioration, it decided to look for a durable, robust solution that would stand up to all the rigours of naval activity.

Fire risk is constantly present on-board navy vessels, and crew need to know they have the best equipment at hand to quickly contain the flames and minimise damage. In this regard, the emergency firefighting water pump is an essential element in fire-fighting equipment. It is vital that such pumps are highly effective, while being relatively light and compact for easy mobility and storage. And of course, the crew need to have confidence that the pumps will work exactly as expected, when they’re needed.

The Royal Navy approached pump manufacture DESMI to help develop a customised pump solution that could be used for its minesweepers — and which could potentially be used on a wider range of vessels, since using the same pump would ease the overall maintenance burden and simplify both training and operations.

Military-Grade Requirements
To this end, the Royal Navy had several specific requirements for its fire-fighting pumps, seeking a relatively light, hand-carried unit that can be stored on deck, at times in a special enclosure. The pump’s weight and size must enable it to be brought to the location of the emergency and quickly connected to hoses before pumping sea water. And each pump must be manufactured to a pre-defined capacity and pressure.

The current version, Mark 3, weighs around 100kg and can be carried by four people. It is relatively light considering its power, mainly due to a lightweight diesel engine and the design of its stainless-steel frame. Contributing to the unit’s robustness is a special coating, which makes it resistant to wear and seawater corrosion.
High-Performance Flow
The portable pump, officially named SP-D3-2, has super-priming capabilities, an impeller diameter and a double-stage design. A combined water ring, priming and centrifugal pump, it is equally effective at pumping water up from sea level as it is at creating optimal pressure and flow. The water ring section of the pump allows it to prime very quickly – a significant advantage when extremely fast fire-response is demanded. The SP-D3-2 creates a flow of 40m³ per hour at a pressure of seven bar. Its suction capability is up to 7m above the sea’s surface, easily exceeding the minimum requirement of 4m.

New Favourite
Ministry of Defence Senior Maritime Engineer Mike Sampson is well satisfied with the pumps created by DESMI. “These pumps do exactly what they’re supposed to”, he comments. “And the latest version is a highly reliable unit that is not only well-suited to emergency firefighting, but which is just as useful for disaster relief tasks, providing a portable water pump that can help to clear flooding or provide fresh water where it’s needed.”

The success of the pumps has already gained the attention of armed forces and other customers around the world with a similar set of needs. “We have already developed customised versions of the diesel-driven firefighting pump for the offshore sector and other navies around the world”, says Martin Bro, Segment Director, Defence & Fuel at DESMI. This makes it very possible that these pumps will not only be the navy’s favourite, but a winner all around the maritime industry.

becker marine systems

COMPACT BATTERY
COBRA is an advanced maritime battery system employing tried and tested 18650 lithium-ion cell technology. The lightweight battery system is designed for marine requirements, suited for seagoing and inland ships such as ferries, tugs, cruise ships, yachts, OSV and harbour/service vessels.

Any scale of power storage is possible due to modular battery units in standardised cabinets of up to 1,000 V DC including integrated cooling equipment. COBRA can be used for fully electric battery or hybrid drives, as emergency power source or as onboard energy supply, e.g. for peak shaving.

www.becker-marine-systems.com
In May, Sea-Kit’s Maxlimer completed the world’s first commercial cargo-carrying remote-controlled transit when it transported oysters from Essex to Belgium. Now, final preparations are underway for Maxlimer to set sail from Canada and attempt the world’s first transatlantic crossing without a crew.

All photos courtesy of Sea-Kit International

The round-trip in May lasted 22 hours and marked a significant breakthrough in unmanned ocean transit. “The voyage to Belgium has been months in the making, and to see it all come together is amazing”, says Benjamin Simpson, Managing Director of Hushcraft Ltd. With the successful voyage of Maxlimer, Sea-Kit has shown its effective unmanned navigation capabilities through GPS and satellite communication, including marine traffic avoidance in what is one the world’s busiest shipping routes. Mr Simpson continues, “It demonstrates not only the capacity of Sea-Kit and the robustness of the design, but also the value and effectiveness of the cloud-based communications technologies involved in unmanned shipping.”

Versatile Model
The British vessel is remotely controlled from a central hub in Essex and equipped with cameras, radar, microphones, thermal imaging and a back-up autonomous system to keep it and other sea-goers safe. Maxlimer was designed and developed by Hushcraft Ltd in Tollesbury, Essex and is operated by Sea-Kit International. The 12m-long unmanned surface vessel (USV) is capable of speeds of up to 8 knots, has a capacity of up to 2.5t and is powered by a hybrid electric-diesel engine. The USV’s modular design can furthermore be easily and cost-effectively configured to a wide range of maritime tasks for various sectors.

Seamapping
The USV was initially developed for, and
used with, the Kongsberg Maritime Hugin autonomous underwater vehicle (AUV) system for the GEBCO-Nippon Foundation Alumni Team entry to the Shell Ocean Discovery XPRIZE, which is a competition to find new ways to map the sea floor. The team’s concept for efficient, safe and cost-effective sea-floor mapping utilised the purpose-built Kongsberg Maritime Hugin AUV system, rated to operate at depths of up to 4,500m.

**Versatile Model**
The vessel can launch and recover the AUV but also has the potential to operate in different roles with different cargos. "It is almost like a utility pick-up vehicle of the sea, it's robust, it's adaptable, it's got a huge range", comments Mr Simpson.

“It is a fundamentally versatile model”, he continues. “The USV’s potential lies in its ability to be adapted to a range of tasks, whether it be transit, hydrographic surveys, environmental missions, or marine safety and security. We’re tremendously excited to push the technology to its limits and see what we can achieve.”

**Remote-Controlled**
The USV is operated by a hand-held remote control when in harbour, and when at sea it can stream live data to the controller via multiple satellite links. As a result, the unmanned capabilities feature the ability to control the vessel from an operation centre, located anywhere in the world, no matter what distance from the vessel. Remote pilots make use of a system known as ‘Global Situation Awareness’ which obtains location data from on-board GPS and radar. The vessel features a custom-built gondola fitted with a multibeam system and HIRAP for communicating with the AUV from the control centre, allowing it to conduct surveys in both deep and shallow waters.

“What is now available through technology is very, very similar to what you have on the...
We are tremendously excited to push the technology to its limits and see what we can achieve.

bridge of a vessel and in many ways, I would argue, even more comprehensive”, says James Fanshawe, Chair of the UK’s Maritime Autonomous Systems Regulatory Working Group. “The controller here in this station can actually see all the way round on the horizon near real-time whereas in many vessels it's quite difficult to actually even see what's behind you from the bridge of the ship”, says Mr Fanshawe.

Benefits
Compared to a typical research vessel, this unmanned vessel provides a large variety of economic and environmental benefits. By eliminating the need for an on-board crew, the vessel size is reduced. The reduced vessel size, combined with the hybrid diesel-electric propulsion system, results in an approximated fuel reduction of 95%, which, in turn, significantly reduces the cost of data acquisition.

Future Potential
Maxlimer is currently bound for the south coast of England from its starting point in Canada and will conduct deep-sea surveys on the way, guided by two control centres, one in a control station in Britain and the other yet to be confirmed, meaning that watches can be handed over, thus creating another level of redundancy. The Atlantic voyage is expected to take about 35 days. Sea-Kit Director of Operations Ashley Skett is convinced there is a future for unmanned vessels as they remove the human element from potentially dangerous situations. He says vessels that do not need to accommodate people also have significant economic and environmental benefits. “You don’t need a bridge, you don’t need a galley, you don’t need water supplies, you don’t need air-conditioning and suddenly the size of that vessel becomes a fraction of the size of vessels currently being used offshore.” Future endeavours of Sea-Kit International will therefore certainly involve larger vessels by the mid-2020s.

i. hushcraft.com
i. sea-kit.com
WHilst working at sea, apprehension about your own or your colleagues’ safety is not something you wish to be concerned with. You need to be able to rely on the available firefighting, rescue and safety (FRS) equipment, both in the case of an emergency and as a preventative device in every-day life.

With the focus on delivering life jackets, fire extinguishers, gas detection devices, personal protection and other FRS equipment, Dräger Marine & Offshore (Dräger) provide this kind of equipment on board sea-going vessels, inland vessels, offshore platforms, cruise ships, ferries and yachts. Based on years of experience, they deliver tailor-made, innovative products and services to the maritime market.

High Quality FRS Products
Safety on board sounds obvious, but it is astonishing to learn what means are necessary to create order and maintain a safe environment on board. Dräger’s drive to grow, innovate and produce ensures the high quality of their products. Investments in product development have led to optimised products in the field of life jackets, fire extinguishers, gas detection devices and personal protection equipment, as well as every-day items. A wide range of products results in a total solution with regard to FRS.

Total-Care Service
Service and maintenance are also of great importance when it comes to ensuring safety on board. Due to the advanced development of products, the frequency with which they need to be checked decreases considerably. To provide optimal service, a unique registration system is used. This means that every product is linked to a barcode and the status of the product can be continually monitored. This ensures tractability, transparency and flexibility. This system is part of the Total-Care service package which ensures all services are arranged through one partner.

