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DOUG FINNEY/FLOKOR

**SJÖFARTS
TIDNINGEN**

Special edition
produced by
the editorial
staff of the
Swedish Ship-
ping Gazette,
Sweden's main
maritime publi-
cation.

Swedish Shipowners' Association – green technology at the forefront

The mission of the association is to increase knowledge of the shipping industry and promote issues vital for shipping nationally as well as internationally. The Swedish Shipowners' Association's members are at the very forefront of environmental, climate and safety issues representing an attractive and innovative future field of business sector.

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3. Digitalization and automation
4. Behavior and logistics
5. Knowledge and competence

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The Swedish Shipowners' Association was founded in 1906 and is an industry association representing 55 Swedish shipping companies operating worldwide.



Set a course towards greener shipping

THIS YEAR'S EDITION of Maritime Greentech, published by the Swedish Shipping Gazette, Sjöfartstidningen, is the result of a cooperation with Donsö Shipping Meet DSM and Swedish Maritime Technology Forum SMTF. DSM is the main shipping event in Sweden, where ship owners, suppliers and other actors in the shipping cluster meet in the unique shipping community on the island of Donsö in Gothenburg archipelago. The mission of SMTF is to strengthen the Swedish subcontractors to shipping and boost the green development of the maritime industry.

THE ORIGINAL PLAN was to launch DSM in 2021. However, DSM2021 became one of many events to be postponed due to the pandemic. The new date is set for June 14-15, 2022. In this Maritime Greentech edition we give a sneak preview of what is to be expected for DSM2022. We take you on a guided tour on the beautiful island of Donsö and we have talked to the main sponsors of the event. The event includes an exhibition, which in 2019 had 290 exhibitors. DSM2022 will also offer seminars, efficient speed meetings between ship owners and exhibitors as well as opportunities for spontaneous meetings. There will also be two events within the event: the Financing Meet and the Commercial Meet. A banquet with capacity for 2,000 seated guests in Donsö harbour will wrap up the first day of activities.

THE THEME OF DSM2022 is Clean Ocean with Future in Sight. Shipping is facing some tough challenges on its journey towards reduced or even net zero emissions of greenhouse gases. Alternative fuels or energy sources have to be introduced in international shipping. All options must be considered and investigated. There are already proven technologies and solutions where a lot of research and testing remains before becoming

viable. We have already collected experience of electric power with batteries, hybrid solutions and alternative fuels such as methanol and different types of biofuels. A lot of research and testing is going on with for example hydrogen and ammonia. It seems obvious that we in the future will see a lot of different fuels and machinery solutions. Distribution and bunkering will be much more complex with many different fuels and power sources in play, compared to when virtually all merchant vessels are powered by diesel engines using HFO or MDO.

WE MUST NOT forget wind power either. It is the only “new” power source that has proven to be fool proof during centuries. Indeed, liner traffic with tight schedules was not an option in those days, but with auxiliary power sources wind powered vessels has every opportunity to be successful. It is quite possible that the Swedish Oceanbird-concept will be a game changer in this field. The wind is a true renewable energy source. By automation and using new technologies for harnessing the infinite power of the wind it is possible to design hi-tech vessels that can be operated by their crews basically in the same way as every other vessel.

THERE IS ALSO a lot that can be done to improve energy efficiency of ships through operational measures. The need to further optimize the logistic chain and its planning, including ports is also identified by IMO as a candidate short-term measure, along with the initiation of research and development activities addressing marine propulsion, alternative low-carbon and zero-carbon fuels, and innovative technologies to further enhance the energy efficiency of ships.

Pär-Henrik Sjöström
Editor-in-chief

The Shipdex protocol

The standardisation, integration, and dissemination of manufacturers' technical documentation into the new digital ecosystem is a critical step that is still missing.

TEXT: MATS BROBERG, S1000D INFORMATION MANAGER AT SSPA SWEDEN



▲ The author Mats Broberg, S1000D Information Manager, SSPA Sweden AB.

MAJOR INDUSTRY SECTORS are currently transforming their business models using a wide array of new and emerging technologies – and the shipping industry is no exception. Today's ships are increasingly becoming connected hubs of data that is shared, refined, and repurposed, which drives automation and optimization of services, logistics, and decision models. This creates an entirely new maritime ecosystem, where concepts such as AI, IoT, big data, and digital twins play major roles, and where many manufacturers' and subcontractors' traditional focus on "as designed" and "as built" in the value chain now also needs to include "as operated" and "as maintained". However, there is one missing piece in the puzzle: the standardization, integration, and dissemination of manufacturers' technical data and maintenance documentation into this new ecosystem.

WHILE MANUFACTURERS' TECHNICAL documentation may not be the most exciting part of the digitalization of the shipping industry, it is still one of the most crucial – and a fundamental requirement for a truly digitalized industry. There is no widely adopted standard, which is not only a technical integration issue but also a matter of quality. For decades, IMO, IACS, and other organizations have stressed the importance of improving the quality of third-party technical documentation, with regard to language and terminology, information structure, configuration and revision management, and illustrations.

IN 2000, IACS published its *Guide for the Development of Shipboard Technical Manuals* (IACS Rec. No. 71), which was followed by IMO's *Shipboard Technical Operating and Maintenance Manuals* in 2007 (MSC.1/Circ.1253), among others. And IMO's ISM code, which was adopted as early as 1993 – following the capsizing of the ferry *Herald of Free Enterprise* in March 1987

– contains sections on document control and maintenance of ship and equipment.

IN 2004, CHIRP, the UK's Confidential Human Factors Incident Reporting Programme, published the report *Marine Operating & Maintenance Manuals – Are They Good Enough?*. In this report, which was based on interviews with manufacturing associations and IACS, as well as significant research into maritime incidents, CHIRP paints a disappointing picture. When analyzing data from MAIB (UK Marine Accident Investigation Branch) between 1990 and 2004, CHIRP found 44 incidents where documentation was either lacking, hard to understand, or inadequate. Of these, 22 led to accidents to persons. Another reason for the generally low quality may possibly be traced to the fact that machinery installed on seagoing vessels does not need to comply with the EU's Machinery Directive (2006/42/EC), which sets strong requirements on documentation in its annexes.

TEN YEARS LATER, in 2014, CHIRP writes in its *Maritime Feedback* newsletter No. 35 that "the industry appears to have made little progress addressing these concerns that have a significant impact on the ability of seafarers to conduct their work in a safe and efficient manner." CHIRP then repeats its recommendations from the 2004 report, which include the importance of a common standard, a simplified vocabulary, a relevant authority verifying the compliance of documentation, and training regimes to familiarize seafarers with the standard.

ENTER SHIPDEX. THE Shipdex protocol is based on Issue 2.3 and, for some parts, Issue 4.1 of the S1000D specification – proven over more than 30 years and widely used in the aerospace and defense industry for major platforms, including ships such as the British Type 45 destroyer, where the documentation amounts to the equivalent of 120 000 pages. Today, Shipdex is the only viable solution that provides a non-proprietary standard that can easily be adopted by major manufacturers, a modularization strategy that integrates

Shipdex will add considerable value to several different areas of the new maritime ecosystem

excellently into the framework of the digitalization of the maritime industry, and structured authoring that enforces many of the recommendations and findings of IMO, IACS, and CHIRP. For small manufacturers that often do not have the resources to set up a Shipdex workflow for their technical documentation, rewriting and conversion services as well as expertise and advice are available from consultants.

WHILE THE ADOPTION of Shipdex has been slow – MAN, Kongsberg Maritime, Yanmar, and Winterthur Gas & Diesel being notable exceptions – this has nothing to do with any technical deficiencies of the protocol, but is largely due to the somewhat difficult question of who should take the lead and set Shipdex as a firm requirement, as several key stakeholders are involved in newbuilding orders – manufacturers and subcontractors, shipyards, ship owners/operators, and classification societies. The jury may still be out on this issue, but it is not an unreasonable viewpoint that the responsibility may lie with one of the two last-mentioned entities.

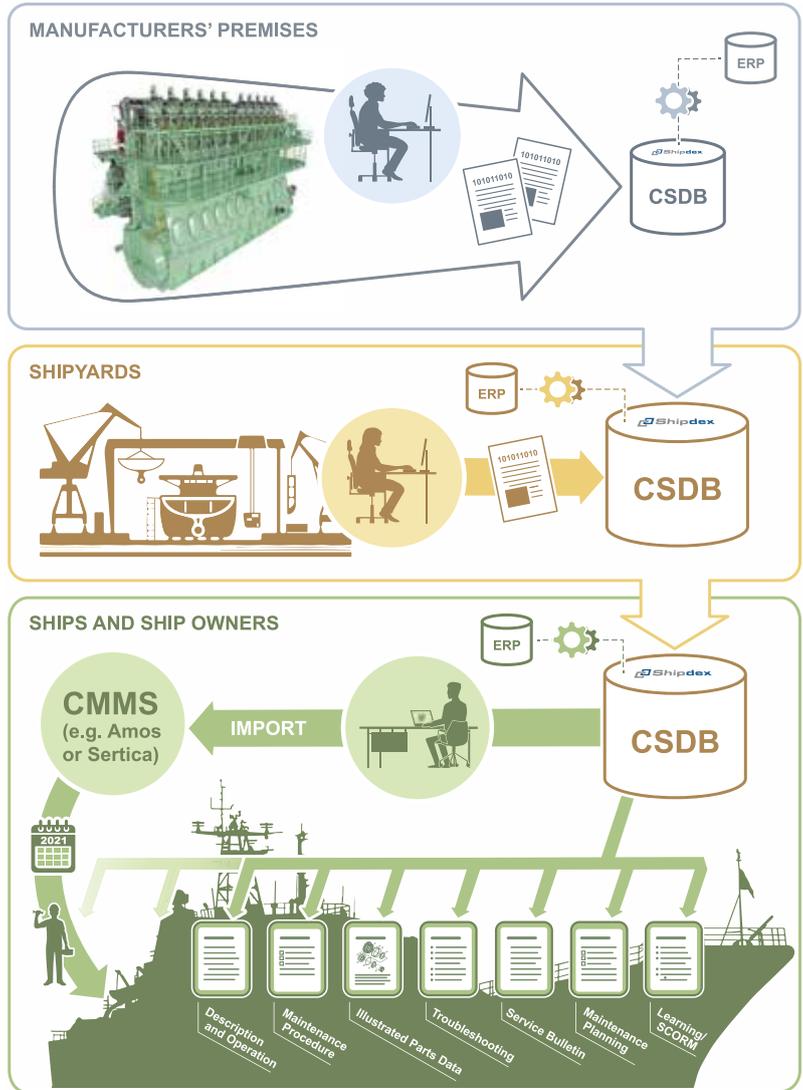
THE SHIPDEX PROTOCOL lays out processes and methods for the production, maintenance, quality assurance, data transfer, and presentation of technical documentation. Enforcing XML (the eXtensible Markup Language), the protocol separates *form* (i.e., layout) from *content*. One of the key concepts of Shipdex is the *data module*, which is a small container of information, such as a task or a description.

THE DATA MODULE concept also paves the way for vast possibilities for reuse, where data modules describing certain functions of, for example, an engine can be reused for the documentation of other engines sharing the same functions. Data modules are maintained under configuration and revision control in a CSDB (Common Source Data Base), and technical publications can be generated from the CSDB in a variety of output formats, such as print, PDF, and HTML for desktop, tablet, and mobile devices. Furthermore – and this is a compelling advantage of Shipdex – data can be imported into ships' and ship owners' CMMSs, such as Amos or Sertica, thus enabling maintenance management systems to be a single point of information for an entire ship's technical systems and installations.

Shipdex will add considerable value to several different areas of the new maritime ecosystem, and is likely to be a crucial prerequisite for the successful digitalization of the shipping industry as a whole.

TO SUMMARIZE, SOME of the advantages of Shipdex include the following:

- Based on S1000D, which is a well-tested concept



and technology with more than 30 years of extensive usage.

