The diversified future

by Przemysław Myszka

There's a growing understanding that the shipping business must become more sustainable. How to hit that nail on the head is, however, a wholly different discussion, with many solutions portraying themselves as the silver bullet. At the same time, the coronavirus continues to disrupt the industry, especially the passenger part. We're talking with Stena Line's Erik Lewenhaupt about the present and coming challenges, including the pandemic and Brexit, the company's experiences and plans surrounding electricity, next-gen digital tools, and his outlook on what will be the name of the game in the foreseeable future.

☐ ***Let's address the elephant in the room first – the coronavirus. What has been the to-date impact of the pandemic on Stena Line's operations?***

The pandemic has been very tough on us. National travel restrictions have hit the international ferry business hard. We scratched the deepest bottom when we noted a 90% reduction in the number of passengers. For the year as a whole, we lost more than 50% of our passenger volume. The flurry of all sorts of ever-changing rules made it at moments difficult to corona-adjust our operations. For example, one country said one thing about the quarantine's length, while the one sitting on the ferry route's other end – something different. The rule-making landscape had been varying like the view in a kaleidoscope. The situation is still full of uncertainty, even though the vaccination programme is rolling out through Europe. There is some light at the end of the tunnel, though; senior passengers, those already vaccinated, started boarding our ships in greater numbers. This, however, won't make me venture into saying that this summer will be like in the good old days. On a more positive note, there are signs that the traffic might build up in the coming months. Since the pandemic's outbreak, we have been focusing on keeping the best of both worlds of the ferry sector, namely providing services that combine passenger and freight flows – where and whenever possible. An equally important priority was to retain as many of our crew as possible. On the one hand, we can be proud that we have swiftly implemented anti-corona measures to render our services safe. The cargo part of our business has been running uninterruptedly, making it possible for our clients to haul vital supplies Europe-wide. On the other hand, we had to close two routes. The plummeting passenger numbers wouldn't allow for keeping them operational, hoping that the pandemic will go away, and the traffic will rebound.

The impact of the pandemic, its length and breadth, is unprecedented. The persistence of the virus makes it very challenging to run a cross-border business such as ours. One can increase safety and hygiene measures, introduce social distancing, receive a helping hand from public authorities in the form of furloughs. Still, the hard reality for Stena Line is that we had to make idle some 30% of our workforce at the end of the day. However, if it hadn't been for the governmental support, chiefly in Sweden and the UK, I'm convinced things could have been worse. Nevertheless, this is the naked truth of the passenger sector in general, off- and onshore: the more one's business tilts towards cruising, the more exposed you are in this situation.

Meanwhile, as the pandemic continued to take its toll, Brexit has materialised. We have to wait and see whether it will have an enduring effect on our bottom line. In the weeks leading to Brexit, we saw a noticeable increase in cargo traffic towards the UK, especially from the Netherlands. Many enterprises were stockpiling before the 'Great Unknown.' Next, similar to other companies active in the region, we have increased the capacity between the Republic of Ireland and France. The so-called "Brexit by-pass services" have picked up the intra-EU volumes. That said, the situation, particularly in the Irish Sea, is a mixed one. Some routes are up, some down. As of now, it is a market in the making, so to say. Perhaps the picture will clarify later this year.

☐ ***Has there been any silver lining to corona?***

Indeed, the issue of sustainability has sped up despite – or because of – the pandemic. It can be seen across the EU, but also in the UK. We hear ambitious statements, most notably encapsulated in the European Green Deal. The block wants to move to a greener and more circular economy/society, including the transport & logistics sector.

Really big topics have started to fly in the high-tier EU debate, such as the shift to low- or zero-emission fuels as well as the inclusion of sea shipping in the EU Emissions Trading System. We, as Stena Line, see it as a positive development. National initiatives are all right, like aiding companies that want to shift freight flows from land onto waterways or when a port authority grants lower fees to the more eco-friendly ships. Yet, the EU should take care of the big picture by establishing a framework – covering regulatory affairs, infrastructure investments, research & development – that will make it possible to green the industry as a whole.

☐ ***What is currently the company's sustainability strategy?***

The maritime sustainability agenda is nowadays very much tilting towards the carbon footprint issue. If you are a company like Stena Line, operating 36 vessels, then it's crystal clear that doing something with how much greenhouse gas you emit will be vital if you're concerned with the state of the environment. That's why our focus lies on carbon emissions and clean energy. We want to lower our emissions by 30% by 2030 versus the 2019 baseline.

Photos: Stena Line

Yet, there's more to our strategy than this. Our industry is traditionally male-dominated. Stena Line's ambition is to break this pattern and make shipping a more attractive workplace for women. That holds for all levels of our business, including leadership. In our view, diversity adds to sustainability. Before 2023, females should account for 30% of our leaders, i.e., among managers, the Group Management Team, and the Board of Directors.