Training
It is also important to keep up-to-date with safety issues and to know how to use the equipment properly. Dräger provides courses which cover both theory and hands-on use of equipment in practical applications as well as testing, maintenance and troubleshooting. For example, firefighting teams can be trained in how to use breathing equipment. There is also equipment that is used daily, such as portable gas detection devices. These items of equipment are equally important, and should be used properly to create and maintain a safe situation. That is why Dräger offers training for safety products and their applications (independent of the brands of equipment used).

l. www.draeger-mo.com
Switching (to) Batteries

JUST A FEW YEARS OLD, THE DUTCH COMPANY SKOON ENERGY (SKOON) IS ALREADY MAKING WAVES WHEN IT COMES TO THE START OF LARGE-SCALE ELECTRIFICATION OF VESSELS’ PROPULSION VIA management of an exchangeable battery network and strategically located charging hubs with a 100% clean energy supply.

Imagine you are a student who gets an assignment to reduce the vibrations of vessels that run on diesel and you are now working together with companies such as Damen Shipyards. This was exactly the case for Skoon’s founders Peter Paul van Voorst tot Voorst and Daan Geldermans.

Hybrid Solution
Shipbuilding Industry visited the start-up just a few days after they moved to a bigger...
office in Rotterdam. Here, Mr van Voorst tot Voorst tells us, “Three years ago, when I was studying Maritime Technology in Delft, we got the assignment to reduce diesel engine vibrations and I thought, why not just change the engine.” He continues, “To make vessels cleaner, more comfortable and more efficient in their operation, I searched for a genuine, viable alternative to oil-based marine power. So, I asked around and the consensus was to go electric.” Emissions-reducing solutions for shipping include engines powered by liquefied natural gas or by hydrogen cells, but these are expensive to implement and at present offer little scope for upgrade once installed. But knowing that hybrid propulsion would be the future, Mr van Voorst tot Voorst sought a way to power the electric propellers. “Batteries are currently the most accessible solution that could also be realised short-term.”

Today Skoon Energy’s swappable battery packs — known as Skoonboxes — are becoming a reality and, as Mr van Voorst tot Voorst sees it, “An important next step in making the shipping industry more sustainable and accelerating the energy transition within the sector.”

Sharing Batteries
He continues, “One of the operational advantages of our Skoonboxes is that you can swap them out with a new one. Just like chargeable batteries. We opted for a swappable solution since the charge time for these large-size batteries is not something that a shipping company has time for, and most ports do not even have the capacity to allow this.”

He explains further, “For ferries and other electric vessels that travel short distances this is possible, but sadly for bigger vessels that need larger batteries, this just isn’t a viable solution. But with charged Skoonboxes at the terminal, we can simply swap the ‘empty’ Skoonbox onboard with a ‘full’ one. This way, you just switch out the battery and you are good to go immediately.”

The Skoonbox continues to develop as more potential customers get involved in the design process. This is done to guarantee an all-round energy storage unit. “And another great benefit is that when the energy storage industry evolves, we can easily switch to a new one with the latest technology.”

Emission Free
The Skoonboxes are a containerised energy storage solution. The advantage of containerisation is the possibility of using the world’s biggest supply chain: container transport. This global standard is crucial for Skoon’s infrastructure. Among the first users of Skoon’s container batteries is the cargo vessel MS Borelli, an inland vessel measuring 110m. Once in full operation, the Skoonbox allows the vessel to sail completely emission-free for about eight hours with the current technology. “The range depends of course of the type of vessel, weather conditions, etc. Starting in densely populated areas and in the ports, the diesel-electric vessel can sail emission-free. This also reduces costs and can even spare the shipowner port dues.”

Another benefit is that the Skoonbox is a plug-and-play concept. “Vessels are already being retrofitted to hybrid propulsion and to use our battery these vessels perhaps only need minor adjustments. This is an accessible retrofit and afterwards it is just a question of plugging it in”, Mr van Voorst tot Voorst explains.

Wide Compatibility
The development and production of transport-grade shipping batteries is expensive — the cost must be offset somewhere. Mr van Voorst tot Voorst states, “The ingenious solution to this challenge is to make these essentially ‘mobile’ batteries compatible with onshore, as well as offshore, applications. Swappable batteries are also viable for use in land-based applications such as powering music festivals and construction sites. This variety in application creates the capacity for batteries to be used while not in demand by marine vessels.”

Large-Scale
Skoon now focuses on increasing the number of available Skoonboxes as well to ensure a solid operational battery network. Therefore, the company is currently developing the software to automate the entire logistics chain of the Skoonboxes. The software enables users to keep track of which customers have which hardware, and exactly where each Skoonbox is and where it will be needed. This automation of the administrative part of the process is the key >>>
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ShipBuilding Industry

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The advantage of containerisation is the possibility of using the world’s biggest supply chain.

To connecting stakeholders to one another, and through these connections, forming the routes that allow vessels to exchange batteries at each end. Mr van Voorst tot Voorst explains why the operational side is also important for them to invest in: “Since the Scoonbox still needs to be plugged in, it is important that the container battery is loaded with the right side at the right spot. Also, the onboard battery needs to be replaced at the right moment (when at the dock) and the ‘new’ battery onboard must be fully charged.” “All these parameters must be automated to offer a true solution for large-scale use. The logistics behind this is what we are focussing on today. We are looking to automate every step in the process, including the truck driver, the container terminal, the shipowner, etc. And then we can really shout out to the shipbuilding industry that our ‘sharing batteries’ can really accelerate the energy transition within shipping.”

Flying Start
Scoon’s concept has attracted the attention of the industry. Last year, the maritime start-up received the Innovation Funding Award at the Startup Funding Event in Rotterdam and was elected one of the ten best energy-storage startups globally. The container batteries are not just interesting for shipping companies, but also for governments, energy providers and all those involved with distribution of green energy.

“I must add that I am truly amazed how helpful everybody within the overlaying industries is. The main Dutch ports are also very cooperative”, says Mr van Voorst tot Voorst. “They see the potential of the Scoonboxes and want to offer this as an extra service.”

Scoon and Damen Shipyards Group have signed a cooperation agreement for the advancement of energy transition in the shipping industry. The agreement combines Damen’s 90 years of experience with the dynamism of the new start-up. Together they have also developed other switchable batteries for the maritime industry. The E-Cross range of electrically-powered ferries, for example, is designed in cooperation with Scoon. The E-Cross ferries are zero-emissions vessels boasting excellent manoeuvrability, low maintenance and modular deck arrangements.

Mr van Voorst tot Voorst comments, “With this partnership, Damen is demonstrating its commitment to enabling sustainable solutions within the maritime industry. We’re looking forward to continuing to work together with Damen and other companies to make fully electric shipping the norm within the maritime industry.”

100% Green Ambitions
Looking towards the future, Scoon will focus on increasing the number of available Scoonboxes to ensure a solid operational battery network. “We want to make the decision to switch to hybrid propulsion as simple as possible”, says Mr van Voorst tot Voorst. “And with Scoonboxes or other similar batteries present on a global scale, with future technology developments that improve the operation time, we believe the answer to the energy transition is as simple as sharing a battery.”

i.scoon.world
Smart Technology

THE MARITIME INDUSTRY IS CONSTANTLY EVOLVING AND STRIVING FOR INCREASED INNOVATION. THE DEVELOPMENT of revolutionary technologies is expected to reshape the future of shipping and shipbuilding. At Europort 2019, innovation is being seen as a key driver for success.

Shipping as a business is being transformed by these technical advances, from its role as a service provider in the supply chain to its place as a customer for newbuilds and marine equipment. Reflecting this transformation, Europort has chosen Smart Technology as a central pillar within the overarching theme of the conference programme and exhibition this year – ‘Special Ships, Smart Solutions’.

Reshaping Innovations
Looking at ‘smart technology’, it is often what these innovations enable that is truly eye-catching. The past year has seen, for instance, the development of the world’s first class-approved 3D-printed vessel’s propeller. US Navy sailors have carried out onboard repairs using additive technology and Ivaldi and Wilhelmsen have worked together to deploy additive manufacturing for marine spare parts production.

As written intensively about before, the development of intelligent, remote-controlled and autonomous shipping is also gathering pace. Europort exhibitor ABB, for example, has recently enabled a ground-breaking trial of a remotely operated passenger ferry near Helsinki harbour.

Alternative Technologies
Significantly, one of the fastest growing areas for smart-technology applications in the marine field relates to ship propulsion. Emission reduction is an important incentive here, and the shipbuilding industry is looking more and more at alternative propulsion, such as hybrid solutions. In one recent milestone, Royal IHC, for example, successfully launched Spartacus, a 44,180kW self-propelled cutter suction dredger for DEME, enabled by an electrical power plant from Bakker Sliedrecht and ABB multivdrive systems. But not only is the industry seeing more and
more alternative propulsion technologies, power optimisation, water conservation and energy-efficiency are also constantly undergoing innovations in their field, which will redefine ship technology and design.

**Intelligent Vessels**

At Europort 2019, visitors will also be able to explore the potential held by artificial intelligence (AI), remotely operated vessels, advanced robotics and other technologies that may change the maritime industry forever. Roger Holm, President of Wärtsilä Marine Business, says, “We are seeing the industry move on from looking at technology alone, to talking about the value this technology can add.”