- An open, non-proprietary standard for collaboration and longterm preservation of digital information.
- A modular information approach with a strong focus on single-sourcing and reuse.
- A hierarchical breakdown of technical information into data modules and information types.
- A process of structured authoring that enforces an analytical approach to information.
- Complete information lifecycle support – production, maintenance, quality assurance, data transfer, and presentation.
- Seamless integration of manufacturers' technical documentation into ships' and ship owners'/operators' CMMSs.

For more information, visit www.shipdex.org. ■

▲ A typical Shipdex workflow. Technical illustration: ©2021, Leif Hertz, www.devarion.se. Photo: The MAN 11G90ME-GI-EGR engine, ©2021, MAN Energy Solutions, www.man-es.com, and used with kind permission.

Article originally published in *Digital Ship*, Vol. 21, No. 5, April/May 2021.

Research on hydrogen operation of ships

Ventrafiken's RoPax ferry Uraniborg is in the center of the study, which will create conditions for sustainable shipping.

TEXT: ELLINOR FORSSTRÖM, PROJECT MANAGER, RISE



▲ The author Ellinor Forsström, Project manager, RISE.

PRIVAT

THE PROJECT "SAFE Hydrogen Installation onboard" investigates how a new fuel cell-based driveline can replace conventional diesel operation on board an existing ship.

At the center of the study, which is ongoing in 2021, is Ventrafiken's RoPax ferry Uraniborg, which operates the Landskrona-Ven route in Skåne. The project aims to develop a theoretical concept and at the same time investigate safety aspects for a hydrogen-based driveline. The goal is to create a "handbook" for those who are considering scrapping fossil alternatives and instead switch to hydrogen operation. Behind the study is RISE, Research Institutes of Sweden, IVL and CLOSER, and the project is part of the Swedish Transport Administration's industry program Sustainable Shipping, which is run by Lighthouse.

THE PROJECT WILL create conditions for sustainable shipping from all aspects of sustainability; environment, social issues and the economy. The environmental perspective is particularly strong as the fuel cell concept that is developed also takes into account how the hydrogen gas is produced and will be based on so-called green hydrogen gas, ie it is produced by electrolysis driven by renewable energy sources. In this way, the ship's propulsion machinery is largely emission-free. Furthermore, noise and vibration are expected to decrease compared to a traditional, fossil-based driveline.

Social sustainability also has a prominent role in the project as great focus is placed on safety. A comprehensive risk identification will be developed for the proposed concept in its entirety, both for crew and passengers. Here, the question of how to bunker the hydrogen gas in a safe way will also be investigated.

Financial sustainability is also part of the project. Sweden has very good expertise in fuel cell and battery technology, while we have a well-developed shipbuilding industry when it comes to rebuilding and installing advanced systems. This is an international competitive advantage and business opportunity in the transition to sustainable shipping. To take advantage of this, the



■ Ventrafiken's RoPax ferry Uraniborg.

VENTRAFIKEN

project will, in parallel with the concept installation, also create a national network for maritime hydrogen in order to increase knowledge in the industry.

AT PRESENT, THE project has reached half-time and a first proposal for a hydrogen concept has been developed. It is based on route data and energy statistics collected on board Uraniborg using an energy monitoring system. At present, it leans towards a driveline that consists of both fuel cells and batteries to effectively meet the varying power output. The exact distribution remains to be determined and will be decided in parallel with the safety investigation.

According to the project group, the broad support and interest from the industry is a prerequisite for a successful result. To help them, the project group has an unusually large reference group with representatives from the entire industry, everything from technology suppliers to classification societies. During the project, these have taken an active role in the work through workshops, both when it comes to the design of the concept and issues concerning safety. ■



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Clas Möller
CEO Tärntank Ship Management



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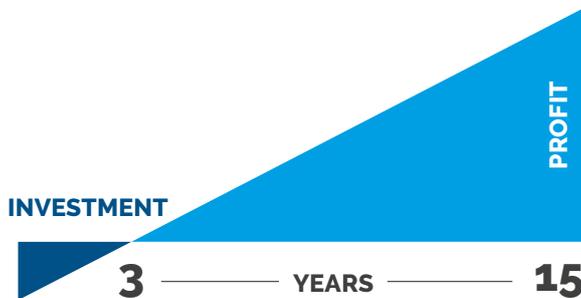
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How to evacuate safe on passenger ferries

Passenger differ widely in age and mobility, and alcohol intake may lead to temporary impairments.

TEXT: ANNE DEDERICHS, RISE

THE PROJECT SEAS (Safe Evacuation at Sea) is funded by Trafikverket. It deals with surveying and improving evacuation safety for passengers on ferries and cruise ships, accounting for a realistic demographic profile of travelers with respect to age and impairments of the passengers, but also their potential influence of alcohol. The partners are RISE and Lund University through CERTEC, Viking Line, Stena Line, Ekerölinjen supported by the disability right organisations as Synskadades Riksförbund, Hörselskadades Riksförbund and DHR (Delaktighet, Handlingskraft, Rörelsesfrihet).

Despite prolonged efforts to develop regulation that combat the occurrence of fires on RoPax ships, statistics indicate that incident numbers have reached a plateau. Since 2014, 15 accidents with ro-ro ships, 14 with ordinary ferries and 15 with cruise ships have been documented. Onboard fires can spread very quickly, and the crew may be forced to fight the fire and evacuate the passengers without external aid. Passengers differ widely in age and mobility, and alcohol intake may lead to temporary impairments. It has been shown that people with temporary or permanent disabilities are more likely to suffer in case of fire or other emergency situations. This creates a need of evacuation practices, environments and tools that are suitable for heterogeneous populations.

Research and praxis have provided a number of studies dealing with evacuation in case of emergency, including evacuation from ships. However, there are no studies on evacuation of mixed populations from ships and few studies on the evacuation of intoxicated persons.

IN THE EVENT of a fire, the crew must fulfil their designated roles and facilitate the mustering and potential evacuation of passengers, all the while maintaining normal functionality of the ship and its systems. Evacuation is associated with many challenging activities, such as guidance, communication, transportation of passengers, preparation of lifeboats and embarkation. Hardly any studies have been found that examine these activities from a socio-technical perspective - that is, how crewmembers working to evacuate the passengers are helped or hindered by the safety



ANNE DEDERICHS

organization and the design of onboard environments, systems and equipment.

THE CURRENT PROJECT deals with personal safety on board ferries and cruise ships, accounting for the actual populations on board of the ship. In this work, the principle of “universal design” will be followed. Universal design is meant to create inclusive products, services and environments that can be used by all people, without the need for adaptations or specialized equipment. This is a particularly relevant need on ships where space is very limited. Accessibility of a structure is not an assurance for egressibility. Designs change when an emergency occurs, meaning for example that certain paths may not be accessible due to obstructions, or the planned evacuation route does not follow the routes used under normal operation. The benefits of Universal design are more pronounced in emergency situations, seeing that time can be saved when separate solutions for separate target groups can be avoided.

THE PROJECT WORKS towards generating a more sustainable maritime transport system through measures to improve the accessibility and egressibility of ferries and cruise ships. It involves the following questions.

One webinar has been held in the project on late 2020, and other seminars are planned for the present and coming years.

If you want to be informed on the project, join the Linked in-group: Safe Evacuation at Sea- Accounting for Representative Populations on Board. ■



PRIVAT

▲ The author Anne Dederichs, RISE.

She is researching the fuels of the future

One who knows more than most about how shipping should be able to halve its greenhouse gas emissions is Maria Grahn, researcher in energy systems analysis at Chalmers in Gothenburg. She thinks it's possible but believes that a mix of different solutions is required.

TEXT: MAGNUS SANDELIN

BY 2050, INTERNATIONAL shipping's greenhouse gas emissions will be halved, based on the 2008 level. This has been decided by the United Nations International Maritime Organization, IMO.

The industry conducts intensive research on various non-fossil fuels. There is regular news about shipping companies and other companies testing alternative solutions.

But what fuel will actually apply to the shipping of the future?

We asked the question to Maria Grahn, researcher in energy systems analysis at Maritime Environmental Sciences at Chalmers University of Technology in Gothenburg. She is one of the foremost experts in Sweden in the field.

“What is exciting about shipping is that there are so many open minds. There are no preconceived notions about fuels that have already been tried and judged, as it does in the road transport sector, for example,” she says.

MARIA GRAHN SAYS that she has thought a lot about which fuels will be most likely for shipping in the future, but also for other modes of transport. With pedagogical diagrams and illustrations, she shows which alternatives have the best conditions to make an impact. She points out three energy carriers that will probably be the main alternatives: hydrogen, electricity and biofuels/electrofuels.

“We have opportunities to replace fossil fuels with the help of renewable fuels that contain a carbon atom, biofuels or electrofuels. And we have those that do not contain a carbon atom, electricity, which can either be used directly as battery-electric propulsion or converted to hydrogen.”

“There are many different types of biofuels and electrofuels, enough for the entire transport sector, especially in combination with reductions in energy

What is exciting about shipping is that there are so many open minds.

demand and battery-electric solutions,” Maria Grahn informs.

She adds that fuels that can be mixed with conventional fuels have an advantage over others.

“They are called drop in. It can be either LBG that you mix into LNG, or it can be alcohols. Ethanol can be blended into petrol for part of the transport sector. You can mix butanol into diesel or petrol, and you can mix biodiesel, HVO, into existing diesel.”

“When you mix them, people do not have to change their behavior. You do not have to learn how to refuel gas or buy an electric car but continue to use liquid fuels that are renewable without even knowing it,” she says.

OTHER FUELS THAT have an advantage are those for which there are already an existing fuelling infrastructure.

“There is an infrastructure for biogas, and we have started to build charging posts for electric vehicles when it comes to road traffic. So, if infrastructure already exists, it's easier for a fuel option to expand.”

Likewise, the fuels for which there are already a larger context are easier to break through. Maria Grahn takes as an example an EU directive that all Member States must have a plan for charging posts, and filling stations for LNG and hydrogen.

“So, if Sweden wants to invest in, for example, ethanol but the EU does not prioritize that, it will be much more difficult.”

Her conclusion, as to which fuel or fuels will domi- ▶

Maria Grahn,
Chalmers.



nate shipping in the future, is that there will be several parallel solutions. Different solutions simply suit different modes of transport or segments of shipping differently.

“I can imagine that it would be beneficial to use fuels that do not emit other harmful emissions such as NOx and soot for transport modes in areas where there are a lot of people, such as boats inside cities and city road transport. There it is most reasonable to electrify different solutions, which also would lower noise. It could be electric ships or boats moving people.”

“And when it comes to electricity, you can invest in both battery-electric solutions and hydrogen for fuel cells, both of which drive an electric motor. Then there will be two electrical solutions that I think could exist in parallel.”

But when it comes to long-distance transports for, among other things, container vessels, Maria Grahn predicts that the liquid fuels will be most suitable.

“The liquid fuels, biofuels and electrofuels are the ones that are likely to make up the majority of the marine fuels. They have a great advantage since they have high energy density, demanding less space onboard compared to hydrogen and battery-electrics solutions, meaning you get more fuel per unit of volume and weight,” says Maria Grahn.

ON THE OTHER hand, two of the liquid alternatives that are currently the most talked about in shipping, LBG and ammonia, are not something that will be of decisive importance in the future, Maria Grahn believes.

▼ The LNG-bunker vessel Kairos.



PAR-HENRIK SÖSTROM

The problem is that there are so many who want to use the bio-raw material for other things.

“Since there is already an infrastructure for LNG, it is easy to switch to LBG, ie liquid biogas. The problem is that the biogas that comes from our household waste is only sufficient for a fraction of the need that exists.”

An alternative would be to use forest raw materials to produce LBG, but this comes with other challenges connected to e.g. sustainable forestry and current lack of interest in investing in large scale gasification facilities (as e.g. the recently terminated project GoBiGas in Gothenburg).

“Theoretically, the global supply potential of biomass is enough to be able to make fuels for the entire shipping sector. The problem is that there are so many who want to use the bio-raw material for other things, such as bioplastics or bio-based heat production for industries, and then the biomass is not enough,” she says.

WHEN IT COMES to ammonia, Maria Grahn sees several difficulties.

