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# Ship & Offshore

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# Harnessing the potential

2023 is only a few weeks old but for many, the turn of the year may already be only a distant memory. Too much is happening: almost every day there are new developments to which society, politics and industry must adapt.

Globally, the Russian attack on Ukraine continues to dominate the agenda. For almost a year now, the people of Ukraine have been subject to unimaginable hardship under Putin's imperialist fantasies; for almost a year now, war has been back in Europe.

The aftermath of Covid-19 is also still being felt in many places, the consequences of climate change are becoming increasingly apparent, inflation continues to rage, and there is a shortage of skilled workers everywhere. Against this backdrop, it is difficult to look ahead to the coming months with optimism. The various sub-segments of the maritime industry, be it shipowners, ports, suppliers, shipbuilders or offshore and marine technology firms, continue to find themselves in an exceptional situation.

However, while we can't predict what the future holds, a realistic view upon 2023 may reveal some exciting prospects not only, but also for the maritime sector – alongside the serious challenges that need to be tackled.

In addition to the fight against climate change, one of the most important issues is and remains the security of energy supplies in Europe.

Interestingly enough, Germany, which is sometimes hampered by its rigid bureaucracies, set some good – and fast – examples in this respect. Several floating LNG terminals have been connected to the grid in northern Germany within a very short time; additionally, the award of contracts for two urgently needed converter stations for offshore wind energy has also been massively accelerated.

The opportunities that are opening up in the industry are huge. The demand for supply and maintenance ships alone, not to mention crew transfer vessels, may result in attractive business cases for specialised local shipbuilders. Now it's time to harness the potential and, above all, not let the reins be taken out of our

hands. Here, of course, it is once again up to the politicians to create the appropriate framework and – if possible – to compensate for any competitive disadvantages caused outside of Europe.

Speaking of regulatory framework – this leads us to the next, very relevant, matter that will be at the very top of at least every shipowner's and ship manager's lists of attention this year: with the Energy Efficiency Existing Ship Index (EEXI) and the Carbon Intensity Indicator (CII), two new statutory requirements entered into force on January 1st.

And while we do not want to go into the textual details of these regulations again at this point, it is important to mention that there are manifold ways to meet these standards which offer many promising options – especially for the supplying industry. In addition to the mechanical improvements that can be reached, such as through the application of air lubrication, new propellers, engine adaptations etc., operational adjustments, such as real-time voyage monitoring, just-in-time arrival, can also generate interesting efficiency gains which are available immediately. The profitability and attractiveness of particular ships are likely to depend heavily on CII ratings in the future, i.e., the carbon intensity of the shipped cargo.

Of course, only time will tell what exactly the ratings will achieve, also with regard to possible retrofitting of the existing fleet and the real reduction of CO<sub>2</sub> emissions.

However, while the IMO's processes are sometimes criticised for taking too long – partly because of the organisation's consensus-based procedures – it is now quite possible that these two indices will provide an effective tool to assist the industry in its drive towards climate neutrality.



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The new vessels will operate on the route across the Bass Strait between Geelong, Victoria, and Devonport, Tasmania

Source: RMC

## Construction of second ferry begins

*Spirit of Tasmania* | The start of construction of another car and passenger ferry, *Spirit of Tasmania V*, has been celebrated at Rauma Marine Construction (RMC), Finland, with a traditional steel cutting ceremony. The production of the first vessel, *Spirit of Tasmania IV*, began in February 2022 and its keel-laying ceremony was held in late October. The *Spirit of Tasmania* sister vessels are set to operate on the world's southernmost sea route between mainland Australia and Tasmania. Despite the fact that it is on the other side of the globe from the Rauma shipyard, the collaboration be-

tween the shipyard and the shipping company has proceeded smoothly and there is strong trust between the two parties, RMC said in a statement. The 48,000gt ferries are equipped with modern dual-fuel engines capable of using LNG. They will have capacities for 1,800 passengers each and will replace two Finnish-built sister ships from the 1990s. Currently, the *Spirit of Tasmania*-named vessels carry around 450,000 passengers each year. *Spirit of Tasmania IV* is scheduled for delivery in the first quarter of 2024; *Spirit of Tasmania V* will follow in late 2024.

## ABS Wavesight opens for business

SaaS | ABS Wavesight™, a new maritime software-as-a-service (SaaS) company established by the classification society, is promising to support ship-owners and operators in streamlining compliance procedures while maintaining competitive, efficient, and sustainable operations. The new setup combines the software platforms Nautical Systems™ and My Digital Fleet™, which are already installed on more than 5,000 ships. ABS has outlined some key features. The new setup will provide risk-based business intelligence with scope to support predictive decision-making using artificial intelligence. At a practical level, it will calculate and predict the impact of certain actions on a ship's carbon intensity assessment, and it will provide an insight into spending on fuel while improving the efficacy of vessel routes, the classification society said.



Rendering of the Sea Fisher 321

Source: Damen

## Damen wins NZ fishing contract

Sanford Limited | Damen Maas-kant is to design and build a new scampi fishing vessel for New Zealand (NZ) seafood company, Sanford Limited. The design, based on a Damen Sea Fisher 3210, will be developed jointly by the two companies to incorporate the

latest standards of sustainability, comfort, and safety for operation in the Southern Ocean. The diesel-electric fishing vessel, due for delivery in 2025, will rate highly in energy efficiency, with all power consumers on board running on electricity.

## Assessing green fleet development

Study | A feasibility study has been launched by the Responsible Shipping Initiative (RSI) and classification society DNV to assess scope to develop a commercial framework for new green-fuelled ships. The RSI is an alliance of Swedish dry bulk charterers and their vessels currently deployed in the Baltic and North seas. Many existing ships in these trades are expected to reach the end of their working lives within the next five-to-ten years. The study, supported by funding from Sweden's traffic administration, Trafikverket, will assess the potential for new vessel designs developed jointly between different supply chain stakeholders including cargo owners,

shipowners, suppliers, and authorities. The study will assess the potential for introducing new ships based on two different green ship concepts. The ECO-Bulk concept will analyse scope to reduce emissions as much as possible within current commercial terms. The ZERO-Bulk concept, on the other hand, will examine zero-emission possibilities. This more ambitious aim is expected to require more collaboration and longer commitments between different stakeholders. RSI chairman, Sebastian Tamm, said: "Through an exchange of knowledge and information, shipowners will be able to gain a better understanding of the market's requirements to make the right newbuild investment decisions."



