



# Baltic transport 2022 highlights

by Przemysław Myszka

**Except for the Russian war of aggression against Ukraine and its impact on transportation – on which we reported several times throughout 2022, hence this round-up will omit that area – the past year was more or less peppered with happenings taking place across two domains: shipping and all-things-green. Meanwhile, ports made certain advancements investment-wise, while a few digital twins were born.**

## Shipping

The year 2022 brought about a mix of good and bad news for shipowners & operators in the Baltic (for the ugly check P&O Ferries' sacking of 800 people out of the blue in the North Sea). The latter was caused by the coronavirus still reverberating around the regional ferry business, compounded last year by the galloping prices. The former, in turn, fell into the 'bigger = better' pattern, with the new tonnage often becoming companies' flagships.

As such, 2021 ended and last year kicked off with the deployment of CLdN's dual-fuel (gas-driven) *Faustine* on the **Gothenburg-Zeebrugge** route. The 217 by 32.2 m ro-ro, constructed by **Hyundai Mipo Dockyard**, offers 5,400 lane metres (lm) of cargo capacity. The South Korean shipyard will also deliver *Faustine*'s sister ship. While these aren't the biggest in CLdN's fleet (*Celine* and *Delphine* offer 8,000 lm), that 5,400 lm is still considerably above the 2022's 3,309 lm average for the Baltic/Scandinavian/North Europe ro-ro market.

On 23 January 2022, *Aura Seaways* as the first and then on 29 April 2022 *Luna Seaways* entered DFDS' **Karlshamn-Klaipėda** ferry service. The 230 by 32 m ro-paxes offer room for 600 passengers and 4,500 lm. Both were built in China, which led their owner to highlight a peculiar trait of ordering vessels in Far East Asia. Namely, both passed the Somali coast on their way to Europe – under arms! "We were accompanied by a special armed

guard on this section. We covered the sides of the open decks with barbed wire, all the doors were constantly locked, most of the lights were turned off and the shutters were covered with opaque material so that the ship would emit as little light as possible in the dark," **Mindaugas Nosavicius**, *Luna*'s Captain, recalled. The company's flagships replaced the ferries plying between the Lithuanian and Swedish seaports, said to have a CO<sub>2</sub> footprint one-fifth lower than the older & smaller tonnage. The deployment of *Aura* and *Luna* also crowned Karlshamn and Klaipėda's infrastructure investments, as the two seaports had to expend significant funds to accommodate what are now one of Baltic's biggest ferries (hence world's, too). In late September last year, *Aura Seaways* was used to successfully test the optimised (with newly converted ramps) berths 5 and 6 at the **Port of Kiel's Ostuferrhafen**.

In February 2022, **Furetank** announced the order placed with **China Merchants Jinling Shipyard** (Yangzhou) on the ninth vessel in the Vinga series, with delivery scheduled for January 2024. The 17,999 dwt 1A ice class tanker will offer cargo capacity of 20,306 m<sup>3</sup> across 12 epoxy-coated tanks. Apart from the possibility to run the dual-fuel newbuild on liquefied natural gas (LNG) or its bio version (bioLNG/LBG), she will be equipped to operate cargo pumps with high voltage (6.6kV) shore power. "This is yet another step forward on our journey towards a fleet consisting entirely of climate

friendly vessels. Furetank wants to be an environmentally friendly and leading actor within the segment. With this newbuilding we will continue to implement all available technologies to do the best we can – now. It feels especially good to place the order in these unstable pandemic times; we have a strong belief in the future," **Lars Höglund**, CEO, Furetank, commented on the order. **Furetank's** deal with **China Merchants** included an option for constructing more vessels. Consequently, in April and July 2022, this time **Erik Thun** and **Thun Tankers** opted for the tenth and Furetank for the eleventh Vinga (the former order came with an option for one more ship). The Vinga tankers are operated within the Gothenburg-located **Gothia Tanker Alliance** and eight are already sailing: four in Furetank's livery, two in **Älvtank's**, and one piece in **Thun Tankers** and **Desgagnés'**. In March 2022, the **Ferus Smit** shipyard in the German Leer handed *Thun Britain* over to the Dutch-Swedish **Thun Tankers**, the second in a series of two 'Not Always Afloat But Safely Aground' tankers (Naabsa). The 79.9 by 15 m, 4,250 dwt, 1A ice-class vessel offers 4,800 m<sup>3</sup> cargo capacity (across eight coated tanks suited to transport oil products and IMO type II chemicals). Like her sister ship *Thun Blyth*, *Thun Britain* has been chartered to the Geos Group, a supplier and trader of marine gas oil. The pair serves harbours with tidal restrictions (a.o., Guernsey,



Photo: DFDS



Photo: Wallenius SOL



Photo: Finnlines

Alderney, ports around the Western Scottish Isles), being able to rest on the seabed while (un)loading during low tide.

Then in May 2022, the same shipyard and shipping line struck a deal on constructing two 7,999 dwt tankers. The 1A ice-class newbuilds are scheduled for delivery in 2024's first half and will serve coastal traffic in northern Europe. The R-class tankers will feature several eco-solutions, including battery packs. They will also be onshore power supply (OPS)-ready. "The R-class has been designed to be the most resource-efficient vessel on the market with minimal environmental impact [...]," **Joakim Lund**, CCO, **Thun Tankers**, commented.

Also in February last year, **Erik Thun** shared that **Ferus Smit** was entrusted with delivering two 6,380 dwt dry bulkers, the first to be already handed over in spring 2022, while the other one year later. The 1A ice-class newbuilds will be equipped with machinery for connecting to OPS (both 50 and 60 Hz) for zero-emission at berth, plus heat recovery and LED lighting for reducing onboard energy consumption. The two will feature a frequency converter, making it possible to run the main engine on a variable RPM depending on the load while at the same time still supplying the electrical AC demand with the shaft generator. **Henrik Källsson**, **Erik Thun Group's** Deputy Managing Director, said on the occasion, "In Erik Thun, we have always had a high focus on resource efficiency translating into modern environmental care. It is a challenge to build vessels fit for the future, but our long experience gives us a good basis for continual improvement and innovative design."

Later in the middle of spring, **Ferus Smit** launched **Erik Thun's** *Nordic Crystal* in its shipyard in the German Leer, the first in a series of two new dry bulk carriers. The 99.99 by 13.35 m, 6,380 dwt, 1A ice-class vessel offers 245k cubic feet of carrying capacity spread across two holds. The Swedish shipping company took hold of *Nordic Crystal* in May 2022 while of her sister ship – it will do so by March 2023 (*Baltic Crystal* was launched at Ferus Smit's yard in the Dutch Westerbroek on 22 December 2022). Both will serve traffic in the Baltic. Worth noting is that *Nordic Crystal* was the 40<sup>th</sup> ship Erik Thun put together with Ferus Smit.

February of 2022 was indeed a month rich in ship news. After a five-week-long journey from China, **Viking Line's** brand-new cruise ferry *Viking Glory* called to the Finnish **Port of Turku**, where she got outfitted to start serving the **Turku-Åland Islands-Stockholm** route as of 1 March 2022. The GT

63,813 vessel of the 1A Super ice class is 222.6 m long, offering 922 cabins for 2,800 passengers and 1,500 lm for cargo. Like her partner on the route in question, *Viking Grace*, *Viking Glory* has dual-fuel engines, making it possible to run on LNG/bioLNG. The new-build also features other solutions to lower her environmental impact, like heat & cold recovery and dynamic ventilation and lighting. **Jan Hanses**, Viking Line's President and CEO, highlighted, "The Turku route is very important for Viking Line as well as for passenger and cargo service between Finland and Sweden. We are extremely proud that we once again can take a vessel that represents the very latest in new advances to Turku – one that both improves the level of service on the route and reduces the environmental impact. There is great interest in *Glory*, and sales have gotten off to a really good start." **Erik Söderholm**, the Port of Turku's Managing Director, added, "We are really excited about *Viking Glory's* arrival. In our experience, a new vessel makes the entire route more attractive and increases passenger volumes. Before the COVID pandemic, we had more than three million passengers annually and now, post-pandemic, we see that there is great pent-up demand for travel [...]." He also underlined, "We serve passengers from all across Finland since people can take the train all the way to the ferry terminal – that is a rarity even in global terms. There is also great potential in international tourism. Passengers from the Far East have been delighted with the day sailings, and being able to see our fantastic archipelago has been a great experience for them." Though 2022 brought **Viking Line** a new flagship, it was also a year when the company – and the Baltic Sea together with it – bid farewell to two seasoned ferries. First, in August, **Corsica Ferries** purchased *Amorella* for a total sale price of €19.1m. The ferry, lately serving the **Helsinki-Mariehamn-Stockholm** route alongside her sister ship *Gabriella*, was handed over to the new owners later in October. **Jan Hanses** said about the sale, "*Amorella*, which has operated for Viking Line since 1988, is one of the loyal servants in the company's fleet. She has been a mainstay that has maintained regular traffic on the company's core line between Turku, Åland and Stockholm. The staff's efforts and commitment over the years have been crucial to the ship's traffic. This does not mean that we are abandoning the Helsinki-Stockholm route, but that we will continue the traffic with one ship during the winter and evaluate strategic alternatives for the continuation of the route." Viking Line also said that it intends to provide *Amorella's* crew with

