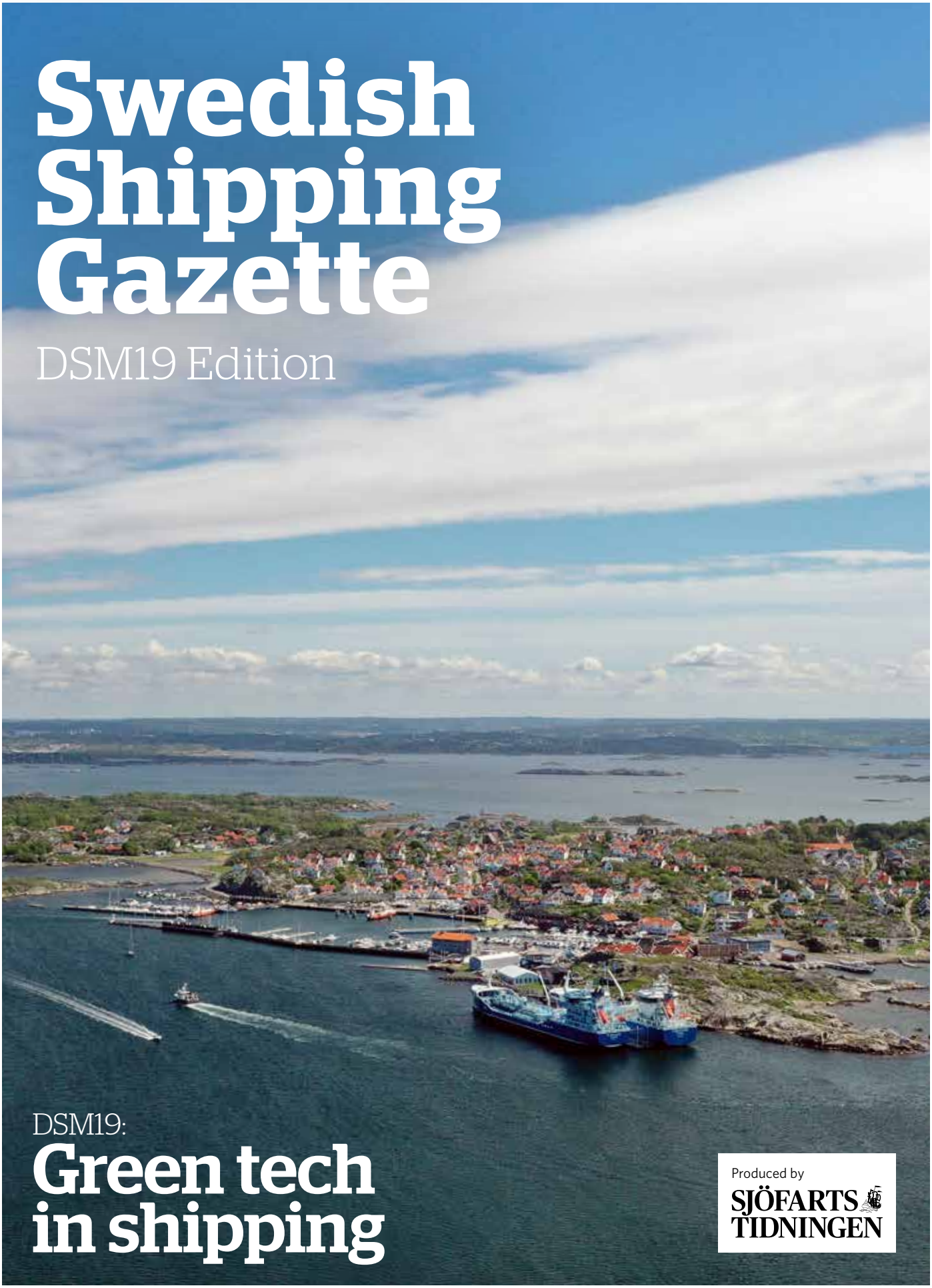
Swedish Shipping Gazette

DSM19 Edition



DSM19:

Green tech in shipping

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Welcome to Donsö

And welcome to Donsö Shipping Meet!

Ten years ago we embarked upon the journey that has taken us to this place - and what a journey it has been! Who would have thought that when we arranged the first Meet back in 2009 (then called Donsö Tanker Meet) that the interest for this venue would have grown like this. These two amazing days we welcome about 2000 delegates to discuss shipping and shipping related topics.

AS ALWAYS OUR ambition this year is to make DSM as welcoming and genuine as ever possible. We do this by utilizing the locally available people and resources and building the venue in a way that we hope will lead to rich and inspiring meetings and sharing of knowledge. All under our common denominator - shipping. We strive to stay true to our island origins - origins with a long tradition of shipping. We offer catering, transportation and guides whom will all be there to make you feel as welcome as ever possible.

The day before DSM the shipping companies of Donsö and the rest of Sweden arrange a special event for future recruiting in to the maritime industry. A day where we invite teenagers from the Gothenburg region out to Donsö for a day filled with education and activities related to shipping. 2 200 young people and their teachers, as well as counsellors, will visit Donsö for a unique opportunity to learn more about the shipping industry.

WE DO THIS because we have seen a decrease of applicants to the shipping related universities of Sweden and also to Compulsory school with maritime connection, and we as an industry must take action in order to ensure that we have as competent Swedish seafarers in the future as we have today.

The discussion of how we will reach this goal will follow as a theme during the rest of DSM as well, together with the other themes; business intelligence and sustainability.

The opening seminar is held by our Main sponsor Wärtsilä. We are grateful to our sponsors and to our partner Stena, we could not have done this without them.

JUST LIKE BEFORE, we offer our exhibitors speed meetings - an opportunity to connect with the right people from the shipping companies. As a complement to the pre-booked meetings we hope that you all feel inspired to also connect with each other more spontaneously - maybe in our garden area or anywhere else you might bump in to each other.

2017 we debuted a focus on both HR & Crewing issues and Commercial topics with two separate seminar tracks. This year we offer a seminar and a workshop related to HR & Crewing. Commercial Meet will also be held again this year with the theme: Surrounding World Analysis - Business intelligence, Sustainability and Future recruiting. New to this year is Financing Meet which will be a complement to Commercial Meet. The focus will be financing sustainable shipping with its related challenges and opportunities.

THE GRAND BANQUET dinner will be held in the harbour of Donsö. During the evening an exceptional three-course dinner will be served and the best-selling authors and business coaches Christer Olsson and Jonas Hammarberg will be speaking to us all about "The power of humanity in the future world".

We are also pleased to welcome our dear friend Tommy Körberg back to the DSM banquet again. 2017 he gave us an unforgettable musical experience - we are sure that we will not be disappointed.

We hope that you all find these two days inspiring and that you also take the opportunity and visit the vessels in the harbour.

So to you all: Welcome and let's meet!

Donsö Shipping Meet
Dick Höglund, Jonas Backman,
Ann-Sofie Ankarcrona

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Q&A – Exploring the Donsö spirit

The shipping community of Donsö is famous for its uniquely successful combination of competition and cooperation. We asked the managers to describe the phenomenon in their own words.

The development of the Donsö fleet has been amazing during the last decades. Still in the 1990s, most of the shipping companies operated second-hand tonnage and their fleets consisted of a handful of vessels. Today several of the shipping companies have grown large, operating fleets mainly consisting of newbuildings.

Most of the Donsö owners are operating exclusively in the product and chemical tanker segment. The 10 000-20 000 dwt intermediate tankers are especially popular, but there is also a strong tradition of operating smaller 5 000-10 000 dwt tankers. There are also some Donsö-related bunker vessels in the fleet, representing the tradition where it all began in the 1950s.

THIS DIVERSITY ENSURES a complete palette of tonnage, suitable for most of the major trading areas for petroleum products and chemicals in northern Europe.

The companies are family-owned. Most of the shipping companies originate from a few families and many of the owners are related to each other. The companies indeed compete with each other on the market, but not by preying on each other. They are experts in finding solutions where they cooperate for the greater good and create a win-win set-up, bringing prosperity to the island.

A typical example is the Gothia Tanker Alliance, including Furetank Chartering and Thun Tankers (the latter is indeed not a Donsö company), a tanker network offering safe and sustainable cargo transportation in characterized by reliable and smooth service. The bulk of the fleet consists of Swedish-owned tankers, many of them from Donsö. Other successful Donsö-related companies, providing commercial management for several tanker owners, are Navix and Sirius Chartering.

BUT DONSÖ IS not only about tankers. A rapidly expanding shipping group is the Northern Offshore Group, offering a wide range of special vessels such as crew transfer vessels for the offshore wind farm industry. Fishing is also important, although its relative importance has been overshadowed by merchant shipping. There are however some large Donsö-owned pelagic trawlers, representing the top of the line of the industry.

THE DONSÖ SPIRIT has evolved during decades from love of the trade and the sea. The Donsö shipowners have a close and personal relation to each vessel. A Donsö vessel is always in top condition. When new vessels are designed, the aim is not just to make them eco-smart and efficient, they must also be comfortable for the crew. The owners indeed have a great heart, and they know how to make money. The Donsö vessels attract the best crews.

We asked some representatives for the main Donsö shipping companies what makes their community special.

Questions

1. What makes Donsö such a good environment for shipowners?
2. How do you promote a sustainable development?
3. Could you give a short description of the company's business?

Donsötank

INGVAR LORENSSON, MANAGING DIRECTOR

1 On Donsö, people have always made their living close to and from the sea. To cope with the challenges that follows from that, we have developed the tradition to strive together. This has continued to the present day, when we often discuss and share our experiences about the different situations we face. Donsö really is a place where people are good at cooperating in many ways.

2 Our goal is to maintain a good economic growth by solid investments that reduce our negative impact on the environment, and that goal ensures our ability to carry out safe and sustainable transports.

The focus of the investment in two new vessels, to be delivered in 2021, is safety, a good working environment, energy efficiency and energy recovery. They will run on LNG and/or LBG. Their CO2 emissions will be reduced by more than 50 per cent compared with the ships we operate now. We design the new ships with input from some of our crew members, who have contributed considerably with their practical experience. We also invest in energy efficiency measures on our current vessels.

3 Our five vessels are in the larger intermediate-sized tanker segment of 20 000-25 000 dwt. They operate mostly in north-western Europe but the area also sometimes extends to between the Arctic and the Mediterranean. They are chartered by our subsidiary Navix Maritime Chartering, where they are part of a group of ten vessels.