## Newbuild ferry to switch from LNG to batteries

**Buquebús** | Incat Tasmania has been asked to investigate the possibility of converting a RoPax ferry on order for Buenos Aires-based Buquebús from LNG propulsion to a battery-electric setup. The 130m-long vessel, with capacity for 2,100 passengers and 226 vehicles, is due for delivery in 2025. The partners admit there are challenges ahead but, when commissioned, the ship would be the largest, lightweight, zero-emissions ferry operating anywhere in the world. Robert Clifford, Incat Group chairman, commented: “The customer wants this to happen, Incat wants this to happen, and whilst there are matters to be finalised, I am extremely con-



Illustration of the ferry for Buquebús

Source: Incat Tasmania

fident that Incat can deliver this ground-breaking ship. In my experience, unless we see something come in from left field, this is a ‘done deal.’”

Pointing out that there needs to be sufficient energy available in ports on the ferry’s itinerary, he noted positive progress. “The batteries and electric

motors are being worked through with our suppliers to ensure they can deliver the technology required in the time-frame we need them,” he added.



Illustration of the A-FSRB

Source: NYK Line

### AiP for ammonia barge

**A-FSRB** | ClassNK has awarded the world’s first Approval in Principle (AiP) for an ammonia floating storage and regasification barge (A-FSRB). The barge has been developed jointly by NYK Line, Nihon Shipyard, and IHI.

Ammonia as a source of green power is one of the front-runners in sustainable energy for the future but, like LNG, the development of shore-based storage and regasification plant is a much greater challenge than floating facilities offshore. The three companies declared that

the A-FSRB is faster and cheaper to build than shore-based plant and could help hasten the adoption of ammonia as a next-generation energy source. There are currently no international regulations for floating storage and regasification facilities relating to ammonia. ClassNK therefore undertook the design review in line with its Rules for the Survey and Construction of Steel Ships and Guidelines for Floating Offshore Facilities for LNG/LPG Production, Storage, Offloading and Regasification.

## RoPax delivered to Tallink

**MyStar** | The LNG-powered RoPax ferry, *MyStar*, built by Finland’s Rauma Marine Constructions (RMC), has been delivered to Tallink Grupp. The Estonian cruise ferry and RoPax operator has commissioned the 2800-passenger ice-class 1A vessel following recent sea trials.

The 212.4m-long ship, with rolling cargo capacity of 3,190 lane metres, has twelve decks, a main engine power of 42,000 kW and a gross tonnage of 50,625. *MyStar*, the largest RoPax ship ever to

be built by RMC, has a service speed of 27 knots. Paavo Nõgene, Tallink Grupp CEO, said: “We are very pleased that we can welcome and receive into our fleet its newest member and the brightest star on the Baltic Sea, *MyStar*. Her much-awaited arrival marks the beginning of yet another new era for the Tallinn-Helsinki route, with customer service standards now even higher, passenger comfort even greater, and sustainability even more at the heart of our operations.”



The RoPax ferry *MyStar* has been built by Finland’s RMC Source: RMC



Source: Finnlines

The RoPax ferry *Finncanopus* was recently launched in China

## Second ‘Superstar’ launched

*Finncanopus* | Finnlines’ second Superstar-class cargo-passenger vessel, *Finncanopus*, has been launched at China Merchants Jinling Shipyard, Weihai. The first vessel in the class, *Finn Sirius*, was launched last August. The RoPax vessels, due to enter service later this year, will have

capacity for 1,100 passengers and 5,200 lane metres of rolling freight. Part of Finnlines’ EUR 500 million investment programme, the ships will operate on the route between Finland, the Åland Islands and Sweden, calling at the ports of Naantali, Långnäs and Kappellskär.”

## Preliminary programme published

CIMAC World Congress | The 30th edition of the CIMAC World Congress will be held from June 12th to 16th 2023 in Busan, South Korea. Now, the preliminary programme has been published. It is divided into the sections Digitalization and Connectivity, System Integration and Hybridization, Electrification and Fuel Cells Development, Controls/ Automation/ Measurement/ Monitoring, Emission Reduction Technologies, Fuels, Lubricants, New Engine Developments, Engine Component Developments and Basic Research & Advanced Engineering. “The range of topics that awaits the participants is very broad. A central focus lies on reducing emissions, particularly of greenhouse gas emissions. Alternative, CO<sub>2</sub>-neutral fuels to replace fossil fuels play the

main role here. But other factors that contribute to the further optimisation of engines and the reduction of emissions will not be neglected either”, said Marko Dekena, vice president Technical Program. Jonas Åkerman, also vice president Technical Program, added: “The 2023 Congress is taking place under special circumstances. Our industry is currently facing enormous challenges. The Congress comes at just the right time, the holistic professional exchange along the value chain is unique. Busan offers a perfect opportunity to keep up to date with what is happening in the internal combustion engine industry and along the value chain”. The preliminary programme can be found at

[www.cimaccongress.com/program/ preliminary-program/index.html](http://www.cimaccongress.com/program/ preliminary-program/index.html)

## CSOVs to be built in India

Pelagic Wind Fund | Cyprus-based investment enterprise, Pelagic Partners, has established a new vehicle, Pelagic Wind Fund, which has ordered a series of two+two+two new commissioning service operation vessels (CSOVs) at India’s Cochin Shipyard. The contract, worth EUR 350 million, is for CSOVs based on Kongsberg’s UT 5519 HL design, with dual-fuel engines, hybrid pro-

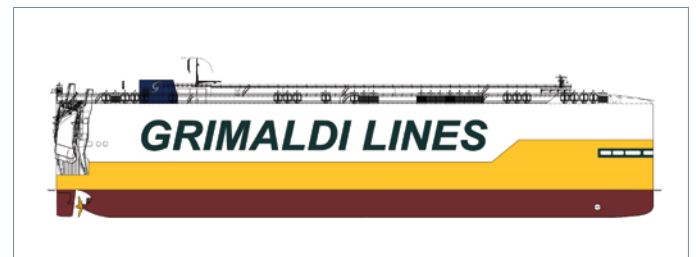
pulsion, and a zero-emission capability. At the signing agreement in Cochin, executives from the newly established joint venture comprising Pelagic Partners, Pelagic Wind Services (PWS), and Cochin Shipyard, revealed that the first vessels will be delivered in the first quarter of 2025. PWS will provide both technical and commercial management services for the ships.