employment on board its other ferries. Before 2022's end, news broke out that **Viking Line's** *Rosella* will leave the Baltic. The Greek **Aegean Sealines Maritime** bought the ferry for €11.25m, planning to employ the 1980-built-in-Turku ship in the Aegean Sea. *Rosella* was lately serving the **Kapellskär-Mariehamn** service of Viking Line, with her last crossing on 8 January 2023. Though in good condition, *Rosella* couldn't further keep up with Viking Line's policy on minimising its environmental impact. Faced with high bunker prices and the incoming emission trading, the company decided to dispose of older tonnage. Meanwhile, Viking Line denied that reflagging *Viking XPRS* (from the **Helsinki-Tallinn** link) to the Finnish flag had to do anything with putting her on the Kapellskär-Mariehamn route. As such, the service's future remains unknown. Also during the autumn of last year, **Viking Line** purchased (with its own funds) 17.1% of shares, for nearly €10.3m, of another Finnish company located in Mariehamn on the Åland Islands: **Eckerö**. Commenting to *Ålands Sjöfart*, **Jan Hanses** did not reveal whether the two companies will merge. He underlined that the share buy was done to keep Eckerö's stock on Åland. The **Eckerö Group** comprises a few shipping lines that operate in the Baltic, including the **Helsinki-Tallinn**, **Vuosaari-Muuga**, and **Eckerö-Grissleham** ro-pax services. The Group's **Eckerö Shipping** disposes of a fleet of three ro-ros. Eckerö also holds the **Birka Cruises** brand, the operations of which were terminated in 2020 due to the coronavirus pandemic (the company's *Birka Stockholm* has been laid up since that time and is up for sale). Back to February 2022 and the announcement of **Polsteam** ordering new ships. The Polish shipowner entrusted **Dalian Shipbuilding Industry Company (DSIC)** with the construction of four bulkers for traffic to and from the Great Lakes. The 37k dwt ships, 199.99 m long and 23.7 m wide, will be delivered by DSIC's yard in Shanghai. Among others, Polsteam's newest 'salties' will be equipped with selective catalytic reduction reactors for reducing NO<sub>x</sub> emissions. The newbuilds will also comply with phase III requirements of the Energy Efficiency Design Index. The very same month also saw the first in a series of machinery-order-news for the longed-for ferries of **Unity Line** and **Polferries**. First, the shipbuilding yard **Remontowa** ordered **Wärtsilä's** 31DF dual-fuel engines for the three ro-paxes, plus the producer's LNGpac fuel storage, supply and control system. Second, in April,

Remontowa said it will receive from **ABB** a complete power, automation, and propulsion package. The order includes batteries, the Azipod electric propulsion (two 7.5MW units/vessel), and the equipment to draw power from the shore. Third, in May, **Cargotec's MacGregor** will design, manufacture, transport, and assist in the installation of the bow and stern equipment together with internal ramps and doors. Each of the 195 m long, dual-fuel (run on gas, preferably bio) hybrid ferries will offer room for 400 passengers and 4,100 lm for trucks & trailers. The Polish shipyard will deliver the newbuilds one apiece in 2025-2027, which will connect **Świnoujście** with **Ystad** and **Trelleborg**.

In the meantime, another vessel joined the Baltic fleet – and ahead of schedule in addition! **Terntank's** *TERN FORS* is the second in a series of two 15,000 dwt big chemical & oil products tanker. The dual-fuel (gas-run) vessel, constructed by **China Merchants Jinling Shipard** (Yangzhou) Dingheng, offers 16,500 m<sup>3</sup> cargo capacity across 14 epoxy-coated tanks. The Finnish **North European Oil Trade** commercially operates *TERN FORS* in the Baltic Sea. The tanker, designed by Terntank in co-op with **Kongsberg Maritime CM**, features a suite of the latter's digital solutions. Among others, these make it possible to optimise the vessel's voyage by constantly adjusting the speed to meet the agreed time of arrival, sending a virtual notice of readiness moving directly into a port instead of dropping anchor and waiting to berth. "The delivery of *TERN ISLAND* and *TERN FORS* marks our ongoing journey to evolve and learn, in respect of continuously developing sustainable shipping across all range of our operations. The innovative ship design [...] unites technical and digital solutions that optimise voyages, achieves a drastic decrease in emissions and most significantly assists our crew on board in daily operations," **Claes Möller**, CEO, **Tärntank Ship Management**, commented. In the early winter days of last year, **China Merchants** Jinling Shipyard was commissioned by **Terntank** to build two 15k dwt chemical/product/biofuel tankers, with an option for two more. Designed by **Kongsberg**, the tankers (offering 14 segregations) will be delivered in the spring of 2025. The newbuilds will initially sail on marine gas oil or biofuel but will also be methanol-ready. The design also foresees the installation of wind assistance. Terntank's new tankers will feature battery systems and OPS connectors.

In March 2022, **TT-Line's** first Green Ship set sail for the Baltic. **Nils Holgersson**, the first in a series of two new ferries for



Photo: Stena Line



Photo: Rostock Port



Photo: Tallink Grupp

the German Baltic shipping line, left the Chinese **Jiangsu Jinling Shipyard** heading for **Travemünde**. The GT 56,138, 230 by 31 m, gas-driven ro-pax – offering room for 600 passengers and 4,600 lm for trucks & trailers – arrived in Germany after about a month. *Nils Holgersson*'s sister ship, *Peter Pan*, became part of TT-Line's fleet just before November's end (interestingly, what is now it seems customary for Baltic-destined newbuilds, *Peter Pan* served as a freighter on her way to Europe). The duo also features a number of eco-friendly solutions: air conditioning that minimises energy consumption, engine heat recovery, LED lighting, an optimised hull, shaft seals with additional air chambers for preventing water contamination from lubricating oil, using only environmentally friendly cooling water additives and cleaning agents, and avoiding as much as possible plastic products. The dining offers include local Swedish products, pre-booking of meals (also to avoid food waste) and reusable crockery, while the onboard shop has sustainable products in store. Remarkably, the car deck is equipped with charging stations (32) for electric vehicles. In April 2022, **Stena Line** announced that the two E-Flexer ferries planned to enter the **Norvik-Ventspils** service will be put on the **Gdynia-Karlskrona** one instead. Then, in mid-August, *Stena Estelle* arrived in Poland, docking in Gdańsk at **Remontowa's** yard for final adjustments before her first departure from Gdynia on 4 September 2022. Alike TT-Line's ship, on her way to Europe *Stena Estelle* took a one-off ro-ro load (construction vehicles) from the United Arab Emirates (**Port of Jebel Ali**) for unloading in the Netherlands (**Vlissingen**). In November, we wrote about the other E-Flexer, *Stena Ebba*, set to replace *Stena Vision* on the Gdynia-Karlskrona ferry service (with the latter joining *Stena Horizon* across the **Cherbourg-Rosslare** crossing in the summer of 2023). On the month's 22<sup>nd</sup>, *Stena Ebba* reached via Karlskrona Remontowa's shipyard in Gdańsk, where she received the finishing touches before joining her sister ship *Stena Estelle* as well as *Stena Spirit* on the Gdynia-Karlskrona route on 2 January 2023. On her way from Far East Asia, *Stena Ebba* too carried a shipment (electric vehicles for unloading in the UK). Both new E-Flexers, built by **China Merchants Jinling Shipyard** (Weihai), are the biggest ferries in Stena Line's fleet: 240 m long and 28 m wide, GT 48k, each offering room for 1,200 passengers and 3,600 lm for cargo. *Stena Nordica* (405 pax, 1,950 lm), which used to ply as Gdynia-Karlskrona's fourth vessel, will serve as a backup ferry. "This all-new

vessel [*Stena Estelle*] is the most modern in our fleet and unmatched in capacity, efficiency design and service setup. With new ferries such as *Stena Estelle* and its twin vessel *Stena Ebba* [...] we are opening up new opportunities not only for the development of our company and the Gdynia-Karlskrona route, but also for the growth of our customers' businesses in this part of Europe," **Marek Kiersnowski**, Stena Line's Trade Director Baltic Sea South, commented upon the arrival of the first E-Flexer.

In April 2022, **Finnlines** laid the keel for *Finnisrius*, while in August – the keel-laying ceremony for her sister ship *Finncanopus* took place at **China Merchants** Jinling Shipyard in Weihai. Each of the 235 m long 1A Super ice-class ferries will offer room for 1,100 passengers (across 323 cabins) and provide 5,200 lm for wheeled freight. The two will serve Finnlines' traffic between **Kapellskär** and **Naantali** via the Åland Islands. "Although we are moving on to a higher service level, the main focus has been on sustainability. Green values have been considered throughout the vessel, from energy generation to lighting management. Onshore power supply and a high-capacity battery pack are examples of how we eliminate local emissions. With the aid of the latest technologies and sustainable innovations, these large vessels are not expected to consume more fuel than the previous generation," **Emanuele Grimaldi**, CEO of Finnlines, highlighted in the spring of 2022. Apart from cold ironing and batteries, the newbuilds will feature scrubbers, air lubrication, waste heat recovery, and ballast water treatment systems. They will also make use of the automooring technology. The Finnish shipping line announced on 30 December 2022 that *Finncanopus* was launched (*Finnisrius* was in August). The two are scheduled to start operating in the Baltic during this autumn.

Next for **Finnlines**, on 6 June 2022, **China Merchants** Jinling Shipyard (Jiangsu) handed over *Finneco III*: the last out of three ro-ros, with 5,800 lm, the most capacious in the company's freight fleet. The 238 by 34 m 1A Super ice-class vessels serve the company's Biscay Line, connecting the ports of **Paldiski**, **Kotka**, **Helsinki**, **Antwerp**, **Tilbury**, **Zeebrugge**, and **Bilbao**. The first newbuild, *Finneco I*, was delivered on 28 April 2022, while *Finneco II* – on 30 May 2022. All three ro-ros feature emission reduction solutions, such as air lubrication, battery packs, solar panels, waste heat recovery, and scrubbers. They also have a ballast water treatment system installed. Together with two Superstar class ferries, the new freighters form Finnlines' €500m newbuilding programme. "Through our

ambitious investment, we can bring to our customers, not only the economies of scale and increased frequency, but a green and well scheduled infrastructure in the Baltic Sea, the North Sea and the Bay of Biscay. The Finneco trio will give added value to Finnlines and its customers when they start to operate on their routes," **Grimaldi** commented.