“There are major practical challenges with ammonia. For example, it is highly corrosive and toxic, so it is easier to use other fuels, such as methanol or biodiesel. But I would not be surprised if ammonia still has a future, because the shipping industry is fantastic at being curious and trying new things,” says Maria Grahn.

On the question of whether the goal of halving the carbon dioxide of shipping by 2050 is a realistic goal, Maria Grahn has become more positive in recent years.

“If you had asked me five years ago, I would have answered that historically it takes a long time to change, and I had also said that the shipping sector is traditionally a bit conservative, and then I would probably have been more hesitant. But from what I have seen in the last five years, there is a huge drive in the shipping sector that surprises me. So, I do no longer think it is impossible.”

“It is good with a mix of different solutions. Sometimes a broad range of options can be seen as too scattered. Someone is testing methanol, someone is testing hydrogen, someone is testing battery electric solutions. But to cope with the climate issue, it is the fossil fuels that must be removed, and then it does not matter that it is scattered. I think it is important to remember that this palette of solutions is something to cherish, not something to try to get away from”, Maria Grahn concludes. ■



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Ways to make tanker cargo handling smarter

SMTF and SSPA are conducting a study with the aim to optimize cargo handling on tankers with the help of AI, machine learning and system integration.

TEXT: ANNA JANSON



ANNA STIGE

▲ Terntank's Ternsund and Ektank's Ek-River in the Port of Gothenburg. Both shipping companies participate in the study.

Cargo handling on tankers is a complex process that must be carried out safely under time pressure, with many parameters to take into account during planning and execution. Although modern tankers have advanced onboard hardware and software systems for planning, monitoring and operating of cargo handling, the process still places great demands on the competence and experience of the operating officer. Several of the work steps are performed manually and some of the required information needed may only be found on paper.

AN ONGOING STUDY conducted by SMTF and SSPA, both parts of Swedish research institute RISE, is looking for ways to optimize the cargo handling process on tankers by making it smarter with the help of AI and machine learning.

The project is now in its final stages of data collection and analysis. Nicole Costa, researcher at SSPA, says that the outcome will be a concept and that further studies will be required.

“The intention of this project is to be a concept study and from there to look into the possibility of continuing the project. Now we are investigating the needs and how the current systems work”, says Nicole Costa.

THE STUDY IS done in collaboration with several actors from the industry, such as shipping companies Ektank and Terntank, suppliers and manufacturers of cargo handling hardware and software. Ektank and Terntank have provided access to ships and crew for the researchers to gather knowledge.

“The idea to investigate tanker cargo handling optimization was born from the contact between Fredrik von Eiern at SMTF and his network of industry partners. We quickly got an uptake of participation from industry partners when we applied for project funding.”

Although final analysis of the study's results is yet to be completed, Nicole Costa says they have found several areas with optimization potential.

”We have identified gaps both in the planning and the execution of cargo handling. There are opportunities to improve the existing systems.”

SHE DESCRIBES THE planning stage of cargo handling as a complex process with many decisions to make for the officer on watch. Based on the requests that they receive for carrying the cargo from A to B, they have to consider how to organize often multiple cargo types in different tanks taking into account trim and stability according to the ship’s specifications, current conditions and also to rules and regulations.

“That’s an area where we see major possibilities for facilitating the task and saving time by digitalizing and integrating information that exists already”, says Nicole Costa.

They also see room for improvement in the execution part of the cargo handling process.

“There may be possibilities to offer more decision support and automation during execution, when the chief officer needs to control valves and pumps. What we are proposing is to use machine learning, AI and treatment of big data, which they already have but today it is not part of the system to look into historical data and provide suggestions based on that data.”

CARGO HANDLING ON tankers is generally successful and uneventful, due to the professional work and

Today it is not part of the system to look into historical data and provide suggestions based on that data.

experience of the operators, Nicole Costa points out, although setbacks can occur. By providing systems with better utilization of data and information, and with decision support, the cargo handling performance can be optimized and the risk of setbacks or mishaps may be reduced.

IN THE STUDY they also investigated ways to make the information exchange and reporting more seamless and thus save time. This investigation will be continued in a future separate project.

“A system that uses information more efficiently also makes decisions faster”, says Nicole Costa.

The plan for the future is to apply for funding for the next stage of the project.

“The next stage would be a proof-of-concept study. We would still be working with the industry and try to develop a functioning prototype that we can test with users and see our proposed functionality in operation to be able to see if the concept really works and brings the benefits we intended.” ■



▲ Nicole Costa, researcher at SSPA.

Project details

The study Autonomous Cargo Handling on Tankers started August 2020 and will finish by the end of 2021. It is funded by Trafikverket. Project coordinator: Fredrik von Elern, SMTF. Project partner: Nicole Costa, SSPA. Industry partners: Bureau Veritas, Ektank, Emerson and Terntank, among others.

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Future proof and R&A Ready

What does a future proof container feeder vessel look like? Kongsberg Maritime's answer is a 2000 TEU open top vessel with multiple fuel options.

TEXT: PÄR-HENRIK SJÖSTRÖM



▲ Oskar Levander, SVP Business Concepts, Kongsberg Maritime.

A HOT TOPIC within the shipping industry is no doubt the fuel transition as a consequence of the global green trend. Oskar Levander, SVP Business Concepts and in lead of the GreenShip strategy at Kongsberg Maritime, knows that ship owners face a lot of new challenges. Uncertainty is by no means the least of them.

“The toughest nut to crack today is what will turn out to be the fuel of the future. There are many alternatives but there is no silver bullet, which is the one and only right solution for all ship owners. They have to consider the existing options and look into the crystal ball as well when trying to figure out which fuels will be available, how much will they cost and which one would be suitable for their actual type of ship.”

He clarifies that a whole new generation of vessels is needed for the transition to be realised.

“Whatever the future fuel solution will turn out to be it will be more expensive than the present. All possible measures have therefore to be taken to further reduce the fuel consumption.”

Oskar Levander points out that the existing regulations set by IMO do not actually demand a fuel transition.

“However, it is obvious that there will be much more stringent regulations regarding environmental issues in the future. To achieve them we need a shift towards low carbon fuels. Still there is a large uncer-

Whatever the future fuel solution will turn out to be it will be more expensive than the present.

tainty around the preferred fuels. There will most likely be a more diverse fuel palette in the future.”

He adds that there also is an uncertain time frame.

“The fuel transition is indeed inevitable, but the pace of the introduction of low carbon fuels is driven by new regulations or market instruments.”

FOR THE TIME being Oskar Levander identifies a couple of options which seem to be more likely than the other ones. An already proven solution is battery power. He thinks electrical power from batteries is an interesting and competitive solution for vessels trading on routes where the distance is less than 100-150 NM.

“You also have to reduce your speed. For example a battery powered ro-ro vessel with 1500 lane meters cargo capacity could offer a transport cost similar to that of a same sized conventionally powered newbuilding. I think it would be a good value proposition.”

For seagoing vessels on longer routes Oskar Levander identifies mainly three low carbon fuels for



KONGSBERG

the future: Methane, ammonia and methanol. He also sees three pathways to produce low carbon fuels.

“They are carbon capture, renewable electricity and bio processing. It is possible to manufacture the same fuel using several of these pathways, for example methane can be produced using any of these three pathways.”

THE MILLION DOLLAR question is however what the ship owners should invest in today. Oskar Levander thinks that there are future proof solutions. He and his team has developed such a concept for a container feeder vessel.

“Many ship owners have asked what to invest in today if they want a future proof vessel. Their customers, in other words the cargo owners buying the transport by sea, are more and more starting to demand green shipments, but not so many of them want to pay extra for that. They also want to be prepared for upcoming technology for remote operation.”

Kongsberg Maritime’s future proof container feeder concept is prepared for future upgrades and has space reservations for installations of new equipment. It is also digital ready with all sensors and an upgradable digital platform. The initial choice of fuel is quite obvious in Oskar Levander’s opinion.

“We think that LNG is a good solution today. It provides an efficient way to reduce emissions compared to diesel fuels and it is at once possible to shift to low carbon fuels such as LBG or synthetic LNG. With a dual fuel engine it is also possible to operate on HVO. We can also install an LNG tank which may be converted for ammonia in the future. In addition to that we have space reservations for additional tanks without reducing the cargo capacity.”

THE DUEL FUEL, two stroke and slow speed main engine eliminates methane slip. Under way electric power is generated by a hybrid shaft generator (HSG) system with take off (PTO) and boost (PTI).

“The PTI enables an addition of a battery pack for which we also have made a space reservation. After that we are able to operate with zero emissions in the port areas. This is another example of easy preparations without making investments in expensive equipment. What we offer is a vessel that already from the very beginning is cost effective and may be flexibly upgraded to virtually zero emissions.”

The open top design reduces weight of hatches and enables adequate stack height even if there are void space under the hold for additional batteries and LNG-tanks. The absence of hatches is compensated by slightly larger beam and length.

“I think that the open top design will be much more attractive in the future when the need for more space for fuel is increasing,” Oskar Levander says. ■

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Silent@Sea – a study of the sound of ships

In the project Silent@Sea, IVL Swedish Environmental Research Institute, Rise and VTI will analyze noise differences between sister vessels with different propulsion.

TEXT:CHRISTOPHER KULLENBERG ROTHVALL

Underwater noise is a growing environmental issue in correlation with increased shipping. The topic have gained more attention recently, but lack of empirical data and studies prevents effective policy instruments. In October 2021, the project Silent@Sea, funded by Trafikverket, the Swedish Transport Administration, was started to measure noise and vibrations both above and below the sea surface from a number of tankers, passenger ferries and commuter ferries in Sweden.

“There has been a lot of talk about electric propulsion and lower levels of underwater noise, but there is no studies or measurements of how much noise it actually reduces. In those measurements that have been made, have quite small electric vessels been compared with much larger diesel vessels and then is it quite obvious that the electric ones generates lower levels of noise. We felt that this needed to be investigated more carefully,” says Torbjörn Johansson, researcher at IVL, Swedish Environmental Research Institute.

TO MAKE A SCIENTIFIC study of how different types of propulsion systems generates underwater noise, the researchers decided to make a comparison between sister vessels with different propulsion.

“We thought that if we could find sister vessels with different propulsion, would it be possible to prove that the expected differences in noise levels are depending on the propulsion. Otherwise is it difficult to know the exact source of the differentness,” says Sanny Shamoun, Human Factors specialist at IVL.

The sister vessels in the study are owned by four different shipping companies in Sweden. In the first case, the researchers will study Västrafik’s commuter ferries in Gothenburg. The ferry named Elvy has electrical propulsion with batteries as power source, while the sister ships Äveli and Älvfrida has diesel propulsion. The next series of vessels are located in Gullmarsfjorden in Bohuslän, where the STA Road Ferries within the Swedish Transport Administration operates the hybrid-electric road ferry Tellus and the diesel-electric sister vessel Neptunus. Forsea will also participate, a shipping company with ferries between Helsingborg and Helsingör. Both the sister vessels Aurora and Tycho

It's also interesting to see if there are any effects for the crew on board.

Brahe runs on batteries, while the ferry Hamlet, which is about the same size, runs on diesel.

In addition, the researchers will also study LNG-ships from Furetank to make a comparison of the effects between diesel- and LNG-propulsion.

“In that case, are we going to compare vessels with a roughly similar specification to get another dimension about how LNG-operation differs from MGO-operation. In addition, several of the ships have the opportunity to run on different energy sources so we can really get comparable measurements,” says Torbjörn Johansson.

THE RESEARCHERS WILL stretch the study even further from only studying noise that radiates into the air and water. They will also study noise in the environment on board the vessels, both from a work environmental perspective and from a passenger perspective.

“If you can improve the environment around the vessel with this kind of propulsion, is it also interesting to see if there are any effects for the crew on board. We hope that our results from the study will motivate more people to choose a career at sea,” says Sanny Shamoun.

The measurements will be carried out at night to minimize disturbing ambient noise. How factors such as temperature, air pressure and wind affect the sound propagation, will also be measured.