Apart from these two areas, we also pay attention to many other things that comprise the 'Stena experience.' For instance, we are making other services, like hotel and catering, more sustainable, too, by looking at how to make our supply chain greener and fairer.

☐ ***Can you shed light on the development of Stena Fuel Pilot, an Artificial Intelligence-based assistant for your crews?***

The industry is full of digital platforms that support shipping operations or fleet or booking management. That said, we didn't find a solution that would suit our needs, hence the decision to develop Stena Fuel Pilot.

In essence, it's a decision-support tool for ship officers. We've started by gathering historical data from five years of operating a given route, which equals a couple of hundred yearly sailings. The datasets encompass weather, trim, cargo, currents, and so on. The AI analyses these data and pairs the current sailing against the historical background, advising the crew on the most optimal way to operate. The captain and the chief engineer are still in charge and have the final say whether to follow the algorithm's advice. To date, the solution has saved us 2-3% on fuel consumption across seven ships. Unfortunately, the corona has halted the installation of Fuel Pilot on other vessels. We are waiting to grant the installation teams access to reap the benefits with the rest of our fleet. If all goes well, we'll equip four ships with it every quarter.

☐ ***Speaking of AI, what's your take on autonomous shipping?***

I'm not convinced that we will see ferries the size we have in our fleet sailing on their own. We may witness smaller crews and automation used to a broader extent. But large seagoing ro-paxes with private and commercial passengers, plus cargo, alone onboard for a dozen or so hours – I don't see that coming. I'm not sure if full automation would bring the benefits of making the whole effort worth the candle. In addition, it would require replicating the know-how and experiences of the crew, which is, I dare say, a bit more complex than in other shipping segments because of the various human interactions on board.

Then again, maybe it's simply about 'domesticating' technology. After all, when New York City saw elevators for the first time, you couldn't ride them alone; the elevator crew had to make sure the "journey" would be safe. It was just too risky to leave people to themselves in an elevator.

☐ ***Can you also say something more about your fleet renewal programme?***

The E-Flexers are the culminating point of our ferry operations running since the 1960s. As the name implies, we wanted flexible vessels, both in terms

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of passenger and freight transportation, to move them across our network when needed. The pandemic and Brexit have proved that this approach was the right one to take. Traffic flows can change rapidly; therefore, having ships that fit different routes, existing and potentially new ones, is pivotal.

The E-Flexers are also very well designed, energy efficiency-wise. Thanks to them being overall bigger than our current tonnage and the hull and engine optimisation, we can trim some 25% off a single transported unit versus the older vessels in our fleet. The E-Flexers run on traditional bunker; however, their design allows for future conversion.

☐ ***It seems that your company has put its bet on electricity. What are the company's plans across this field?***

With today's pace of development, it's hard to check in practice each alternative propulsion technology, no matter how much buzz there is around them. Even big companies like ours don't have endless capacities to put all the solutions to the test. That said, Stena Line wants to play its part in greening the industry, hence the decision to centre our efforts around electricity.

We aren't doing this in isolation. Our past, present, and future projects play into the broader trend of electrifying port infrastructure or, even more broadly, as we're witnessing it in Sweden, the logistics supply chain. For many years we've been using the onshore power supply, as it makes perfect eco-sense in instances where the energy mix is green and policies, like taxation, don't discourage the use of cold ironing. A total of 14 ships in our fleet can 'plug in.'

Next, in-port cargo handling equipment and vehicles are getting electrified. Truck manufacturers, e.g., Volvo and Scania in Sweden, are working on solutions that will make it possible to electrify lorries. Just a couple of years ago, e-cars were a thing only when somebody was commuting on short distances in cities that had the charging infrastructure. Fast forward to today, and we're talking about heavy-duty long-haul e-transportation. The same goes for tugs – we're barely a few years before that happens.

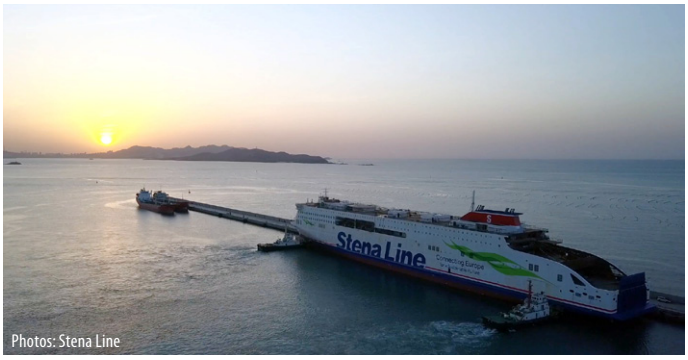
One of Stena's other companies, Battery Loop, intends to develop what could be called "port power banks." The idea is not only to provide shore power in ports that otherwise couldn't offer it or at least the amount needed, but it's also about giving second life to 'used' vehicle batteries. The supply of batteries generates a carbon footprint of its own. We should make the process as sustainable as possible, which means reusing and recycling them to the fullest. Europe goes green with renewables, which is positive, but it'll require a whale of energy storage to balance supply and demand. During off-peak hours, when there are no ferries at berth and port operations aren't so intense, the energy storage installed in ports can support other uses across the grid.