Another good-bad news grabbed headlines in April and December 2022. First, **Hansa Destinations' Nynäshamn-Visby-Rostock** service's capacity was doubled by introducing the ro-ro *Eliana Marino* (174 by 25 m, 2,500 lm). As a result, the crossing that kicked off in August 2021 and served together with *Drotten* (1,650 lm) began offering six weekly round-trips. Yet, before last year's end, the subsidiary of the **Gotland Company** decided to abort operations across the service in question in 2023. The shipping line listed high bunker prices and difficulties securing sufficient cargo volumes as the reasons behind the termination. In addition, because of the lower freight traffic, Hansa Destinations didn't receive the so-called eco bonus in its entirety – SEK26m instead of 74.2m (the **Swedish Transport Administration** announced the aid in 2018 for companies that reduce road congestion, contribute to air depollution, and lower greenhouse gas emissions, GHG-E). *Eliana Marino* ended her gig for Hansa Destinations on 18 December 2022 in Rostock, while *Drotten* followed suit on 4 January 2023 in Nynäshamn. According to **Håkan Johansson**, Gotland Company's CEO, the service's reinstallation in 2024 will be evaluated.

In May 2022, we also said goodbye to *Sea Wind*, sold by **Tallink Grupp**. The company's subsidiary **Tallinn Swedish Line** handed over the 1972-built 1,000 lm of capacity ro-ro to the new owners on 26 April 2022 in **Tallinn's Paljassaare Harbour**. Tallink Grupp rearranged its schedules following the sale: the 2,087 lm ferry *Regal Star* was shifted from the **Kapellskär-Paldiski** service onto the **Muuga-Vuosaari** route according to *Sea Wind*'s schedule. The 1,400 lm ro-pax *Sailor* thus remained alone on the **Kapellskär-Paldiski** connection, though now serving extra departures. "We are of course sad to see our grand old lady *Sea Wind*, who is 50 years old this year, leave our fleet, but we are pleased that she has a new life ahead of her and that she will continue sailing on other seas with the new owners. I would like to thank the crew for taking such good care of her over the many years, ensuring she has many years of sailing still ahead of her," **Paavo Nõgene**, CEO of Tallink Grupp, said. *Sea Wind* started operating under the Estonian flag in 2015: first serving the Tallinn-Vuosaari and then

the Muuga-Vuosaari link. At the moment of writing this (3 January 2023), *Sea Wind*, flying the flag of Cameroon, was berthed at the Russian Black Sea **Port of Tuapse**, having arrived there from the Turkish **Port of Karasu**. It is rather hard to find it pleasing that the old-faithful *Sea Wind* has found new life serving Russia's trade...

During the summer of 2022, **Tallink Grupp** also made it public that **Slaapschepen Public**, on behalf of the **Dutch Central Agency for the Reception of Asylum Seekers**, chartered two of its ferries up till now serving traffic in the Baltic. *Silja Europa*, sailing between **Helsinki** and **Tallinn**, started the new assignment in the Netherlands on 20 August 2022, while *Galaxy* (**Stockholm-Turku**) joined her on 20 September 2022. Both have been taken in for seven months, with an option for an additional quarter of a year. The charter covers Tallink Grupp's technical crew only. "The charter agreement is, from today's perspective, necessary to stabilise the economy in the long run. The agreement concerning *Galaxy* means, unfortunately, that 265 of the crew in Sweden will receive dismissal notice because of lack of work, which is terribly sad news," **Ats Joorits**, CEO, **Tallink Silja AB**, said. He added, "Following these measures Tallink Grupp will be able to stand strong on the day our traffic can return to full capacity. Currently, this is the best we can do for the company's future." *Silja Europa* and *Galaxy* joined *Isabelle* and *Victoria I*: the former provides accommodation for refugees in Tallinn, while the latter – in Scotland. On 13 May 2022, the Chinese **CIMC Raffles** shipbuilding yard handed over the brand-new con-ro vessel to **Wallenius SOL**, the first in a series of two. In August, *Botnia Enabler* was joined by *Baltic Enabler* across the **Zeebrugge-Antwerp-Kokkola-Oulu-Kemi-Skellefteå-Travemünde** string. Each 242 by 35.2 m 1A Super ice-class vessel offers 6,442 lm for wheeled cargo; there is room for up to 960 TEUs. Both feature multi-fuel engines that can run on LNG, bioLNG, diesel, and synthetic diesel. "Because many of our customers base their entire operation on the green transition, we must match them. These vessels enable us to do so. The Enabler vessels emit 63% fewer greenhouse gases [...]," underlined **Ragnar Johansson**, Wallenius SOL's Managing Director. As of 1 June 2022, the Riga-based **Scandic Line** offers an entirely new connection between the ports of **Riga** and **Södertälje**. The crossing is served by the 108.5 by 17.5 m *Midas*, offering 1,030 lm for trucks & trailers, other vehicles, and miscellaneous cargo loaded onto mafi trailers. She makes three weekly round-trips.

In mid-2022, **Fennorail**, a Finnish company from Mariehamn and owned by shipping and shipbuilding professionals from Finland and Estonia, entrusted **Deltamarin** with designing a vessel for carrying trailers, trucks, and wagons between the two countries. *Eurocarrier* will offer 2,500 lm, including 1,000 for train cargo (of the 1,520 mm gauge). Plans speak of connecting Estonia and Finland's TEN-T rail networks, with **Paldiski** as the receiving port on the Estonian side. *Eurocarrier* will initially offer two daily round-trips. The newbuild could enter traffic as soon as 2025. "We strive to make the train ferry climate-friendly and profitable. The train ferry will have multi-fuel marine engines that can run on either pure LNG, a mixture of LNG and green hydrogen or marine gas oil," **Kaj Jansson**, Member of the Board of Fennorail, highlighted. He furthered, "The ship's propulsion system is arranged by two 360-degree rotating pods which increases the propulsion efficiency and ships manoeuvrability. Deltamarin is well acquainted with these technologies and their manufacturers, and combines them with their own advanced ship design knowledge. In addition, they have well proven experience in supervising the ships construction process."

Next for **Deltamarin**, in September 2022, the **Estonian Transport Administration** commissioned the Turku-based company with developing a new concept design for a ship linking the country's mainland and islands. The works are expected to be completed in early 2023, with the concept afterwards used for preparing a public procurement and further designing & constructing the ferry.

News about another future-oriented carrier surfaced in July 2022, when **Avatar Logistics** and **Sand & Grus AB Jehander** revealed that they are planning to construct an environmentally friendly electric barge for transporting sand and gravel to a cement factory located in the Swedish capital. The newbuild will replace the 1970-built *Jehander 1*, used by Avatar Logistics for shipping macadam, gravel, and sand. The 75 by 8.5 m vessel can take up to 1,420t across six holds and carries around 300kt/year dry bulk from Sand & Grus AB Jehander's gravel pits in Mälaren (central Sweden). "[...] The electric barge will be technologically advanced and offer double the capacity, meaning that each shipment can replace 100 trucks. The barge's electric propulsion will also decrease Jehander's CO<sub>2</sub> footprint by up to 95% relative to the trucking alternative. It will strongly contribute to a cleaner environment in Stockholm's city centre," **Johan Lantz**, CEO of Avatar Logistics, highlighted. **Ferus Smit** already provided the first design. Avatar Logistics said it will also

try to secure green co-financing for constructing the barge.

In August 2022, the keel laying of **AtoB@C Shipping's** second hybrid vessel took place at **Chowgule Shipyard**, with the first's delivery slated for Q3 2023. The Ystad-based subsidiary of the Finnish **ESL Shipping** has, in total, ordered seven 5,350 dwt general cargo freighters from the Indian shipbuilding yard. Each 90 by 16 m hybrid 1A-ice class coaster will offer 7,650 m<sup>3</sup> carrying capacity. Apart from battery packs, the vessels will feature OPS connectors. Later the same month, AtoB@C Shipping exercised the option to have Chowgule deliver more hybrid vessels – 12 at the moment. Additionally, ESL Shipping will, together with institutional and private investors, form the **GreenCoaster** shipping pool, managed by AtoB@C Shipping. All vessels in the pool will be placed as part of the shipping company's existing and growing contract traffic. The investor company is offered complete construction and maintenance services of the vessels on a turnkey basis. The total amount of ESL Shipping's investment will remain at the size of six vessels and approximately €70m.

In September 2022, **Langh Ship** ordered three 1,200 TEUs container vessels, slated for delivery in 2024, with the **PaxOcean's** shipyard in Zhoushan delivering the first vessel in August. In collaboration with the **Shanghai Merchant Ship Design & Research Institute**, Langh Ship designed the 150 by 27 m, 8.75 m draft, 1A ice-class ships for carrying 45' containers both in the holds and on deck. The newbuildings will be equipped with two-stroke, slow-speed main engines (suitable for running on biofuel) and hybrid scrubbers (from Langh Ship's sister company **Langh Tech**). The container ships will also be carbon capture-ready (for a system also developed by Langh Tech). The vessels will be prepared for shore power connection and a hybrid solution, including batteries. In addition, Langh Tech will supply the LanghBW Systems ballast water management system. "In the European market, we see a need for this type and size of container feeders. By optimising the hull lines, we managed to maximise the cargo capacity and, at the same time, minimise the energy consumption, still keeping a speed of 18 knots if needed [...]" **Laura Langh-Lagerlöf**, Langh Ship's Managing Director, highlighted. Meanwhile, **Wuhu Shipyard** is working on three 7,800 dwt multipurpose vessels for Langh Ship.

In October last year, **Färjerederiet's** inked its biggest investment ever. The **Swedish Transport Administration's** ferry company commissioned the **Holland Shipyards Group** to construct four hybrid ships. The 86

by 14.2 m domestic traffic ferries, which will serve Stockholm's archipelago, will be delivered starting from summer 2024 one piece a year. The newbuilds, usually running on electricity, will also feature backup hydro-treated vegetable oil diesel engines. The entire investment (totalling SEK1.0b) will also cover eight automooring installations, four charging stations, a simulation centre likewise one for operating the vessels remotely. The ferries will perform certain operations automatically (autonomy level 2), such as mooring and hoisting/lowering their ramps for vehicle load- and unloading. The charging will take around four minutes. The ordered ferries will help realise **Färjerederiet's** Vision 45, in which the company's fleet becomes climate-neutral by 2045. Like **Viking Line** and **Tallink & Silja Line**, the Norwegian **Color Line** was forced to let go of part of the company's tonnage in 2022. The Norwegian shipping line removed the *Color Viking* ferry from the **Sandefjord-Strömstad** service (last sailing: 20 November 2022; *Color Hybrid* continues serving the crossing) and the *Color Carrier* ro-ro from the **Kiel-Oslo** one (six days earlier), putting them up for sale. The company says that high energy prices, macroeconomic uncertainty, and worsened framework conditions led to the decision. These and such specific factors as halving the tobacco quota for residents of Norway as well as reducing the allowance scheme for Norwegian seafarers in the country's budget for 2023.