Illustration of the CSOV series

Source: Pelagic Partners

## Grimaldi orders more car carriers



The newbuildings will be delivered in 2025-26 Source: Grimaldi Group

PCTCs | Naples-headquartered Grimaldi Group has ordered five, option two, pure car and truck carriers (PCTCs) at Shanghai Waigaoqiao Shipbuilding Company Limited and China Shipbuilding Trading Company Limited, both subsidiaries of China State Shipbuilding Corporation Limited. The total investment could total more than USD 630 million and comes just about two months after the company ordered five more PCTCs. The 200m-long vessels will have a

capacity of 9,000 car equivalent units (CEU) and their design has evolved from the 6,700-CEU PCTCs – *Grande Balitmore*, *Grande New York*, and *Grande Halifax*, commissioned between 2016 and 2018. The vessels are to be the first units equipped with a new type of electronic engine, the company said, with a specific fuel consumption that is one of the lowest in its category. The PCTCs will have the ‘Ammonia Ready’ class notation from RINA.



## Installation of hybrid coms network completed

Uni-Tankers | Marlink has completed the installation of a hybrid communications network on board all ships owned by Danish tanker operator, Uni-Tankers. The setup combines high-throughput connectivity with cloud-data access, remote IT support, and cyber security. Ships have been equipped with a future-proof smart network, Marlink said, which combines global VSAT, L-band backup, global 4G connectivity, CyberGuard and ITLink.

The company's XChange platform provides a fully managed service including network management and secure file transfer between ship and shore. Vessels now send and receive data on the most appropriate channel and can process data on board

at the edge of the network. ITLink facilitates remote IT support and the Cyberguard Threat Detection system provides additional security for business and crew communications. Unified Threat Management with firewalls has also been adopted.

Michael Hust, the tanker company's IT manager, commented: "Uni-Tankers' business is built on high-quality service and long-term relationships, and the safe operation of our vessels has the highest priority of both the company and our people. Partnering with Marlink has enabled us to take our fleet operations to a new level, increasing both operational flexibility and safety which in turn enables us to deliver an



Marlink

Uni-Tankers has selected Marlink as partner to support its digital transformation, combining hybrid high-throughput connectivity with cloud-data access, remote IT support, and cyber security

even higher level of service to our customers."

Marlink's president, Maritime, Tore Morten Olsen, said: "We are delighted to have completed this successful migration of the Uni-Tankers fleet to Marlink's

hybrid network, a process that relied on close cooperation and a commitment to quality. We look forward to fully service Uni-Tankers' global operations with the best-in-class network solution."

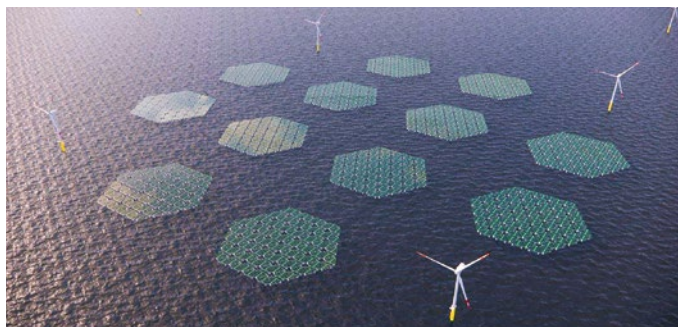
## Floating solar power demonstrator

Hollandse Kust West VII | Off-shore floating solar power specialist, SolarDuck, is to build a 5-MW demonstrator plant, with energy storage capacity, at the Hollandse Kust West VII wind farm in waters off the Netherlands.

The contract, awarded by German-based energy multinational RWE in July, is a significant step forward for Dutch-Norwegian SolarDuck as it seeks to com-

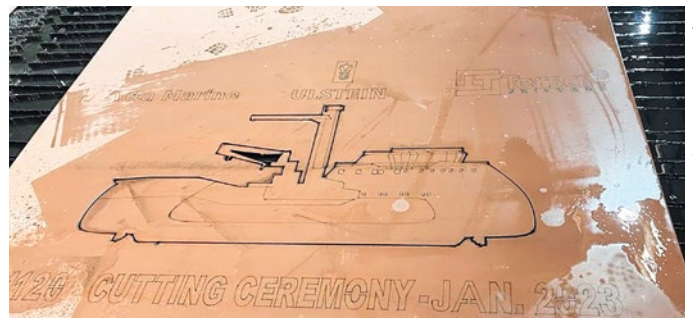
mercialise floating solar technology. The facility is due to be commissioned in 2026.

The development of hybrid off-shore wind and floating solar projects offers significant benefits, SolarDuck said in a statement. The combined systems can make the most of complementarities between wind and solar, as well as making better use of existing offshore infrastructure.



SolarDuck will build a 5-MW demonstrator with innovative integrated energy storage

Source: SolarDuck



Source: Acta Marine

The CSOV for Acta Marine is the first design to implement the Twin X-Stern

## Construction of CSOVs begins

SX216 | The building of two dual-fuelled construction service operating vessels (CSOV) by Turkey's Tersan Shipyard for Acta Marine has been marked by a traditional steel-cutting ceremony. The 89m-long vessels will be built to a SX216 design developed by Ulstein Design & Solutions AS and are due for delivery in the second quarter of next year.

The two ships, claimed to be the first to be contracted with

Ulstein's distinctive Twin X-Stern, will be capable of operating on methanol MDO/HVO (hydrotreated vegetable oil) supported by an energy storage system. They will have motion-compensated cranes and gangways from SMST that will enable the safe transfer of engineering personnel in significant wave heights of up to three metres. Accommodation for up to 135 persons will be available on board.



The Estonian shipyard Baltic Workboats builds ships with a length of 10m to 100m and exports them worldwide

Source: Lau

# Cooperation strengthens European maritime locations

**ENTERPRISE ESTONIA** With around 1.3 million inhabitants, Estonia is one of the less populous countries within the EU; what makes the Baltic country unique is its pioneering role in digitalisation. With a coastline of 3794km, the republic is also home to a vibrant maritime industry. In a press trip organised by Enterprise Estonia at the end of 2022, in which Ship&Offshore took part, its representatives showed particular interest in cooperation with European partners. Among other things, the expansion of the offshore wind industry offers great potential.