Ektank

JÖRGEN JOHNSSON, MANAGING DIRECTOR

1 The small community of Donsö is built around the church with all its related activity, which contributes to a very strong sense of belonging and solidarity among the 1 500 inhabitants. There is a familiar atmosphere where all help all. The shipping companies cooperate despite being competitors, realising the need to stand together to become even stronger. That, together with the genuine passion for ships and the love of the sea and the island, I think is the explanation to the fact that the Donsö shipping companies have become a well-known concept and constitute a great part of the national tanker fleet.

2 Our two latest vessels, built in 2018, are designed to reduce the environmental impact. The ships' machinery, hull, propeller and rudder reduce the CO2 emissions by 30 per cent, SOx emissions by 97 per cent and NOx emissions by about 50 per cent compared with a ten years older corresponding vessel.

We constantly work to reduce the environmental impact of the ships through energy efficiency optimisation and investments in new propulsion technology. We have made drastic improvements in reducing the fuel consumption of our vessels.

We are not convinced that a fossil fuel like LNG is the maritime final fuel of the future. We have great hopes for the development of biofuels like biodiesel (HVO), which we believe is one way to go for a fossil-free fuel for the maritime industry.

Together with our partner OSM, we work for human rights and cannot tolerate violations of them. We will always show respect for human dignity and rights in all relations, including respect for the culture, customs and values of individuals and groups of people.

3 All our ships operate on the north European market and are chartered by the chartering department at Ektank. The vessels are built to Swedish/Finnish Ice Class 1A and are classified for oil and chemical products with a capacity of 13 700-19 900 MT.

Today, Ektank has a fleet of six ships but by the end of the year one of them will be sold due to the age limit of 20 years. When that ship will be replaced is too early to tell.

Furetank

LARS HÖGLUND, MANAGING DIRECTOR

1 Donsö, today the centre of Swedish tanker shipping, has a long history at sea - it began several hundred years back with mainly fishing and local cargo transports with small sailing vessels. Today, close to 50 modern vessels owned by the Donsö shipping companies transport oil world wide.

This is living proof of what tradition and cooperation can establish - sharing experiences of shipyards and other suppliers, sources for finance and ways to cut costs by being innovative.

2 The vessels in our latest newbuilding program have a design (completely in compliance with TIER III) that takes into consideration IMO's Energy Effective Design Index and measured to this, our newbuildings are 35 per cent better than the final requirements.

The ship can operate alternatively on regular bunker oil, bio diesel, LNG or LBG. Auxiliary engines are SCR-equipped. The inert gas generator can be operated on LNG. Electric motors all have the highest energy class and all lights on board are LED. The rudder and hull shape are designed to reduce the noise level on board and in waters. The steering gear is adopted to frequency control and propeller could be run at variable speed, which reduces fuel consumption drastically. The installed ballast water treatment plant uses UV light and no additives of a poisonous character.

Furetank's policy is to own and operate new, or almost new, vessels flying recognized flags - preferably the flag of Sweden. The vessels are always built to or beyond the latest known rules and requirements. And they are built on the idea that a well designed and well functioning vessel creates a good working environment for onboard personnel, for oil terminal personnel and others. Furthermore, it increases the production output and reduces the risks for damage and accidents.

3 Furetank today operates seven modern oil and product tankers, mainly in the intermediate size segment - up to 20 000 dwt - employed by oil majors and traders, on COA, time charter or spot. The trading area is mostly Europe with occasional transatlantic voyages. Commercially, Furetank is one of the founders of the Gothia Tanker Alliance, based in Gothenburg, offering close to 50 vessels in sizes between 5 000 and 37 000 dwt.

It is Furetank's firm intention to stay closely in touch with markets, in this case through owning the commercial operator. In 2015 Furetank, together with fellow shipowners Thun Tankers and Rederi AB Älvtank, ordered six new LNG-powered vessels in China.

Furetank continuously strives to be a leading medium-sized shipping company with head quarters on Donsö, run by members of the family and recognized for innovative thinking and care of the environment.

Kiltank

BENJAMIN FHAGER, OWNER

1 For generations, there has been a joy in entrepreneurship and shipping on Donsö. A sound competition combined with the ability to learn from each other is likely the key to the presence of so many shipping companies on Donsö.

2 At Kiltank, we invest in long-term, sound business. A ship shall be a good environment both while you work and a good living environment during off duty hours - a place for employees to thrive.

3 Kiltank owns the tanker Donia, which was acquired in 2017, transporting petroleum products between Finland and the continent. Donia is of 7 700 dwt and operates in the chartering system of Sirius Chartering, which gives Kiltank's investment the advantage of large scale, both commercially and operationally. The vision of Kiltank is to own ships in the smaller tanker segment and to operate first-class tankers.

Northern Offshore Group

DAVID KRISTENSSON, OWNER/CEO

1 The knowledge and tradition of many generations are gathered in one place. There is a positive spirit of competition where we always want to improve, but not at the cost of others. We help each other when it is needed.

Our basic values are very important for us and permeate our companies and activities. Above all, it is a question of trust and professionalism. We are many who share the same values, which I think enables us to achieve great success both individually and together.

2 We always strive to be flexible and open to new opportunities. It is not the big one defeating the little one, but the fast one winning over the slow one. We work closely with our customers to ensure that we meet their requirements and expectations.

The Donsö shipping companies cooperate where we have common interests, for example now at the Donsö Shipping Meet.

3 The largest business area of the Northern Offshore Group is in Offshore Wind, where the companies Northern Offshore Services (N-O-S) and Mareel Ltd transport materials and technicians to offshore wind farms on crew transport vessels (CTVs).

N-O-S is also in the process of building what will become the first hybrid CTV. Northern Energy & Supply offers

solutions in Energy, Recycling and Logistics. The group operates primarily in northern Europe and has recently become part owner of British CPower, offering consulting and specialist solutions within Offshore Wind.

OljOla

TOM NILSSON, DEPUTY MANAGING DIRECTOR

1 The island's traditional community spirit and its close connections to shipping has been a good starting point. There is an incredible amount of technical know-how on the island and in the open atmosphere people are helping each other and sharing experiences when building and operating vessels in a safe and sustainable way.

Of course, personal commitment and passion for the business is a prerequisite for success. I also want to believe that the collective interest in each other's well being and success encourages to further development.

I am of a younger generation and I try to listen to those who have been around for a long time and I am trying to absorb as much as possible of their knowledge. It is a privilege and we are grateful to be able to do what we love.

2 Our main goal is to establish and maintain good relations to our employees, customers and partners. We believe in long-term relationships and the importance of delivering. The result of this can now be seen in the newbuilding project that we are working on together with our customer.

We are currently building a bunker vessel designed to increase flexibility and reduce environmental impact. Due to increased cargo intake and flexibility, we expect to reduce the number of voyages and port calls. The ship is equipped with a diesel-electric propulsion system which is optimized for our types of operations. Calculations about the propulsion system and its energy output show, in combination with the hull design, a significant improvement compared to our existing vessels at corresponding speed.

3 OljOla Shipping AB is a family-owned shipping company with its roots on Donsö. We own and operate coastal bunker vessels along the coasts of Sweden, Denmark and Norway. We carry and distribute bunkers to shipping for our charterer Stena Oil.

We are a small but powerful company under development. We look forward with great excitement and anticipation to the coming addition in our fleet and new challenges.

Sirius Shipping

JONAS BACKMAN, MANAGING DIRECTOR

1 The island of Donsö has a long tradition of fishery and shipping. This has contributed to an extensive know-how and the practice of sharing experience and best practices, especially within the technical area.

Working together, the shipping community on the island has the strength to influence and take the lead in a sustainable shipping for the future. This is an environment that creates a win-win situation were what is good for the industry, also is a competitive strength for the individual company.

2 At Sirius, we encourage our employees to seek out items for improvement to create even more efficient, safe and eco-friendly transport. In addition to these ongoing daily efforts, Sirius has also diversified and ventured into the LNG segment.

The FLEXI project, carried out with the customer Gasum, resulted in the state of the art LNG vessel Coralius optimized for both efficient short sea trading and ship-to-ship LNG bunkering operations. The vessel is an important part of the infrastructure needed to make LNG more available for the consistent growing fleet of LNG-powered vessels. As of today, Coralius has performed more than 150 successful bunkering operations.

Sirius' latest newbuilding project, with the launch of the EVOlution series, is the next step for the environment and Sirius as a company. The development of the EVOlution series focuses on fuel economy, greenhouse emissions and working environment. The project has been carried out in cooperation with our customers, all to ensure sustainability.

3 Sirius Shipping performs safe and efficient transports of oil, chemical and LNG cargoes in northern Europe. Sirius Shipping has always had the courage to think and act differently. By never being satisfied and always trying to reach further, Sirius can boost customers' capacity and business.

With a fleet of modern tankers, skilled management, well-trained staff and a close cooperation between the ships and the shore organization, Sirius Shipping has earned a reputation as an effective partner and reliable shipping supplier.

Sirius Shipping is part of the Sirius Group where, together with the sister companies Sirius Chartering, Vald. Andersons Shipagency and Vald. Logistics, we can offer a full range of services; commercial management for chemical/tanker vessels, port agency services along the entire Swedish coast and reliable logistical solutions customized for the special requirements for the shipping industry.

Veritas Tankers

OVE JOHNSSON, MANAGING DIRECTOR

1 With the tradition of generations of shipping. We are challenged to maintain a high quality and performance of our vessels through innovative solutions. "If they can, we can".

2 Through cooperation between the shipping companies and a certain amount of competition. High quality vessels will make the customer happy and also makes it easier to employ highly skilled crew. Highly skilled crew, together with high quality vessel, equals safe transports of cargo! We are always looking into possibilities were we can save the environment, one way or another. "Less bunkers in, less emissions out"

3 Rederi AB Veritas Tankers is a family owned, operated and controlled company. It was founded in 1983 on the island of Donsö and has its origin in the bunkering trade. Today, the company owns and manages three oil and chemical tankers of 11.000 dwt, trading in North Europe. Our main goal is to conduct ship transports with the highest safety, first-class quality and in the most eco-friendly way possible.

Älvtank

CHRISTIAN NILSSON, MANAGING DIRECTOR

1 The island's long tradition of shipping means that very many people on Donsö have a solid knowledge about shipping, and tanker shipping in particular.