He also identifies that improved data collection and analysis across supply chains is a key challenge when it comes to true smart technology. “By using real-time data from container ships, for example, we know we can achieve double digit reductions in fuel consumption, but with better connectivity and optimisation we can go even further,” he comments. “The potential for really big savings exists. We just have to capitalise on potential by moving from stand-alone to connected technologies.”

**Programme Highlights**

Indeed, the value lies in combining technologies. To facilitate such connections, there will be a number of matchmaking and networking events throughout Europort 2019. In the exhibition halls, covering 45,000m² of space, there are naturally also interesting connections to be made among the exhibitors and visitors.

Javier López de Lacalle, FMV Director General, says, “Europort gives us the chance to show the technology and quality our companies have developed, and establish contacts and business relations, especially in those niche markets where Dutch companies are developing opportunities.”

The Marine Industry 4.0 conference is interesting as well. This conference, organised by the Royal Institution of Naval Architects (RINA) on 5 November 2019, will explore how new innovations in digital technology will transform the maritime sector, ushering in a fourth industrial revolution.

The conference plans to focus on technical developments, including: innovations in digital technology, from AI and IoT to 3DP; smart sensors; intelligent data analysis; robotics; additive manufacturing and constrained and fully autonomous operations.

There are also multiple masterclasses from the best in the business, with great insights into current industry trends, especially those relating to smart technology. One of these will look at environmentally friendly innovations in the cruise and ferry markets. In this Europort Masterclass, experts from both cruise and ferry markets share their perspectives on the potential reduction in the carbon footprint in terms of propulsion, energy management and route optimisation.

[1. europaort.nl](http://europaort.nl)

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**Europort 2019**

Europort is one of the world’s leading maritime meeting places and focuses on special-purpose vessels and the smart solutions which drive success. From 5 to 8 November 2019, over 27,000 professional visitors and 1,111 exhibiting companies from 40 different countries will be attending Europort 2019 in Rotterdam for strategic cooperation and technological partnerships with like-minded ‘smart’ businesses.
An Electric Lifeboat

An electric-powered freefall lifeboat, which is being built by the Dutch shipbuilder Verhoef Aluminium, has recently passed its final drop tests, making it truly the first fully functional electric lifeboat in the world.

All photos courtesy of Verhoef Aluminium.

The electric lifeboat recently passed its final drop tests at Verhoef’s test facility.
The all-aluminium freefall lifeboat, type FL50-NS-EP (electric propulsion) has a maximum capacity of 32 persons @ 100kg, and complies with DNV-GL-ST-E406. The battery pack has been designed to sail 30 minutes at full speed, and after that 10 hours at approximately 50% of maximum speed.

New Industry Standard
Verhoef Aluminiun’s knowledge of freefall lifeboats goes back to 1939. Martin Verhoef, CEO of Verhoef Aluminium, elaborates, “In 1960, the first freefall lifeboat in the world, designed by my father, was installed on a Dutch coaster. It was made of aluminium alloys, because of their well-known mechanical properties: light, strong and with a long life-span. These same qualities are still very valuable for the design and construction of the freefall lifeboats which are being built today.

Over the years, Verhoef has been consulted many times during the development of the new DNV-standard. He was contacted in 2006 by the Norwegian Authorities to investigate their ideas to increase safety of all freefall lifeboats on the Norwegian continental shelf in a joint industry project initiated by the Norwegian Oil Industry Association.

Their findings have supported the development of the DNV-OS-E406, a new standard which forms an addition to the SOLAS-standard for freefall lifeboats on platforms. In this new offshore standard, requirements for freefall lifeboats are enhanced, which improves the safety of the lifeboat occupants. The Petroleum Safety Authority decided that from 2015 all Norwegian freefall lifeboats at platforms must meet these demands.

World’s First
Verhoef claimed the first order for a fully electric freefall lifeboat to be deployed on the AkerBP offshore platform in the new Valhall Flank West oilfield project in Norway. The contract includes an option for similar lifeboats in the future. This offshore platform is designed for minimal maintenance. Consequently, an aluminium freefall lifeboat with a battery-powered electric motor instead of a diesel engine is a huge advantage. "It is also an unmanned platform. As a result, the lifeboat does not need a lot of capacity."

Remote monitoring and testing of the batteries is also a novelty of this EP freefall lifeboat. Mr Verhoef adds, “For AkerBP, it was very important that the lifeboat is low maintenance and can be monitored and operated from shore. That way you are sure that the lifeboat works before the crew arrives at the platform.”

We are convinced that electric propulsion is the future for lifeboat technology.

Many Benefits
“Using electric propulsion for lifeboats has many advantages, from safety and the comfort of the occupants, right through to reliability and maintenance and the cost view-point”, Mr Verhoef says. One of the primary motivations for the switch to electric power is the reduction in the high-maintenance costs run up by the diesel engines currently in use, according to Mr Verhoef. “Experience has shown that diesel lifeboat engines require a great deal of ongoing maintenance and repair. Soot accumulation in the seldom-run engines can cause internal damage and negatively affect the performance and reliability of the evacuation system. Electric propulsion also eliminates the need to transport, store and handle diesel fuel on the platform.”

Mr Verhoef estimates that the electric propulsion system will also reduce operating costs by some 90% to 95% compared to combustion-powered lifeboats. The built-in connectivity function will enable remote monitoring of the condition of the electric system from shore. The system also comes >>
with a nine-year battery capacity warranty. He continues, “But there is also the aspect that electric propulsion is much more environmentally friendly and reduces the human footprint.”

**Added Comfort**

The lifeboat is capable of carrying 32 passengers with an individual weight of 100kg, which is more than the SOLAS-standard of 82.5kg. Mr Verhoef explains,

“Research has shown that the average weight of a worker on an offshore platform is 99kg, and therefore DNV has pushed this number up to 100kg with a maximum of 150kg. The same goes for a person’s height requirements, which range from 1.50m to 2.10m tall. That is why we designed aluminium seats for our FLS0-NS with a sliding headrest, onto which the newly developed five-point harness is attached. This way the seat can always be adjusted to the passenger, guaranteeing maximum safety during the launch.”

In order to test Verhoef’s new seat design, they contacted TNO. “TNO is the only place in the world where you can test this kind of seat and, besides this, you identify yourself with a world-renowned research institute. We first conducted tests at MARIN, after which Norwegian research institute Marintek performed computer simulations of freefall lifeboat drops, from which representative boat accelerations were computed. TNO then used this data for their own tests on our seats. They were tested with dummies with a weight of up to 150kg. Based on this, TNO developed a computer model that can simulate a set of situations and create an occupant safety analysis, from which we can extract information which can be used to enhance the seats. The DNV-standard is a step forward towards...
These lifeboats must be ready for launch in an emergency at any time of day or night...

improving the occupant safety. We need to take this opportunity and consider it a challenge to improve the safety of lifeboats even further.”

After the introduction of the DNV standard, Verhoef Aluminium decided to manufacture only freefall lifeboats which conform to these requirements, in line with their company policy to deliver only the safest lifeboats.

Electric System
The integrated propulsion system was provided by Torqeedo. Verhoef and Torqeedo engineers have developed and tested a fully integrated emission-free propulsion system consisting of a 50kW, 80 horsepower-equivalent and a Deep Blue inboard electric motor powered by three 30.5kWh Deep Blue batteries with technology by BMW i. The robust system is designed to withstand the heavy G forces of freefall launch and provide 30 minutes at full speed, followed by ten additional hours at 50% maximum speed. The electric system also includes an inverter to drive a water spray pump, which is a requirement in case the craft has to drive through burning oil on the water's surface.

“This challenging project is an important validation of the ruggedness, resilience and performance of our integrated marine electric propulsion technology”, comments Dr. Christoph Ballin, co-founder and CEO of Torqeedo GmbH. “These lifeboats must be ready for launch in an emergency at any time of day or night, capable of surviving the shock and vibration of a launch from a high platform, and deliver passengers to safety. Torqeedo has demonstrated that we are up to the task.”

Great Potential
“Similar to the introduction of the very first freefall lifeboat ever, back in 1960 by our company, the introduction of the EP freefall lifeboat will have the same global effect”, states Mr Verhoef. “We have again demonstrated that we are truly the leader in freefall lifeboat technology. This is what the Industry has been waiting for to reduce their OPEX and carbon footprint.”

He adds, “While we are focusing initially on applications such as oil platforms, with shorter distances to shore, we believe this technology will also ultimately transform the shipping and cruise industry as well.”

Verhoef Aluminium is currently developing more electric lifeboats with a greater capacity and the ability to travel larger distances. “Since these electric vessels are safer, low-maintenance, more comfortable and environmentally friendly, we see great potential for applications on all sort of vessels, including offshore vessels and cruise ships.” He continues, “We are convinced that electric propulsion is the future for lifeboat technology.”

i. verhoef.eu
The new AmaMagna brings the luxury of more space to the river.

Dining on the AmaMagna with a spectacular view.

All AmaMagna’s state rooms and suites are appointed with stylish decor and natural wood accents.
A Labour of Love

AT TWICE THE WIDTH OF TRADITIONAL RIVER CRUISE SHIPS, AMA MAMA’S REMARKABLE CONSTRUCTION JOURNEY HAS TAKEN her across various bodies of water, symbolic of the boundaries the ship is breaking through with her contemporary take on river cruising.