In November 2022, **UECC's** latest hybrid gas-run car carrier, *Auto Achieve*, berthed at the **Port of Gothenburg**, where she received her name and joined the weekly service that links the Swedish seaport with **Zeebrugge, Drammen** and **Esbjerg**. The 169 by 28 m ship can carry up to 3,580 vehicles across ten decks. *Auto Achieve* joined her sister ships *Auto Advance* and *Auto Aspire*, constructed by **Jiangnan Shipyard**, christened in Zeebrugge earlier in October 2022. UECC says that the trio exceeds the **International Maritime Organization's** requirement for a 40% reduction in carbon intensity by 2030. Last year's shipping news list was ticked off by **Tallink & Silja Line** who deployed their new flagship: *MyStar* was put on the **Helsinki-Tallinn** crossing on 13 December 2022. The 212.4 by 30.6 m ro-pax – offering room for 2,800 passengers and 3,190 lm for cargo – served nearly 32k travellers during her first week. **Rauma Marine Constructions** built the GT 50,629, dual-fuel (gas-driven) ship. The ferry can connect to an OPS facility. Tallink & Silja Line's Helsinki-Tallinn route is now served by *MyStar*, *Megastar*, and *Star* (who joined them on 1 January 2023 after undergoing technical maintenance).

The regional 2022 eco-news revolved around a number of developments: alternative fuels, cold ironing, offshore wind energy, and green corridors. The year set off to a start with Ørsted taking stake in **Liquid Wind's** FlagshipONE. The Danish energy company purchased 45% shares of the e-methanol project developed by the Swedish power-to-fuel development firm. FlagshipONE will feature a 70MW electrolyser, making it possible to produce 50kt/year of e-methanol (to be used as a marine fuel) based on renewable hydrogen and biogenic CO<sub>2</sub>. Wind will power hydrogen production, while the biogenic CO<sub>2</sub> will be captured from the combined heat & power plant Hörneborgsverket in Örnköldsvik in Sweden, where FlagshipONE will also be located. The partners plan to commission FlagshipONE in 2025. Later, on 20 December 2022, information was circulated that Ørsted's Board of Directors took the final investment decision by taking full ownership of FlagshipONE. **Mads Nipper**, Group President and CEO of Ørsted, said, "Now more than ever, the world needs bold green energy projects to fight climate change, decarbonise hard-to-electrify sectors, and secure regional energy independence. [...] E-methanol is the best solution currently available to decarbonise hard-to-electrify sectors like global shipping, and with this first commercial-scale project, Ørsted will break first ground in advancing our industry-leading pipeline of e-methanol projects." **Olivia Breese**, CEO of **Ørsted Power-to-X**, added, "[...] Our first offshore wind projects came with significant risk, but we saw a route to leveraging our capabilities to deliver that technology as a cornerstone in the green transformation. Today, Power-to-X is at a similar inflection point – and at

Ørsted, we're once again ready to assume risk and lead the maturation of this crucial technology. However, the Power-to-X industry urgently needs supportive frameworks that enable the transition away from fossil fuels, and we call on policymakers to take action to match the climate ambitions of developers and shipping companies."

In mid-February 2022, **Furetank** and **Eskilstuna Biogas** signed a letter of intent enabling the set up of a 5,000t/year bioLNG plant in Eskilstuna (which received SEK140m, about €13.4m, in climate investment support from the **Swedish Environmental Protection Agency**). Production is likely to start in Q4 2023. Gas will be extracted from manure and food waste coming from the municipalities of Eskilstuna and Strängnäs and then upgraded to bioLNG for use as fuel. Furetank will take at least three-quarters of the production over ten years, using the bioLNG to lower its fleet's carbon footprint, including minimising the company's exposure to the inclusion of sea shipping into the European Union Emission Trading System. "In addition to these grants and public production support for biogas, a long-term agreement with a strong partner is required to make this big investment and achieve the large-scale biogas production that we are planning. It is also very gratifying to find a partner who sees business opportunities in leading the way towards climate neutrality," **Kaj Wågdaahl**, Chair of Eskilstuna Biogas' Board, underlined.

Last year's overview included a hefty portion of wind assistance installation news, and the Finnish **Norsepower** had plenty of work in 2022, too. In March, the company said it will furnish by year-end CLdN's *Delphine* with two 35 m tall and 5.0 m in diameter tilttable sails, said to reduce the ship's fuel consumption & carbon emissions by 7-10%. At that moment,

it was Norsepower's seventh Rotor Sail contract and the third for the tilting version of the Finnish company's auxiliary wind propulsion system. After that came **Scandlines'** ferry *Berlin* (30 m tall sail), an agreement with **Pan Pacific Copper** to assess retrofitting *Koryu* (a combination carrier operated by **Nippon Marine**), and a deal with **Dalian Shipbuilding Industry** for the delivery of single 28 m tall Rotor Sails on board two CO<sub>2</sub> carriers commissioned by **Northern Lights**.

Alike in shipping news, **Furetank** also made numerous eco-strides last year. In spring, the **Swedish Export Credit Agency (EKN)** gave, for the first time, its green guarantee to a shipping company. It will be used to pre-finance Furetank's next oil products and chemicals tanker in the **Vinga-series**. The guarantee will cover 80% of the lender **Tjörns Sparbank's** risk. "For the world to succeed with climate transition, it is of crucial importance that companies such as Furetank can finance their ambitious climate investments [...]" **Anna-Karin Jatko**, Director-General, EKN, commented. **Anders Hermansson**, Head of the **Swedish Shipowners' Association**, praised the move, "It is an extremely positive decision for the shipping sector, which is a capital intensive industry where climate investments costs are high and difficult to sustain internally. It is a big step for shipping's green transition globally, where Swedish shipowners top the environmental list. When our members invest in new technology it pushes the boundaries not only for the given vessel but for the entire sector."

In April 2022, the Danish shipping line **NORDEN** started offering its customers the option to sail on biofuel made from waste cooking oil. "We believe there is a growing demand for carbon-neutral transportation from our customers – particularly those with ambitious sustainability goals. We are ready to support those customers that wish to take the leap to an environmentally-friendly form of freight transport," **Adam Nielsen**, Head of Logistics and Climate Solutions, **NORDEN**, said. **Henrik Røjel**, the company's Head of Decarbonisation, added, "We see biofuel as a very important transition fuel on our journey to zero-carbon shipping [by 2050] as it can be used on board our current vessels to make an immediate reduction on carbon emissions." In the same month, **ESL Shipping** became part of the **Botnia Link H2** project. The initiative's partners – including **Uniper**, **ABB Sweden**, the **Port of Luleå**, and **Luleå Energi** – work on producing and marketing fossil-free hydrogen to transport and industrial customers as



Photo: Gotland Company

an alternative for fuel, electricity, and heat generation. Once up & running, the Botnia Link H2 hub could reduce CO<sub>2</sub> emissions in Sweden by up to 235kt/year. “Tackling climate change is very urgent, especially given the sensitivity of our home waters in the Baltic Sea. Along with our customers and partners, we have a responsibility to do what we can to turn the tide. Industrial partnerships like Botnia Link H2 are key to achieving real change. We very much look forward to participating in developing a much-needed source of fossil-free marine fuel,” **Mikki Koskinen**, ESL Shipping’s Managing Director, underlined. His company carries some 5.5mt/year to and from the Port of Luleå. ESL Shipping plans to offer 100% fossil-free sea shipping solutions in the future. Also in April last year, the Swedish freight haulier **AA Logistik** received its first electric truck from **Scania** to operate it 10k km/year with an 89% lower carbon footprint than a traditional lorry. The e-truck is deployed around Finnslätten, where AA Logistik will have its brand-new 32k m<sup>2</sup>, photovoltaics-furnished warehouse ready in 2024. The haulier intends to electrify its entire fleet of 15 heavy-duty trucks by 2030. Finnslätten has already an **ABB** charging station installed by **Mälarenergi** that can both provide overnight and daily fast recharge to the new e-lorry. Before April’s end, two other green developments took place in Sweden. First, the **Swedish Transport Agency** accepted the general methanol operating regulations for ship-to-ship bunkering prepared by the **Gothenburg Port Authority (GPA)**, following which the seaport will work on creating a value chain for supplying the transport industry with e-methanol, a.o., to the methanol-run container ships ordered by **Maersk** and **X-Press Feeders**. **Christoffer Lillhage**, GPA’s Senior Business Development Manager Energy, explained,

“We are also planning for large scale storage of methanol with storage operators in the port when the demand is in place. We encourage methanol producers and stakeholders in the industry to reach out and start a dialog with the Port of Gothenburg as we have set the aim to become a bunker and storage hub for methanol/e-methanol.” Plans speak of providing e-methanol in the port by 2024. Second, the **Ports of Stockholm**, operator of the harbour in **Kapellskär**, took delivery of the central OPS unit, provided by **Actemium**. Cold ironing will be offered where **Finnlines’** ships berth, specifically the **Finnsirius** and **Finncanopus** newbuilds. After the delivery, the Ports of Stockholm began laying the power lines, installing cranes to carry them to the vessels, and testing the facility. The investment is part of the EU co-financed (30%) **Upgrade of the Baltic Sea Bridge Kapellskär-Långnäs-Naantali** project, carried out by the ports of Stockholm and **Naantali** and **Finnlines**. The **Climate Leap** initiative also provided partial funding for the project’s Swedish part. Also in April, the **Maersk Mc-Kinney Møller Center for Zero Carbon Shipping** partnered with the ports of **Hamburg**, **Gdynia**, **Rønne**, **Rotterdam** and **Tallinn** to advance the decarbonisation of the maritime industry. The partnership will demonstrate the early commercialisation of alternative fuel supply chains, provide a roadmap to scaling them up, and create a blueprint for rolling out green corridors in other locations. The parties will start with a pre-feasibility to identify the potential routes, vessel types, and fuels to establish high impact green corridors in the Baltic and the North Sea regions. The next phase will assess the shortlisted routes’ technical, regulatory, and commercial feasibility. Finally, the project partners will implement the vision and establish green corridors in Northern Europe.