Most of those who work in the offices of shipping companies have their own onboard experiences, which gives them a good understanding of life and activities on board. We live close to our business, as all the Donsö shipping companies are owned and managed by families.

2 We employ young co-workers who picture their future with us and want to keep working with the company for many years. We are proud that almost all of our masters began with us as 2nd officers, it shows we thrive together.

Last year we took delivery of a LNG-powered ship built to the highest degree of environmental protection.

3 The Älvtank vessels are on 18.000 dwt and operate in Europe with clean petroleum products. They are chartered by Furetank Chartering of Gothia Tanker Alliance.

We will soon take delivery of a second newbuilding, one in a series of six identical tanker vessels built together with our partners Furetank and Thun Tankers.

Terntank

TRYGGVE MÖLLER, RIGMOR MÖLLER, ANNIKA KRISTENSSON, OWNERS

1 Despite operating in a fierce competition, the tradition is to share our experience of operation and technology. It is natural for us to share the joy when someone succeeds in buying a ship or makes an order for a newbuilding. The neighbour effect is very stimulating - if they, we can. Another thing is the closeness of all the shipping offices, where so much competence is gathered. That way, we get a feedback of experience to vessels beyond our own fleet.

2 Terntank was a pioneer regarding double bottom, double skin and LNG-powered propulsion. In collaboration with customers we have installed SCR and frequency converters to reduce emissions.

Together with customers we have also implemented a just in time-concept, meaning that the sea transport is right on time rather than fast. The speed and the time of arrival is adapted to the actual situation regarding the slots for cargo handling.

Together with our crews and the office we have refined the work environment so that we today have 100 percent retention rate.

3 Terntank is based in Skagen, Denmark, while the management and chartering functions are on Donsö. The area of operation is northern Europe, with focus on Norway and the North sea. The fleet consists of ten vessels of 9 000-16 000 dwt.

Our customers are oil majors in Scandinavia. Together with our chartering department and our customers, of which Neot, Preem and Exxon are the largest, we handle time charters and COA contracts.

The arrangement gave us the opportunity to order and take delivery of four LNG-powered, high-tech new buildings within a year in 2016/2017. The fuel consumption of the vessels is lower than any of us thought possible just five years ago!

PER HANSSON, OWNER

1 It is the competition and mentality that drives development. In addition to that there is a deep know-how.

2 To create sustainable development, I see that my main responsibility is to ensure that the company earns money and has satisfied customers. I invest in the vessel to maintain quality and safety.

My goal is also to always have competent and motivated employees, which is an important prerequisite for safe handling of the ship.

3 Vinga Ship operates the vessel Vinga Safir, which is employed in European trade with bunker deliveries and depot deliveries.

Vinga Ship Management

The Donsö Fleet

Name, year of build, dwt, flag (FRO=Faeroe Islands)

Donsötank
Bonito, 2004, 25 000, Swe
Evinco, 2005, 19 999, Swe
Excello, 2008, 19 999, Swe
Solando, 2009, 19 992, Swe
Solero, 2009, 19 991, Swe
Newbuilding 1, 2021, 22 000
Newbuilding 2, 2021, 22 000

Ektank
Ek-River, 2018, 19 884, NIS
Ek-Star, 1999, 13 683, NIS
Ek-Stream, 2018, 19 884, NIS
Eken, 2004, 13 702, NIS
Ekfjord, 2009, 17 006, NIS
Ekfors, 2003, 13 702, NIS

Furetank Rederi
Fure Ferder, 2003, 18 736, FRO
Fure Fladen, 2003, 18 736, FRO
Fure Nord, 2004, 17 653, Swe
Fure Valö, 2018, 17 999, Swe
Fure Ven, 2019, 17 999, Swe
Fure West, 2006, 17 557, Swe
Furevik, 2005, 37 082, FRO
Newbuilding, 2020, 17 999

Kiltank Shipping
Donia, 2008, 7 702, Swe

Northern Offshore Services
Accomplisher, 2012, DIS
Achiever, 2011, DIS
Advancer, 2013, DIS
Arriver, 2012, DIS
Assister, 2012, DIS
Attender, 2102, DIS
Backer, 2012, DIS
Boarder, 2012, DIS
Bolder, 2013, DIS
Booster, 2012, DIS
Braver, 2013, DIS
Bringer, 2011, DIS
Builder, 2011, DIS
Carrier, 2013, DIS
Defender, 2016, DIS
Deliverer, 2005, DIS
Detcter, 2016, DIS
Developer, 2014, DIS
Discoverer, 2014, DIS
Dispatcher, 2015, DIS
Doer, 2017, DIS
Northern Kattegat, 1968, Swe
Northern Skagerrak, 2017, Swe
Preceder, 1975, Swe
Provider, 2007, DIS
Rescuer, 2015, DIS
Server, 2005, DIS
Supplier, 2005, DIS
Supporter, 2009, DIS
Tender, 2008, DIS
Transporter, 2009, DIS
Voyager, 2008, DIS
Newbuilding, 2020

OljOla
Norden, 2006, 2 870, Swe
Oljaren, 2001, 1 030, Swe
Newbuilding, 2019

Sirius
Coralius, 2017, 3 077, Swe
Lexus, 2005, 4 513, Swe
Lotus, 2005, 4 514, Swe
Marinus, 2003, 7 082, Swe
Mercurius, 2019, 7 999, Swe
Nautilus, 2006, 6 928, Swe
Neptunus, 2007, 6 928, Swe
Nimbus, 2008, 6 927, Swe
Olympus, 2006, 9 189, Swe
Saturnus, 2018, 7 999, Swe
Scorpius, 2006, 11 249, Swe
Tellus, 2006, 9 181, Swe

Terntank
Tarnbris, 2007, 11 288, DIS
Tern Ocean, 2017, 15 000, DIS
Tern Sea, 2016, 15 000, DIS
Ternfjord, 2016, 15 000, DIS
Ternhav, 2002, 14 796, DIS
Ternholm, 2005, 14 825, DIS
Ternsund, 2016, 15 000, DIS
Ternvag, 2003, 14 796, DIS
Ternvik, 2001, 14 796, DIS
Ternvind, 2008, 11 259, DIS

Veritas Tankers
Astina, 2006, 11 283, Swe
Astral, 2006, 11 317, Swe
Astrea, 2010, 11 215, Swe

Vinga Ship Management
Vinga Safir, 2000, 2 650, FRO

Älvtank
Ramanda, 2018, 17 994, Swe
Ramona, 2004, 17 592, Swe
Newbuilding, 2019, 17 994

ANNA LUNDBERG

Looking beyond 2020

Bunker One Sweden's prediction is that the price spread between MGO and HFO will increase.

The Bunker One Group consists of a growing number of physical bunker suppliers with the aim to attain global coverage. Throughout the group there is an ongoing process of streamlining, all the way down to the local level. The goal is to ensure that customers feel equally familiar with the service of any supplier in the group, combining the global reach with a strong local hold.

BUNKER ONE SWEDEN operates in an area extending from the Norwegian west coast, around the Swedish south coast to Karlshamn and across the sound of Öresund to Copenhagen and Skagen. The company is part of a group that during the last few years has become one of the global majors in the bunker business.

CEO Carl Johan von Sydow is enthusiastic when he describes the Bunker One Group's gathered knowledge:

"The greatest asset is that you access so much information about what goes on in other parts of the world, how others view future regulations and how they take on the development."

On January 1st 2020, the new global IMO rules for max 0.5 per cent sulphur content in marine fuels enter into force. At Bunker One, they are preparing for a greatly changed bunker market.

CARL JOHAN VON Sydow and COO Petter Jonason explain that there will be many decisions to make for shipowners. It will still be possible to burn heavy fuel oil, HFO, provided there is some solution to cleaning the exhaust gases, such as scrubbers. In addition, there will be a variety of fuels with a sulphur content of 0.5 per cent, feasible when sailing outside an ECA, which has stricter limits. The 0.5 fuels can be based on vacuum gas oil, VGO, or they can be cracked down to the allowed amount of sulphur content. The main point for shipowners throughout the process of bunker handling and burning is to keep the different fuel grades separate in order to avoid engine problems and non-compliance.

Depending on the trade and the conditions of each vessel, it may be necessary to bring several grades of fuel on board.

"We see challenges with the quality of fuel ahead. Will the different bunker alternatives be compatible with each other? We try to be proactive and gather as much information as possible, so we do not end up in a situation where the shipowner gets into trouble", says Carl Johan von Sydow.

"As a shipowner you need to have many fuel tanks on board. You need one fuel for your auxiliary engines, another for the main engine, and you need to be able to switch fuels when you enter a SECA", says Petter Jonason.

Both are confident about their own supply chain and can guarantee its quality both now and after 2020.

"We buy directly from the refinery. We load at the Preem refinery in Brofjorden, among others", says Carl Johan von Sydow.

PROBLEMS CAN ARISE when ship operators bunker elsewhere and are not sure if the next fuel is compatible with the one they already have on board, a situation that already exists today but is expected to worsen with new and more varied fuel mixes after 2020.

"We have secured the supply of HFO and all other products that we provide today. We are always on the lookout for new supply and are investigating the options for customers who want to burn 0.5 fuels when exiting an ECA area. Those products are being developed at the refineries right now. To ensure the supply after 2020 we have a close dialogue both with our regular suppliers and with potential ones", says Carl Johan von Sydow.

"We think that if you operate 100 per cent within the Baltic sea, a scrubber is a great alternative", he says.

Petter Jonason paints a scenario where the price of gas oil will rise, as it may be difficult to meet the coming demand for it.

"There will be an HFO surplus. That makes a scrubber investment calculation interesting", says Petter Jonason.

Anna Lundberg

WALLENIUS SOL

Ragnar Johansson, *managing director of Wallenius SOL.*

Building sustainable infrastructure

Wallenius SOL are creating a revolutionizing transport infrastructure for shipments to and from the Gulf of Bothnia.

When two influential Swedish operators join forces to create a new, efficient infrastructure for industry in the Gulf of Bothnia the result cannot be anything else but remarkable. We are talking about the joint venture between two successful Swedish shipping companies with long traditions and an impressive track record - Wallenius and SOL.

Wallenius is a pioneer within global car shipments being one of the key players in the development of the pure car and truck carrier (PCTC). Today, Wallenius' contribution to the global car trade is operated through ventures such as Wallenius Wilhelmsen and UECC.