Two things cannot be done digitally in Estonia: getting married and getting divorced. That's what visitors to the Baltic country hear from time to time. What is more of an ice-breaker in conversation, however, has a forward-looking and lasting character. According to the former President of the Republic of Estonia, Kerstin Kaljulaid, around 2% of the gross domestic product can be saved by the authorities because no one has to travel to sign documents.

Digitalisation is an important USP in the country, which was able to position itself anew and independently after the dissolution of the Soviet Union in 1991. In addition, however, the north European country also has a lively maritime industry that sees great potential for networking and cooperation in Europe.

## Hamburg police boats are built on Saaremaa

A direct link to the German market was recently established with the order placed by Flotte Hamburg GmbH & Co. KG for two patrol boats (plus an option) from the Estonian shipyard Baltic Workboats. The shipyard is based on the largest Estonian island of Saaremaa, and its origins date back to 1967. Today, the company employs around 200 people (including subcontractors) and specialises in workboats and patrol vessels, with deliveries to 23 countries worldwide.

Rimo Timm, sales manager at Baltic Workboats, also sees great potential for European cooperation in the expansion of the offshore wind industry in the Baltic Sea. There are currently no offshore wind farms in the Gulf of Bothnia or the Gulf of Finland,



but areas have already been planned. The goal is to bring an installed capacity of 3 GW to the grid by 2028. Particularly in the construction of the required crew transfer vessels, Timm can imagine cooperation with other European shipbuilding companies.

## Customers from all over Europe

The Saare Yachts boatyard on Saaremaa is also a European project. Customers of the company, whose owner is based in Eckernförde in Schleswig-Holstein, Germany, come from all over Europe. At the shipyard, which employs 26 people, yachts in a low price segment of around EUR 400 000 are built in three sizes from 38 to 46 feet. According to Peeter Säask, managing director since 1997, Saare Yachts OÜ generates a turnover of EUR 1.6 to 2 million by building around five to six ships a year.

## Research and development

The potential expansion of offshore wind energy in local waters is also a topic at the Small Craft Competence Centre (SCC), a research and development department for marine technology and hydrodynamics at Tallinn University of Technology. Model tests, CFD calculations and hydrodynamic research work have been carried out at the experimental facility since 2011.

This year, according to the head of the institute, Kristjan Tabri, investigations into the dynamic evaluation of floating offshore structures are to start. In addition, the spin-off company Mindship is developing an autonomous multipurpose platform that can be used for the planning and maintenance of offshore wind farms, among other things.

Current projects at the SCC include a “green” icebreaker concept, which is intended to lift the ice instead of pushing it down and thus save energy, and model tests to reconstruct the sinking of the RoPax ferry *MS Estonia* in 1994 as precisely as possible.

## Port of Tallinn: the impact of war

The Russian war of aggression on Ukraine has left its mark on the port of the Estonian capital, Tallinn. After the cruise industry had seemed to recover in the short term after the peak of the Covid-19 pandemic, a decline in passengers has been recorded again in Eastern European ports since February 24th 2022, explains Rene Pärt, Head of Business Development at the Port of Tallinn. While

10.6 million passengers visited the city in each of the years 2017 – 2019, there were only 3.5 million in 2021 with fewer ferry and cruise ship calls (2019: 6,100; 2021: 5,679).

In the first nine months of 2022, 4399 ships brought 5.4 million travellers to the city. The outlook for the current year is not favourable either, Pärt said. The effects of the war and the impact on maritime transport are also reflected in the cargo sector. With a total volume of liquid and bulk cargo as well as containers and RoRo traffic of 22.4 million tonnes, 2021 can be seen as a record year in the 2017 – 2022 period. In the first nine months of 2022, 13.9 million tonnes were handled.

Nevertheless, the port, which has facilities across the country, continues to gear up for the future. In addition to the reconstruction of Terminal D, which should enable more sustainable operations, through the use of solar panels, for example, there are plans to build a new Terminal A, which will then be used by the ferry company Viking Line, among others.

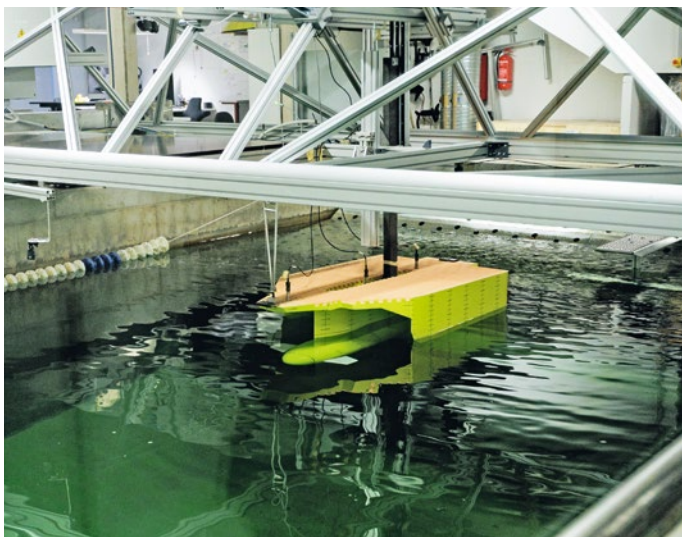
Offshore wind energy also plays an important role in the Port of Tallinn. A service hub is to be built for the maintenance of wind farms by 2025. In addition, there is a focus on bunkering possibilities for alternative fuels such as methanol.

## Shore power connection: export to Abu Dhabi

Since 2021, shore power connections have been available at five quays in the Port of Tallinn. If a ship draws its energy here for seven hours a day, Pärt calculates, up to 1,440 tonnes of CO<sub>2</sub>, 20 tonnes of NO<sub>x</sub>, 820 kg of SO<sub>x</sub> and 2% to 3% of fuel could be saved per year.

The equipment for the Port was produced by the Estonian company Shore Link. Here, too, the focus is on possible cooperation with German ports such as Hamburg, Kiel, Bremen or Rostock, says CEO Klaus Kopelman. But he is particularly proud of the latest order from the Arab Emirate of Abu Dhabi. The Abu Dhabi National Oil Company (ADNOC) has ordered ten low-voltage systems for oil platform support vessels. These will be completed and shipped in the next six months.