“We will measure during eight to twelve hours on each location. Usually, you need the vessel to pass the station a couple of times at different speed and distances,” says Torbjörn Johansson.

The perceived noise on board the ships will be analyzed both through measurement and interviews.

“We will interview both crew and passengers about how they experience the environment on board, specially if they have experience from both sister vessels,” says Sanny Shamoun. ■

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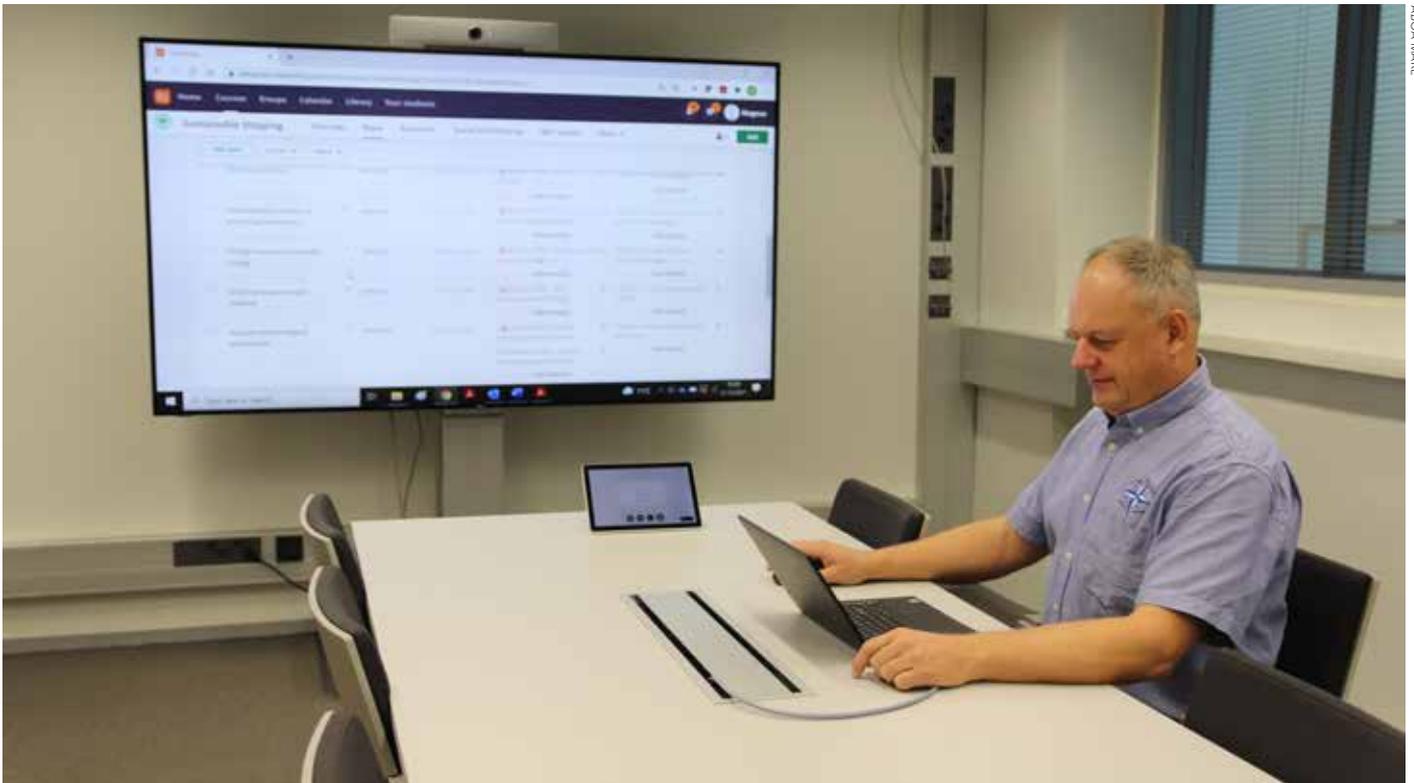
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Training is essential for sustainable shipping

Sustainable shipping is not just about green technology and zero carbon fuels. It is also about training and changing old attitudes.

TEXT: PÅR-HENRIK SJÖSTRÖM



ABOA MARE

▲ training Director Magnus Winberg, Aboa Mare, reviewing the online course material.

The Maritime Academy and Training Center Aboa Mare in Turku, Finland, has launched a Sustainable Shipping Course. It will provide the participants with knowledge of sustainable development and its application on shipping.

“Even if sustainability is embraced by the management of a shipping company it does not mean that the whole organisation has the same understanding about the background and the work towards a common long term goal. A change of attitude may be necessary within the whole organisation and it will be difficult to proceed unless everyone understands why. Training is essential,” summarizes Leif-Christian Östergård, Manager of Marketing and Sales at Aboa Mare.

ACCORDING TO MAGNUS Winberg, Training Director, Aboa Mare, it is crucial to work towards sustain-

ability both on board and in the land organisations. He underlines especially the environmental and social pillars of sustainability.

“It is better to work with attitudes than just issue orders from above. If you know the background and why you are doing certain things it is much easier to achieve results. A key component to success is of course leadership and engaged officers on board.”

Magnus Winberg thinks that is important for Aboa Mare to take an active part in the work for a sustainable development because it will be a key issue in shipping for decades to come.

“Sustainable development is one of the keywords all over the world and obviously also in shipping. It is based upon the 17 sustainable development goals of the United Nations, which IMO also has agreed on with emphasis on a number of them.”

The main focus of Aboa Mare's Sustainable Shipping Course is environmental sustainability. In shipping it is regulated mainly through The International Convention for the Prevention of Pollution from Ships, MARPOL Appendix VI, where the focal point is emissions to the air.

"This includes for example The Energy Efficiency Design Index (EEDI) for new ships and the Ship Energy Efficiency Management Plan (SEEMP) to improve energy efficiency of a ship in a cost-effective manner. The latest addition is EEXI, Energy Efficiency Index for Existing Ships, entering into force 2023."

He says that the course provides the basics for understanding sustainability.

"The course provides the background that everyone has to know about it. After that the environmental part of sustainability is much about technology and how to operate the ship. The idea is to continuously improve energy efficiency."

MAGNUS WINBERG HELD a key role in developing the course. He explains that one objective is to guide the participants in current and future IMO and EU regulations and help them to implement new regulations in the everyday operations.

"The participants will become familiar with technical and carbon neutral solutions and learn how

to operate ships in a sustainable way. They will also be prepared to adopt new attitudes and affect company culture to achieve future goals."

The course is intended for both land and sea based personnel.

"Because we want to make it available for as many seafarers as possible it is an online course using remote learning through our Virtual Learning Environment," Magnus Winberg explains.

He emphasizes that the course is not mandatory by STCW, but it has aroused interest among shipping companies. He is convinced that a sustainable operation will bring a competitive edge to the business in the long run.

"I think that the shipping companies' customers who buy transports will be asking more and more about how they handle issues about sustainable development. The interest is great but very few know how to tackle the problems. Our part is to offer a frame course which can be tailored for each shipping company."

He hopes that courses like these will be redundant in the future.

"I suppose sustainability issues will permeate society as a whole, as they will be self-evident for the younger generations. Until then there may probably be more courses in sustainability and they must be continuously be updated." ■

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DSM2022 – Clean Ocean with Future in Sight

Financing of new icebreakers and transfer of goods from road to sea. Last spring, a year before the next parliamentary election, the Swedish political parties answered some questions about their view on Swedish shipping industry in the future.

EDITOR: MAGNUS SANDELIN

Political party survey:

The future of Swedish shipping

1. How do you see the role of shipping in the future Swedish transport system?

2. Should politics act in any way to move more goods from road to shipping? How in that case?

3. How do you think the new icebreakers should be financed?

4. How should the Swedish Maritime Administration cover its costs?

5. Should politics act with instruments or in some other way for Swedish shipping to achieve the IMO's goal of a 50% reduction of greenhouse gases by 2050? How in that case?

6. Should passenger shipping companies receive more support due to the reduced travel caused by covid 19? How in that case?

7. Do you think that the tonnage tax should be developed, and if so, how?



IN A SURVEY that we sent to the eight political parties in the Swedish parliament last spring, they were asked to answer seven questions that are important for Swedish shipping industry.

When it comes to the future role of shipping in the Swedish transport system, there is a general agreement about the great importance of shipping.

“Scandinavia and Sweden are surrounded by water and the shipping industry is therefore of central importance for our prosperity and our trade,” Centerpartiet answers.

“It is very important, not least for the adjustment of transports that we must make to achieve the climate goals,” is the answer from Vänsterpartiet.

And from Kristdemokraterna the answer is:

“Shipping has an important role in the future transport system because shipping has the capacity to transport very large volumes of goods, not least to and from Sweden.”

ON THE OTHER hand, the views differ between the political parties about, for example, how the next generation of icebreakers should be financed.

“If you look at the Swedish Maritime Administration’s finances, it is not possible for the Swedish Maritime Administration to finance new icebreakers. We have suggested that the icebreakers, including the operation of them, should be in the national infrastructure plan”, Sverigedemokraterna answers.

Moderaterna have the same opinion:

“They will be included in the plan and financed within the current funding framework, preferably in collaboration with Finland, which is also in the phase of renewal.”

Centerpartiet, on the other hand, believes that it is also an issue for the business community:

“The financing of icebreakers is an issue for both the business community and the state, and the division

between them the parties must settle. In the procurement, all relevant regulatory needs should be taken into account and done in close dialogue with freight transporters, industry, and more.”

Socialdemokraterna do not give a clear answer on how the financing should take place:

“The icebreaker fleet we have is too old and needs to be modernized. The government is preparing for investments in new icebreakers, in collaboration with Finland and Estonia. The common icebreaker capacity of us is important for shipping throughout Sweden. The government has now submitted an infrastructure proposition to the parliament, which sets out the framework for the coming planning period. No individual objects or icebreakers are specified, but now the Swedish Transport Administration must return with an action plan.”

ON THE QUESTION of whether the shipping companies should be supported more due to reduced revenues due to the pandemic, Miljöpartiet refers to the government’s previous general measures:

“The government has mainly chosen to work with general support such as adjustment support and short-term layoffs to help companies that lost revenue during the pandemic.”

Liberalerna, on the other hand, are open to the need for further action:

“Covid-19 has hit hard on passenger traffic. According to Trafikanalys, shipping may need to raise prices to repay loans and compensate for losses in connection with the pandemic, which may affect the transfer of freight transport to shipping. We have contributed to the shipping industry receiving financial support during the pandemic, but more may be needed.”

YOU CAN READ the complete answers to our questions in the following entries.



Socialdemokraterna

1. SHIPPING IS and will continue to be an important part of the Swedish transport system. About 90 percent of the country's export and import goods is transported by sea and the Swedish government aims to increase the shift from road to sea. Inland shipping plays an important role and we need to continue to create good conditions for shipping and our ports.

2. THE GOVERNMENT is working to strengthen the competitiveness of shipping by creating better conditions for the transfer of goods from road to shipping. Within the framework of the government's freight transport strategy, a national coordinator has been appointed with the task of promoting Swedish shipping. We have also extended the eco-bonus, commissioned the Swedish Transport Administration to investigate obstacles to transfer, and during the current pandemic decided on a temporarily adapted shipping subsidy for shipping to remain strong.

3. OUR ICEBREAKER fleet is too old and needs to be modernized. The government is preparing for investments in new icebreakers, in collaboration with Finland and Estonia. The common icebreaker capacity we have is important for shipping throughout Sweden. The government has now submitted an infrastructure bill to the parliament, which sets the framework for the coming planning period. No individual objects or icebreakers are specified, but now the Swedish Transport Administration must return with an action plan.

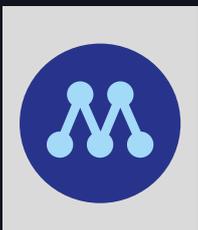
4. THE GOVERNMENT has recently taken several measures to support the Swedish Maritime Administra-

tion financially. On the one hand, the Swedish Maritime Administration has received a capital injection of SEK 300 million, and on the other hand, the government has temporarily abolished the financial targets for the Swedish Maritime Administration.