Bringing the luxury of more space to the river, AmaMagna took her first scenic ocean trip from the Serbian shipyard of Vahali to Rotterdam, where she was outfitted with luxurious furnishings and various contemporary design elements. She completed her 17-day return ocean voyage to Constanta, Romania, and then joined several other AmaWaterways ships in Linz, Austria. Rudi Schreiner, President and co-owner of AmaWaterways highlights: “It is an exciting time for AmaWaterways, and we are proud to lead the industry by offering guests a new dimension in river cruising.”

Welcome Aboard
At an exclusive Oktoberfest welcome event in Vilshofen, Germany, Captain Jan de Brujin, Cruise Manager Dragan and Hotel Services Manager Guido greeted AmaMagna’s first guests, many of whom were loyal AmaWaterways cruisers anxious to be among the first to experience the newest member of the family. The brain child of Mr Schreiner, AmaMagna surpassed guests’ expectations on embarkation day with the highest level of luxury and generous personal space of any ship on the rivers. “Dreams are fuelled by the passion of an individual, but usually accomplished through the creativity and hard work of many”, says Mr Schreiner. “This ship represents a labour of love for so many people who contributed groundbreaking ideas, as well as a lot of hard work that was done by the team to bring my dream project to reality. The delighted reactions of our guests and travel partners when they embarked on this cruise is genuinely rewarding,” says Kristin Karst, AmaWaterways’ Executive Vice President and co-founder. “With the choice of four distinct dining venues, five bars, elegant lounges and exceptional accommodation, AmaMagna has been designed for those seeking a fresh, contemporary and dynamic take on river cruising. This beautiful ship has a direct appeal to ocean cruisers who are accustomed to the luxury of expansive personal space and a wide variety of leisure activities during their vacation.”

Spacious Suites
AmaMagna provides more personal space with most state rooms measuring between 101m² and 216m², comparable to ocean cruise ship suites. In addition, guests can...
look forward to two new dining venues – Jimmy’s, family-style dining named after AmaWaterways’ late co-founder Jimmy Murphy, and the Al Fresco restaurant, with retractable ceiling and windows – complimenting the Main Restaurant and the Chef’s Table Restaurant. AmaMagna is twice the width of traditional river cruise ships, yet welcomes only 20% more guests – with more than half of the 98 state rooms designated as suites. All state rooms and suites are appointed with stylish décor and natural wood accents. The suites feature full outside balconies, open seating areas and luxurious bathrooms, complete with double basins and walk-in showers. Six Grand Suites (144m²) and an Owner’s Suite (216m²) provide even more amenities, with separate seating areas and sizable bathrooms complete with spa-style bathtubs.

Leisure Activities
A hearty complementary daily excursion programme, including escorted hiking and biking tours and group fitness classes led by a trained Wellness Host, offers guests the ability to personalise their river cruise experience. Additional features include an expansive Zen Wellness Studio, complete with a large exercise area offering group classes focused on stretching, cardio and core strengthening and spin classes and an innovative Water Sports Platform. In addition, new Yow Renewal and Concierge Golf Programmes are offered uniquely to AmaMagna guests. The Concierge Golf Programme provides the opportunity to experience four top-level golf courses in Hungary, Slovakia, Austria and Germany, while enjoying the magic of river cruising. AmaMagna’s itineraries include Romantic Danube, Melodies of the Danube and Christmas Markets on the Danube.

Onboard Entertainment
The vessel also provides entertainment offerings with an onboard cinema and amenities, including a large boutique, a juice bar and two massage rooms, along with manicure, pedicure and hair services; and a sun deck with a large heated pool, relaxing whirlpool and sky bar. All sun deck facilities are easily accessible via an innovative pop-up elevator serving all four decks.

Christening
AmaMagna will be officially christened by her godmother, respected travel expert and Emmy Award-winning television host, Samantha Brown, during a 11 July christening ceremony in Grein, Austria.

i. amawaterways.com
Maritime Charity Golf Event Raises EUR 6,350 for Nationaal Fonds Kinderhulp

In May, around ninety international maritime professionals took part in the annual Maritime Charity Golf Event, organised by Yellow & Finch Publishers in favour of Nationaal Fonds Kinderhulp (National Child’s Aid Foundation).

This is the ninth time the event has been organised by the maritime publishers. This year, at the beautiful Grevellingenhout golf course in Bruinisse, the Netherlands, participants of both the golf tournament and the clinic enjoyed a sunny day of sport, some good food and networking. Of course, there were some prizes handed out, but the real winner was Nationaal Fonds Kinderhulp. At the end of the day, Charles van den Oosterkamp, Managing Director of Yellow & Finch Publishers, donated a cheque worth EUR 6,350 to Erna Metz, representing Nationaal Fonds Kinderhulp.

“We are extremely happy to have been able to raise this amount of money together with all the participants and sponsors,” Mr van den Oosterkamp stated, “My team and I hope to see you next year for another great day of golf and charity.”

i. www.ynfpublishers.com
FERRY COMPANY STENA LINE HAS ACHIEVED ANOTHER MAJOR MILESTONE IN ITS MULTI-MILLION FLEET INVESTMENT PROGRAMME WITH THE FLOAT-OUT CEREMONY OF THE SECOND VESSEL IN ITS NEW GENERATION E-FLEXER SERIES.

**ALL PHOTOS COURTESY OF STENA RORO**

Stena Edda had her float-out on 15 April at AVIC Weihai Shipyard, China. Like her sister vessels, she has a length of 214.5m with a freight capacity of 3,100 lane metres and the space to carry 120 cars and 1,000 passengers and crews. But most importantly, the E-Flexer models are at the forefront in terms of sustainability and will create a new standard for...
One of Stena Line’s new E-Flexer model steel-ready at the AVIC Weihai Shipyard in China.

SPECS

<table>
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<th>Specification</th>
<th>Value</th>
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<tr>
<td>Length</td>
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<tr>
<td>Depth</td>
<td>8.4m</td>
</tr>
<tr>
<td>Beam</td>
<td>27.8m</td>
</tr>
<tr>
<td>Speed</td>
<td>22 knots</td>
</tr>
</tbody>
</table>

also feature a digitally enhanced customer experience and be 50% larger in the basic model than the current RoPax model standard ferries.

“Stena Edda will deliver many benefits to our freight and travel customers including faster and easier loading/unloading with drive-through decks and new port infrastructures. Our latest design in cabins and the further enhancement of our Scandinavian-inspired interiors will make these new ships the largest, most spacious and most comfortable ships ever to sail between Belfast and Liverpool”, elaborates Paul Grant, Stena Line’s Trade Director, Irish Sea North.

Stena Line CEO Niclas Mårtensson adds, “It is very exciting to follow the building process and this is another highly important milestone in our rolling construction programme. This is a very exciting time for our business and I am proud that, as Europe’s largest ferry company, Stena Line continues to help shape the industry for the next generation of freight and leisure passengers.”

AVIC Weihai Shipyard

AVIC Weihai Shipyard Co. Ltd. (former Shandong Province Weihai shipyard) was built in 1951. The production facilities include a slipway of 50,000DWT and two 100,000DWT drydocks, which enable the shipbuilding of all types of vessels under 100,000DWT.

i. wh-shipyard.com/english

emissions, cost and energy efficiency, as well as performance.

Hybrid Ferries

The next-generation vessels, with hybrid technology, are in keeping with the Stena Line strategic commitment to sustainability and will be extremely fuel-efficient, with a substantial reduction in emissions. They will external ferry operators by Stena RoRo.

Two of the ordered E-Flexer RoPax vessels will feature a larger design and are scheduled to be deployed within Stena Line’s network in 2022. These larger vessels will be 240m long with a total freight capacity of 3,600 lane metres and passenger capacity of 1,200.

Stena Line’s sister company Stena RoRo is managing all the E-Flexer building projects that are ongoing on AVIC Weihai Shipyard.

CEO of Stena RoRo, Per Westling, comments on the ongoing work, “We are very happy with the great collaboration with AVIC Shipyard, which includes both development and production of the E-Flexer series. From a customer standpoint we have exacting requirements on adaptation and flexibility, which the shipyard has successfully fulfilled, and done so largely with a high degree of quality.”

He continues, “These vessels are the result…”
of good cooperation between Stena RoRo and the AVIC Weihai Shipyard. With their strong design capabilities, Stena Line will be able to optimise its capacity to accommodate the vessels within most parts of its route network.”

Sustainable Solutions
During the design of the new generation of Ropax vessels, the company focussed on energy efficiency and flexibility. Stena Line CEO Peter Arvidsson comments, “By continuing to invest in our fleet, we want to lead the development of sustainable shipping and set new industry standards when it comes to operational performance, emissions and cost competitiveness.”

WE Tech Solutions provided many of the solutions. Hongbing Liao, the CEO of AVIC International Ship Development says, “The cooperation with international companies, such as WE Tech Solutions, created a win-win situation. The combination of WE Tech’s reliable solutions and AVIC’s mature shipbuilding technology brings the most energy-efficient ships to the sea. We strongly believe that WE Tech’s innovative and proven technology will lead and further develop the shipping industry.”