Kopelman said there was great interest from the markets in Australia, New Zealand and the United States. The company is currently working on an automated system that can connect to electric or hybrid-powered ferries via Bluetooth. Tests of a prototype have already been carried out.

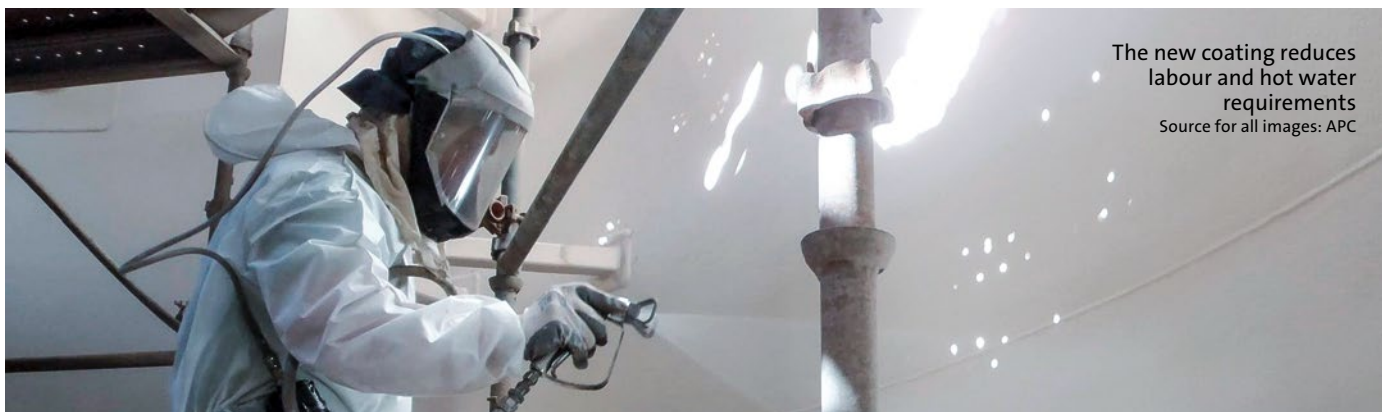


Test basin in the SCC



A new pedestrian bridge in the Port of Tallinn

# The applied science of tank coatings



The new coating reduces labour and hot water requirements  
Source for all images: APC

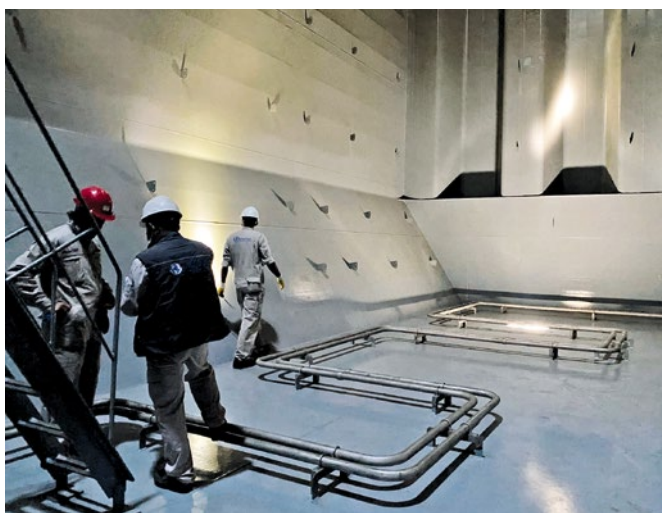
**ABSORPTION** On a chemical or product tanker, cargo stored in tanks on board is typically partially absorbed by the tank coating and will have to 'desorb', which can take some days. The more cargo is absorbed in the wall of the coating, the longer it will take to desorb back to the surface, ready to be hosed off with cleaning products. Therefore, the best way to reduce off-hire and cleaning time is to ensure that absorption is minimised in the first place.

Ohio-based Advanced Polymer Coatings (APC) calculates that where a conventional cleaning operation on a typical vessel with 16 zinc-coated tanks would amount to 64 hours, its high-functionality polymer coating MarineLINE could lower this interval to twelve, reducing labour and hot water requirements, and eliminating the need for expensive cleaning agents. The dense coating with a highly contiguous surface and strong bonds between molecules ensures minimal absorption even with the most aggressive chemicals.

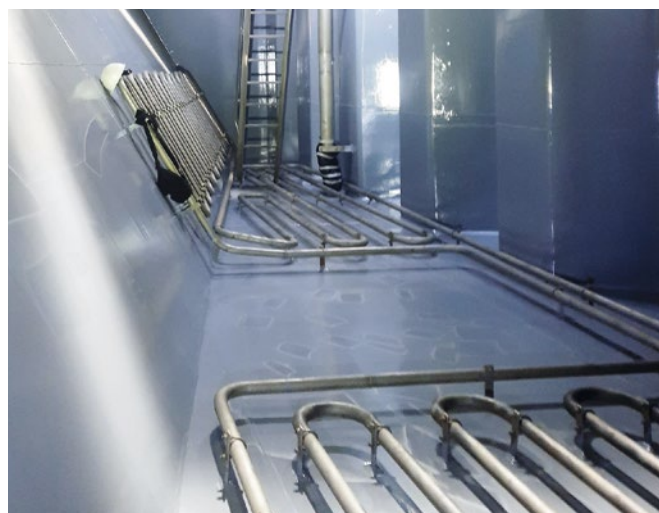
Traditional tank cleaning arrangements between cargoes of chemicals can be time-consuming and have an impact on

profitability. Potential revenue-earning time is taken up with hosing tanks clean of all remnants of their previous cargo. It is a laborious process, requiring days of spraying and cleaning and tonnes of hot water,

The efficacy of tank cleaning may also reduce a vessel's flexibility. Instead of easily switching between canola oil, molasses, and benzene, vessels may be limited to a smaller number of cargoes to prevent cross-contamination, affecting profitability. These issues make a compelling case for a better coating – one with a dense surface that can repel even the most aggressive chemical cargoes, cutting down on cleaning time and costs, and maximising flexibility.



The coating's chemical structure ensures minimal absorption



The new product can also be used as a retrofit





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### Put to the test

Last year, energy major Shell decided to test APC's mettle, undergoing a demanding series of trials with MarineLINE. Shell wanted to apply it to one of the most challenging scenarios imaginable: first, a cargo of benzene, and then, monoethylene glycol (MEG). So demanding is MEG that Shell's own policy previously specified that it should only be carried in stainless steel tanks.