5. THE GOVERNMENT has been active in the IMO to reduce the climate impact of international shipping. In order to create conditions for the blending of biofuels in marine fuels, the government intends to work to adapt international regulations and standards for renewable marine fuels. We also want to continue to strengthen research and innovation to enable sustainable and affordable alternatives to the fossil fuels used today. This promotes the Swedish export industry's competitiveness and reduces the climate impact.

6. IN ORDER for Swedish shipping to remain strong after the pandemic, the government has, in addition to the general subsidies that also include the shipping industry, decided on a temporary adapted shipping subsidy to support the industry. The government has always realized that the economic consequences of the virus must be mitigated. We have presented crisis measures for more than SEK 400 billion. We extended the support for short-term layoffs and we continue to analyze the situation carefully and are ready to decide on new measures.

7. WHEN THE tonnage tax was introduced, the government stated that its intention is to follow up and evaluate the effects of the legislation. However, such an evaluation and follow-up should not be done until the system has been in force for a couple of years. ■



Moderaterna

1. SHIPPING IS an underutilized resource which, with the right political decisions, will play an increasingly important role as a means of transport in the coming decades. Moderaterna has pointed out the untapped potential of shipping in several motions.

2. YES, AND this should be done by ensuring the flow of goods between modes of transport, which includes transport to and from ports. We need to ensure access to the electrical grid in ports, refuelling with fossil-free fuel and battery charging options. Finally, the Swedish icebreaker fleet needs to be renewed so that ports in northern Sweden do not risk being closed because of

ice during the cold winter months.

3. THEY MUST be included in the national plan and financed within the current funding framework, preferably in cooperation with Finland which is also in the phase of renewal.

4. WE WANT to review the organization for all infrastructure, including the Swedish Maritime Administration. Raising fees to cover the Swedish Maritime Administration's costs would affect Swedish shipping's ability to compete. It would be unfortunate for jobs, growth and the environment.

5. THE STATE shall, together with municipalities and

the business community, ensure the infrastructure for refuelling fossil-free in Swedish ports, the possibility to charge batteries and ensure the supply of electricity.

6. IN THE Finance Committee, Moderaterna has proposed various support packages for the seriously affected hospitality industry, where passenger traffic

plays an important role.

7. MODERATERNA WANTS to evaluate the tonnage tax continuously so that its purpose, to strengthen the competitiveness of shipping and contribute to sustainable transports, is fulfilled. It is important for jobs, growth, entrepreneurship and the environment. ■

| Sverigedemokraterna

1. SHIPPING IS and has always been important for Swedish trade. Shipping has great opportunities to develop both as inland shipping but also as coastal shipping. There is a great potential and great opportunities to increase the shares of shipping and we already have the infrastructure in place with ports and spare capacity. Now it's just a matter of simplifying regulations and reviewing costs.

2. WE HAVE worked to enable more shipping. The measures are rule reductions, cost reductions both in terms of fairway fees and pilot fees, as well as access to pilots. We also need to review the infrastructure to and from the ports, both roads and railways, so that it will be easy to get to and from the ports.

3. IF YOU look at the Swedish Maritime Administration's finances, it is not possible for the Swedish Maritime Administration to finance new icebreakers. We have suggested that the icebreakers, including the operation, should be included in the national infrastructure plan.

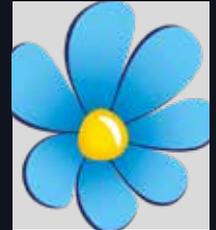
4. THE SWEDISH Maritime Administration has an important role, but we do not believe it is possible to run the agency as a business entity and at the same time have a shipping industry that is competitive in the international market. There is an imminent risk that goods will seek new routes if the financing for the Swedish Maritime Administration is not changed.

It is speculated that ships will instead discharge goods in, for example, Germany from where it will be transported by truck or train to Sweden via the Fehmarn-Belt if costs continue to increase.

5. SHIPPING ALREADY has quite strict regulations in terms of emissions. The SECA directive has meant that shipping now runs on low-sulphur fuels. Many shipping companies want to change and many have already started rebuilding ships for other fuels. Between Helsingborg and Helsingör, ferries are already powered by batteries. We believe that the shipping companies are already doing what they can to change, but if the politicians contribute with an environmental incentive in the form of reduced fairway fees for the ships that switch to cleaner fuels, it will also be a positive driving force.

6. THE GOVERNMENT increased maritime support and introduced short-term layoffs, which has been helpful. Passenger / cruise traffic has a very important role for the tourism industry and for freight transport. We are open to listening and acting to help those companies that are having a hard time surviving the pandemic. The politics should have good contact with the companies that are affected, in order to find the most accurate solutions so that they can spend the time until society reopens.

7. WE ARE happy to see that more vessels can be included in the tonnage tax system. The government has promised to evaluate the tonnage tax after a while and now it is the time to do so. ■



| Vänsterpartiet

1. IT IS very important, not least for the adjustment of transport that we must make to achieve the climate goals (provided that shipping also changes), but also for many Swedish companies. It is essential that it works well for export and import, but we also need to start

using our inland waterways much more.

2. YES, WE need greater competitive neutrality between modes of transport. Less subsidies for road traffic at the same time as fairway and pilotage fees are reviewed and incentives are introduced, such as support for combined terminals and better environ-



mental bonuses.

3. WITH APPROPRIATIONS preferably in the national infrastructure plan, which we proposed in our motion on the government's infrastructure bill.

4. WITH A larger share of funding than today. We are not against fairway fees, but they should be a means of control, not an absolute necessity to cover the Swedish Maritime Administration's costs for, for example, icebreaking, recreational shipping and sea rescue.

5. YES. THE changeover is urgent, so both incentives are needed, consisting of for example sharply differentiated fairway and port fees, and environmental

bonuses. We want the state owned companies to use only certified sustainable transports, both in terms of environmental and climate requirements and social sustainability. Some legislation may also be required and Sweden also needs to push much clearer for stricter environmental and climate requirements internationally.

6. WE BELIEVE that the temporary regulation on maritime aid should continue to apply until the crisis is over, as should short-term redundancies.

7. WE ARE reviewing that part of our policy but have not yet taken a position. ■



Centerpartiet

1. WHAT AVIATION is for people, shipping is to a large extent for goods. Sweden is surrounded by water and the shipping industry is therefore of central importance to our prosperity and our trade. If shipping and our ports can increase the pace of change for a better environment and a better climate, we welcome a larger share of shipping in the transport system.

2. IN GENERAL we want fees and tariffs in shipping to be linked to the climate and environmental impact. The shipping companies and ports that are actively working towards a transition to better fuels and electrification should benefit.

3. THE FINANCING of icebreakers is an issue for both the business community and the state, and the division the parties must decide about. In the procurement, all relevant regulatory needs should be taken into account and done in close dialogue with freight transporters, industry, and more. Another aspect is the need for international cooperation to optimize procurement and operations, not least with Finland.

4. THE SWEDISH Maritime Administration collects fairway fees and environmentally differentiated fees. The authority has however had difficulties in environmental differentiation in a satisfactory manner. Today, for example, ships that have electric propulsion - and thus emit zero CO₂ - face increased fees. Therefore The Swedish Maritime Administration needs to take a holistic approach to this issue. Centerpartiet wants a broad review and advocates a developed bonus malus model. We also believe that the Swedish Maritime Administration is lacking in its analysis regarding how

increased fairway fees affect the possibility of moving goods from truck and rails for shipping. This criticism is unanimous from the Swedish Transport Agency, The Swedish Transport Administration, Traffic Analysis and the Swedish Regulatory Council. We therefore want the government to give The Swedish Maritime Administration the task to do a better analyze of the effects of its existing fees as well as fee proposals and a developed environmental differentiation with regard to its effects on transfer of goods to shipping.

5. SWEDEN SHOULD be a driving force in fulfilling these commitments. It is also important that there is an effective follow-up of the regulations and requirements that have already been implemented, for example control of the regulations that form the basis for emission levels in the SECA area.

6. CENTERPARTIET EXTENDS the support as long as the business community is affected by the closures and restrictions. Since the pandemic broke out, we have worked on all fronts to create good conditions for entrepreneurship in Sweden and contributed to a number of extra budgets. The subsidies are aimed at companies, households and the public sector, and shipping has thus received part of these subsidies.

7. WE HAVE not determined in detail how stamp duty and tonnage tax are to be designed, but it is of course important that Swedish shipping industry receives the same conditions of competition as shipping in other countries. We follow the discussion and have a dialogue with the industry. ■

Kristdemokraterna

1. SHIPPING HAS an important role in the future transport system because shipping has the capacity to transport very large volumes of goods, not least to and from Sweden. It is important to see the transport system as a whole where all different types of traffic fulfill different functions and are needed. Sweden is highly dependent on trade, the export industry accounts for almost half of our GDP, and here shipping is of crucial importance. Shipping can also play a greater role in domestic transport.

2. KRISTDEMOKRATERNA WANTS to increase the competitiveness of Swedish shipping. The financing of fairway maintenance, both icebreakers and other things, must be reviewed. It is a big problem that the Swedish Maritime Administration has raised fees for shipping in order to manage the agency's budget. This makes it difficult to achieve the overall goal of moving goods from road to shipping. Kristdemokraterna has together with other political parties voted through an announcement in the parliament to review the Swedish Maritime Administration's organizational form and funding. The transport system is a whole and in our follow-up motion to the infrastructure bill, we pointed out the need for four tracks on the Västra Stambanan between Floda and Alingsås. This would have promoted the flow of goods to and from the Port of Gothenburg, which also would led to better conditions for transporting more goods by sea.

Miljöpartiet

1. SHIPPING HAS the potential to be an important part of climate change as it is an energy-efficient mode of transport. Miljöpartiet wants to move more transport from road to shipping and rail.

2. A SHIP can correspond to 300 trucks, but is powered by the corresponding 20 truck engines. Therefore, the government has a freight transport strategy that aims to move goods from truck traffic to rail and shipping. A transfer to shipping is best achieved if the differences in competition between different modes of transport are evened out by the respective modes of transport, including road traffic, bearing the costs of the environmental and climate impact they cause. Therefore, Miljöpartiet wants a distance-based tax to be introduced for heavy road traffic and to invest in infrastructure such as shipping and the opportunity to reload from sea to rail. Miljöpartiet has ensured that

3. THEY SHALL be financed by state grants.

4. AS MENTIONED above, we have taken the initiative for an announcement of a review of the agency's form of financing. Our vision is that the Swedish Maritime Administration should be financed by appropriations in the state budget and not by fairway fees.

5. CHARGE SYSTEMS and taxes must steer towards climate-smart choices. It is important that environmental discounts and other incentive structures are designed in a long-term way. Today's stamp duty on ship mortgages makes investments in climatesmart technology more expensive, and a removal must therefore be investigated.

6. YES. KRISTDEMOKRATERNA has repeatedly pointed out during the pandemic that targeted support should be given to companies in the industries that are hardest hit, which includes the travel industry. Temporarily reduced employer contributions would have been an appropriate model.

7. YES. THE rules, which mean that ships must be included in the system for ten years and may operate in Swedish waters for a maximum of 25 percent of the time, entail an uncertainty factor. It is difficult to predict how the market will develop in such a long term. It is time to start developing the tonnage tax system and ease these restrictions. ■

the eco-bonus is in place and works to ensure that it remains and develops.

3. MILJÖPARTIET WANTS the icebreakers to be financed in a special order, and pushed in the framework of the negotiations on the infrastructure bill that the icebreakers should be financed within the framework of the national infrastructure plan. Unfortunately, we did not gain support from our co-operation parties. We are now continuing to work to make it a good solution for the financing of the new icebreakers.

4. THE SWEDISH Maritime Administration is a business enterprise and covers its costs via fees. By, for example, lifting the icebreaker, the Swedish Maritime Administration's finances would be relieved and the increase in fees for shipping would be kept down. Miljöpartiet also wants to review the fairway fees so that they have clear environmental control and provide shipping with long-term conditions.