One technology used is the WE Drive. This compact and robust modular-designed Variable Frequency Drive enables efficient, flexible and economical power distribution. In Power Take Out (PTO) mode, the propulsion machinery operates in combinator/variable speed mode via WE Drive, while the shaft generator provides the vessel’s electric network with considerable electrical power that results in variable speed and optimised efficiency of the main engine.

The Efficient Power Distribution solution utilises the common DC-link to distribute power in energy-efficient and economical ways. Large electrical consumers such as thrusters or large compressors can have their dedicated Inverter Units (INU) connected directly to the common DC-LINK.

The solution also enables efficient power distribution and controlled short-circuit currents, which allows for lighter switchboards in marine installations. Mr Arvidsson adds, “Having visited the site several times, we are very impressed with the work being carried out by Stena RoRo, the AVIC shipyard and its subcontractors.”

i. stenaline.com
i. wetech.fi
The Rise of the E-Farer

UNMANNED TECHNOLOGY IS RESHAPING THE SHIPPING INDUSTRY AND EVEN METAPHORICALLY BRINGING THE SHORE CLOSER TO THE VESSEL. THIS CREATES THE POTENTIAL FOR HUGE CHANGES IN SHIPBOARD WORKING ENVIRONMENTS.

WORDS BY CRAIG EASON, FORMER SEAFARER AND MANAGING EDITOR AT RATHOM WORLD.

One of the common features on most ships is the crew. They are trained to a specific internationally agreed level. These crew are awarded internationally accepted certification, and to a large extent find they can work on almost any of these internationally trading assets (and sometimes also have one or two bespoke pieces of additional training, such as danger cargo certification, ECDIS-training and so on).

But there is no question that the industry is changing and becoming more digitalised. Vessels without any crew at all are already being produced; this development entails a significant adjustment, and raises some important questions.

Crew Training

Experts now argue that seafarer training needs to be overhauled to reflect the changing digitalisation of the industry, which is increasingly seeing ship managers and owners build cloud-based support or control centres, such as, for instance, Columbia Ship Management, Grieg, Carnival, and most of the liner companies. Support services are building more and more data and work platforms, like DNV GL’s Veracity platform. In extreme cases, this argument leads to questions about the role of oversight in autonomous unmanned vessels, and here we can look to the Kongsberg-designed Yara Birkeland, which until now has been supported by the Norwegian authorities and will be operated remotely by Maersk, a joint venture between Kongsberg and the ship owner, manager and supplier, Wilhelmsen, after two years of trials.

But the more immediate question regarding training-overhaul points to the digitalisation and solutions that are filtering into the industry today and changing on-board roles. While technology is speeding up the pace of change in a once-sleepy industry, there are warnings that more needs to be done in recognition of the human role in the (digital shipping) loop, a term favoured by technology experts to acknowledge the fact that there is a human making the decisions or having the ability to override autonomous systems – even if it is a yes/no decision relating to a voyage route.

Welcome the e-farer, the seafarer trained for...
the age of the smart ship, the seafarer who may not need to actually work on the ship.

An Unmanned Future?
Speaking at a Maritime UK-backed autonomous shipping seminar in London, Sarah Kenny, Chief Executive of UK marine engineering consultancy BMT Group, argues as well that the current arrangements train officers for a career in an industry that no longer reflects the reality of this technology.

In a conference dedicated to assessing technology and the regulatory requirements of autonomous shipping, Ms Kenny says there will always be a need to address the hype of those pushing technologies, but the fact is that there are already significant changes in the sector, with increased connectivity, digital solutions and sophisticated and integrated shipboard systems.

She warns that shipping is not facing a near future of unmanned vessels, but one of rapid transition in which the roles of ship operators and shore-based operators are perhaps interchangeable, and autonomy of systems and crew, as much as unmanned vessels, will be a significant part.

The future seafarer, or e-farer, will be one who could be on-shore as often as on-board, and training establishments need to prepare for this.

Autonomous Challenges
The difficulty with this, however, lies in the regulatory requirements as referred to at the International Maritime Organisation’s (IMOs) STCW convention, which spell out the lengthy requirements for training a seagoing officer.

The IMO has been conducting an extensive study of its instruments and conventions to see what may need to be changed to enable the international development of autonomous or unmanned vessel trials, but what Ms Kenny points to is the ongoing digitalisation of many shipping processes that are not yet reflected in the education given to school leavers who may choose a career in the industry, nor serving officers currently at sea.

An additional point is the need to attract more people into the industry to meet the expected demand for seafarers in the future, whether they will be operating the vessels from the bridge at sea or from a control room in an office.

Captain John Lloyd, Chief Executive of the Nautical Institute, says that the structure of cadetship training therefore needs to be drastically rethought to ensure that a cadet’s training is fit for purpose for a digital or autonomous industry. He warns that the current training modules in the United Kingdom, for example, are too prescriptive to allow for this, noting that other countries allow more leeway for additional modules to be included to give a cadet an opportunity to be digitally savvy.
The Importance of Listening

There are a growing number of conferences and seminars dedicated to the future of maritime autonomy, and there are examples of unmanned craft with significant autonomous capabilities. Sea Hunter 1, for example, has been under tests with the United States Navy for a couple of years now and UK-based Sea-Kit has built an autonomous craft that launches an autonomous submersible for remote survey work (Read more about this vessel on page 22). Sea-Kit Director of Operations Ashley Skett says that sound is one of the most important aspects of remote control of the Sea-Kit vessel.

As a former seafarer, Mr Skett recognises the importance of being able to hear what is going on around a vessel – for example, a change associated with a fault can be heard well in advance of a sensor translating that fault into a signal and it being diagnosed.

When in operation, Sea Kit has live microphones feeding real-time audio from the vessel into the control room. What these developments demonstrate, according to experts like Mr Lloyd and Ms Kenny, is the need to look at regulations such as STCW and national training requirements as soon as possible to ensure they are fit for purpose. The international merchant fleet may not be switching to unmanned autonomous craft in the next decade, but there is no doubt that there will be practical uses of this technology, and the connectivity that is emerging in the industry, because even a shore-based operator should at least know whether to turn a vessel to port or starboard under duress, understand when a remote vessel has right of way or not, and perhaps understand the nature of sea-keeping in a storm so as not to expect a vessel to do the impossible.
Pure-Electric Tanker

RECENTLY, GROOT SHIP DESIGN SUCCESSFULLY COMPLETED AND DELIVERED THE CONCEPT DESIGN FOR THE ‘E5 PROJECT’, UNDER DEVELOPMENT IN JAPAN.

The project has been initiated by Japan-based Asahi Tanker and Exeno-Yamamitizu. They want to introduce a new type of bunker vessel with zero emissions. Exeno-Yamamitizu approached Groot Ship Design in 2018 to participate in this project. The Japanese and Dutch companies have already worked together in the past on two other projects.

Green As Can Be
A design for a 1,300m³ bunker tanker was prepared based on the specifications of Asahi and incorporating zero-emission electric propulsion. The result is an environmentally friendly design, featuring high maneuverability through the use of two azimuth thrusters and a single bow thruster, an electric propulsion package (including battery power and a single generator set as back up facility), an auto-mooring system for mooring alongside large vessels, a shore connection-charging facility, a comfortable accommodation facility and no ballast water required for normal daily operations. In anticipation of future adaptations to conform to rules and regulations, ClassNK has been appointed to give technical advice on ship design and electric propulsion.

E5
Commercial model development of the ‘e5’ design is underway for all bunker supply vessels trading in Tokyo Bay. The target for the first vessel launch is set for Q4 in 2020. The ‘e5’ concept contributes to the sustainability of the domestic shipping industry and creates solutions for issues such as shortage of crews, vessel demand and environmental regulations. By utilising the ‘e5’ concept, the project wants to ensure a stable energy supply and added value. ‘e5’ captures the five core elements of:

- Electrification: the ships’ core energy source will be electricity, achieved by way of adopting lithium-ion batteries.
- Environment: emission control of CO₂, NOx, SOx and minimisation of noise...
vibration along with improvements in vessel operation environmental controls at sea and in port.

- Economics: achieving economic efficiency through installment of IoT and digital tools, coupled with improved propulsion performance by using electricity.
- Efficiency: simple hull construction and installment of automated equipment will reduce the work load for the crew.
- Evolution: digitalisation and technological advancement will ensure the most advanced design concept for the future of domestic shipping.

The environmentally friendly design incorporates zero emission electric propulsion.

**SPECS**

- **Total length**: 60.00m
- **Overall width**: 10.30m
- **Propulsion machinery**: 2x 350kW azimuth thruster, 1x 130kW bow thruster
- **Gross tonnage**: 499t
- **Cargo tank capacity**: Approximately 1,300m³

Ship-to-ship bunkering.

Project 'e5'.
Hotel Style Vessel

ACTA MARINE’S LATEST CONSTRUCTION SUPPORT VESSEL (CSV) OFFERS STATE-OF-THE-ART HOTEL FACILITIES TO ACCOMMODATE up to 120 persons, and an ample 1,000m² of deck space for cargo storage.

ALL PHOTOS COURTESY OF ACTA MARINE

All accommodation areas are designed with the primary focus on the adage that well-rested personnel are productive personnel. Acta Centaurus, as the newbuild is named, provides 80 cabins compliant with DNV Comfort Class level 2. Cabins and public spaces are furnished with high-quality materials and features.