"We tested for benzene as it is a cargo that can absorb easily into tank linings," explained APC marine manager Captain Onur Yildirim. "But MarineLINE performed robustly and did not absorb the benzene, which ensured the MEG cargo's purity."

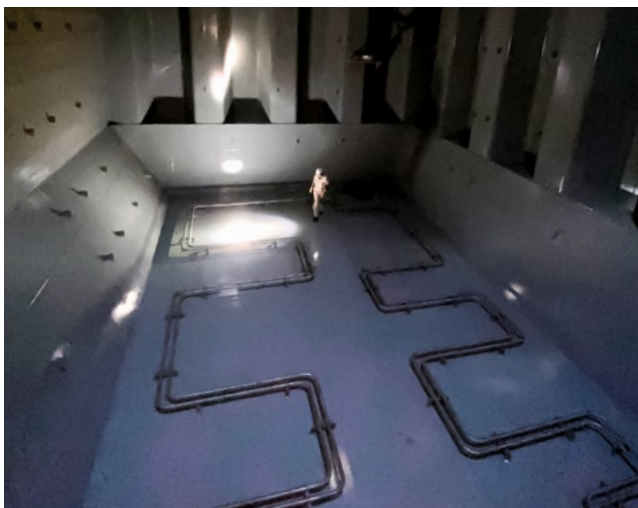
At the end of the nine-month study, Shell made APC's MarineLINE the first tank coating to be approved on its Cargo Handling Sheet for the carriage of MEG. For the first time, Shell had discovered that it is possible, in effect, to paint on the same level of protection as is afforded by a stainless steel tank.

"The testing, which was independently verified by the quality assurance company Intertek for Shell, showed it is MarineLINE's low absorption characteristics that enable it to transport these two chemicals without cross-contamination," Yildirim said. "This underlines why MarineLINE is unique in the coatings market for its ability to transport highly aggressive chemicals without absorption, enabling operators to switch grades frequently."

Shell's findings allow for more chemical and product tankers to adapt their operations using MarineLINE. With the ability to apply, even retrofit, the same protection afforded by a stainless steel tank, APC says that its coating not only makes sense as long-term protection for new vessels but also as a life-extension upgrade for existing ships.

"As is the case with many things, a cheap coating will be more expensive in the long run, when weeks of cleaning time have accrued," said David Keehan, APC president. "On top of that, the vessel will have missed out on various opportunities due to inflexibility."

"We urge shipowners to consider the implications of their vessels' tank coating and see how MarineLINE can bring many immense operational and bottom-line advantages."



MarineLine has been tested with various aggressive cargoes

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## Workboat operators home in on grease-free bearings

**INLAND WATERWAYS** | Canada-based Thordon Bearings has revealed a sharp increase in demand for its environmentally sustainable water-lubricated and grease-free bearings and seals across the workboat sector. The increase in orders has been particularly marked in the US and Latin American inland waterway markets where

operators are complying with environmental regulations as they replace ageing assets in the workboat sector.

Speaking at last year's International Workboat Show in New Orleans, Jason Perry, the company's regional manager, North America, said: "With much of the inland waterways fleet in the Americas comprised of rel-

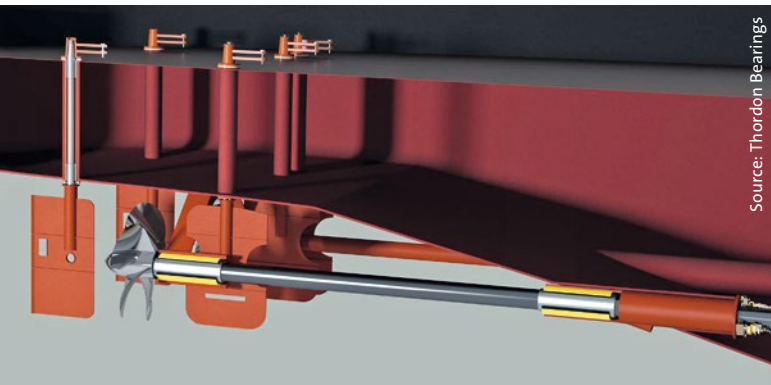
atively old vessels, environmental upgrades make good sense. And with waterborne freight on the increase, a whole new generation of more sustainable workboats is set to expand the fleet as environmental priorities and ESG issues in inland waterway operations climb the agenda."

Orders for Thordon's water-lubricated RiverTough tail shaft bearings have increased sharply over the last three years, the company has said. Demand for grease-free, self-lubricating ThorPlas Blue bearings, TG100 shaft seals, and pucker seals, has also climbed.

Thordon's products targeting the workboat sector are not only attracting the attention of vessel operators. They are also popular with shipyards owing to ease of installation. Its components are much easier to machine and

faster to fit than conventional rubber and greased bronze products, according to Perry. "A Thordon system reduces the operational and maintenance spend, improves system reliability, and removes the oil and grease-free interface between vessel and water," he said.

The fastest growth in the inland waterway sector has come in Latin America, according to Scott Groves, vice president, sales, as a result of investment in new warehousing and inventory controls. "We have established a robust supply chain so that all products are available at key locations across the inland waterway network, whenever and wherever our customers require them. And that is a key selling point to inland waterway operators for whom any delay or downtime is a costly exercise."



Thordon's RiverTough tail shaft bearing and seal system

## All-inclusive auxiliary turbocharger service now available

**FIXED PRICE** | Leading turbocharger developer and manufacturer, Accelleron, has launched an all-inclusive service agreement, Turbo AuxiliaryCare, for through-life maintenance of auxiliary engine turbochargers. The fixed-price service is structured around events-based servicing, maximum uptime for turbocharger units through exclusive access to an exchange system, the easing of administrative challenges, and more contract flexibility.

The streamlining of maintenance procedures now eliminates the risk of unexpected costs, the company said, giving shipowners and managers peace of mind. Turbochargers will undergo maintenance as and when required, with minimal

administrative burden, at a price known in advance.

The events-based strategy will support full financial predictability and the package will include spare parts and labour. Furthermore, when a customer's fleet changes through asset acquisitions or disposals, the Turbo AuxiliaryCare plan can be adapted accordingly.