5. THERE ARE a number of instruments that can help to reduce emissions from shipping. Miljöpartiet wants to see even more environmentally friendly fairway fees, broadened eco-bonuses, the introduction of a green port strategy and increased electrification of shipping. The climate and the new green credit guarantees can be used for climate investments in shipping, it is important that these are at high levels onwards.

6. THE GOVERNMENT has mainly chosen to work with general support such as adjustment support and short-term layoffs to help companies that have lost revenue during the pandemic.

7. THE TONNAGE tax should be able to be developed so that even smaller vessels are covered by the system. ■



| Liberalerna

1. SHIPPING IS of great importance for the transport system, both for passenger transport and for companies' freight transport, not least for the export of goods. Shipping has unused capacity that can increase the proportion of sustainable transports. In order for shipping to become more competitive, good accessibility to our ports is required.

2. THE WORK of promoting waterways must be given priority in order to increase the proportion of sustainable transports. Regulations for inland waterways that impede barge traffic must be removed. We want to ensure that the infrastructure to and from our ports works well together with an efficient transshipment function where a transshipment fee should be discussed.

3. THE ICEBREAKERS shall be financed through the state budget. The icebreaker fleet needs to be modernized. We proposed in our infrastructure motion that the government should investigate how a procurement of new icebreakers can best be carried out based on different government needs. The Swedish Maritime Administration now has such an assignment.

4. THE SWEDISH Maritime Administration shall be financed through fees. Users must pay for the services they use and we welcome discussion between the Swedish Maritime Administration and the shipping industry on how a tariff system can be designed, where transport efficiency and incentives for wise environmental choices govern and where the Swedish

Maritime Administration's long-term financial conditions are ensured. Those who switch to sustainable and transport-efficient transport will receive a fee reduction.

5. ECONOMIC INSTRUMENTS are necessary to achieve the environmental goals. A differentiation of the Swedish Maritime Administration's fees to stimulate environmentally friendly alternatives. More use of shore-connected electricity in ports must be stimulated by introducing differentiated port charges and / or that the vessels that connect to shore power may visit the ports close to the city. At the same time, research, development and production of rechargeable vessels and fossil-free fuels need to take place in order to achieve climate-neutral shipping.

6. COVID-19 HAS hit hard on passenger traffic. According to Trafikanalys, shipping may need to raise prices to repay loans and compensate for losses in connection with the pandemic, which may affect the transfer of freight transport to shipping. We have contributed to the shipping industry receiving financial support during the pandemic, but more may be needed.

7. THE TAX conditions for the Swedish shipping industry must be competitive. We contributed to today's tonnage tax. In order to strengthen Swedish shipping, costs must be reduced through lower taxes on entrepreneurship, which will have positive effects on future tonnage taxation. Today's restrictions for ships operating in national and international traffic and the lower tax limit should be reviewed. ■

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Donsö — The home of shipping

Like a maritime Silicon Valley, but in a smaller scale. That's the frame of the island Donsö outside Gothenburg, Sweden, a place with the right conditions to become an important maritime meeting place.

TEXT & PHOTO: CHRISTOPHER KULLENBERG ROTHVALL



It's afternoon during a grey autumn day in the archipelago outside Gothenburg. Just next to the port of Donsö, where Styrsöbolaget's ferry Rivö docks after the 20 minute long journey from Saltholmen on the mainland, are the preparations for the winter in progress with workers taking up boats and lining them up on the paved stand. The rain is in the air and most of the passengers from the ferry rushes to their homes, but some of them makes a stop at the grocery store or in the store named Hamnaffären. It's a small store for tools, miscellaneous and maritime goods, a business that has existed on Donsö since the 1950s. This is the place where all residents of Donsö can find all the conceivable maritime accessories they need to stay afloat.

At the checkout Daniel Wirgård is working. He is often hearing talk between customers in the store. One common topic is shipping.

"It's a lot of nostalgia. They often talk about how it was in past times, for example when this picture was taken," he says and points on a black and white picture below the checkout desk with a crowd of fishing boats in the harbor.

"They know the name of every boat."

TODAY MOST OF the vessels owned by the shipping companies on Donsö have become too large to fit in the inner harbour. They are instead referred to the quay in the deep harbour, a large pontoon berth that was inaugurated in 2018. On this day, it's only the 63 meter long fishing vessel Clipperton in the port. In fact, is it quite rare that any of the tankers with Donsö as home port docks here, except when DSM, Donsö Shipping Meet, is arranged. It's a maritime fair held on the island every other year with the next opportunity in June 2022.

Just a few steps away from Hamnaffären is a long row with red fishing huts on both sides of Donsö Hamnväg. There is a small maritime square with wooden tables, where a raised mast and railing has been built next to the small houses. A large announcement board hangs on the wall with a long list of the most important events in the history of the island. A huge screen is installed behind the glass of the announcement board, showing rolling pictures with all ships with Donsö as their home port. In the middle of the square stands a bronze statue named Skärgårdsfiskare ('Archipelago fishermen'), created by the sculptor Svenrobert Lundquist. It's a copy of a similar statue standing outside Stena Fastigheter's office near Feskekörka in Gothenburg and depicts a scene from a photograph taken in 1890 where some fishermen from the Donsö boat GG

690 Tärnan landed their catch at the same place in the Rosenlund Canal in Gothenburg. The statue consists of a dog, three adults and a little boy watching the fishermen. The boy's name is Gustaf Olsson, who later become the father of Sten Allan Olsson, who grew up at Donsö and was the founder of the world's largest ferry company, Stena Line.

JUST A FEW hundred meters further down the Donsö Hamnväg is the first in a long row of shipping company offices on the island. It's a white wooden house with a lacquered wooden sign with the name Donsötank. The house was once a small workshop where fishing gear, ropes and nets were manufactured and repaired. The next office belongs to Furetank and is located just a stone's throw further down. It's a modern concrete building in red and white colours with large windows and a small tower on the roof, adorned with a wind direction indicator at the top consisting of a steel plate shaped as a tanker. Next office is located just a few meters away and belongs to Terntank. It's a large gray coated steel building with a futuristic look with a large balcony and terrace facing the sea and all the anchored ships who either gets bunker or are waiting for a free quay in the Port of Gothenburg.

The area behind Terntank's office is worth a visit for every person with an interest in maritime history. It's the location of the former Donsö shipyard with the big slipway still visible. The shipyard was founded in 1916, but had to be closed in 1981 because it couldn't serve the growing size of the ships owned by the shipping companies on the island. But even if the shipyard was closed, there is still a maritime business on the location through Donsö Marin AB.

Further down the road towards the deep harbour, Älvtank is located in a red wooden building reminding of a row of boathouses. Across the street are Sirius Shipping located in an orange and brown building with a view over the deep harbour.

IN ADDITION TO the offices seen during a walk along Donsö Hamnväg, there is a couple of more shipping companies in other places on the island, such as Veritas Tankers and Kiltank Shipping AB. In total, there is a dozen shipping companies on Donsö. In addition, there is even more shipping companies with strong connection to Donsö, but with their offices on the mainland, for instance Ektank, Oljola Shipping, Northern Offshore Services and even the Stena Sphere who has its roots on the island.

In total, there is about sixty vessels operated by the shipowners on Donsö. The amount increases to around 120 if all vessels connected to the Northern Offshore Group are added. If all the vessels within the Stena Sphere also are counted in, the number would increase to 300 vessels with connection to Donsö. This means



▲ Jonas Backman, CEO of Sirius Shipping, chairman of the port association on Donsö and also one of the initiators of DSM.

Donsöandan is about cooperation. We are competitors, but there is cooperation in our everyday life.



that the small island with about 1500 inhabitants, probably is the island with the highest amount of shipping companies per capita in the world. The cluster becomes even stronger due to the fact that there also is several strong companies on the island with business related to the maritime industry and the fishing sector.

WITH A DOZEN shipowners with their daily business operated from Donsö, is it obvious that a large part of the island's inhabitants also are working within the shipping or fishing industry. One person who lives in the eye of the shipping cluster on Donsö is Jonas Backman, CEO of Sirius Shipping, chairman of the port association on Donsö and are also running the DSM, which has been arranged on the island five times since 2009. He often explains that the shipping cluster on Donsö has emerged from a special spirit existing on the island he describes as "Donsöandan", Donsö spirit.

"Donsöandan is about cooperation. We are competitors, but there is cooperation in our everyday life. There is a relationship and a kinship. We have grown up out here on this island together and that has founded something genuine. These relationships and the collaboration makes a thing like DSM work so well. When we build up such an event everyone is united. We strive towards the same goal and in next year it will be the sixth time we do this," he says.

Jonas Backman believes that one of the most important core words in the shipping cluster of Donsö is respect.

"It is about respect for employees, colleagues

and competitors, but also for the entire industry. It is also about having a sensitivity for any process of change. Regardless of whether it's about the port, DSM or Sirius, I can never move forward without having everybody with me. That's how you build respect and that's very important to me," he says.

Despite the everyday cooperation and respect for each other, the shipowners are living in a commercial reality where the various players operate more or less the same type of tanker business.

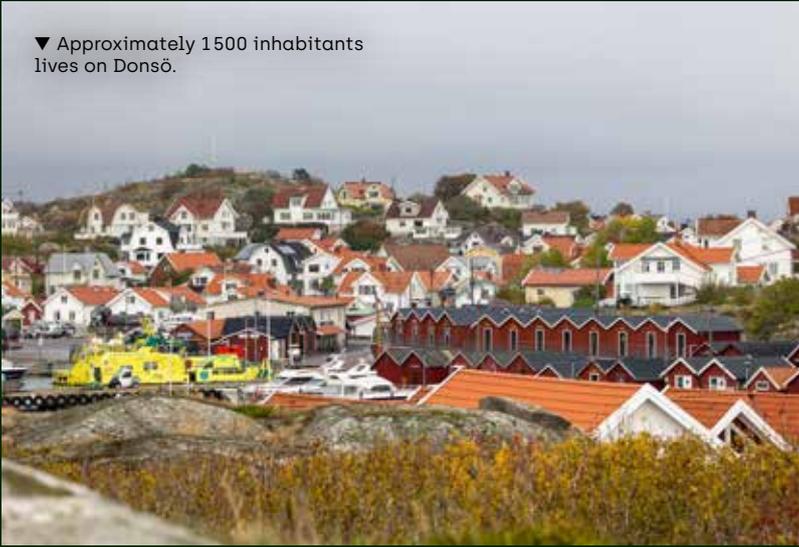
"We are of course always having a chat with each other when we meet in the harbour, but do not think that everything always is nice and cute. Everyone wants to make money and we sometimes fight for the same contracts and then it is not cute in the heat," Jonas Backman says.

ALTHOUGH DONSÖ AS a business cluster lies somewhat behind in size compared to Silicon Valley in San Francisco, there are a lot of similar mechanisms behind the phenomena where companies in the same niche can coexist in the same geographical area. It is a fairly well-studied area in the field of economics where clusters are seen as an important reason why certain regions become strong in terms of competition. An accumulation of players in a geographically limited area generates benefits connected to classic economies of scale, while competition and rivalry also are important factors for companies that want to develop their own business.

Even if the shipping companies on Donsö doesn't

▲ Daniel Wirgård in front of the cashout desk in Hamnaffären, a small store for tools, miscellaneous and marine goods, a business that has existed on Donsö since the 1950s.

▼ Approximately 1500 inhabitants lives on Donsö.



▼ The inner harbour is often filled with different kinds of ships, from small passenger vessels to work boats and fishing vessels.



▼ The bronze statue named Skärgårdsfiskare, created by the sculptor Svenrobot Lundquist.





▲ The former Donsö shipyard with the big slipway still visible. The shipyard was founded in 1916, but had to be closed in 1981 because it couldn't serve the growing size of the ships.



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cooperate commercially, they see other benefits with existing together in a cluster. One such example is technology development where the shipowners on Donsö through history have been triggering each other, for instance when it comes to sustainability.