In addition, Acta Centaurus has an up-to-the-minute, buffet-style restaurant, multifunctional public areas, a modern sauna and gym facilities. There are plenty of office and work spaces available for charterers. The mess room and lounge area include a library, coffee corner and a games room.

The CSV is outfitted with a hybrid battery package to further reduce fuel consumption, thereby contributing to a lower CO₂ footprint. As a result, it has very low noise and vibration levels, which are rated better than the requirements for DNV-GL comfort level V2 class. Furthermore, smart Wi-Fi connectivity allows personnel to connect their own digital devices to internet and Video-on-Demand services from aboard.

Large Deck
Looking at the vessel, the space has been used very efficiently. Acta Centaurus offers 500m² indoor cargo space and 500m² cargo space on the weather deck, with a container skidding system and ample room for a total of 24TEUs. The containers can be stored on the two deck levels, allowing clients to take all the equipment necessary for longer offshore assignments.

The optimised on-board logistics solutions of this vessel have been developed by considering the flow of people during
The vessel is equipped with the hull designs X-BOW and X-STERN.

various work operations. All cargo handling is centralised, with stepless transfer to the cargo and personnel lift, and likewise over to the wind turbines or offshore platform.

Safe and Stepless Transfers
The SMST motion-compensated gangway provides safe and flexible Walk-to-Work operations in significant wave-heights. Capable of working over either side of the vessel, it is mounted on a height-adjustable integrated tower. The integrated elevator allows for stepless cargo and people-flow from different deck levels to the gangway platform without exposing them to the weather. The gangway is capable of lifting cargo up to 4t with motion compensation. It also facilitates efficient handling of electronic cargo trolleys loaded with 300kg Euro pallets.

In addition, the newbuild is fitted with a helideck to further support offshore operations. The overall logistics, the SMST motion-compensated gangway and integrated elevator tower secure safe and stepless transfers of people and cargo in significant wave heights of up to 3m.

In addition, the CSV features a 3D, motion-compensated knuckle-boom crane supplied by SMST. In offshore mode, it can lift 20t without compensation and 6t with compensation. At maximum draught, lifting height is 36m above water level. The 3D crane radius is between 5.0m and 29.5m.

Optimised Hull Form
The vessel is equipped with the hull designs X-BOW and X-STERN. The X-BOW is important when the vessel is sailing in heavy seas, reducing slamming and vibrations with a positive impact on the well-being on board. The X-STERN has much of the same qualities as the X-BOW and will secure a higher in-field flexibility and improved winter workability. When keeping the stern facing the weather on dynamic position (DP), the vessel will be able to stay positioned with a lower thruster load, resulting in a lower fuel consumption.

**SPECS**

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</tr>
<tr>
<td>Main Deck area</td>
<td>580m²</td>
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<tr>
<td>Weather deck (Deck A) max load</td>
<td>250 mT</td>
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<tr>
<td>Main Deck max load</td>
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<tr>
<th>MACHINERY &amp; PROPULSION</th>
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<tbody>
<tr>
<td>Main diesel generator</td>
<td>2x 1,700kW</td>
</tr>
<tr>
<td>Emergency generator</td>
<td>2x 940kW</td>
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<td>(1x 200kW)</td>
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<tr>
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<td>2x 1,500 kW @ 0 - 1,200 rpm</td>
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<tr>
<td>Bow thrusters (tunnel thruster)</td>
<td>1x 1040 kW @ 1,200 rpm</td>
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<tr>
<td>Bow thrusters (swing-up thruster)</td>
<td>2x 880 kW @ 1,800 rpm</td>
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<tr>
<td>DP2 system</td>
<td>4x Operator stations</td>
</tr>
<tr>
<td>Reference systems</td>
<td>3x Motion reference unit</td>
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<tr>
<td></td>
<td>3x Position reference system (2x DGPS + 1x CyScan)</td>
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<tr>
<td>Fresh water</td>
<td>840m³</td>
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<tr>
<td>Water ballast</td>
<td>1970m³</td>
</tr>
<tr>
<td>Containers</td>
<td>24TEU divided over 2 deck levels</td>
</tr>
</tbody>
</table>
Safety: Worker’s Accident Prevention
Consulting services and products for heavy industries, offshore rigs, shipyards, ports/terminals etc.

High precision EM/RF sensor technology solutions:
- To alert workers and pedestrians only when in real danger zones.
- To limit false and annoying alerts so that real alerts are not ignored by workers.
- Prevent collision between cranes or with dangerous obstacles.
- Integration with machine operation.
- Not restricted by weather related factors like snow, rain, fog, dust etc.
- High precision detection method.
- Various warning and alerting methods adapted to work site noise and light environment and human factor.

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INFO@YNFPUBLISHERS.COM
Naming the Vessel
On Wednesday 22 May, Marianne van Oord christened Acta Marine’s third Walk-to-Work CSV Acta Centaurus; Centaurus being one of the stellar constellations in the northern hemisphere. The ceremony took place in Den Helder with many guests attending the festivities and taking the guided tours on board the brand-new vessel. Ms Van Oord wished the newbuild and her crew and charterers crew-safe sailings while supporting the growth of offshore renewable energy.

Walk to Work
Acta Centaurus’ first job has already been successfully completed by providing Dutch energy company ONE-Dyas Walk-to-Work support for a short maintenance campaign on the M7 Gas platform in the Dutch North Sea. “All systems have shown excellent performance. With great confidence, we move forward to her next assignment”, says Rob Boer, Managing Director at Acta Marine.

“Building on the experience we gained with our first Ulstein Walk-to-Work construction support vessel Acta Auriga, delivered to us last year, we are highly confident that Acta Centaurus will be very well suited to operate in the offshore, and specifically the renewable market. We will now get ready to bring her out to the offshore windfarm to commence work”, says Mr Boer. Kristian Sætre, Managing Director at Ulstein Verft, continues, “We know how important it is to get a vessel completed on time. This has been achieved through good cooperation between Acta Marine and Ulstein on all levels. We feel certain that the Acta Centaurus will be a good work platform for the owner and their clients.”

Acta Centaurus will soon be mobilised for the start of her charter with MHI Vestas Offshore Wind to support the installation and commissioning of 33 V164-8.4MW MHI Vestas turbines at the Deutsche Bucht offshore windfarm in the German Exclusive Zone.

i. actamarine.com
A New Mechanical Hybrid Propulsion

In close collaboration with Svitzer, Schottel has developed a new hybrid propulsion concept based on the Schottel Y-Hybrid thruster technology. The new concept connects a vessel’s port and starboard-mounted azimuth thrusters with each other. This makes it possible to drive two thrusters with either one of the main engines.

All images courtesy of Schottel

The companies are discussing a pilot project to retrofit an existing tug with the new mechanical hybrid technology. This can transform the direct-driven ship into a greener and more cost-efficient vessel.

An Optimised System

Common vessel operation profiles for tugs or workboats include up to 50% of operation time with low engine loads. To optimise propulsion systems for such loads, conventional hybrid propulsion systems come with two independent power sources per propeller, normally configured with a main engine and a smaller electric motor. The additional electric components make those hybrid concepts more complex and more expensive. The Schottel SYDRIVE-M system, however, is a purely mechanical hybrid propulsion system with no need for any additional electronic components or an additional gear box. This system comes with many advantages as can be seen in the three main operation modes: Light Operation Mode, Full Thrust Operation Mode and FiFi-Mode.

Three Operation Modes

The core functionality of the new system is to mechanically connect two thrusters and one of the two main engines for all light operation activities which do not require the full power of the two main engines. In this synchronised Light Operation Mode, one of the two main propulsion engines remains alternating off. This leads to a noticeable reduction of operating hours for the main propulsion engines, and thus to a reduction of maintenance costs. In addition, the single running main engine remaining in operation will be better loaded by two thrusters and operate in a better specific fuel-consumption range.
leading to less fuel consumption and fewer emissions. This is in contrast to a conventional tug with two engines running in traditional Light Operation Mode, where both engines are operated at a relatively low rpm range which is not efficient with regard to fuel consumption and emissions. For short operation times, when full propulsion power is needed, the connection between the two thrusters is disengaged and each engine is engaged to each thruster. The system is now identical to any other direct-driven propulsion system. For any direct-driven vessel, the hybrid system provides a solution to enable firefighting operation with no need of an additional investment in components such as medium or heavy-duty slipping clutches, CP propellers or dedicated engines to supply power to a FIFI-pump. For the FIFI-mode, the disengaged main engine is used to drive the FIFI-pump through its front Power take-off.

For Newbuild and Retrofit
Another advantage of the system is that it allows any configuration of the three separately positioned power intakes, thus enabling the hybrid drive system to be integrated into existing vessel designs with no need for design changes. Retrofit is possible as well upon request for other specific azimuth thrusters and engine types.

i. sydrive.schottel.com
First Autonomous Manoeuvring Vessel Trials

A UNIQUE SERIES OF AUTONOMOUS-OPERATIONS TRIALS HAVE BEEN HELD IN THE NORTH SEA, ABOUT FIVE NAUTICAL MILES OFF THE COAST OF DEN HELDER, THE NETHERLANDS.