☐ ***Can you share the company's first offshore experiences with electricity?***

We've started our e-adventure with *Stena Jutlandica*. At the time of her conversion in 2018, she was, if not the biggest hybrid ship, then at least one of the top. The solution we used is a containerised

Photo: Stena Line

Photo: Port of Gothenburg



Photos: Stena Line

1.0 MW battery, whereas there are 4-5 MW installations on the market today, with more powerful ones already on the drawing boards. It only manifests the potential hidden in ship electrification – from supplementing ancillary systems through hybrid propulsion to fully electric operations.

The battery pack onboard *Stena Jutlandica* supplements one or two auxiliary engines. She can draw energy for running the thrusters, ventilation, and heating & cooling. The batteries can as well act as a backup in case of a blackout. The batteries are charged in the Port of Gothenburg and use peak shaving when at sea. Overall, the project has proved to be a success from both environmental and safety perspectives. The ship crew is pleased to operate it, too.

☐ ***What will it take to construct* Stena Elektra*, your fully electric, large-scale ferry?***

Scaling up from *Stena Jutlandica* to ***Stena Elektra*** will require a few things. First, the battery technology itself – whether the present technology will evolve to power the ship of her size, or maybe we'll have to experiment with alternative battery technologies. Secondly, the shore infrastructure. The onshore power supply is one thing, even if you think about providing cruise ships with electricity, which requires significant grid capacity. Charging a seagoing ferry will be an altogether different kettle of fish. We're looking at, give or take, 30 MW to charge 60 MWh batteries in *Stena Elektra*'s case.

Port authorities must work with energy companies, suppliers and infrastructure managers alike, local and even national authorities to make this happen. Being able to plug *Stena Elektra* will be the result of a concerted undertaking of many parties. We're in talks with the ports in Gothenburg and Frederikshavn, between which the e-ferry will sail, who've expressed their support for this fossil-free venture.

Lastly, the triple-e issue, namely we need electricity that is ecological and economical. Naturally, there will be a significant number of points to resolve while designing the ship in detail and preparing for its construction. By all means, *Stena Elektra* will be a monumental project, having everything it takes to be a game-changer. We're excited to embark on this journey and hope to see her one day calling to ports she'll be serving (as quietly as a Tesla!).

☐ ***You have also been running one of your ro-paxes on methanol. Are you planning to expand on this idea?***

We are satisfied with running *Stena Germanica* on methanol. We've shown that it's, in fact, possible. We'll further explore the topic by shifting to renewable methanol to slash her carbon footprint. The supply of e-methanol must be, though, scaled up to become a commercially attractive option. Most recently, we have, within the EU backed FReSMe project, run *Stena Germanica* on recycled methanol coming from the country's steel industry. The so-called blue methanol used in the trial bunkering was produced from carbon dioxide recovered from the blast furnace gases from SSAB's steel production in Luleå. It is a fantastic example of cooperation between shipping and the steel industry, proof that together we can drastically lower our climate impact.

☐ ***What's your take on the Next Big Fuel/Thing in shipping? Which solution and policies have the highest chance of being a game-changer?***

The industry needs the stick of regulations – preferably the more international, the better – and the carrot to drive the green transition. If allowed and supported, shipping lines are more often than not eager to go beyond the regulatory minimum. For instance, if the industry falls under the Emissions Trading System, the money gathered this way should be channelled back in the form of green investments, be they capital or research & development funding. In my opinion, this would give shipping a shot in the arm. Companies would get extra wiggle room to either retrofit their fleet with energy efficiency measures or opt for eco-friendly newbuilds. The transition is a process in the making. We cannot wait for some magical point in time for everybody to say, "All right, we're now going to replace our vessels with the latest and greatest ships that will tick off IMO's targets."

Evolution and revolution in the shipping business will go hand-in-hand. Some have already opted for liquefied natural gas and are increasingly interested in exchanging it for renewable liquid biogas. Others have invested in add-on energy efficiency solutions such as wind propulsion or air lubrication. At the same time, companies are placing their bet on electricity or hydrogen. We need to explore all those avenues. We'll find the future much more diversified in terms of the number of energy carriers available. What will work in one instance won't fit other circumstances.

Much research will have to be carried out to corroborate the claims this-and-that solutions makes. Shipping companies need to have clear guidelines before they make an investment decision. Otherwise, the risk will be too high, and they'll pass on the opportunity and play it safe by opting for more traditional solutions. New fuels and next-generation technologies need support and validation from classification societies and authorities like the IMO and EU. For example, suppose an operator invest millions in a new ship that runs on hydrogen. In that case, they want to be sure that it works on the operational level and there is a common standard for how the carbon footprint for that propulsion gets valued among authorities across the globe. We need both support and alignment to speed up this transition. ■