The activities of SOL, or to use its full name, Svenska Orient Linien, has its roots in the early age of Swedish trans ocean liner shipping. The company has several business areas - roro services from the Gulf of Bothnia to the Continent and to the UK operated by SOL Continent Line, Liner services to the Mediterranean using its subsidiary SOL Med Service and project/contract shipments as part of its TransProCon operations.

RAGNAR JOHANSSON, MANAGING Director of Wallenius SOL, says that detailed planning of the cooperation began at the end of 2017 although the idea to fundamentally overhaul the provision of efficient industrial shipments serving the northern parts of Finland and Sweden was much older than that.

"We thought that it should be possible to coordinate and streamline the forest industry's seaborne transports by concentrating traffic to only a few ports in Germany, Benelux and England. We also believe that a transport system which is designed to meet future needs should be scalable, flexible and of course sustainable. Last but not least, the transport system of tomorrow should include a sufficient number of large, and in every aspect, efficient eco-smart vessels."

Ragnar Johansson explains that it was essential to take into account that the forest industry was committed to their existing long-term contracts for both chartered vessels and terminals.

"Two years ago, we discovered that the stars would be right in 2021 to start something new. At that point charter contracts for a number of vessels and agreements for several terminals would expire."

WALLENIUS SOL HAS already commenced activities. Today the company has its head office in Gothenburg and it is located in the same building as SOL. The new venture has taken over the operation of SOL Continent Line's roro services from Swedish and Finnish ports to the Continent and England. Thus far, the fleet employed remains the same, however, this is just an interim solution. Wallenius SOL has ordered two ultra large roro vessels from China which are slated for delivery in 2021. The contract also includes options for additional vessels. In total, five ships will initially be employed after 2021, of which four may be newbuildings.

The newbuildings will be the world's largest roro vessels built to Swedish/Finnish ice class 1A Super. They will also be eco-smart as they will be powered by LNG. Their cargo capacity is planned at 5800 lane meters with a deadweight of 27000 tons.

The new vessels are designed to form an essential component for long term operation of the service. Using state-of-the-art technology and innovative cargo handling solutions they will contribute to increased efficiency in the logistics chains of the company's customers.

"Design work is in full swing and is progressing very well, we are pleased so far", says Ragnar Johansson.

The newbuilding project was developed by Wallenius Marine which is also managing the project while Danish-based consultancy Knud E. Hansen has been contracted to participate in the design of the vessels. All of the newbuildings will be Swedish flagged and will also be a part of the Swedish tax tonnage system.

"The Swedish flag is just as competitive as any other European flag and the tonnage tax system suits us well as we introduce new vessels in the long-term. It is ideal for our business", says Ragnar Johansson.

THE COMPANY'S MAINSTAY for cargo exports and imports is the forest industry. Stora Enso and Mestä Board have already signed agreements with Wallenius Sol as has BillerudKorsnäs, an existing customer to SOL.

According to Ragnar Johansson the goal is to develop a long-term infrastructure for the industry around the Gulf of Bothnia, offering environmentally friendly seaborn transportation.

"It is almost as far from Kemi in northern Finland to the Continent as it is from eastern Canada to the Continent. The entire shipment takes place within SECA, which means additional bunker costs. The forest industry competes with their products, not with their logistics. By consolidating their shipments to the same liner service, they can utilize volume shipping capacity with sailings at least twice a week while reducing their shipment costs substantially. We offer them the possibility to strengthen their competitiveness and get better opportunities to sell their products in the market", says Ragnar Johansson.

THE NEW RORO service is based upon high frequency sailings, something that Ragnar Johansson believes is necessary for the industry in the north.

"This is an industrial project where the Gulf of Bothnia-region will receive a liner service as good as those in southern Finland. By consolidating cargo volumes and attracting an increasing number of industrial companies and customers with long-term agreements we are able to offer a liner service where industry is its base. Instead of serving mainly trailer shippers and freight forwarders, which is the case in liner traffic in southern Finland, we offer a complete solution", Ragnar Johansson explains.

Ragnar Johansson points out that it is not at all self-evident that there are liner services available in the North.

"Therefore, the industry in this area has been forced to handle its shipments by themselves using their own shipping companies. This has been necessary to ensure that delivery deadlines are met, especially when it comes to the distribution of their products to their main markets. The change is that we now offer a long-term service enabling the forest industry to invest in production facilities rather than in advanced vessels. Another factor which makes it less attractive for the industry to be engaged in shipping operations is that from 2019, long-term chartered vessels are included in the balance sheet which is hardly appreciated by any CFO", Ragnar Johansson says.

RAGNAR JOHANSSON IS convinced that the main reason for the lack of traditional liner traffic to and from the Gulf of Bothnia is that there are unfavourable conditions in the region.

"Liner services to Southern Finland up to Rauma are based upon cargo from freight forwarders and ferry traffic because a large share of consumers are concentrated in this area", he explains and continues:

> *"This is an industrial project"*
>
> **Ragnar Johansson, Managing Director, Wallenius SOL**

"Therefore, long-term contracts are necessary for us to make this fly. The point is that no one is strong enough to do this alone. However, together in a system, where every customer takes their share of responsibility we are able to achieve astounding results. Wallenius SOL is a neutral party. We are perceived as dedicated and objective. We will deliver our service as agreed. Our customers benefit from our economy of scale and a higher frequency of sailings. In addition to that our services are also sustainable." The key to success, according to Ragnar Johansson, is listening to customer needs, investigating their logistic requirements and offering them the solution that they really want.

"This service is tailor made. Our ambition is to offer a customized solution for every customer as far as it is possible.

WALLENIUS SOL

> *"It is a scalable system"*
>
> **Ragnar Johansson, Managing Director, Wallenius SOL**

Naturally some compromises have to be made when many customers share the same logistic chain, but it is still possible to achieve a lot. Our main sales pitch is that this is a service for the industry, but freight forwarders are of course welcome too. An important feature is that our customers appreciate the environmental approach."

The foremost challenge when operating liner traffic in the Gulf of Bothnia is, according to Ragnar Johansson, to obtain large enough volumes on the northbound legs.

"We know that considerable volumes of goods needed in the industrial production processes in the region today are carried by trucks from the continent to the North. This is by no means rational and it is not good for the environment either. We see great potential in our shipments and substantial benefits for the environment. As there is free capacity on board the existing northbound vessels a modal shift from road to sea would mean no negative impact on the environment at all. But it would take away a large amount of trucks from the roads."

SINCE LAST SPRING, when it was announced that the new shipping company had been established, Ragnar Johansson has been mostly on the road, meeting potential customers.

"The project got much attention when it was announced. We were contacted by several large industrial enterprises and from April until now I have visited many companies to inform them about our ideas and what we want to achieve. The response has been overwhelming."

He emphasizes that there will be a major shift in 2021 when the first of the newbuildings are put into service.

"Until then we will continue to run our well established and reliable roro service with our existing fleet as we have done for many years. Now we are focused on building our new delivery system and will by no means rest on the contracts that we already have. The advantage of shipping is that it is a scalable system. It is indeed a big deal to add a vessel, but still not extraordinary. Neither is it so difficult to add one or several ports to the system."

Ragnar Johansson adds that even the ports involved are thrilled with the new venture's initiative.

"By now investments totalling more than three billion euros in ports included in our roro service have been announced by the industry. We are pleased with that and it ensures that we are comfortable with our investments in newbuildings."

Pär-Henrik Sjöström

Donsö: Small, but a maritime giant

Torbjörn Dalnäs writes about his personal impressions of the rocky island of Donsö – very likely one of the most shipping dense spots in the world.

The word insular is aiming at an island connection. It might also point to an alleged self-sufficient narrowness of outlook, that islanders are supposed to lack enlightening contacts with the outside world. Thus it doesn't fit at all to the approximately 1500 inhabitants of the small island of Donsö in the Gothenburg southern archipelago.

FROM MAINLAND GOTHENBURG it takes around 40 minutes aboard a conventional archipelago ferry to get there. If you chose the high speed ferry it takes a little bit more than 20 minutes.

On arrival, the visitor sight a pier with dozens of flagpoles. Along with the Swedish flag the house flags of some twelve local shipping companies with a varying number of ships each are flying in the wind. That means approximately one shipping company per 100 islanders!

You'll also see the flags of a couple of companies which moved to mainland Gothenburg but have their roots here, among them the world leading ferry company Stena Line.

According to a legend, the island got its name from a castaway Dutch seafarer named Don. But rather, it's supposed to be named after the downy cottonsedge plant. Down is "dun" in Swedish.

Donsö and the double-sized neighbouring island of Styrsö are connected by a bridge, colloquially called "the crow's plank" (kråkspången in Swedish). The islands are quite disparate. Historically, Styrsö had several hamlets; a fishing village here and a small cargo wharf there (at times smugglers' dens as well), and also scattered crofters' holdings.

HERE THE VISITOR may find a clue to the ingenuity of the Donsö islanders. On their small island each and everyone had to devote themselves to both fishery, freight trade, small scale farming and associated crafts.

Take Terntank as an example. This shipping company was founded in 1958. But its prehistory goes back to a local ship chandler, run from 1904 by the Kristensson family. During World War One, a family owned fishing-boat was equipped to be able to carry a certain amount of petroleum products.

During the Thirties, combustion engines became commonplace at sea. When there was a fishing decline, the Donsö fishermen used to make a deviation to Copenhagen to purchase barrels of diesel and paraffin oil. These products were then sold in Gothenburg with a good profit.

Some of the fishermen installed permanent tanks on board in order to increase the volume. This was a first step in the process leading to pure coastal tankers after World War Two. Thus it has continued, in a pace the Donsö shipowners themselves have decided.

PETROLEUM PRODUCTS MAY dominate the Donsö shipping today, but ashore private car motoring is not allowed. For decades, a normal means of conveyance has been the so called "Donsö Porsche" (a three wheel utility moped), in later years in competition with electric golf carts.

The islanders' homes indicate comfort without extravagance. Several gardens are decorated with symbolic anchors, and many mailboxes are beautifully painted with motifs revealing which shipping or fishing company the family belongs to. An impressive church, run by the Mission Covenant Church of Sweden, has an important role for the spirit of community.