SeaZip 3, a Damen Fast Crew Supplier 2510 “Twin Axe”, from SeaZip Offshore Services, was outfitted with collision avoidance technology and took part in several nautical scenarios to determine how the vessel would interact with seagoing traffic. The trials are part of the Joint Industry Project Autonomous Shipping, a two-year research and innovation project started in 2017 and focussing on the autonomous operations of seagoing vessels. “We are proud that our consortium of seventeen partners has established the first-ever autonomous-operations with seagoing vessels held in the North Sea”, comments Mamix Krikke, Innovation Director at Netherlands Maritime Technology (NMT) and Project Leader of the Joint Industry Project. “A total of eleven scenarios were run, in which SeaZip 3 interacted with two other vessels, Octans, a training vessel from the Maritime Institute Willem Barentsz and Guardian, an Emergency Towage Vessel operated by the Netherlands Coastguard. These scenarios are the outcome of research by the Technical University of Delft, MARIN and TNO. The scenarios were first tested in the MARIN simulator centre in Wageningen and, last week, in a real-life environment in the North Sea.”

By testing the scenarios in the North Sea, the partners involved were able to show the decision-making process carried out by an autonomous system in ensuring safe sailing and avoidance of collisions with other vessels. The autonomous system provided by Robosys Automation, connected to the on-board autopilot and machinery control system, performed the evasive manoeuvres in a safe way. It was concluded that further development of autonomous systems is needed, to cope with complex marine traffic situations in a more efficient way.

Autonomous Shipping Roadmap
The demonstration provides input for an autonomous shipping roadmap which will define the lessons learned and the obstacles, technology and potential as well as the steps to be taken towards further realisation. The roadmap will guide development of technology within the Netherlands maritime industry, the knowledge-based and academic institutions and the government. These include not only technical issues but also those in the regulatory field and aspects such as risk management. Mark van der Star, Managing Partner at SeaZip Offshore Service, says that the impact of autonomous shipping and the possibilities it offers are enormous. “We are continually working on innovation at SeaZip Offshore Service and are proud that our offshore service vessel SeaZip 3 is the first ship to carry out a fully autonomous test in the North Sea. Participating in this project has enhanced our knowledge in a wide...”
range of fields and will help us grow further as a shipping company in the future.”

Broad Consortium
This Joint Industry Project is unique in the sense that it is supported by a broad consortium of stakeholders: shipping companies SeaZip Offshore Service, Fugro; the Dutch Pilots’ Organisation, Damen Shipyards and Feadship, naval architects DEKC Maritime, technology suppliers Bosch Rexroth, Robosys Automation, knowledge institutions MARIN, TNO, Technical University of Delft, classification society Bureau Veritas, maritime academies Maritime Institute Willem Barentsz – NHL Stenden University of Applied Sciences, Rotterdam Mainport Institute (STC & Rotterdam University of Applied Sciences) and project coordinator Netherlands Maritime Technology. The Dutch government is represented by the Ministry of Infrastructure and Water Management and the Ministry of Defence (Defence Materiel Organisation). It is partly funded by the TKI-Maritiem allowance of the Dutch Ministry of Economic Affairs and Climate Policy.

i. autonomousshipping.nl
BY 1997, HYBRID TECHNOLOGY HAD ALREADY BEEN ADOPTED BY THE AUTOMOTIVE INDUSTRY. IN CONTRAST, THE MARINE INDUSTRY has been slow to move towards hybrid solutions, although there are increasing signs of greater acceptance. Still, the question remains: Is hybrid technology a viable propulsion solution for large newbuild vessels?

ALL IMAGES COURTESY OF WÄRTSILÄ

The marine industry continues to face the need to reduce operational costs, while at the same time meeting ever more stringent environmental regulations. New technologies are rapidly being developed in answer to these challenges. According to Giulio Tirelli, Director of Sales & Business Intelligence at Wärtsilä Marine: “The implementation of hybrid systems is a trend that allows improvements in fuel consumption, fewer exhaust emissions and lower operating costs. Importantly, it also makes the vessel itself more competitive as a revenue-earner.”

Energy Management
The Wärtsilä HY hybrid-propulsion technology is designed to be independently used in both electric and mechanical applications in accordance with the owners’ requirements. The hybrid power module produced combines engines, an energy storage system and power electronics through a highly sophisticated and fully integrated energy management system (EMS). The Wärtsilä HY also includes the propulsion equipment and, most importantly, the propulsion control system (PCS). Having the PCS logics integrated into the EMS ensures that at every moment the most efficient power production source is materialising its benefits, which are transformed into effective thrust for the vessel.

This latest generation, specifically designed EMS works as the overall ‘brain’ for the Wärtsilä HY product. It answers the demand for power from the power-management system according to various parameters, such as the typology of the demand, the speed of change from the previous condition, and the status of the power producers – meaning the engines, their loading, the status of the battery charge, and the capabilities of each power producer.

Energy Storage
When operating on battery power, the energy storage system (ESS) enables
instantaneous load acceptance with rapid response to step-load changes. In ‘green’ mode, there are zero emissions, while in all modes — from start-up to full power output — the operation is smokeless, thanks to a new, patented Wärtsilä electric start procedure. Additionally, the reduced engine operating time lowers the maintenance requirements, while also extending the intervals between overhauls.

The size and typology of the ESS are selected according to the design principles of the ship. For example, it is possible that a cruise vessel could be operated with an ESS of comparable size to that of a tug. The amount of energy storage obviously depends on what the vessel is designed to achieve through hybridisation. The ESS can also be retrofitted to existing vessels. With a hybrid-battery system to provide backup and redundancy power, the engines can be operated closer to their optimal load point and with a more stable load. The system allows one engine and a single battery to operate at the most efficient load point, since the battery is used to reduce frequent engine load variations with a charge/discharge strategy.

**Peak Shaving**

The peak-shaving function in hybrid applications reduces the capacity required by the engines, which are usually oversized to cope with power peaks. While the peak shaving function balances short-term power fluctuations, a mission energy management system can use the ESS to optimise the power balance over a complete mission. As an example, the ESS can optimise the operation of auxiliary gensets on a containership by avoiding prolonged low load operation, should there be an unfavourable match between the required electrical power and the available genset size. In the case of a conventional auxiliary genset being forced to run at 20% load on a 28-day voyage, the integration of an ESS allows for running this auxiliary genset at its most efficient load of 85% in start-stop cycles, while the ESS charges and discharges during the process. In addition to the fuel savings related to the better loading conditions, a substantial reduction in genset running hours can be achieved.

**A Key Factor**

The ability of the ESS to provide power instantly through the discharge of the stored energy is a key factor in overcoming the typically slow response of the internal combustion engine to sudden loading. This very efficient spinning reserve perfectly adapts to the sudden load changes, during large offshore support vessel operations, for example. In numerous case studies, the integration of an ESS has reduced the required number of auxiliary gensets from three to one.

**Zero Emissions Sailing**

In full battery mode, zero emissions sailing is achieved. This is particularly advantageous for vessels operating within harbours or close to shoreside communities. For example, a ferry with short port calls of about an hour, and with a 2MWh ESS, does not need its large main gensets while docked, thereby avoiding having to operate them inefficiently at low load.

**The Back-Up Advantage**

A similar battery-only operation, but in a different context, is the back-up feature offered by an ESS. On critical applications, such as cruise ships or offshore installations, an ESS provides extra safety in case of a blackout by providing electrical power instantly to the essential consumers, while buying time for the main gensets to be put online again. Since the time needed for a blackout recovery is relatively short, the size of the ESS is reasonable, even if the required power for the essential load is large.

In addition to the primary feature described for each application segment, the same ESS can, of course, also provide all the additional features in other phases of the voyage, including spinning reserve in manoeuvring, peak shaving and mission energy management.

The integration of battery-based energy storage systems is an important first step along the path towards zero emissions. Furthermore, it paves the way for other future technologies, such as fuel cells, that will still need to be paired with energy storage systems, and which will still use the energy management systems being introduced today.

*www.wartsila.com*

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*Guilio Tirelli, Director of Sales & Business Intelligence at Wärtsilä Marine.*
ON SATURDAY 27 APRIL, BATH IRON WORKS (BIW) CHRISTENED THE UNITED STATES NAVY’S NEWEST guided missile destroyer. The newbuild is named after President Lyndon B. Johnson, the 36th president of the US.

ALL PHOTOS COURTESY OF BATH IRON WORKS RELEASED

The christening took place in Bath, Maine, where the vessel was built at the BIW shipyard. Godmothers of the vessel, Lynda Johnson Robb and Luci Baines Johnson, daughters of the late president, officially christened the destroyer by breaking bottles of sparkling wine against its bow.

According to Mrs Robb, naming this technologically advanced vessel after her father was an honour; it is also highly appropriate, given President Johnson’s focus on the future. “These shipbuilders and this Navy realise, as did our father, that we need to look forward”, she says.

Zumwalt-class
The vessel is one of the Zumwalt-class, multi-mission vessels. This Navy class is designed for littoral and land attack operations, and features an advanced electric propulsion system, wave-piercing tumblehome hull, a state-of-the-art electric propulsion system and a stealth design meant to reduce the vessel’s radar cross-section.