“The shipowners here have chosen different paths in different ways, but we have never been so similar as today in strategic environmental decisions. Everyone strives for the same goal and in that way are we triggering each other. It becomes a cluster effect. A substantial part behind the success of the shipowners here lies in the fact that we understand our customers and their process of change,” Jonas Backman says.

A recent example of how the various shipowners have been able to find ways to cooperate technically was when several companies worked together to purchase new ballast water treatment systems.

“We made a large deal worth a lot of money one year ago when we purchased altogether 27 units for ballast water treatment. It was a great deal and a good example,” he says.

In this case, it was Desmi, a global company founded in Denmark specializing in pumps, who won the contract. A result of the deal with the shipowners from Donsö was that Desmi became the main sponsor of DSM 2022.

DSM in particular has become a unifying point on the shipowners’ radar, not at least when it comes to collaboration between the generations.

“I get so much energy when I see this. It’s not just the driving forces in the companies who are involved

in arranging DSM. It’s the younger talents from the next generation, who are building up the event area. DSM really nurtures the next generation to the shipping industry and that means incredible much to us, our companies and our society,” Jonas Backman says.

AS A SMALL and closely linked society, where many inhabitants are active in the same industry and where many have different types of ties to each other, history and traditions become important cornerstones for the entire community. A factor that in this context contributes to safeguarding the cohesion that exists on Donsö is the church and the Christian faith.

A fifteen minute walk towards the centre of the island, through an area with picturesque houses, leads to the Donsö Mission Church. It’s a mighty triangular building from 1974 with an impressive high tower. One third of all residents on the island are members of the Donsö Mission Church where Pelle Marklund is pastor.

“Shipping and belief in God are very closely linked. It is about respect for the forces of the nature creating a certain godliness, even though you may not feel quite as small at sea today as you felt a hundred years ago. The ships are much bigger today,” he says.

The history behind Donsö Mission Church has a connection to shipping from the very beginning. On a stormy night in September 1874, six fishermen from Donsö were out at sea when their vessel was hit by a major wave. Two fishermen was tossed overboard and the ballast below deck shifted causing the fishing boat to list heavily. One fisherman could be saved, while the

▲ Donsö Mission Church, built 1974. One third of all residents on the island are members of the Donsö Mission Church.

The shipping companies on Donsö



Rederi AB Donsötank
 Founded: 1953
 CEO: Ingvar Lorensen
 Fleet: 7 vessels 2 during construction



Rederi AB Älvtank
 Founded: 1948
 CEO: Christian Nilsson
 Fleet: 3 vessels



Furetank
 Founded: 1954
 CEO: Lars Höglund
 Fleet: 9 owned vessels, management for 11 vessels.



Rederi AB Veritas Tankers
 Founded: 1983
 VD: Ove Johnsson
 Fleet: 3 vessels



Tärntank Ship Management AB
 Founded: 1958
 CEO: Tryggve Möller
 Fleet: 11 vessels, 2 during construction



Kiltank shipping AB
 Founded: 2008
 CEO: Benjamin Fhager
 Fleet: 1 vessel



Sirius Shipping
 Founded: 1994
 CEO: Jonas Backman
 Fleet: 14 vessels

Fishing companies on Donsö: Kristine Fiskeri AB, B-C Pelagic, Christer & Lennart Fiskeri AB and AB Clipperton.

Shipping companies with roots to Donsö: Ektank AB, OljOla Shipping, Ektank AB, Northern Offshore Services (NOS), Stena AB Group.



▲ Pelle Marklund is pastor in the Donsö Mission Church.

other one, Jonas Eriksson, drowned. Jonas' brother Olof Eriksson, who was in command of the vessel, made an attempt to save the situation by going down under deck to pull back the ballast.

"In that situation, he said 'God, if you exist and can help us ashore, I will serve you for the rest of my life'. And after they came ashore, he decided to stay ashore and establish the Donsö Mission Church. At that time, the Church of Sweden didn't exist on Donsö and based on that, this has become such a strong congregation," Pelle Marklund explains.

Since Pelle Marklund works so close to the island's inhabitants, he often meets those who work in the shipping industry. Based on that, he has a good picture

of what the islanders stand for and the meaning of Donsöandan to them.

"The residents of Donsö are characterized by a very strong entrepreneurial spirit and a strong cohesion. They have a lot of good self-confidence and feel a sense of security as people. You can't cajole a Donsöbo as easily as you like. Interpreting it figuratively, an inhabitant of Donsö won't fall even if it blows 25 meters per second," he says.

Pelle Marklund states further that it's a very strong loyalty among the inhabitants on the island, both towards their families and towards the companies they are working in.

"This is where Donsöandan comes in. As I see it, the church has been involved in shaping this cohesion, forward thinking and faith in the future. Building community is also included in the church's message. I would express it like no man is an island," he says. ■

The residents of Donsö are characterized by a very strong entrepreneurial spirit and a strong cohesion



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Sees the light at the end of the tunnel

The tanker company Stena Bulk is investing in several projects for more sustainable shipping. After a tough year in the oil market, the company's President and CEO Erik Hånell now sees the light at the end of the tunnel.

TEXT: MAGNUS SANDELIN

STENA BULK IS the tanker company within Stena AB, which will be a sponsor and participant of Donsö Shipping Meet 2022. Stena Bulk's President and CEO Erik Hånell sees the event as an important gathering place for shipping in northern Europe.

"Many of our important suppliers and customers come there. DSM2022 is very positive for Gothenburg and for merchant shipping," he says.

Looking back on the past year, Erik Hånell notes that it has been a tough time for tanker shipping.

"The first three quarters of 2020 were good. After that, we have faced an extremely challenging market due to the Covid 19 pandemic, which reduced the demand for oil following the strict limitations imposed on air traffic around the world."

"Now, demand is increasing again. We see the light at the end of the tunnel, even though the tanker market is still considerably weak. The countries in the Western hemisphere are gradually opening up, and we will probably see the same thing in the East in the coming months. Then global demand for oil is likely to return to pre-Covid 19 levels, and eventually may gradually decline again when alternatives to oil gain more traction," Erik Hånell predicts.

STENA BULK IS already preparing for a future of sustainable shipping. According to Erik Hånell, the big question for shipowners today is which efficiency technologies to invest in and what kind of improvements they must make to their fleet to be able to continue using their existing vessels ensuring sustainable business operations.

"When it comes to sustainability, we talk about ESG (environment, social and governance) issues, and these

This will be achieved through a combination of energy efficiency measures and green technology



STENA BULK

include financial sustainability. There is still plenty of work to do in this space, but we are making progress very efficiently in the right direction," says Erik Hånell.

STENA BULK HAS several projects underway through which they are investing in a green future. In collaboration with the global methanol producer Proman, for example, they are building six methanol-powered ships that will see a significant reduction in the emissions resulting from their operations compared to vessels powered with traditional fuel. Stena Bulk's partnership with Proman is one of the several projects and investments that the company has in place in their journey to a sustainable future.

"We have a wide range of projects currently in place, and we do extensive research on everything from sails to wind turbines and batteries. We also invest in more efficient machinery and explore improvements in the shape of the ship's hull."

"I am hopeful that the industry will find efficient solutions to move forward and become sustainable in every way. This will be achieved through a combination of energy efficiency measures and green technology, rather than a single stand-alone solution to all of shipping's sustainability issues," Erik Hånell concludes. ■

■ Erik Hånell,
President and
CEO, Stena Bulk.



Marine pumps for a better environment

Reducing ships' greenhouse gas emissions is the most important issue for shipping right now, says Rasmus Folsø from the Danish company DESMI, the main sponsor of Donsö Shipping Meet.

TEXT: MAGNUS SANDELIN

DESMI WAS FOUNDED in 1834 and is one of Denmark's oldest companies. In the beginning, a variety of metal products were manufactured, such as church bells and steam engines. Today, it has gone from being a local company to a global one, with offices in 18 countries and manufacturing in Denmark, China, India and the USA. The company's focus is also completely different than before, with pumps as the main product, and the marine sector as one of the largest customer groups.

"It is centrifugal pumps and internal gear pumps that are the main products. For the shipping industry it is mainly centrifugal pumps which are used for engine cooling purposes, and also many other purposes," says Rasmus Folsø, CEO for DESMI Ocean Guard A/S.

MANAGING THE VESSELS' ballast water is also one of the company's areas of expertise.

"This is a part of the business that is really growing rapidly now, because of legal requirements for ships. DESMI Ocean Guard has achieved a market leading position and is supplying its CompactClean BWMS to shipowners and shipyards worldwide," Rasmus Folsø says, and adds:

"And in addition to the pumps and the ballast water management system we also have OptiSave, which is an energy optimization system. It is a system that automatically ensures that the engine cooling pumps and also the engine room ventilation does not consume more energy than what is needed."

DESMI IS THE main sponsor of Donsö Shipping Meet 2021, which will take place in June. There are several

reasons why the company sponsors DSM, according to Rasmus Folsø.

"First of all it is a very important exhibition in our part of the world and DESMI has a long history of being present at Donsö Shipping Meet. This time we also feel that we have even stronger connection to DSM, because we are working closer together with the big group of Donsö ship owners, regarding the ships ballast water management systems, which we are supplying. So we are closely linked to those ship owners and that region, and therefore it make good sense for us to be present and to support the Donsö Shipping Meet."

"I had the opportunity to participate in Donsö Shipping Meet before, and I think it is a very nice event with a lot of good companies presenting new products and their existing product portfolios. And then also a good number of ship owners coming there," says Rasmus Folsø, and adds:

"And also the focus that is in particularly Scandinavian countries on energy efficiency. That is something that we as a company have a number of solutions to assist with."

Which are the most important questions for the shipping industry at the moment?

"What is really important now is to limit the emissions of greenhouse gases, and especially the CO₂, from shipping. That is a very tough nut to crack, but there is a lot of working on this in terms of carbon capture technologies, but also a lot of new fuels are stepping in to the ship building industry. If I have to point at one single topic that is probably the most important for shipping right now, this is it."

"Then also implementation of ballast water management systems is something that is a big task for ship owners, and it is happening right now. DESMI, shipyards and ship owners are very busy with running these quite complex projects on thousands of vessels each year."

It is a very important exhibition in our part of the world and DESMI has a long history of being present at Donsö Shipping Meet.



According to Rasmus Folsø, DESMI is the leading supplier in the world of pumps for scrubber systems, technology that can also contribute to reduce carbon dioxide emissions.

“Although traditionally scrubber system not have been reducing CO₂-emissions there is now more and more activities going on in actually using also scrubbers and maybe some slightly adjusted concepts of

the scrubber to capture some carbon emission from ships. And for these solutions scrubber pumps will be required and there we have very good products for that.”

“We are quite happy with the way we are doing now, we are growing quite a lot every year, and that is also our ambition. And we are in a very good shape for the future,” says Rasmus Folsø. ■

▲ Rasmus Folsø,
CEO DESMI Ocean
Guard A/S.

Gijsbert de Jong,
Bureau Veritas.



D for decarbonization and digitalization

The challenges of the future for shipping are about the two big D's, according to Gijsbert de Jong at Bureau Veritas, gold sponsor of Donsö Shipping Meet.

TEXT: MAGNUS SANDELIN

GIJSBERT DE JONG, Marine Chief Executive Nordics at the Ship Classification Society Bureau Veritas, is impressed by the focus and forward thinking regarding environment and technology which he sees as characteristic for the shipping cluster on Donsö.

Bureau Veritas (BV) is one of the gold sponsors of Donsö Shipping Meet (DSM) and has been a proud and loyal sponsor of the event since many years. Gijsbert de Jong considers there is a logical match between BV and DSM:

The key to success today is to make sure that if you build a vessel today you must have in mind the technology of tomorrow.

“We are fortunate to count a lot of the Donsö shipping among our clients, so for us there has always been a very direct link with the very well organized and attended DSM event. So we are happy to support the event and will keep supporting it into the future,” he says on a video link from the Netherlands.

The organizers of Donsö Shipping Meet show a much greater commitment to the than is usual at shipping events, he says. According to him, it has to do with DSM being arranged by the local shipping cluster on the island. Many more commercial oriented events are organized by companies who do events as a business.