“Until recently, the maritime sector was the only transport sector in the EU not subject to greenhouse gas emission reduction targets. That time has passed, and the new reality has arrived: we must all work together to reduce CO<sub>2</sub> emissions; there is no other way out,” **Valdo Kalm**, the Port of Tallinn’s CEO, commented. He furthered, “To achieve maritime sector decarbonisation, zero-emission fuels and vessels must be deployed at scale over the next decade. It is undoubtedly a difficult task, but it can be aided by the formation of green corridors in which major ports provide the necessary zero-carbon fuels at the required scale for bunkering [...]”

Confirming transport companies’ assertions that cargo owners are looking for green solutions, **Arvid Nordquist**, a Swedish coffee maker, with the help of **Scanlog** signed an agreement in May 2022 with the carrier **Hamburg Süd** to use biofuel to carry the company’s containers. The **RSB-** or **ISCC-**certified Ecofuel will be used by Arvid Nordquist to lower the CO<sub>2</sub> emissions of its sea shipments by around three-quarters (the remaining portion will be carbon offset). The company’s distribution is already 80% fossil-free. The agreement entered into force in April 2022 and covered some 260 containers from Brazil, i.e., about 30% of Arvid Nordquist’s total raw coffee beans traffic. The parties also agreed to look into how to scale up their biofuel co-op. “To make further advancements, there must be sustainable alternatives on the seaside. We have had a comprehensive dialogue with Scanlog about finding this alternative and investing in fossil-free fuel. It is the last puzzle piece for us to feel that we have fossil-free transportation across transport modes and product areas,” **Tomas Skenbäck**, Manager Logistics Controlling and Development, Arvid Nordquist, commented. He also underscored, “The world around us is challenging, but we make what we can to take responsibility for our part. We will hope to see more shipping lines go this way by offering the option to purchase fossil-free transportation. It will be an important factor in the future when we make the decision with which carriers we want to work with.” **Mathias Wideroth**, Chair of Scanlog’s Board, also said, “It means a lot that Arvid Nordquist invests in this type of project that drives forward fossil-free sea shipping. The technology for fossil-free sea shipping exists, but biofuel is unfortunately more expensive because of the low supply. With this investment the supply increases – and hopefully also demand in the industry.” Also in May 2022, **Neste** and **Nordic Marine Oil** developed the **Neste Marine 0.1**



Photo: Scandlines

co-processed fuel, said to enable up to 80% GHG-E reduction over the lifecycle compared to fossil fuels. The new product, ISO 8217-compliant, is produced at Neste's refinery in the Finnish Porvoo, where renewable and fossil raw materials are co-processed in the conventional refining process. The sustainability characteristics of the co-processed marine fuel are certified with **International Sustainability and Carbon Certification (ISCC PLUS)** with a mass balance approach. The GHG-E reduction has been calculated using a method guided by the EU Renewable Energy Directive II (EU)2018/2001. "For cargo owners and charterers, the product is an effortless and cost-efficient opportunity to reduce CO<sub>2</sub> emissions in transportation and reach their own climate targets. The emission reduction is immediate and the solution is easy to implement as the shipowners are not forced to make any investments or changes to the vessel engines. Our strong partnership with Neste gives us the opportunity to supply tomorrow's fuels for the maritime industry already today," **Steen Møller**, CEO of Nordic Marine Oil, said. **Sveta Ukkonen**, Head of Marine Fuels & Services at Neste, also highlighted, "The maritime sector is combating climate change by all available means. Our new co-processed marine fuel is a competitive and feasible solution for shipping companies, and also for cargo and brand owners looking to reduce their GHG emissions across their value chain. [...] The co-processed marine fuel is a strategic step for us to reduce the dependency on fossil resources by replacing crude oil based raw materials partly with renewable raw materials." Still present in May, the Nantes-based **Lhyfe** and the local Swedish energy company **Trelleborgs Energi** teamed up to perform a pre-study on the set-up of a 5.0MW green hydrogen production plant in Trelleborg. The inquiry will cover the questions of energy supply, production capacity, technology selection and location, and the utilisation of hydrogen production by-products: waste heat and oxygen. The potential plant, possibly up & running in 2024, will feed mobility and industries' needs for zero-emission energy. "We want to create sustainable energy solutions locally and renewable green hydrogen is part of that plan. Hydrogen is a clever, multi-purpose energy carrier and can play a part in solving the climate challenge. We believe in making a real difference, in 'walk the talk,' and our renewable hydrogen initiative is one way of doing that," **Magnus Sahlin**, CEO of Trelleborgs Energi, commented. More in the north but still in Sweden, the **Ports of Stockholm** and **CMB.TECH** formed a hydrogen co-op in July 2022. The

two partnered to start offering hydrogen in **Norvik** – for port operations as well as the needs of shipping and haulage. To that end, a hydrogen-fuelling station will be erected adjacent to the harbour, following which port vehicles will be converted to run on green hydrogen. Norvik's first hydrogen-fuelled terminal truck is planned to start operating in 2023. "Hydrogen will play a crucial role in converting to fossil fuel-free transport, both on land and at sea. [...] This is entirely aligned with the ambitious environmental goals of the Ports of Stockholm for operations to be fossil fuel-free by 2030," **Anna König Jerlmyr**, Mayor of Stockholm, highlighted. Also in early summer of 2022, the **Port of Rønne** announced it will make available ten more hectares for offshore wind energy (OWE) projects. The Danish port began the regulatory approval process at the same time also initiating a tender round for the development project. In effect, the southern part of the island seaport will focus on catering to the OWE industry, while passenger traffic will consolidate in the northern. The port's reconstruction is expected to be ready in 2025. "In the next many decades, enormous amounts of offshore wind will be set up all over the world and also here in the Baltic Sea. As a port, we are therefore in the middle of an exciting time and with a unique opportunity to take advantage of Bornholm's unique position to attract more business and growth to the island," **Lars Nordahl Lemvigh**, the Port of Rønne's CEO, said. He furthered, "We have already prepared our port to take on OWE-projects [...], but we do not have the space to meet the increased interest that will be needed. Therefore, we are now starting a future-proofing of the port, so that within a few years we will be able to handle more and larger wind turbine projects." Staying at the Danish island, at the end of last year, **MT Højgaard Denmark** completed the development of Galløkken and the second phase of the **Port of Rønne's** expansion. For the past year and a half, **MT Højgaard Denmark** has worked on expanding the outer pier in the industrial part of the Danish seaport by 475 meters and establishing an additional 300-meter heavy cargo quay with 50k m<sup>2</sup> of hinterland. The two tasks – and the expansion of Galløkken – resulted in a total of approximately 100k m<sup>2</sup> of new port areas. "With the expansion, we can continue the significant growth we are experiencing, especially in the shipping of offshore wind from Bornholm. Our ambition is to maintain our position as the most attractive port in the Baltic Sea for the installation of offshore wind, and we have strengthened this competitive position significantly with

the expansion, which is planned to accommodate all the port's business areas," **Lars Nordahl Lemvigh** commented. **Dan Locht**, Project Manager, **MT Højgaard Denmark**, added, "Bornholm is often called the sunshine island, but compared to many other places in Denmark, the weather with more often strong winds and big waves has been a bit of a challenge. Despite the challenges, we have still been able to keep our tight schedule and completed the project on time, and with great help from the local suppliers [the company has invested more than DKK75m, around €10m, in Bornholm firms]." In the second half of July 2022, **Kalmar** and **Helsingborg** shared that the latter will become Sweden's first port to receive an electric reachstacker. The Finnish manufacturer will supply its 587kWh of battery capacity cargo handling machine in Q4 2022. The machinery will have a wheelbase of 6.5 m, a stacking capability up to five high, and a maximum lifting capacity of 45t, 32t, and 16t in the first, second, and third row, respectively. The order also covers comprehensive training for maintenance technicians and equipment operators. The deal includes an option for additional two electric reachstackers. "We will sustainably develop the new container terminal [ready in 2028] with automation, electrification, and efficient land use. Investing in the electric reachstacker is an important step in our journey," **Bart Steijaert**, the Port of Helsingborg's CEO, said. In mid-August 2022, one step closer to LNG in Oxelösund was taken. **Avenir LNG** and the **Port of Oxelösund** signed a memorandum of understanding for the development & construction of an LNG/bioLNG terminal in the Swedish seaport. **Avenir LNG** intends to acquire a 100% stake in **OxGas**, the wholly-owned dedicated project company of the Port of Oxelösund that has secured all environmental and construction permits required for setting up the up to 30k m<sup>3</sup> terminal. The **OxGas** facility will comprise a single full-containment atmospheric tank, natural gas delivery via regasification to a local pipeline network and LNG via two truck loading bays for broader distribution beyond the port. The companies also agreed to evaluate the development of a future energy hub to transition from LNG/bioLNG to renewable energy sources. Among others, **Avenir** and the Port of Oxelösund will evaluate CO<sub>2</sub> reduction schemes toward a fully-renewable net-zero energy facility. **Douglas Heilborn**, at that time the Port of Oxelösund's CEO, also said, "Teaming up with **Avenir LNG** will allow us to proceed into the next phase with our **OxGas** project and we are convinced **Avenir** is the right partner to work with. The demand



Photo: Port of Gothenburg

for alternative fuels such as LNG/LBG will grow in the shipping industry within the Baltic Sea. A key component for sustainable shipping is developed infrastructure for such fuels. Having access to terminals is important as it will create opportunities for new shipping solutions.”