Probably we must go to the Greek Archipelago to find an equal. There is no lack of candidates. During the 20th century the Aegean island of Andros in the northern Cyclades a leading shipping centre, with prominent shipowners like Embiricos and Goulandris. But the island is quite big.

A competitor is the island of Chios, just off the now Turkish port city of Izmir (which was still called Smyrna when a certain Aristoteles Onassis was born there). Chios has brought forth several shipowner clans like Livanos, Frangos and Chandris.

BUT IN THIS context small is beautiful, and Chios is also too big to match Donsö. But a short distance off the town of Kardamyla in the northeastern part of Chios we find the small island of Oinousses.

Oinousses means "Place of wine". It's a bit bigger than Donsö but with less permanent inhabitants, around 1000. Practically all of them are said to be involved in shipping. Here, famous shipowner clans like Hadjipateras and Lemos have their roots. They are reported to visit their residences every summer, and their donations have made it possible to run a maritime school and a maritime museum on the island.

But the difference to their Donsö colleagues is that they run their shipping companies in Piraeus, London or New York.

Oinousses has probably better wine and calamares in the local taverna, but Donsö has smoked mackerel and much better and safer ships!

Torbjörn Dalnäs

PÄR-HENRIK SJÖSTRÖM

Working for zero emissions

A large fleet under the Swedish flag benefits the nation more than the shipowners.

Rikard Engström, Managing Director of the Swedish Shipowners' Association, has a vision about a strong merchant fleet where the Swedish flag is the obvious choice:

"As far as I'm concerned, Sweden as a nation benefits even more from a large Swedish-flagged merchant fleet than the individual owners. For Sweden, as a country, it is important that the fleet is diversified enough and includes all vessel types needed."

SWEDISH SHIPPING HAS taken a position in the forefront when it comes to sustainability, especially regarding safety and environmental concern. The goal is to reach zero emissions in 2050, and for domestic shipping even earlier.

"In the meantime we must ensure that it is also profitable to improve the other two pillars of sustainability. If it comes with reduced profitability, no one would follow Sweden's example", Rikard Engström emphasizes.

With some legal adjustments he thinks that it is quite possible for shipping in Sweden to be profitable and sustainable.

"If we succeed in this it is also paving way for Sweden to influence the surrounding world to enter a path towards more sustainable shipping without affecting the economical results of the business in a negative way."

IN RIKARD ENGSTRÖM'S opinion the Swedish flag is not just a matter of ensuring Sweden's shipments of import and export goods in all conditions. It is also a symbol to show ship owners throughout the world that it is possible to operate shipping in a profitable way without sacrificing sustainability.

"We must have a national policy creating as good conditions as possible for shipping activities and entrepreneurship. Then the Swedish flag would no doubt be the obvious choice for at least all Swedish owners but perhaps also for owners in other countries who want to highlight sustainability."

Rikard Engström thinks that a large Swedish-flagged fleet is also important for Sweden's credibility in the international context such as when talking about the importance of a more sustainable shipping sector in IMO.

"If we cannot show the world that it is attractive for our shipping companies to register their vessels in Sweden, how could anyone follow our example on the road towards zero emissions?"

WITH THE RIGHT conditions in place, Rikard Engström thinks that it is without any greater efforts possible to at least double the number of larger, Swedish flagged merchant vessels to some 200.

"Much progress has been made during the last years, such as the tonnage tax, but the most important thing is that the politicians by their actions show that shipping is an important industry for Sweden", Rikard Engström says.

Among the actions needed he mentions an abolishment of stamp duty as it is set up today, proceeding with developing the tonnage taxation system to become more inclusive and ensuring the so called net model.

"We have to safeguard the conditions, so that the ship owners are able, want and dare to flag Swedish. I see a great potential for more Swedish-flagged vessels. I want the Swedish flag to attract shipowners in the forefront of sustainable shipping."

NOW IT LOOKS like the tide has turned and the number of Swedish-flagged vessels has begun to increase.

"We must not lose momentum. We must continue our work with promoting shipping, for the maritime industry, for Swedish industry and for Sweden as a nation. Many positive things have happened, but the signal from the politicians is important, stating that they really do believe in shipping."

Pär-Henrik Sjöström

"We must not lose momentum"

Rikard Engström, Managing Director, Swedish Shipowners' Association

New fuels

Currently, hydrogen is not a viable option for marine applications, according to Rene Sejer Laursen.

According to Rene Sejer Laursen, Promotion Manager, ME-GI/ME-LGI at MAN Energy Solutions, currently hydrogen is not a viable option for marine applications even though he says that significant advances have been made during the past few years.

"It is a highly combustible fuel with small molecules which are hard to contain. Also, the space it takes up on board is four times greater than conventional bunker as it has to be stored at minus 253°C in large, spherical containers with what we anticipate will require one-meter thick insulation. This means a significant reduction of valuable cargo space."

LNG IS A better option in terms of infrastructure costs, he says even though there is a lack of infrastructure internationally.

"LNG is a viable solution seen from an environmental standpoint, but it is still a costly and complex alternative for operators. We see a certain resistance to its introduction for this reason. LNG Infrastructure is not readily available in any significant scale. However, this could well change within the coming 10 to 15 years", Rene Sejer Laursen says.

So, what of the alternatives?

"We also have methanol as a fuel and to a certain extent also ethanol which both have the advantage that they can be used in a mix on the same engine."

SWEDISH SSPA, TOGETHER with Lloyd's Register, have looked at this very closely and have determined that it could be a future fuel as was published in a study commissioned by the EMSA.

"What we are seeing, however, is an increase in interest for batteries in small scale installations and ammonia as a fuel for propulsion. Ammonia is readily available and when burned it releases no carbon emissions."

Ammonia (NH_3) contains just one nitrogen and three hydrogen atoms which is why it is being closely scrutinized. Its combustibility is due to the fact that it includes hydrogen in its makeup. However, it is cheaper and of a lower volatility than pure hydrogen which makes it safer to transport.

"Production facilities currently exist around the world because ammonia is widely used in fertilizers, so the infrastructure is already present", says Rene Sejer Laursen.

Using ammonia as a pure fuel is not by any means a new phenomenon and it has been used in combustion engines in the past, but Rene Sejer Laursen points out that NOx emissions are still an issue that need to be addressed.

"Nitric oxide emissions could prove to be a problem which is something that the Kyushu University in Fukuoka, on the island of Kyushu, Japan is studying. They are conducting tests on ammonia used in diesel combustion cycles. If the NOx level proves to be too excessive, then we have the technology to reduce the levels of NOx which can either be done by installing a SCR or EGR systems."

MIXING AMMONIA WITH air using a variation of pressures has previously been tested using what are known as the Otto principles. These are based on the Otto cycle which is the thermodynamic process which drives a typical piston engine.

Basically, it describes what happens to a 'mass' of gas as pressure, temperature, volume, heat addition and heat removal all interact. The gaseous mass used under these conditions is called the system. The Otto cycle means that the output from the system allows the engine to drive whatever it is attached to through air, on land or in water.

Comparisons have been made of the results with an ammonia/air premix constant before it was introduced into a combustion chamber. After many tests Kyushu University researchers found that two ammonia flows combined with one stream of air actually reduced nitric oxide emissions due to an even distribution of fuel and air within the combustion chamber. So, reduced nitric oxide emissions were proved possible.

But could this be a path for the hydrogen proponents?

According to Don Hofstrand at the

MAN

Agricultural Marketing Resource Center, this could be the case.

"Anhydrous ammonia (dehydrated ammonia) can be a viable substitute for petroleum as a mobility fuel. It can be manufactured and made from all our current primary energy sources."

He believes that production should be focused on three things - the cheapest, cleanest and greenest sources.

Ammonia can be used in internal combustion engines with minor modifications and ammonia fuel cells are being developed. Ammonia distribution infrastructure already exists and other, under-utilized, existing infrastructure can be converted although there are safety issues.

"But these are no more than those of gasoline or diesel fuel", he says.

TO SOME IT still might seem to be an under the radar fuel, but Sejer Laursen says that ammonia is a viable future fuel.

"The infrastructure is there already as I have said before and currently there are around 170 ammonia carriers which are far less complex in their technology than LNG carriers for example. Storage is done in a pressure tank at 20 bar and price-wise it is a cheap alternative."

As a new fuel it faces the usual scrutiny of authorities around the world which requires a set of standards for its use to be approved. Currently, legislation is being looked at in Norway and other applications are pending.

ITS MANUFACTURE IS relatively simple and has been around since 1917 due to a breakthrough by Fritz Harber and Karl Bosch. Currently, ammonia is one of the most highly produced inorganic chemicals in the world with an annual output of 195 million tons per year. The largest producer by far is China with Russia coming at a not so very close second. India and the US rank third. Even with a combined output, none of these three can outmatch Chinese production volumes.

As a flexible (regarding the ways it can be used) product, apart from the previously mentioned ingredient in fertilizers, it is also used to make plastics, fibres, explosives, nitric acid as well as dyes and pharmaceuticals.

LNG can be used to create ammonia with the added advantage that you can actually recover and reintroduce spent CO_2 back to its source. One operator embracing this way of thinking is A. P. Moller-Maersk that has set a goal for carbon neutral ships by 2030.

But if new fuels are to be used efficiently, then the engineering that they drive needs to be equally as efficient if not more so. Sejer Laursen explains:

"Investments in our engines and systems are long term and vital for owners so we work to future-proof our solutions as much as possible. If we take traditional fuels, we have optimized things like injection pressure to increase efficiency. Our latest engines inject at 900 bar into the combustion chamber which provides better fuel efficiency. We also use new materials in the manufacture of these both for efficiency and longevity."

"This technology can be retrofitted, but here the age of the vessel, its machinery and its route has to be taken into consideration. New engine technology is commonly adopted in newbuildings, less often in retrofits, but there is a growing market for the latter", he says.

"Legislation is the driving force"

Rene Sejer Laursen, Promotion Manager, MAN Energy Solutions

SO, WHAT IS the major driving force for adopting new fuels and new technology? His answer is straight to the point.

"Legislation without a doubt. This applies to all segments of the industry although those companies with a high environmental profile such as ferry and cruise operators are making investments based on the commercial grounds of their customer bases. In general, I see that for suitable applications, hybrid solutions are making rapid headway, but we are a long way off from its use as a drive-line solution for large vessels."

In the end it is the human factor that is the sweet-spot and here operator attitude, costs and crew training in the use of new fuels is vital.