The turbocharger exchange arrangement provides Turbo Auxiliary customers with exclusive access to Accelleron's turbocharger pool. An exchange unit is provided for a vessel where turbocharger maintenance is required, enabling the crew to swap the component that requires servicing, even while sailing or bunkering. Exchange units that require maintenance are then sent

to the Accelleron service hub for overhaul and storage until they are reinstalled. This arrangement minimises downtime and saves customers the expense of investing in exchange units themselves. The Turbo AuxiliaryCare service agreement has been designed with maximum simplicity in mind. The procurement process is straightforward, Accelleron said, with many different purchase orders, contracts and invoices now replaced with one purchase order and one invoice for each servicing event.

The company's head of Global Service Product Management, Dr Thorsten Bosse, commented: "Making it easy and reliable for our customers to do business with us is our number one priority at Accelleron. With

Turbo AuxiliaryCare, we make financial planning simple by offering a fixed-price service and we ensure there are no surprises or budget overruns.

"By making use of a pool of turbocharger exchange units tailored to our customer's needs," he continued, "we provide those exchange units right on board the vessel when they are needed. The swapping can be done by the crew, it's easy and fast. Alternatively, based on our customer's preference, we will send our service engineers on board to do the exchange. In any case, Turbo AuxiliaryCare helps to keep engine downtime to an absolute minimum with easy turbocharger service planning and full financial control for the customer."





Illustration of the heavy-lift vessel with methanol engines and hybrid propulsion system

Source: SAL Heavy Lift GmbH &amp; Co KG

## Methanol engines for heavy-lift vessels

**HYBRID PROPULSION** | German heavy-lift and project cargo specialist, SAL Heavy Lift GmbH, is investing in hybrid propulsion systems with methanol engines for four heavy-lift vessels under construction at Wuhu Shipyard in China. The Harren Group company has ordered the ships together with its joint venture partner, Netherlands-based Jumbo Shipping, and the companies hold an option for two more vessels.

The ships will have a range of energy-saving features. A variable-speed Wärtsilä 32 main engine capable of operating on methanol, a clean-burning sulphur-free alternative to conventional fossil-based marine fuels, will be integrated with an energy storage system, a PTO/PTI generator and motor, and a multidrive converter. Lithium titanium oxide batteries, which can handle more deep cycles than lithium-ion based systems, will provide the basis for the energy storage system, Wärtsilä said. The company

will also provide gearboxes, controllable pitch propellers, bow and stern thrusters, air shaft seals, as well as stern-tubes and bearings.

SAL Heavy Lift owner and CEO, Dr Martin Harren, commented: "These ships represent the next generation in heavy-lift shipping. In addition to their technical capabilities, they will feature outstanding environmental performance and help guide shipping towards a greener future. We are committed to decarbonising shipping activities, and we wish to thank Wärtsilä for the support and cooperation throughout this project."

Matthias Becker, Wärtsilä Germany managing director, said: "We are proud to be able to support SAL with Wärtsilä's market-leading integrated hybrid-mechanical propulsion system. This is a well-proven future-proofing solution that enables owners and operators to lower operating costs while complying with current and anticipated environmental regulations."



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# Heavy-duty fuel cell systems – another emissions-free option

**PILOT PROJECTS** | Oslo-based Teco 2030, a green energy transition specialist, has revealed significant developments in its proton exchange membrane (PEM) fuel cell technology which promise to open up a range of potential applications in ship propulsion and marine power systems. The fuel cells, arranged in stacks, generate electricity from electrochemical reactions using fuels such as hydrogen.

Combining stacks and modules for heavy-duty sectors on land and sea, several pilot projects are in progress as the company works closely with Austria-headquartered development partner, AVL. One of the pilots will see the assembly and testing of the first FCM400 prototype later this year. The 400-kW unit will be tested at AVL Fuel Cell Canada's global centre of excellence for PEM development in Vancouver.

Teco 2030's hydrogen-based technology offers a zero-emission power generation option with significant benefits over diesel plant. It has a 60% smaller footprint compared with a diesel generator, for example, and a peak efficiency of 57% compared with an engine genset maximum of 48%. It is modular and scalable, with up to 6.4MW available from a unit the size of a 40-foot

container, the company said. It also has a high dynamic transient response, rising from idle to 90% load in less than three seconds.

Tore Enger, the company's CEO, declared: "Teco 2030 is targeting heavy-duty industries where the emissions of greenhouse gases are substantial and where batteries will have to be supplemented by fuel cells to provide a viable alternative to fossil fuels. I would like to thank all the team members at Teco 2030 and our development partner AVL who have worked hard to ensure this project has progressed according to schedule over the past months and years, enabling us to proceed with several pilot projects during 2023.

"We will gradually increase production during 2023 to supply fuel cell systems for a number of pilot projects, followed by automated volume production at our gigafactory in Narvik, Norway, from early 2024," he added.

Teco 2030 is already working with AVL on fuel cell systems for heavy commercial vehicles. Announcing this development last August, Enger, said: "We are excited to team up with AVL again in a new project where our fuel cell stacks will be validated in a class-leading heavy-duty truck

application as early as mid-2023. This opportunity positions Teco 2030's Gigafactory in Narvik as strong contender for the upcoming upfitter market for trucks way before the promised market entry of the OEMs by 2030."

## Partners to receive EUR 5 million grant for hydrogen-powered tanker project

In a different move, Teco 2030, Shell and other partners have been awarded a EUR 5 million grant for the development of HyEKOtank, a project to retrofit an 18,600dwt products tanker with a 2.4-MW fuel cell system from Teco 2030 and 4,000 kg of compressed hydrogen storage space. The system is likely to be demonstrated in 2024.

The tanker will demonstrate zero-emissions at berth and a 60% reduction in greenhouse gas emissions (GHG) while operating at sea. The partners are hoping that the project could become a first mover in the tanker sector and support the European Union's drive to cut GHG emissions by 55% by 2030.

Tore Enger commented: "We are proud to have been invited for funding from Horizon Europe as we move forward with the integration of Teco 2030 fuel cells on board ships. The hydrogen tanker concept will be a state-of-the-art vessel retrofitted to reduce up to 100% of GHG emissions during voyage and at berth."