Also in the middle of the month, this time September 2022, the **Port of Gothenburg** shared that it will have another green hydrogen-filling station. The facility for tanking heavy vehicles, slated for completion by September 2023 and operated by **Nilsson Energy**, will sit next to the **Gothenburg RoRo Terminal's** entrance. The approximately SEK35m investment, financed wholly by the **Swedish Energy Agency**, will have 1,500t of capacity, enough to tank 35 trucks/day (two simultaneously). The hydrogen made available will be produced using renewables. “It is a much-requested addition to the port, one that’s also fully in line with our strategy to create conditions for accelerating the transport industry’s transition to fossil-free,” **Viktor Allgurén**, Head of Innovation at GPA, said. He furthered, “A hydrogen filling station contains large volumes of pressurised energy, so we are facing a risk management process and, not least, a permit process, which we must face with great humility. But we feel very reassured about progressing this project with Nilsson Energy, a company with extensive experience in this field and the most highly respected actor on the Swedish hydrogen market.” **Maria Franksen**, CEO of Gothenburg RoRo Terminal, also commented, “The location is ideal for truck customers, and also gives us as the terminal operator an opportunity to use hydrogen to power our work machines in the future. We

are a close neighbour of the new hydrogen-filling station, so issues of safety and risk are naturally important.”

In addition to **Nilsson Energy's** new hydrogen-filling station, another station is also being planned in the port area. In 2023, **Circle K** and **OG Clean Fuels** will open a hydrogen-filling station five minutes east of Nilsson Energy’s station. **Allgurén** said in this regard, “The most important thing about having two stations is the peace of mind, knowing that it will be possible to have an uninterrupted opportunity to fill up with hydrogen at the port, even if one station is closed for maintenance or the like. That creates a robustness in the infrastructure that is a decisive factor for haulage companies that are considering converting parts of their vehicle fleets to run on fuel cell technology.” Fast forward to late October 2022, and **Circle K** opened its e-truck charging station in **Gothenburg**. The facility offers six public charging points for heavy-duty lorries, with each bay providing up to 360kW of power. There is room for adding more bays (even 1.0MW). Apart from the bays, the facility offers a fenced, CCTV parking lot for about 40 trucks. The station also comprises amenities (showers, toilets, and food & drinks). As highlighted above, within one year it will be possible to tank hydrogen at the station (720 kg of capacity, one bay, 15 trucks/day). “The station’s opening at exactly the right place, in terms of both timing and location. Serial production of electric heavy goods vehicles is up and running, and vehicles have been ordered by actors with a lot of traffic at the port. By the end of the year, electric heavy trucks will be a common sight in the port, and it will just keep on growing from there. So, this station comes at just the right time

– the transition is taking place here and now, and as far as the port is concerned we’re delighted to be able to work with Circle K to provide the necessary infrastructure,” **Elvir Dzanic**, GPA’s CEO, commented.

About one month earlier, in late September 2022, **Green NorthH2 Energy**, **Meriaura**, and **Wärtsilä** penned a letter of intent to build a project cargo vessel that runs on ammonia produced using renewable electricity. The newbuild will be ordered and operated by Meriaura, Wärtsilä will provide the modular multi-fuel main engines, and Green NorthH2 Energy will supply the fuel (the company will build an electrolysis, green hydrogen & ammonia production plant in Naantali). The parties target 2024 for delivering the ship, with 2026 planned for starting green ammonia operations. “Green ammonia has a significant role in reducing greenhouse gas emissions of shipping because the energy needs of this industry cannot be met with battery technology. Compared to hydrogen, it can be stored and moved more easily, and its logistical network already exists,” the partners said.

Also late in September last year, the **Decatrip** project, coordinated by **PBI Research Institute**, received financing for developing solutions to make the **Stockholm-Turku** ferry service zero-carbon. The project comprises **Rauma Marine Constructions (RMC)**, **Viking Line**, **Åbo Akademi University (ÅAU)**, and **Kempower**. **Business Finland** granted €1,596k to RMC, ÅAU and Kempower, while the **Government of Åland** backed Viking Line. Specifically, RMC will develop energy-efficient solutions for operating the ships; Kempower – for charging electric vehicles aboard the vessels, while ÅAU will evaluate the societal benefits of the green corridor. Fuel for the zero-carbon transport is planned to be manufactured locally in Southwest Finland. The parties hope to turn Viking Line’s Stockholm-Turku service, which crosses the Åland Islands, into a carbon-neutral crossing by 2027 (the company’s flagships, the gas-run *Viking Glory* and *Viking Grace*, operate on the route). “The solutions developed in the project will enable fully carbon-neutral freight and passenger travel between Turku and Stockholm, but the project will also be scalable for other routes. This is important since all EU countries, Finland included, have signed on to build green maritime transport corridors,” **Mika Laurilehto**, back then RMC’s interim CEO, underlined. Dr **Magnus Gustafsson**, Research Director in Industrial Management at ÅAU also highlighted, “Consumers increasingly want the products and services they buy to be sustainable, and this is reflected throughout the

entire logistics chain. The project is starting from the position that the transition to zero emissions will not increase the costs significantly. This will provide passengers with a sustainable alternative, an opportunity for the industry to gain competitive advantage in sustainable transport, and a tangible example of how we can eliminate emissions in seafaring using Finnish expertise.”

Though **Gotland Company** had to temporarily put **Hansa Destinations** on the shelf, it still believes that sea transportation has future. As such, the Gotland Hydrocat concept was presented last autumn. With the help of the **Austal** shipyard, the Swedish shipowner unveiled the second zero-emission vessel in its Horizon series. Gotland Hydrocat is a high-speed catamaran that will feature a multi-green fuel engine, with hydrogen as the preferred one. The 35 knot-max speed vessel will offer room for 1,600 passengers, plus space for 450 cars. **Gotland Company** intends to place an order on Gotland Hydrocat in 2025, with the catamaran entering traffic five years later. It is the same time horizon for Gotland Horizon, a ferry concept, also multi-green fuel, presented by Gotland Company, **Gotland Tech Development**, and **Destination Gotland** last year. The 28-knot ro-pax will offer room for 1,900 passengers and cargo capacity for 100 trucks & trailers. “It feels excellent that we now have two concept ships for our future fleet that will bring Gotland and the mainland even closer – at the same time reducing our emissions dramatically,” **Marcus Risberg**, Destination Gotland’s CEO, said. **Håkan Johansson**, CEO of Gotland Company, added, “The Horizon series is ‘the’ single most important initiative of ours to lower shipping’s footprint. We enjoy a long tradition of utilising leading-edge technology and constantly modernising our fleet.” Destination Gotland, which runs Gotland-mainland ferry traffic, aims to make its operations carbon-neutral by 2045. In late November 2022, **Furetank** announced it is piloting **Equinor**’s waste-based marine fuel. During a round-trip between **Mongstad** in Norway and Iceland’s **Reykjavik**, the Swedish shipping line’s dual-fuel tanker *Fure Valö* sailed on a 30/70 blend. The smaller portion of the mix was cooking oil, while the remaining portion – marine gas oil. Equinor’s refinery in Mongstad supplied the fuel. The blend has a certified reduction in GHG-E of at least 87.5% vs its fossil fuel equivalent. “The initial results were positive, as no adverse effects on performance or consumption were detected compared to conventional marine gas oil,” Furetank shared. The companies plan to continue testing Equinor’s

blend, with another five-to-six round-trips between Norway and Iceland to “[...] prove performance in the harsh weather-exposed trade on the North Atlantic, as well as and handling over time.”

Then came news that the **Port of Riga** goes solar and hydrogen. First, the Latvian seaport launched a tender for developing a part of its land into a solar park, won by the Lithuanian **Saulės Graža** (“Return of the Sun”). The company will invest around €90m over the next five years to erect a solar park of at least 100MW capacity, producing a minimum of 100,000MWh/year. The Port of Riga will benefit from the investment in two ways: collect rent and receive a portion of the electricity, the latter for the use of the authority and port companies. Next, the seaport – together with numerous Latvian energy, technology and transport companies, academia, and governmental bodies – signed a memorandum of understanding to develop a hydrogen ecosystem in the country, including production, storage & transportation capacities. Speaking of hydrogen, two other events unfolded in November 2022. First, the **Hycamite-Wärtsilä** hydrogen & solid carbon co-op. The two Finnish companies banded together to develop a solution for producing hydrogen from LNG on board vessels with high-grade allotropes of carbon as a by-product. The produced hydrogen will be used either by blending it with LNG bunker or in fuel cells aboard the ship. The process will also deliver solid carbon, including industrial graphite and carbon nanotubes (a potential additional revenue stream). The concept design will be ready by mid-2023, while the prototype testing unit – in H2 2024. The parties say the solution will apply in principle to all LNG-run vessels. They also underlined, “When using bioLNG, this solution enables even power generation on board ships with a negative carbon footprint.” **Mathias Jansson**, Director, Fuel Gas Supply Systems, Wärtsilä, also accentuated, “[...] This solution overcomes the lack of an existing hydrogen supply infrastructure. It also supports reducing the safety risks around storing and handling of liquid hydrogen and enables a gradual decrease of the vessels’ environmental impact.”

Second, the **Port of Szczecin-Świnoujście**, alongside other parties from across the business, technology, and R&D sectors, signed a letter of intent to develop an economy based on hydrogen in Poland’s West Pomeranian Voivodeship. Thanks to low- and zero-emission hydrogen, hard-to-abatement industries like transportation will have it easier to partake in the green transition. The West Pomeranian Hydrogen Valley is to play its part in the 2040 Polish Energy

Policy in building a low-emission energy system while maintaining energy security. Earlier, in December 2021, the port authority exercised its pre-emptive right to acquire lands in Świnoujście, which will be used for erecting an installation terminal for offshore wind energy farms. The 20 ha big facility will offer 500 m of 12.5 m deep quay wall for handling up to 80 turbines (up to 15MW) per year. The terminal’s commissioning is expected at the beginning of 2025. One year before that, **Vestas**’ wind energy turbine factory will come online in Szczecin.