"One issue that we have to take seriously in the introduction of new technology is its use by crews on board. We provide operators with training programs to cover this. Today's ships are very sophisticated so knowledge and an understanding of how to operate them efficiently and safely is vital", concludes Rene Sejer Laursen.

Daniel Cooper

DESTINATION GOTLAND

Innovation meets Gotland

The order of Visborg represents a record-breaking investment in Rederi AB Gotland's 154-year history.

Visborg was built in China at the state-owned Guangzhou Shipyard Int. (GSI). This continues a tradition for Destination Gotland as its two existing, large capacity vessels Visby and Gotland were built by the same yard there in 2003.

AFTER WINNING THE Swedish Transport Administration's (STA) procurement contract for services linking the island of Gotland with the mainland, Destination Gotland signed, in April 2014, a new agreement with STA for its Gotland services beginning in February 2017 and running until January 2027. During the procurement phase, the Swedish Transport Administration set specific conditions for how services should be operated including capacity requirements per day and per year. These were augmented with further demands regarding arrival and departure times in Visby, Christer Bruzelius, CEO of Destination Gotland explains.

VISBORG	
Builder	Guangzhou Shipyard, China
Class	DNV GL
Length	199.99 m
Beam	25.86 m
Draught	6.40 m
Dwt	4636
GT	32447
Lane meter, cargo	1650
Cars	500
Passengers	1650

"The idea behind this was to create an advantageous timetable for the people who live and work on Gotland, but also for visitors to the island and for freight transportation."

It wasn't long after Destination Gotland signed the agreement with the Swedish Transport Administration that Visborg was ordered by Rederi AB Gotland. Keel laying took place on December 10, 2015 and the ship was launched on November 18, 2016. On December 8, 2018, a few days before delivery, Visborg was christened by her Godmother Siv Olofsson, who has worked closely with the board and management of Rederi AB Gotland for more than 40 years.

visborg was handed over to its owners on December 14, 2018 and the vessel began its just over one-month long journey home on December 18, 2018. Along the way the ship made calls in Hong Kong, Singapore, Durban and Las Palmas before arriving in Landskrona on January 23, 2019. Here a visit to Oresund Drydocks secured her final outfitting before she was to be entered into regular service. Visborg arrived in Visby on March 14 this year where she was welcomed by shipowner Eric D. Nilsson together with his wife Marieann and a large delegation including her Godmother as well as staff and management from Rederi AB Gotland and its subsidiary, Destination Gotland AB.

"Towards a climate neutral ferry service"

Christer Bruzelius
CEO Destination Gotland

DESTINATION GOTLAND

VISBORG NOW OPERATES on Destination Gotland's northern route between Visby and Nynäshamn.

"This summer we operated our new vessel together with the ferries Visby and Gotland", says Christer Bruzelius.

The Visby-Nynäshamn route is served by two large vessels while the company's Visby-Oskarshamn route operates with one large vessel during the high season.

"With three large vessels in service, we can create better traffic flows on our routes with up to 20 per cent increased capacity at peak times which typically are during weekends and in the high season. At the same time, our decision to use LNG as a fuel provides emission reductions of CO_2 by 20 per cent", explains Christer Bruzelius.

"The need to create sustainable growth in freight capacity, passenger numbers and with regard to our climate footprint is very important for Destination Gotland. Our service concept is also based on very short port turnarounds where a full ship carrying 1650 passengers and as many as 500 cars can be completed in just over an hour in the high season."

Christer Bruzelius says that the design of the new ferry is based on the company's previous experience from operating its SF 1500 vessels Visby and Gotland so as to create sustainable operations that will extend into the next contract period for ferry services to and from Gotland. The ship's engines enable operation using either LNG/LBG or alternatively low-sulphur diesel.

"This is especially important for us as we start our journey towards a climate-neutral ferry service between Gotland and the mainland. The choice of fuel, LNG, also gives us the opportunity to switch to LBG in future.

VISBORG IS PRIMARILY intended for day-time services and the vessel has 98-day cabins available for travellers. Compared to the company's SF 1500 vessels, Visborg (which is referred to as SF 1650 defined by its passenger capacity) can carry more passengers.

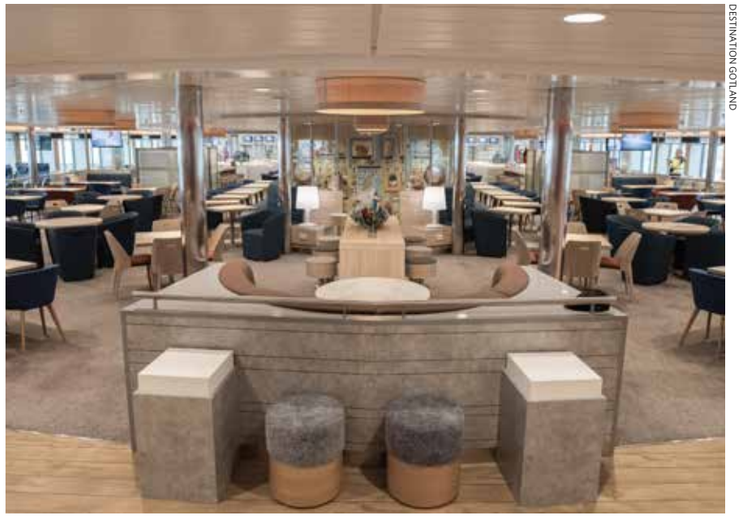
"The ship has capacity of 1650 passengers, compared to 1500 on our previous generation of ferries. During the journey, all passengers have their own reclining seat in one of our salons", Christer Bruzelius says.

Seating is available in two categories. Seats in the aft salon and central salon correspond to the company's existing economy class. Seating in the forward salon is sold in the same way as on the older vessels. On board Visborg there are separate sections for families with children or travellers with pets. Day cabins are located on deck 8 which also houses an upper seating lounge forward with a capacity of 620 people and which also has its own café. The lounge on deck 7 can accommodate 675 people with additional seating midships and aft on both sides of the ship.

VISBORG ALSO MARKS the introduction of larger public spaces offering better serving flows when passengers want to eat during the crossing. The galley adjacent to the restaurant square on deck 7 was supplied by Loipart.

"The new vessel offers better logistics with more payment points in the restaurant square than before. We have also introduced our 'Café concept' in more places on board during the high season. For example, we have a café in the upper lounge which is a change compared to our older vessels. Visborg features larger retail areas which improve the onboard experience", explains Christer Bruzelius.

"In addition, the ship has a large, wind-sheltered outdoor café on the top deck aft with a capacity of between 150 and 200 passengers that we know will be very popular on summer crossings. It is a facility that has been lacking on our



DESTINATION GOTLAND

“The new vessel offers better logistics”

Christer Bruzelius
CEO Destination Gotland

DESTINATION GOTLAND

older ships where passengers only have limited seating available aft on the top deck.”

FIGURA ARCHITECTS WERE responsible for the design of the restaurant areas and Danish OSK-ShipTech A/S played a major part in the ship’s configuration in close cooperation with the owners.

The transportation of passenger cars, trucks and buses is obviously a fundamental part of Destination Gotland’s business model. Visborg has been designed for fast and efficient cargo handling.

Her two full-length car decks both offer a drive-through concept with bow and stern doors for fast operation in port. A mix of trucks and passenger vehicles are also made on both decks in order to maximize capacity usage.

“The volume of freight vehicles is fairly evenly distributed over a year, while the number of passenger vehicles increases considerably during the high season and at weekends”, says Christer Bruzelius.

At the stern of the vessel there are separate, fixed ramps on either side of the ship that take vehicles to the upper deck as well as a door in the middle that leads onto the main deck.

In the port of Visby, Visborg docks bow first. On main deck cargo is handled through the bow door while the upper deck is loaded and unloaded through a side door forward on the port side. The cargo handling equipment is supplied by TTS.

VISBORG’S MAIN ENGINES comprise four dual fuel Wärtsilä 12V50DF which are located in two separate engine rooms both of which constitute watertight and fire-insulated compartments. If one engine room would become unusable, the other engine room remains intact with its doubled systems for maximum redundancy.

The main engines are in pairs connected to two shafts via reduction gears shafts that drive Wärtsilä propellers. The automation system was supplied by Wärtsilä Lyngsø Marine.

THE VESSEL’S TWO LNG tanks have a capacity of 285 cubic meters each and have been placed under the car deck forward of the engine rooms. LNG is primarily bunkered in Visby using a ship-to-ship solution which is supplied by Nauticor’s LNG bunker vessel, Kairos. During the low season, Visborg needs to bunker about twice a week while in the high season that increases to every other day.

During the vessel’s design and construction phases much focus was placed on energy efficiency. The ship’s hull design has been optimized in CFD models, surplus cold from the LNG system is utilized in the AC system on board and the choice of fuel has enabled the possibility of using an additional mix of biogas to power the ship.

To further reduce energy consumption, various pumps on board are frequency controlled.

The ship’s bridge design and the equipment have been based on experience from Visby and Gotland. The bridge has been equipped for Pilot/Copilot navigation using Nacos Platinum system with integrated radar and Ecdis.

THE NUMBER OF crew employed varies depending on the season and passenger numbers. During the off-season, the vessel can be operated with a crew of 35 while in the high-season this number doubles.

Visborg has 70 crew cabins which are located on deck 9 while in addition to the common galley and day rooms there is also a gym and sauna for the crew.

Pär-Henrik Sjöström

WÄRTSILÄ

The ecosystem of Wärtsilä

The Smart Marine Ecosystem is a network of interconnected vessels, ports, suppliers, customers and other stakeholders.

Wärtsilä has during the last decade realized its strategy to become a global leader in smart technologies and complete lifecycle solutions for the marine market. By emphasising sustainable innovation, total efficiency and data analytics, Wärtsilä aims at maximizing the environmental and economic performance of the vessels of its customers.

"WE ARE VERY active in developing our vision Smart Marine Ecosystem. For several reasons we strongly believe that there is in the marine sector a remarkable potential for improving the use of data and connectivity for reducing fuel consumption and this way reduce emissions. There are also many cases where data for navigation improves safety", explains Roger Holm, President of Marine, Executive Vice President and member of the Board of Management of Wärtsilä Corporation.

Roger Holm says that there are several factors pushing this development. He mentions IMO's 2050-target to reduce emissions by half by that year as one of them.