The destroyers are equipped with eighty MK57 vertical launch tubes, each capable of accommodating one to four missiles, including SM-1, SM-2 and SM-6 missiles or Tomahawk land-attack missiles. The warships will also be armed with new, long-range, anti-ship missiles such as the Maritime Strike Tomahawk, following a change to the mission requirements of the Zumwalt-class from a land-attack platform to surface warfare in November 2017. The destroyers can conduct area air surveillance, including over-land, throughout the sea-land interface, power projection and command and control missions.

Stealthy Superstructure
The keel of Lyndon B. Johnson was laid on 30 January 2017. The newbuild features a hull designed to create a low radar profile, an integrated power system and a total ship computing environment infrastructure. In comparison to the preceding two vessels of the class – the USS Zumwalt and USS Michael Monsoor – the Lyndon B. Johnson will feature a steel deckhouse instead of a composite structure as a cost-saving measure. This has led to the vessel having a re-fashioned stealth design and being capable of sailing at 30 knots, according to the Navy.

Specialised Shipyard
Part of General Dynamics Marine Systems, BIW has been building naval ships since the 1980s and specialises in the design, construction and support of complex surface combatants for the US Navy. In addition to Lyndon B. Johnson, BIW is currently constructing Arleigh Burke-class destroyers Daniel Inouye (DDG 118), Carl M. Levin (DDG 120), John Basilone (DDG 122), Harvey C. Barnum Jr. (DDG 124) and Patrick Gallagher (DDG 127).

i. gdbiw.com
Anders Lindmark, Business Unit President

Anders Lindmark, formerly Head of Alfa Laval PureBallast, has transitioned from ballast water treatment into another compliance application. As Business Unit President, Gas Systems, he now oversees the Alfa Laval PureSOx offering in exhaust gas cleaning. The move follows years of service in ballast water treatment, comprising a number of key milestones for Alfa Laval PureBallast.

Marcus Anvell, Area Sales Manager

ChartCo welcomes Marcus Anvell who will be responsible for the Nordic regions. Mr Anvell has previously handled sales development for Wärtsilä Corporation. While maintaining a presence in the Nordics beyond the two current offices in Oslo and Sandnes, Mr Anvell will also be responsible for the sales of digital products, charts, publications, service updates and associated chart business services to customers within the allocated region.

Markus Hoffman, Technical Director

I-Tech has appointed Dr Markus Hoffmann to the role of Technical Director. In the newly-created senior position, Dr Hoffmann will play a pivotal role in I-Tech’s commercial and development processes with the aim of accelerating and expanding current business within the global marine coatings industry. He will also be a key player in generating new revenue streams from the use of marine anti-fouling active agent Selektone in other application areas and sectors.

John-Kaare Aune, Managing Director

John-Kaare Aune has been appointed as new Managing Director, Ship Management for the Wallem Group. Mr Aune joins Wallem from the Cayman Registry, where he was most recently Regional Director, Safety and Compliance, overseeing its global commercial services and business development in addition to the Registration section in the Asia-Pacific region.

Baba Devani, Managing Director

As part of a tranche of measures introduced to strengthen its leading position in the global marine safety and survival market, Survitec has appointed Baba Devani to spearhead the company’s newly restructured division. Mr Devani joins Survitec as Managing Director, Survitec Marine, with the mandate to strengthen the group’s divisional structure with a more customer-oriented service philosophy.

Jan Eskil Hollen, Managing Director

Jan Eskil Hollen joined Survitec in May as Managing Director, Survitec Scandinavia. Mr Hollen, who will be responsible for managing all marine business activities in Scandinavia, has worked in various senior roles, gaining a wealth of experience in product management, business development, export sales, purchasing and global procurement.

Neil Cooper, Vice President, Sales

Neil Cooper has been appointed Vice President, Sales, at Thorndon Bearings, with the directive to build upon the Canadian company’s leading position in the global water-lubricated bearings market and to drive continued growth. Mr Cooper is an experienced commercial leader with over 35 years of experience in sales, sales management and marketing roles with large global organisations.

Hannes Norrgren, CEO

Volvo Penta is pleased to announce that Hannes Norrgren has been appointed the new CEO of Humphree. In 2016, Volvo Penta became a majority shareholder of Swedish marine technology provider Humphree. Mr Norrgren has a global network based on more than ten years of experience in the marine industry and many years in leading and designing international organisations with excellent results.
**Smart Dimmable Windows**

One of the latest innovations developed by Vision Systems is a multi-zone dimmable window with an integrated, transparent information panel based on electroluminescent technology. This digital shade provides opacity control of a chosen zone of the window and gives real-time information to the passengers for a greater comfort and travelling experience. The sleek design of the solution conveys a modern high-end look allowing for brand differentiation. Using SPD technology (Suspended Particle Device), Vision Systems’ EDWs are directly integrated into the glazing. They enable the passengers or the crew to instantly change the opacity of a window from transparent to dark to control both daylight and privacy.

[link: vision-systems.fr]

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**Dynamic Positioning (DP2) Functionality**

ABB adds DP2 functionality to ABB Ability Marine Pilot Control, the solution that enhances vessel command execution and enables operators to focus on safer maneuvering. Designed to optimise vessel responsiveness, efficiency and safety across the entire operating profile, ABB Ability Marine Pilot Control allows joystick control for maneuvering at all times, including around the berth. This functionality will add redundancy in technical design, ensuring that in the event of a single system fault, the vessel’s position will be maintained. This is particularly crucial for the safe and reliable operation of construction and windfarm vessels working alongside fixed structures.

[link: abb.com]

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**New Davit Range**

A new range of davits designed to increase safety and reduce the corrosion of critical parts has been introduced by safety solutions specialist Survitec. The range includes different davit types suitable for life rafts, rescue boats and fast rescue craft.

A grooved drum guides the fall into the correct position and packs it tightly within the drum as the fall is wound up and down during the lifting and lowering of the raft or boat. The davits are supplied as a fully tested and assembled unit, which can be installed in or out of dry-dock. All the davits are supplied with manual operation, with the option for hydraulically powered rescue-boat and combination davits depending on the route and port state requirements.

[link: survivetecgroup.com]
Witt-Gasetechnik has developed a dome pressure regulator with smart option. This high-precision gas pressure regulator now electronically transmits the upstream and downstream pressure as well as the gas temperature in real time and is also able to calculate the current flow rate. These signals can be integrated into burner control systems. They can also be integrated into gas supplier cryogenic tank telemetry systems, and protect downstream pipework from cold embrittlement. Another development is next-generation safety relief valves. These protect gas systems from overpressure, by relieving pressure at a precise set-point. With the smart option, the safety valve can now electronically record its status and send a signal as soon as the valve opens and blows off.

i. wittgas.com

Alfa Laval has launched a new, modular PureSOx water-cleaning system (WCS) with the option of scrubbing in closed loop, either by choosing a fully equipped hybrid system or by installing a hybrid-ready system that can be upgraded for closed-loop operation later. In the new modular system, the separator module can be combined with a flocculator or a membrane module for additional capacity, either directly or through a later upgrade. Two new features include the ability to use either NaOH or non-hazardous Mg(OH)2 as the alkaline additive, based on which is desired or most affordable at the time. The other is the option of using seawater rather than fresh water for replenishing the water system, which yields lower energy costs.

i. alfalaval.com

Delta ‘T’ Systems’ fan and blower motors are ignition-protected for use with diesel and gasoline applications, and completely marinised. They’re a direct-drive TEAO design (totally enclosed air-cooled) and feature double-shield ball bearings with diecast, aluminum end plates, O-ring seals and stainless-steel shafts. Armatures are dynamically balanced for quiet, vibration-free operation. Available in 23cm, 28cm and 41cm sizes, Delta ‘T’ Systems’ DC Axial Fans provide flow rates to 20.8, 40.3 and 81.2 cmm, respectively, with low electrical load requirements. They have integrated safety guards and reversible hub/blade assemblies. Delta ‘T’ Systems 78mm and 101mm DC Centrifugal Blowers deliver flow rates to 3.5 and 10 cmm, respectively. Ideal for OEM or retrofit, they have flange mounts that provide for easy installation.

i. deltatsystems.com

Wärtsilä has secured the first order for its SmartDock auto-docking system. By automating docking procedures, the SmartDock system mitigates potential human errors resulting from ship officers having to perform these technical manoeuvres many times a day. The Captain can select the destination, and with a simple click of the sail button, the SmartDock system takes over. The ship then leaves the dock, manoeuvres out of the harbour, sails to the next port of call, manoeuvres into the harbour and docks alongside the quay, all without human intervention. The SmartDock solution is the culmination of decades of extensive research and testing by Wärtsilä in automation technology.

i. wartsila.com
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NEXT ISSUES

We have already started preparing our upcoming issues of ShipBuilding Industry. Below you will find some of the main topics we are planning to cover. Please feel free to provide our editorial staff with any relevant information, so they can take your input into consideration for publication. Our commercial department will be happy to assist you with your marketing needs.

ShipBuilding Industry – Issue 4

Big Data
Cranes
Deck Equipment & Machinery
Decommissioning & Heavy Lift Vessels

Copy deadline | 10 July 2019
Advertisement deadline | 31 July 2019

ShipBuilding Industry – Issue 5

Europort 2019
Focus on Germany
Dredging Vessels & Equipment
Ballast Water Systems

Copy deadline | 28 August 2019
Advertisement deadline | 23 September 2019

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