In September 2022, also the German Baltic **Port of Wismar** decided to go solar by entrusting **FABER Solartechnik** with the installation of a 10k m<sup>2</sup> photovoltaics system across a previously unused open space. The 2,200kWh/year facility is to be up & running in Q1 2023. The seaport expects to consume some 35-40%, feeding the public grid with excess green energy. The investment goes hand-in-hand with Wismar’s replacement of cargo handling equipment with electric machinery (the first e-forklifts arrived in November 2022). The port will also look into wind energy.

Last but not least in the green-thread – and for **Furetank** in 2022 – the company received support to cold-iron its ninth Vinga newbuild. **Klimatklivet**, a **Swedish Environmental Protection Agency-NextGenerationEU** initiative, will fund half of the machinery needed for the shipping line’s tanker to ‘plug into’ OPS. The vessel will draw green power from the shore in the **Port of Gothenburg** thanks to the investment (Klimatklivet will also back setting up Gothenburg’s OPS in the port’s **Energy Harbour**). According to Furetank’s calculations, done using *Fure Ven* in 2021, OPS-connecting a tanker can save 600t/year of CO<sub>2</sub> emissions. The company adds that in-port tanker emissions can account for as much as 20% of the ship’s footprint. “This grant is a very positive response to our environmental efforts, it confirms that we are doing the right thing. We have chosen to install a very powerful 6.6kV high voltage shore power capability which even supports the cargo pumps during unloading. They consume a lot of energy which can now be provided through the electrical grid instead of ship generators. This eliminates all harmful emissions while in port close to densely populated areas,” **Jonatan Höglund**, Newbuilding Inspector at Furetank, highlighted. He also noted, “It is a classic ‘chicken-and-egg’ dilemma where we now choose to progress before the infrastructure is in place. We hope and believe that our move can contribute to the expansion of shore power connections gaining momentum in Sweden and beyond.”

The previous section ended and this one starts with cold ironing. In February 2022, the Swedish **Port of Gävle** received support from the country's **Environmental Protection Agency** to supply onshore power at its Sligkajen from the summer of 2022. The initiative is carried out together with **Boliden**, whose ships berth at the quay to take in ores from the Garpenberg mine. "We have with keen interest followed the international development for the segments we have in Gävle, which are container, bulk, project loads and tankers. Boliden has a stable flow of goods via the Port of Gävle with more than 60 ship calls per year. We are proud to now be able to offer onshore power supply for these ships," **Niklas Hermansson**, the Port of Gävle's Head of Traffic and Safety, commented. **Linda Astner**, the port's Head of Sustainability, added, "The changeover to a more sustainable freight transport is a challenge with long logistics chains and many players. Collaboration is required to meet the climate goals. Boliden has a commitment to sustainable transport and it feels great to be able to collaborate with them on the conversion of an entire flow." Cold ironing at Sligkajen forms part of Gävle's Port Cluster 2030, a programme to reduce the seaport's carbon footprint in line with the Paris Agreement.

We stay in **Gävle** because in the spring of 2022, the port's Fredriksskans intermodal terminal was again put online following increased demand for rail transportation of both containers and trailers. Located close to the port's quays and warehouses, the facility spans 50k m<sup>2</sup> and offers a 550 m long track. **Yilport Gävle**, the port freight operator, is in charge of handling the flows. The company has invested in two reachstackers to take care of the traffic. Then on 18 May 2022, the official launch of Yilport's upgraded container terminal in Gävle was celebrated. The facility's annual handling capacity was doubled to 600k TEUs. Lastly, in late October 2022, **SCHWENK Sverige**, the Swedish arm of the German **SCHWENK Building Materials Group**, signed a 25-year lease agreement with the Port of Gävle. Following the deal, SCHWENK Sverige will set up a 90kt/year capacity terminal on Quay 1. Construction works should start in Q1 2023, with the first cement shipment arriving by year-end.

In mid-March 2022, the **Port of Gdańsk** announced another modernisation project. The Polish port intended to invest

PLN533m (around €112m, including the EU's support of €95m) to upgrade four quays in its **Inner Harbour**. In total, some 1,916 m of quay wall would be revamped across the Bytomskie, Wiślane, Rudowe III, and Węglowe quays to accommodate larger and deeper vessels served with modern cargo handling equipment (such as **Liebherr's** LHM 550 mobile harbour cranes). The project was to be evaluated by the **European Climate Infrastructure and Environment Executive Agency**, with the port authority expecting to see the green light in June 2022. Once inked, the project will have been completed by 2026. Also, back then the Port of Gdańsk was completing its previous Inner Harbour overhaul project (PLN595.5/€125.5m, co-funded by the EU's **Connecting Europe Facility**), covering 5.0 km of quay wall and which also included deepening the fairway (9.35-10.6 m of ship draft).

In May last year came the conclusion of an effort that had been going on for many, many years, namely deepening the **Świnoujście-Szczecin Fairway**. **DEME** and **Van Oord** completed dredging the 65 km long channel, which now offers 12.5 m of depth (previously 10.5 m). Approximately 24m m<sup>3</sup> of material was dredged (used for creating two artificial islands, one of them as a new natural habitat). Over 9,000 trees and bushes were planted as part of the project's greenery works to create new wildlife habitats. Deepening the **Świnoujście-Szczecin Fairway** also proved to be DEME and Van Oord's largest unexploded ordnance campaign: an

unexploded, five-tonne bomb was one of the "discoveries;" after a year of research and preparations, the so-called Tallboy was safely detonated in situ by the Polish Navy. As well as the deepening works and the new islands, the parties carried out shore protection works and underwater reinforcements and installed cables and navigational aids. The deeper fairway makes it possible for bigger & heavier vessels to call the **Port of Szczecin**.

Later in June 2022, the **Port of Szczecin-Świnoujście** started looking for investors interested in developing a total of 44.6 ha across the under-construction Norwegian and Danish and the existing Finnish quays in Szczecin. The area, divided into four yards, will be made available to investors in 2023. The future Norwegian quay will offer 12.5 m of water depth and 300 m of berthing space. Ships 240 m long and 32.3 m wide will be able to call the new quay. A rail terminal, capable of serving 750 m long train sets, will be located next to the new infrastructure. This one is a particularly interesting news bit in the light of the authority's ongoing campaign to set up a 2.0m TEUs/year container terminal in Świnoujście. Two bids were submitted: by the 2020-incorporated **Baltic Gateway** from England (and apart from the address that's pretty much all there is known about it) and a consortium between the Belgian **DEME Concessions** and the **Qatari QTerminals** (a 51-49 JV between **Mwani Qatar** and **Milaha**, operating a multipurpose terminal in **Hamad Port**). In mid-July 2022, the **Port of Esbjerg**



Photo: Besix



Photo: Van Oord



Photo: Liebherr Maritime Cranes

ordered another LHM 800. The largest and most powerful mobile harbour crane in **Liebherr's** portfolio will land in the Danish seaport in 2023. It will be Esbjerg's second LHM 800 in a fleet totalling seven Liebherr's as of 2023. The newest machinery will be used for handling the ever-growing wind turbines. LHM 800 can alone lift 308t. In tandem mode, using the Sycratronic system developed in co-op with the Port of Esbjerg, up to 616t can be pulled. Importantly, tandem lifts make it easier to handle long cargoes, such as rotor blades that can measure over 90 m in length. Sycratronic is a computerised assistance system for operating two cranes by one operator. The solution monitors the operations to avoid overloads and compensate for the displacement of components being loaded. "Our competency lies in break-bulk and in having the capacity for tandem lifts above 600 tonnes, which is necessary not only in the on- and offshore wind market but also in supporting production in the hinterland," **Dennis Jul Pedersen**, the Port of Esbjerg's CEO, commented. Some four-fifths of Europe's installed offshore wind energy capacity has been shipped out of Esbjerg. The port handles more than 0.5mt/year of wind turbine components.

Also in July 2022, the **Port of Tallinn** said it would invest in a new quay in **Paldiski**. The authority will expend up to €53m in setting up a new 310 m long quay and adjacent 10 ha big yard in **Paldiski South Harbour**. The new infrastructure, slated for commissioning in the summer of 2025,

is meant to serve Estonian offshore wind farms, with the first to be ready in 2028. The new quay will also be used for military mobility purposes, as the project is co-financed (€20m) by the **European Commission** through the **EstMilMob** project. The new infrastructure will also be fit to handle ro-ro ships.

Too in July last year, the **Deepwater Container Terminal Gdańsk** (now bearing the **Baltic Hub** name) revealed that the **Budimex-Dredging International** consortium will construct the T3 expansion, increasing the terminal's handling capacity by 1.7m TEUs to 4.5m/year. T3 will cover 36.5 ha of yard area and a 717 m long and 17.5 m deep quay wall. The new facility's traffic will be handled by eight ship-to-shore cranes and 28 semi-automated rail-mounted gantries. Operationally, T3 will come online at the end of 2024's first half, while the full commissioning is planned for Q2 2025. The consortium entered the construction site in November 2022.

The PLN2.0b (about €420m) investment to dig the **Vistula Spit Canal** was officially commissioned on 17 September 2022, allowing Poland to access its part of the Vistula Lagoon directly. Ships 100 m long (180 m for a set of barges) and 20 m wide, with a 4.5 m draft, can pass the new infrastructure (measuring 1,300 m). The canal's lock is 230 m long, 25 m wide, and 6.5 m deep. There are four gates leading to it. The investment also comprises two swing bridges. There is a sheltered harbour (1,000 m of east and 500 m of

west breakwaters made of x-block plus prefabricates) for vessels arriving from the side of Gdańsk Bay. For the **Port of Elbląg** (125.1kt of cargo traffic and 33.6k passengers in 2021) to serve larger ships, thanks to the Vistula Spit Canal, the banks of the Elbląg River will be restored and reinforced, and another swing bridge will be constructed. The final phase will involve dredging the port's fairway. Earlier, ships sailing to and from the Vistula Lagoon had to pass the sea territory of the Kaliningrad Oblast, obtaining crossing permits.