"Probably we will also see more and more pressure from normal consumers. We have a strong focus on good and sustainable solutions where we can combine reduced costs with lower emissions, thus creating a win-win situation."

WÄRTSILÄ HAS EXPANDED their product portfolio substantially and the company is today able to offer its customers complete packages, including ship design as well as key onboard systems and equipment.

The portfolio not only include complete propulsion systems for different fuels. Wärtsilä also offers for example state-of-the-art navigation systems and bridge equipment after finalizing the acquisition of the Germany based L-3 Marine Systems International (MSI) in 2015.

"We know the change will come"

Roger Holm, President of Marine, Wärtsilä

According to Roger Holm the main focus today is to connect existing systems on board rather than adding more new products.

"For example we added navigation systems because they are crucial systems on board. It is possible to navigate from point A to B in a way that is continuously updated due to weather, traffic, slots in port and other circumstances. We see great possibilities in the future to connect navigation of the vessel and the next port slot and to use just the amount of fuel needed for reaching the port in time. Optimizing navigation is connected to optimizing the operation of the engines and also to optimizing the ETA of the vessel."

ROGER HOLM THINKS that the existing types of marine engines will play a long term key role in green shipping.

"We think that there will be a greater variety of different types of fuel for shipping in the future. We will most likely see more bio fuels, but we are also looking at other possibilities."

The starting point is, he says, that it is not possible to introduce new marine fuels which lack a distribution channel fast enough if we want to reach IMO's 2050-target.

"We must focus at what is realistic for the marine installed base, resulting in a change with enough effect to fulfil the targets for 2050. Therefore we believe that LNG as a marine fuel will have a great impact in this change. An advantage with LNG is that the same engines may be operated on bio fuels and LBG. Then, if we are looking beyond the 2050 targets it is of course possible to have a complete different discussion."

He underlines that there is a distinction between what is technically possible and what is feasible for the industry.

"However, we will see much more flexibility with different fuels. It must also be possible to mix different fuels, depending on which fuels are available. Our core competence is that we are in the front line regarding which fuels may be used in our engines in the future and which are the driving forces for the choice of future fuels in different parts of the world."

IN THE FUTURE Roger Holm foresees that it will take a lot more of cooperation between many stakeholders to change the marine industry.

"We know that the change will come, and the more co-operation we can see among different stakeholders, the faster the change will be", he says and adds:

"We are closing in on a tipping point. The first movers will have a competitive edge in relation to others. They are opening up for more cooperation between the different parts of the ecosystem, including ship owners, ship operators, suppliers or shipyards. I think that during the next years we will see a lot of positive development in shipping, lifting the image of the industry both from an environmental as well as from a technology perspective."

Pär-Henrik Sjöström

WÄRTSILÄ

PÄR-HENRIK SJÖSTROM

Is this the end of HSFO?

The IMO 2020 set of emissions standards are intended to significantly cut SOx emissions produced by sea transportation.

Amrita Sen, Chief oil analyst at Energy Aspects, is convinced that IMO 2020 is going to be a challenge.

"It's the biggest change in the history of the market. Our projections show that the industry is not prepared for its implications".

As an independent research consultancy, Energy Aspects provides detailed, cross discipline analysis of the energy markets advising clients in investments, trade and R&D alternatives.

"We evaluate underlying market fundamentals and plot trade flows. Based on this we can see that it is going to be a difficult transition especially when you add geopolitical factors and the complexity of forecasting how prices will fluctuate in future", says Amrita Sen.

IN ESSENCE, THE new regulations mean that a cap similar to that introduced by the IMO in 2015 will further limit emission levels of sulphur in fuel oil used on ships operating outside designated emission control areas cutting the allowed limit to 0.50 per cent m/m (mass by mass) compared to the current 3.5 per cent.

The new legislation is anticipated to cause a surplus of high-sulphur fuel which is likely to drive the price of IMO-compliant products up forcing refineries produce a higher volume of low sulphur fuels.

"This is significant for the Middle Eastern producers as their crude has a high sulphur content", explains Sen.

"However, for US output the situation is different as lighter crude is more common."

A RECENT REPORT by Morgan Stanley predicts that the price of Brent crude will rise to USD 90 a barrel by 2020 due to an increase in demand stating:

"We expect the crude oil market to remain under-supplied and inventories to continue to draw (which will) underpin prices", they say.

Even though scrubber technology has been around for a long time its use is still low. Conversions take time and cost a lot of money, so the market appears to believe that low-sulphur fuel is the way forward.

PAR-HENRIK SJÖSTRÖM

High oil prices combined with more stringent legislation does drive technological development, but investment cost constraints mean that alternative fuels may have become a more attractive alternative. And herein lies the variable. Shipping is demand-based, and any significant economic downturn means that when fewer commodities are traded there is a decreased demand for shipping services which in turn makes investments in new-tech ROI sensitive.

Paradoxically this may lead to a slowdown in orders for vessels such as LNG carriers.

SEEN AS A global player, shipping is a major consumer of oil and demand currently averages approximately 5 million barrels a day - roughly 5 per cent of global output.

Most of this volume is made up of HSFO and as Bjarne Schieldrop, Chief Commodities Analyst at SEB, stated in March this year:

"It is the residue of simple refining and (represents) the dirtiest and heaviest product produced by refineries worldwide. Basically, it is a waste product with little use outside the (current) shipping market."

Estimates are that the new IMO rules will cost the shipping industry somewhere in the region of USD 40 billion in conversion.

So is scrubber technology a viable solution? Not according to Søren Toft, COO of Maersk Line, who when asked by the Wall Street Journal of his opinion said:

"It's like installing small refineries in approximately 60 000 vessels and it's not a very sensible way of doing things."

PRODUCING A REGULATION-compliant fuel is going to be something that the refiners will have to deal with financially. ULSFO means that a significant reconfiguration of their technology will be required.

"Demand for HSFO will plummet in 2020", says Bjarne Schieldrop.

"The change to ULSFO or gasoil (will mean that) global refinery upgrading and capacity utilization will be stretched to its maximum. The implications for the global refining industry are profound, as HSFO production will need to be upgraded to ULSFO."

Alan Gelder, VP Refining, Chemicals and Oil Markets at Wood Mackenzie sees that the stakes are high even in the long term:

"The bunker market requires more than 5 million barrels a day and it will need an alternative fast. Once the ramifications of the 2020 directive have settled there will be future challenges as the proposed 2050 target becomes new legislation. It will be a tough time for refiners, oil companies and commercial shipping and there is a lot at stake in the long term."

Those old enough to remember flying up the coast of Norway on a dark night and seeing jets of flame emanating from the murky waters below will know that just a few decades ago natural gas was merely a bi-product of oil production. Things are far different now as LNG is a growing fuel alternative.

LNG is a bi-product of oil extraction which means that any reduction in oil output should ultimately affect its availability and therefore its price. But as is the world of fuel, there are variables. When it comes to LNG for example there is no common price denominator.

IN THE US, LNG is sold in 'available volume' meaning that prices are relatively stable providing that oil extraction is constant. However, just across the divide in Canada and as far away as Asia and Australia, a comparison with oil prices (the Brent Crude benchmark) is the baseline. Both business models work, but in the end, it is the cost of conversion of gas to liquid that bites.

Cooling and decontaminating the gas (as it contains residual matter from its original source) is estimated to cost around USD 1.2 per Mcf (a thousand cubic feet), which is the denominator in the US whereas in other markets MCM (a thousand cubic meters) is used.

In terms of energy output, one Mcf equates to approximately 1 000 000 BTU (British Thermal Units).

There are six conversion scales used to define and compare the energy output of natural gas (cubic meters, cubic feet, tons of oil equivalent, tons of liquefied natural gas, BTU, and barrels of oil equivalent).

Putting the L into LNG requires costly conversion facilities which, to be built, necessitate investments on a scale that few companies are willing to make today.

LNG IS A sound alternative regarding present and future regulations for emissions. Of that there is little doubt. But will it outclass the 'old guy on the block' with regard to its use and efficiency? Delving deeper we have to look at the oil market.

In 2013 the benchmark price of oil

PREEM

peaked at USD 121 per barrel. The following year it backtracked to USD 99. In 2015 is resided at just under USD 53 per barrel which was at the time considered to be about as low as it could go. But the experts got it wrong and in 2016 it lulled at just under USD 44. The producers were struggling as this happened at a time when major investments in new technology were expected to be supported by higher market prices.

Things did stabilize and 2017 saw an average of USD 54 per barrel which rose in 2018 to a respectable USD 71. So far this year the statistics suggest a price of around USD 65 per barrel with a falloff in 2020 to around USD 60 dollars (although Morgan Stanley predict a 2020 high of USD 90 per barrel). So did the experts get it wrong? That is a difficult call if you ask the traders.

"WE KNOW HIS (Trump's) stance on Iran", says Hussein Sayed, chief market strategist at FXTM.

"Oil prices have risen, but there are still hopes that trade tensions will ease. Having said that traders could well price at a higher risk premium. The Syria conflict has had little impact on oil supplies from the Middle East but should the situation in the Strait of Hormuz get out of hand I think that an increase of USD 10 - 15 in risk premium will be added to the current price".

So if tensions continue prices will rise, but not necessarily because of higher oil prices but rather the cost of shipping oil from Gulf states. Basically it is a re-run of heightened tensions in the area that we have seen before.

AS A SINGLE country, the largest producer of oil is currently the USA with a daily output of 12 080 000 barrels. Close second comes Saudi Arabia (11 114 000) followed by Russia (10 800 000). Collectively the 14 OPEC member countries account for 82 per cent (1 214.21 billion bbls/yr) of world output leaving the remaining 84 non-member countries with a mere 18 per cent (268.56 billion bbl/yr) market share between them.

World-wide, demand for oil has risen steadily since 2009. Year on year it has averaged at around 2.3 per cent. This seemingly slow ascent can be attributed to a number of factors including new tech and more efficient vessel operation. However, very little points to the adoption of alternative fuels making a major impact seen in global terms.

Oil producers have kept production stable and in certain cases increased output. OPEC has not been able to persuade Saudi Arabia to reduce its yield which as a consequence has hit the growth prospects and bottom lines of the alternative energy providers.

IF YOU OWN and operate legacy production and distribution infrastructure, you are less vulnerable to the fickality of the fuel market. Emerging fuel technologies don't have this luxury as they have yet to get their product to market in volume and in ways that the established players don't have to worry about.