Carl Henriksson, general manager Technology, Innovation & Digitalisation at Shell Shipping and Maritime, said: "Our target is to be a net-zero-emission energy business by 2050 and to accelerate this transition, we are partnering with customers and businesses from across the sectors. Shell will purchase the fuel cell system and provide the renewable hydrogen to power this pioneering project as we continue to drive innovation to deliver the cleaner energy solution that our customers need."

Other partners in the project include Ektank AB, Blom Maritime, Teco Solutions, Umoe Advanced Composites, FKAB Marine Design, Neste Oyj, and the Arctic University of Norway.



Illustration of the HyEkoTank

Source: Teco 2030



The vessels will operate between  
Portsmouth, UK and Saint-Malo  
and Caen in France  
Source: Leclanché



## Hybrid ferries to have Leclanché battery packs

**E-FLEXER** | Two hybrid E-Flexer RoPax ferries under construction for Stena RoRo and Brittany Ferries are to have Leclanché battery systems with a capacity of 11.3 MWh. The 195m-long vessels, which will operate using LNG as fuel, are due for delivery in 2024 and 2025. Leclanché claims that they will be the world's largest hybrid vessels so far.

The Navius MRS-3™ energy storage systems use lithium-ion batteries with 46 battery strings and a high degree of redundancy. The system is guaranteed for ten years of continuous operation, Leclanché said.

The Swiss company claims that its batteries have better safety features, charge faster, and have a longer cycle life, a smaller footprint and lower energy consumption than other systems. It manufactures its own battery systems at assembly plants in Willstätt, Germany, and Yverdon, Switzerland.

CEO of Leclanché E-Mobility, Phil Broad, said: "We are delighted to join in the efforts of both Stena RoRo and Brittany Ferries in favour of the decarbonisation of maritime transport. These latest project wins further emphasise Leclanché's leadership position in the electrification and hybridisation of large vessels ... The ben-

efits of our differentiated cell technology and liquid-cooled system were key factors in our nomination. Another main competitive asset, the system design provides a distinct size and weight advantage versus our competitors and is especially cost-effective for large-scale systems such as those being manufactured for Brittany Ferries."

Staffan Stenfelt, general manager Newbuilding at Stena RoRo, commented: "Stena is a leader in the development of technologically advanced vessels and an early participant in the green shipping transition. We are excited to partner with Leclanché in this major milestone in hybridisation technology and demonstrate the importance of flexibility in building next generation vessels that can adapt to the latest technology developments."

Brittany Ferries' director Engineering and Maintenance, Arnaud Le Poulichet, added: "Brittany Ferries is committed to supporting – and help lead – the decarbonisation efforts of the maritime industry. Every vessel we invest in will pay dividends for the environment in the short-and-long term. We are proud to be supporting this green planetary agenda in a meaningful way."

### Environmentally friendly production of lithium-ion batteries

Shortly after the contract with Stena RoRo was announced, Leclanché said in a statement that it has also achieved a breakthrough in the environmentally friendly production of modern G/NMCA cells. The company says it is now able to reduce the cobalt content in NMCA as cathode material from 20 to 5% and manufacture electrodes using an environmentally friendly water-based process. In doing so, Leclanché completely dispenses the use of the highly toxic organic solvents (NMP) that are otherwise common in the production process. The new G/NMCA cells from Leclanché have a 20% higher energy density – with the same size, weight and performance level. Water binder-based NMCA cathodes are easier to dispose of and are also recyclable.

"With the water-based production of the high-capacity NMCA cathodes, we have reached a decisive milestone in lithium-ion technology," said Dr Hilmi Buqa, vice president R&D at Leclanché. "Until now, producing them using environmentally friendly processes was considered impossible. But, now we have mastered the process."

# DNV updates standards for wind-based propulsion

**WAPS** | Classification society DNV has published an update of the technical standards for wind-assisted propulsion systems (WAPS).

The standard, called ST-0511, provides a regulatory framework for review and certification of the technologies and can be applied to obtain an Approval in Principle (AiP), design or type approval.

The technical standard is an addition to DNV's WAPS class notation, which focuses on the integration of systems on board vessels, both retrofit and newbuild.

Due to the complex interactions with the ship's structure, the amended code includes a new section on fatigue strength of WAPS, including calculations to derive the load combinations of wind and inertial forces. In addition, an approach to evaluating performance in extreme wind conditions has been added and documentation requirements have been adjusted to streamline the process.

WAPS are already used on commercial vessels and provide fuel savings of up to 20%, according to DNV. The amendment to the standard is intended to support the growing interest in the technology.

"We have recently seen the announcement of several lighthouse projects, which are taking WAPS further and will further showcase the potential of the wind as both primary and additional propulsion for a modern cargo vessel. This is why it is vital for us at DNV to use our technical expertise to continue innovating and enhancing our rules and technical standards and ensure that our customers can reap the benefits of these exciting new developments with confidence," said Hasso Hoffmeister, senior principal engineer at DNV Maritime.

To further support and promote the use of WAPS, DNV has joined the International Windship Association.

## BV joins global battery network



Bureau Veritas has joined the Maritime Battery Forum to support the development and deployment of batteries within the maritime industry

Source: BV

**MBF** | Classification society Bureau Veritas (BV) has signed up to the Maritime Battery Forum (MBF), a network of companies and organisations established in 2014 which aims to further the development and deployment of batteries in the maritime and offshore sectors. Its 60 members and 19 collaborative partners cover every link in the battery value chain. The fast-evolving battery sector is already assisting in shipping's decarbonisation drive but has the potential to go much further across a wider range of sectors. BV noted in a statement that battery technology has the potential to provide shipowners with a competitive advantage; to offer shipyards a chance to gain expertise; and to provide access to new markets for equipment manufacturers.

The classification society's Paul Delouche, director of Strategy & Advanced Services, said: "Batteries are part of the growing list of solutions to achieve carbon-neutral shipping. We are very pleased to join the MBF. Being a member will enable BV to expand our expertise in this fast-moving area. Our role as a class society is to bring together different stakeholders and help find solutions for the industry. The Forum is a perfect opportunity for us to help accelerate the technologies and their integration on board large vessels."

BV's rules for battery-powered ships are updated every six months to reflect advances in the fast-moving sector. It has three battery notations covering safe installation and operation, hybrid applications, and systems in which batteries may be installed at a future date.



Source: BAR Technologies

Wind-based auxiliary propulsion systems enable fuel savings of up to 20%