In early autumn of last year, the **Port of Gothenburg** got the green light for a deeper & wider fairway. The **Land and Environmental Court** granted a permit to deepen and widen the fairway (from 13.5 m to 17.5 m), strengthen the quay, and dispose of dredge spoil in a designated sea location. The Court, however, rejected an application for dispensation of contaminated material at sea. The Swedish seaport will carry out quay reinforcement and deepening of the dock. The **Swedish Maritime Administration** will deepen the fairway and remove dredge spoil (some 13m<sup>3</sup> will be dredged). If all goes as planned, with construction works kicking off by 2022-end, the Port of Gothenburg's **Skandia Harbour** will be able to welcome fully laden ocean-going 430 by 65 m and 17.5 m of draught vessels by 2026 at the earliest. The **Skandia Gateway** project is worth around SEK2.5b (€230m), with funding split in half between the **Swedish Transport Administration** and the **Gothenburg Municipality**.

Also just before 2022's end, the **Port of Helsinki** made cold ironing available at the whole of **West Terminal 2**, the seaport's newest ferry terminal. The Finnish seaport now provides OPS at the city centre harbours to all liner traffic vessels visiting Helsinki regularly and mooring for longer. The port authority underlined, "Providing onshore power more extensively

than before is one of the most important measures in the Port of Helsinki's carbon neutrality programme [making its operations carbon-neutral by 2025]. The greatest positive environmental impact can be achieved with regular liner traffic in particular, but in the future, OPS will be provided in Helsinki to cruise ships and cargo vessels as well." Concerning the latter, the port

will provide OPS in its **Vuosaari Harbour** for **Finnlines' Travemünde** traffic in 2023. According to the port's Head of Sustainable Development, **Andreas Slotte**, "Shore power reduces the emissions of berthed vessels by 50-80%. This figure is probably closer to 80%, but we're making a conservative estimate, as vessels are not heated with shore power during colder weather."

## Digital

When it comes to digitalising the regional transport & logistics industry, 2022 could very well be named the year of the digital twin. Starting in late winter/early spring, the **Port of Esbjerg** teamed up with the Californian global infrastructure advisory firm **Moffatt & Nichol** specialised in port planning to develop a digital twin for Esbjerg's future offshore wind harbour. "Port Esbjerg and the supply chain in Esbjerg have vast experience in supporting offshore wind projects, but we need to simulate the future to plan optimally today, and for this we are excited to work with Moffatt & Nichol," **Dennis Jul Pedersen**, the seaport's CEO, said.

"A digital twin allows Port Esbjerg to simulate every operation in context to future projects and optimise the infrastructure accordingly," **Joshua Singer**, Offshore Wind Lead with Moffatt & Nichol, explained the project's target. After a year-long collaboration with **Upteko**, in June 2022, **DFDS** claimed to be the world's first to introduce a drone support system as part of commercial ships' equipment, with **Selandia Seaways** as the first to feature the innovation. The drone system is connected to advanced navigation and includes a charging station, lidars, a thermographic sensor, and a high definition RGB camera. The drone can fly 120

m up, live streaming to the captain on the bridge, using a neural network to post-process the streamed video and calculating the distance between objects around the vessel. In the future, the system will also be able to act as an extra set of hands when a person is in distress or if a fire breaks out on board the ship: should a person fall overboard, the drone can fly back and locate the person using its cameras, including a thermal one. "Using drone technology to support operations on board our ships have been an area we have been investigating with great interest. We are proud of this collaboration which will push large-scale utilisation of drones to solve a number of tasks. This



Photo: Port of Esbjerg

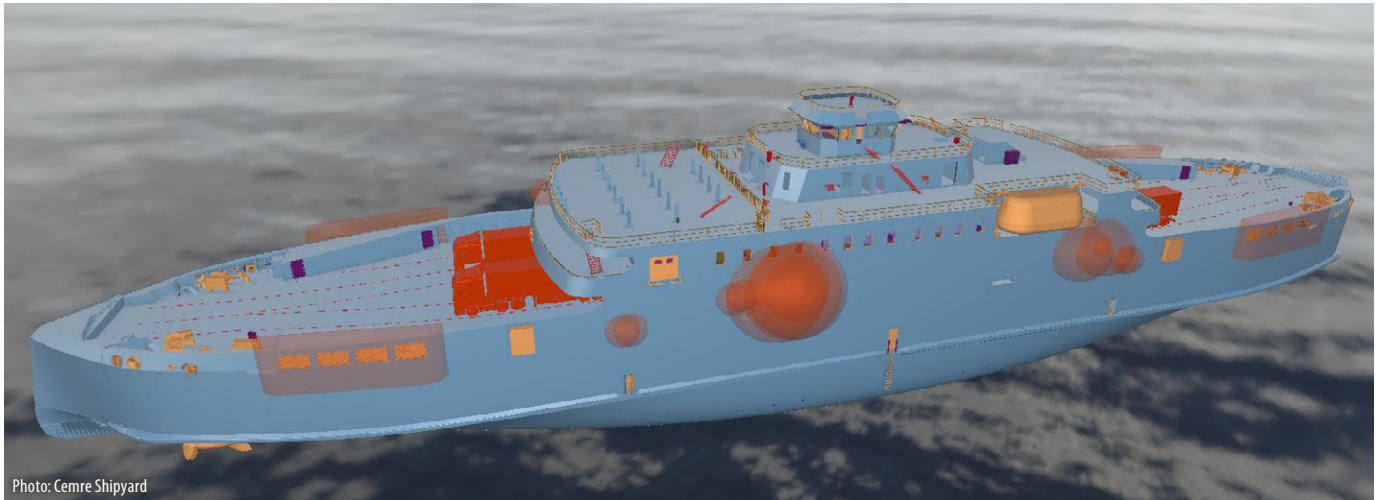


Photo: Cemre Shipyard

will in time result in improved efficiency and, more importantly, improved safety on board our ferries,” **Mads Bentzen Billesø**, Head of Innovation and Partnerships at DFDS, highlighted. The **Danish Maritime Fund** and **ShippingLab/Innovation Fund Denmark** supported the development of the technology.

In July 2022, the Aarhus-headquartered feeder & short sea container line **Unifeeder** chose **ZeroNorth**’s full suite of optimisation services. The three-year deal will see 90 of Unifeeder’s vessels using services included in ZeroNorth’s platform, plus **ClearLynx**’s bunker solution. The suite includes voyage planning & optimisation (including weather routing) and recommendations on bunker and vessel operations to lower fuel consumption and emissions. “In Unifeeder, we are gaining a partner that understands the urgency of the climate emergency and our mission to make global trade green, as well as the role that digital solutions can play to reduce the environmental impact of maritime operations whilst improving earnings [...]” **Jesper Bo Hansen**, ZeroNorth’s Chief Revenue Officer, commented. **Martin Gaard Christiansen**, Unifeeder’s CCO, also said, “[...] Our green agenda includes setting efficiency targets and limiting bunker consumption to reduce our overall emission levels by 50% per container by 2040; an ambitious goal that we will be able to achieve by optimising efficiency across our operations with the support of industry-leading advanced digital technologies.” Like **Esbjerg**, also the **Port of Gdynia** will have a digital twin. To that end, the port authority commissioned last summer the consortium of **HydroBIM**, the **BIM Association** and **scan3D** to map the seaport’s areas digitally. The cloud platform will integrate geographical and spatial

data, allowing for creating past, present and future representations (in two and three dimensions) of the Port of Gdynia’s infrastructure. Additionally, the represented pieces, down to single objects, will have their data sets, including technical documentation. According to the port authority, having a common digital data environment will improve asset management, a.o., better maintenance. Importantly, the solution will have bank-grade cyber security.

In August of 2022, **Scandlines** also shared it will develop a digital twin – a climate one for its under-construction zero-emission ferry. Using the life cycle assessment (LCA) methodology, the Danish climate tech start-up **ReFlow** will develop a digital twin of the ro-pax. The detailed life cycle model will represent the ferry from her construction to the end of life, including installed equipment. Scandlines will use the digital climate twin to run simulations on the use of new green technology (already several maritime original equipment manufacturers have sent their LCA calculations). According to the ferry line and ReFlow, this “[...] makes it possible to cut the time and cost associated with a life cycle assessment of the products by over 80% compared to traditional manual approaches.” **Rasmus Elsborg-Jensen**, ReFlow’s CEO and Founder, also commented, “[...] It is our ambition to provide Scandlines with a granular understanding of the emissions associated with, not just the fuel use, but also the vessel itself, allowing for future ‘plug and play’ scenarios where new greener technologies can be assessed on the vessel before an investment.” The 147.4 by 25.4 m double-ended ferry, offering 1,200 lm and room for 140 passengers, is being built by the Turkish **Cemre Shipyard**. She is expected to enter

traffic between **Puttgarden** and **Rødby** in 2024. The newbuild will feature 10MWh of battery capacity, recharged in 17 minutes. Topping 2022’s digital news thread was the announcement from September that Latvia will develop a multimodal data digitisation & exchange platform. The **Port of Riga** is leading a project tasked with creating the integrated platform for sharing information between various private & public logistics supply chain actors. The authority also says the project will allow for the automation of port & logistics processes. “We are working on the digital transformation of port processes in order to introduce the principles of the smart port into everyday life by integrating several information systems that make the port a multimodal transport hub and allow information to move faster than actual cargo carriers,” **Viesturs Zeps**, Board Chairman of the Freeport of Riga, commented. He furthered, “Digitalisation of the port not only facilitates the port and the port companies’ cluster operation, promoting their role among the logistics players of the region, but also provides data for new solutions aimed for linking the city, the city transport and other solutions.” The **Digital Transformation of Port Management, Improving the Processing and Analysis of Transport and Logistics Data** project is part of the **Digital Transformation of the EU’s Recovery and Resilience Facility**. The initiative is led by the Port of Riga, with the support of the ports of **Ventspils** and **Liepāja** (the **Liepāja Special Economic Zone Authority**), the **Maritime Administration of Latvia**, **Latvian Railways**, the **Customs Administration of the State Revenue Service**, and the **State Border Guard**. The project’s implementation financing amounts to €3.2m. The Latvian ports will carry out the maintenance and future development of the platform.