“Some of them can be excellent, but the difference with DSM is that it really come from the Donsö Shipping community, so people on Donsö area are really engaged and that attracts very good crowds. So we find it really interesting and engaging and it delivers really a quality event which you cannot find so easily somewhere else.”

DE JONG HIGHLIGHTS that the shipping companies on Donsö are always at the forefront when it comes to developing new solutions to, for example, environmental issues, when ordering new vessels.

“What I have always find interesting in the Donsö shipping community is that they are extremely forward looking if you look at innovation and dealing with the challenges of the environment.”

The challenges of the future for shipping are about the two big D's, according to Gijsbert de Jong. They stand for decarbonization and digitalization, where decarbonization is the most significant challenge.

“It is hugely important, because the climate change is something we need to address as a society. Shipping is a part of society, so shipping has to play its part and transform.”

“We are seeing a very healthy market at the moment, at least in a lot of segments. Many shipping companies are actually looking at ordering new ships, they see business expanding or want to make use of the opportunities in the market, and that brings the big question about it: what kind of fuels should I use?” says Gijsbert de Jong.

THIS IS WHERE the issue of fossil-free fuels comes in, and Bureau Veritas is actively participating in many



▲ Furetank's Fure Vinga.

projects, ranging from research and development projects to hands-on real life ships. If you are going to order a ship today, the big challenge is that the propulsion technology and fuels of the future are not yet fully developed.

“You cannot (yet) bunker ammonia. Today the engines are in an advanced stage of development and advancement, but not yet commercial available. So what do you do today? That is really a big challenge for the shipping community and that is the same for the Donsö owners,” says Gijsbert de Jong.

The solution is fuel flexibility, he believes, and technology that, within a few years without excessive costs, will enable the conversion of ships to carbon neutrality.

“I think the key to success today is to make sure that if you build a vessel today you must have in mind the technology of tomorrow and be prepared for that.”

WHEN IT COMES to digitalization, it will become increasingly important in the future. More and more tasks in shipping can be solved through automated systems or even remotely.

“To be digital is not in itself a novelty, but the fact that digital expanded in to the internet-of-things actually means that we can do things now which help digital to become much more powerful,” Gijsbert de Jong says, and takes Furetank as an example.

“The recently delivered two ships from Furetank from China actually carry the so called SMART notations of Bureau Veritas, recognizing the high level of automation and system integration which has been adopted onboard the ships so they already comply today with the standards of the future. And that brings us back to what for the Donsö shipping cluster stand for: thinking and acting ahead.” ■

Power Tech is the new addition to Ö-Borgen

Power Tech Sweden AB, which is part of the DSM sponsor Ö-Borgen, focuses on electricity distribution, storage of electricity and control of distribution and consumption.

TEXT: PÄR-HENRIK SJÖSTRÖM

THE MOST RECENT addition to the Ö-Borgen group of companies, sponsor of Donsö Shipping Meet, is Power Tech Sweden AB, offering solutions for hybrid and electrical propulsion on ships.

The main focus area of Power Tech Sweden is manufacturing of marine electrical and hybrid propulsion solutions based on own technology. The company has a joint administration with its sister company Power House and also operates in the same premises in Långedrag in Gothenburg.

“We decide that we must go this way. We understood that it is difficult to start from scratch so we acquired an existing company which had been doing this for ten years,” explains Anders Bernhardsson, CEO of Power House and also CEO of Power Tech Sweden .



▲ Anders Bernhardsson, CEO of Power House and Power Tech Sweden.

ANDERS BERNHARDSSON SAYS that it is difficult to say exactly where the development is heading in the transition to fossil-free shipping.

“Electricity is the closest solution for fossil-free propulsion using technology that works already today. The next step, which indeed is quite close, is hydrogen based and includes some kind of fuel cell to generate electricity.”

But he emphasizes that batteries are also needed on board that use fuel cells.

“Fuel cells cannot take a varying load curve. They have to charge batteries instead, which can then take the varying load.”

He therefore believes that the battery will be a key component in electric powered ships for a long time.

“The battery forms the core of the technology that Power Tech is working with right now. At the same time, Power House continues to offer conventional

diesel gensets, because this transition will not happen overnight, although it certainly will happen.”

Power Tech Sweden currently has two main categories of customers who are interested in battery solutions.

“We have the so-called early birds, which do this from a non-profit point of view and have an interest in green technology. However, they often have limited resources. The largest group of customers group when we reach by public procurements where political decisions set demands upon environmental goals and emissions,” Anders Bernhardsson explains.

He says that every solution that Power Tech Sweden develops has to be the most suitable from the customer’s point of view. It depends on a number of factors, such as route, distance, capacity and speed requirements.

“Today, it may for example be possible to charge the batteries only at one point during a roundtrip. It means that the batteries have to be charged with a lot of power in a short time to keep up with the schedule. In those cases we chose for example Echantia’s LTO-batteries.”

IF THE SCHEDULE allows a little more time for charging, there are less costly alternatives, Anders Bernhardsson informs.

“For example, Corvus provides batteries that are designed to take in and release energy at a slightly slower pace. But both Echantia and Corvus offer proven battery technology that does not entail any greater risks than any other propulsion method.”

Indeed fire safety in battery powered ships is an issue receiving more and more attention. A short circuit may cause thermal runaway in the cell with a very high temperature as a result.

“The temperature may rise so much that the protective walls of the surrounding cells break and then they start a chain reaction,” Anders Bernhardsson explains.

We understood that it is difficult to start from scratch so we acquired an existing company



He says that, among other things, Echandia avoids thermal runaway in their batteries with a system for dissipating heat, gas and flames individually for each cell.

“Should a cell cause a thermal runaway, it would not affect the surrounding cells and it would remain an isolated event. In addition, there is equipment that cools and extinguishes the cell, eliminating further damage.”

ACCORDING TO ANDERS Bernhardsson, effective monitoring of the batteries on a system level is crucial in order to detect potential problems in an early stage and neutralise them before a dangerous situation arises. He stresses that these are essential functions in the energy management systems that Power Tech Sweden develops.

“The monitoring systems are built in several layers and they alert if some deviations occur, such as insta-

ble voltage or increased temperature. Monitoring takes place at both cell and battery bank level in the manufacturer’s own battery management system. In addition to that our energy management system monitors all these systems and is connected to protective measures such as powder extinguishing, water immersion and sprinklers.”

ANDERS BERNHARDSSON SAYS that safety largely depends on how the technology around the cell itself is built.

“We buy the batteries directly from Echandia or Corvus or another manufacturer. They have their internal battery management system that communicates with our system. There we monitor one more time all signals from the systems. In our system, we determine the logic for which measures should be taken when we receive a certain signal from the various peripheral units.” ■

▲ Power Tech Sweden also manufactures complete electrical cabinets.

TELP – providing relevant information

After one and a half years of using the Trade Enabling Loss Prevention (TELP) service, the feedback from Swedish Club members is very positive.

TEXT: PÅR-HENRIK SJÖSTRÖM

TELP IS A free service for The Swedish Club members, aimed at increasing safety awareness in specific areas and ports worldwide.

“The idea of this loss prevention initiative came about three years ago. By analysing our vast claims data, we could identify areas around the world where the likelihood of suffering a claim was higher than normal. As an insurance company, you are quite unique with this type of information as it covers such a broad scope, including almost everything from collisions to injuries “ says Ellinor Borén, Claims & Loss Prevention Controller at The Swedish Club.

She adds that The Swedish Club is also good at profiling their incoming claims.

“We know what happened, why it happened, the extent of the damage and where it happened. We have gradually built a huge database with statistics and facts. We felt that we wanted to pass this knowledge on to our members in a more systematic way.”

“This is an efficient and highly appreciated system to distribute information. TELP is about providing specific information on everyday questions that our members are facing, such as what is to expect when calling a certain port for the first time.”

By tracking their insured vessels’ AIS signals, The Swedish Club is able to identify vessels bound for areas of particular risk and provide them with timely and tailored loss prevention advice relevant to that destination.

“We know their positions and when they reach the destination. By matching their ports of call with our claims statistics, we can identify vessels entering a risk zone and provide them with advice,” Ellinor Borén explains.

TELP sends out advice a few days prior to the

vessel’s arrival to the hot spot, enabling the crew to include and discuss it in their pre-arrival planning.

“It is relatively simple system but extremely effective. We are able to provide a lot of information to a large number of members.”

The Swedish Club launched TELP for its members in 2020.

“After the launch, all our members have the possibility to sign up for TELP. Presently, about half of our tonnage has signed up for the service, which is free of charge for our members.”

Depending on the actual risks, different types of alerts are sent when a vessel is approaching a hot spot.

Claim alerts are based on The Swedish Club’s claims statistics. By comparing where claims occur with the members’ trading patterns, The Swedish Club has identified areas around the world where the risk of suffering a claim is higher than the average. The Claim alert includes loss prevention advice based on the Club’s experience dealing with claims in the area. It also contains information on the particular risk provided by correspondents.

THE SWEDISH CLUB’S global network of correspondents is able to provide essential information on local conditions relevant to the daily operations of a vessel through the Correspondent’s advice. It can contain information on health issues, disruptions in a port’s cargo handling or specific navigational warnings.

The Piracy alert contains a weekly status report on the last week’s activities regarding piracy, robbery and similar, which is issued by the Piracy Reporting Centre of International Maritime Bureau (IMB). The alert serves as a heads up to the vessels operating in the listed areas and urge them to stay extra vigilant.

The newest type of alert is the Bunker alert, which helps members avoid bunkering off-specification fuel. The Swedish Club has partnered with Veritas Petroleum Services (VPS). As soon as VPS gets an indication that bad bunkers are being supplied in a specific port, TELP vessels heading for that area are alerted.



▲ Ellinor Borén, Claims & Loss Prevention Controller at The Swedish Club.

By matching their ports of call with our claims statistics, we can identify vessels entering a risk zone



The alerts are sent directly to the members by e-mail to the addresses provided when signing up.

“It is a simple pdf-file which is not too large to receive regardless bandwidth,” Ellinor Borén says.

She points out that the system is continuously upgraded and improved.

“For example, regarding Claim alerts, we have specifically looked at navigational damages, such as collisions and groundings, and cargo damages. The container trade is a little bit special as cargo damages does not necessarily take place onboard or in ports, they may occur during land transport as well. We are trying to identify patterns and certain container trades that are more exposed to damages. We are also looking at different types of fines in the port. They are not the most expensive claims, but may cause delays and disruptions for our members.. It can for example be connected to corruption, and we are charting the possibilities to alert our members in advance if our correspondents know that such problems exist.

ELLINOR BORÉN INFORMS that TELP has turned out to be a most useful tool especially during the pandemic.

“Most of the countries and ports have had different types of restrictions, and we have been able to relay information to the vessels what to expect in the form of controls and inspections. Safety and security are essential parts of TELP, but in addition to that we also want to make everyday operations a little bit easier for

We are trying to identify patterns and certain container trades that are more exposed to damages

our members by providing them information which they perhaps would not receive otherwise.”

The only criterion is that the information distributed by TELP has to be relevant for the vessel’s operation.

“The information does not have to be relevant just from an insurance point of view. As long as it is relevant for the operation of the vessel it will be included in TELP. Information about new laws and regulations which do not directly affect the vessel are not sent.”

ACCORDING TO ELLINOR Borén the feedback from the members is very positive.

“We have noticed that TELP has become a part of the everyday life on board. If they don’t receive a TELP advice prior to calling a new port, they may ask about information for the actual port. Then we can perhaps provide more non-critical information not included in TELP.”

The Swedish Club has set a goal to reach a ten percent decrease of claims in the actual areas.

“It is still too early to evaluate the effect of TELP. We determined the hot spots by analyzing statistics from a five years long period. Therefore, we need more time to measure the impact of the project.” ■

Sjöfartens modernaste utbildningscenter Centralt i Stockholm

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The journey to a climate-neutral Gotland ferry service will require smart choices and investments in innovative technologies. We have adopted an ambitious climate roadmap that sets out how the crossing between Gotland and the Swedish mainland can become fossil-free by 2045.

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