Although LNG is a bi-product of oil production and offers better emission levels it is still a fossil fuel. It is expensive to create and expensive to distribute. There are very few LNG bunkering facilities around the world and only a handful of companies are willing to invest in them despite the fact that they would gain if better distribution infrastructure was in place.

The same applies to methanol and in the future, hydrogen. In the Baltic region, LNG bunkering is still called 'innovative' despite the number of LNG fuelled vessels operating (or soon to be operating) in the region being per centually high compared to international demographics.

THE PRODUCERS OF oil all have a residual intrinsic value, but this varies according to how they regulate profits and more importantly how market prices and demand moves. In 2015, Saudi Arabia had roughly six years of capital reserves to counter negative share market fluctuations of the spot price of oil averaging USD 50 a barrel (or lower). This has now increased as the price went up. In January 2019, the country's estimated proved reserves was upgraded. In an independent evaluation carried out by DeGolyer and MacNaughton

(the first survey by outside surveyors ever conducted) indicated that reserves were higher 'than previous official estimates'.

Khalid Al-Falih is the Minister of Energy, Industry and Mineral Resources of Saudi Arabia. He is also the chairman of Saudi Aramco (and previously the company's CEO).

"We began this process in August 2016 and it took two and a half years. We made a very thorough, independent evaluation of our reserves. We did this by taking data from each of the wells and reservoirs that were part of the study. They used their technology and methods to conclude what our proved reserves were."

The trade media was quick to react and Ellen Wald, Global Energy Policy Analyst had this to say:

"It makes little difference if they have 260 or 266 billion barrels, the point is that they had DeGolyer and MacNaughton do the survey. It is a highly respected company. I think it's an exercise in confidence building for the future."

RUSSIA, WITH ITS flagging rouble and a slew of sanctions saw the nation's economy in trouble in 2017. Since then, output has increased, and Russia's oil production now rivals its natural gas production. Official statistics say that Russia produces 10 million barrels of crude a day. This is primarily done through state-owned companies such as Rosneft, Lukoil and Surgutneftegas. Gazprom is said not to be state-owned, but state controlled.

There are no official figures available regarding key figures for any of these, although all the companies have shares that are traded on the London markets. Rosneft is 70 per cent state owned while Surgutneftegas has an ownership structure that is not officially available. This means that its main owner is also the Russian government.

Incomes have gone up. Rosneft has reported more than twice the net income it generated in 2017, this as a result of higher crude prices despite an unpredictable market. Net income for 2018 was USD 8.4 billion in 2018 while revenues rose by 37 per cent over 2017.

PÄR-HENRIK SJÖSTRÖM

Rosneft stated that: "In part a capping of output agreed with OPEC cartel countries, as well as improved company efficiency has increased our revenue(s)."

At the same time, Lukoil, Russia's second-largest crude producer, saw a profit leap of almost 50 per cent in 2018. This was driven by two factors - higher oil prices and a weak rouble. Profits increased to USD 9.4 billion. It has to be said that earning gains from foreign exchange rates were the deciding factor here. Lukoil has also increased its production which was, in part, driven by an increase in gas production at its Gissar and Kandym facilities in Uzbekistan.

IF WE LOOK at the price of LNG, we see that it is down. Some US analysts say that this is a conscious strategy. More likely it is the result of increased off-flow from oil wells, but this is not something that the oil majors want to talk about.

In the Baltic region supply is available, but it is by no means used to capacity as the ships that operate on it are simply not here and as with any commodity, it requires volume users to make it viable and for that it needs simple infrastructure and reasonable prices to provide operational gains and environmental impact.

AN INCREASE IN the cost of oil means that freight rates will rise as operating costs go up - this to negate the impact on operators' profits. It could also mean that liner operators will adjust their schedules on certain routes reducing capacity which will ultimately have an impact on fleet productivity. Shipping companies are also likely to announce a bunker adjustment factor which would spread cost and risk to their customers.

But it may not be all bad news say some analysts. Increased operational costs will encourage eco-driving which reduces fuel consumption. This is something that will be welcomed by the environmental organizations.

Daniel Cooper

Battery power. *The zero emission ferry Aurora on Öresund.*

PÄR-HENRIK SJÖSTROM

"Too much focus on CO_2"

Sweden has entered the journey towards a tough target – net zero emissions in 2045. Fredrik Larsson wants more action.

Fredrik Larsson, sustainability expert at the Swedish Shipowners' Association, is concerned that the move from talk to action is going too slowly. And he thinks it is partially because of the current GHG debate.

Today's hottest environmental topic for the shipping industry and Sweden as a whole is the reduction of GHG emissions. However important this issue is, he thinks that it overshadows everything else.

"**IT IS STRANGE.** a couple of years ago the debate was mainly about SOx, then came NOx and we also talked about ballast water treatment. These rules will cost the global industry approximately 300 billion USD to implement, but yet, today it's almost exclusively emissions of GHG and CO2 in particular that is on peoples mind. It's almost like you can emit anything as long as it is not CO_2", says Fredrik Larsson.

He fears this might have pulled the debate into a side track.

"**IF YOU FOCUS** so heavily on CO_2, you will miss many other parameters. For example, it has led to an extensive dialogue about whether LNG is a fuel for the future or not. Many people point out that we are locking ourselves into a fossil-fed gas trap and that LNG still emits as much GHG, or perhaps more, than previous fuels when taking the methane slip into account. But the debate completely ignores the fact that with LNG you significantly reduce sulphur, nitrogen and particles, but more importantly, it is reasonably available and economically viable today, thus there should be no reason for criticism unless there is an even better suitable alternative available, which I doubt there is for the majority of ships today."

HE THINKS THAT we have to remember what the journey we have embarked on actually is about right now.

"It's about gradually switching to cleaner fuels. One step on this journey is to change to cleaner fuels such as low-sulphur distillate or low-sulphur HFO, LNG or methanol. Some have even chosen electric power using batteries. We must recognize that every solution has its pros and cons, certainly if we include lifecycle assessments, but what we have to keep in mind is that five years ago it was common practice to use HFO with a 3.5 percent sulphur content. People tend to forget this as we are so keen to reach the targets that have been set by governmental legislators and in the IMO to reduce CO_2 emissions."

Fredrik Larsson points out that there is still plenty of time until 2045, when the domestic transport sector will have to deliver zero emissions in Sweden.

"Still you get criticism for today's emissions of CO_2. We have not yet progressed so far in technological developments that we can ensure an elimination of CO_2 here and now, because if we had, then the targets would have been superfluous. It will take time to find the best options available, and in the meantime we should allow and encourage investments in the best available options rather than expressing criticism."

LIKE A NEWBORN baby must learn to crawl before it starts to walk, the industry must be allowed to adapt stepwise.

He believes that the shipping industry must be clear about the challenges ahead, but also what solutions are realistic, including economic aspects.

"After that we will have to work diligently towards realizing these solutions. One step down the road might be to establish a principle followed by a mechanism that appropriately rewards those who take on the investment burden and actually minimize their environmental impact further and beyond regulatory requirements. At a local level, there may be reductions in fairway dues and port fees as well as abolished registration fees for green vessels."

The main purpose of this is, according to Fredrik Larsson, to make it cost-attractive for transport buyers to choose shipments using climate-smart vessels.

"Of course, it is desirable that they pay a little more for the shipments because it is more expensive with green transport solutions, and ultimately they should in turn be rewarded by their respective customers and society at large."

SINCE THE TRANSITION will take time, Fredrik Larsson believes that it is important to start working on already existing solutions as soon as possible.

"It is important that policies and rules keep up with the pace of technological developments. It can go fast once it gets started and therefore regulators must also work quickly so that they allow tests with new technologies or fuels and that new technologies are allowed to be implemented on board vessels."

Fredrik Larsson says that we now must start realising the ideas, thoughts and proposals that have been presented by both the industry and the authorities in recent years.

"We have to start with what we already have. I am convinced that once we get started the industry will keep up and invest."

Fredrik Larsson does not believe that it is the industry that wants to slow down developments. Rather, he believes that the introduction of SECA taught the shipping companies that change can be beneficial as they promote a propensity for innovation.

"Policies must keep up with technological developments"

Fredrik Larsson, sustainability expert, Swedish Shipowners' Association

SWEDISH SHIPOWNERS' ASSOCIATION

"**I THINK SOMETHING** happened in the industry back then. In hindsight, SECA was able to implement change, it was good for the environment and shipping became cleaner. Sure, it was tough and expensive, but shipping companies learnt from this disruptive legislation and began to look further ahead when they were making decisions that would lead to a changeover to new fuels."

Regulations then altered the playing field.

"Future regulations at the time had an impact and back then there was a lot of talk about NOx. So many companies started looking at alternative fuels such as methanol and LNG, mainly to manage the next stage of new environmental legislation in the form of NECA. The tendency to innovate was then accelerated."

NORDIC SHIPOWNERS ARE known for adapting to change and have both the knowledge and understanding that their businesses have an effect on the climate and the environment.

"In Sweden and the other Nordic countries they have also seen new business opportunities emerge by utilizing their technical expertise and selling it onto other shipping companies in the form of new solutions."

Fredrik Larsson points out that Sweden is also at the forefront of the regulatory arena when paving the way for a collaboration between governments, academic institutions and industry.

"We have gained a better working climate and understanding of each other's roles and how we must act together to solve impending problems", says Fredrik Larsson, and continues:

"It is going to be a very long journey before we are completely at home on this, but we have an active dialogue with governments, authorities, academics, manufacturing industries, transport buyers and shipping companies. It is positive that we have it, if not imperative. There is much talk about the triple Helix. Actually, I would say that multiple Helix would be the most telling term."

Pär-Henrik Sjöström

STENA

From the Katapult Ocean *event in April: Maren Hjort Bauer, Katapult; Anna Forshamn, Stena; Erik Lewenhaupt, Stena Line (Mentor Katapult) and Ingrid Kylstad, Katapult.*

Saving the oceans together with Katapult

Stena AB is supporting start-ups in the Katapult Ocean Accelerator Program with half a million US dollar.

Stena AB is pushing the development of new and greener technologies within shipping. Several pilot projects places the group at the forefront of green shipping, including new fuels such as methanol as well as battery powered propulsion. In addition to their in-house work for sustainable shipping, the group also wants to encourage other companies, especially start-ups with fresh ideas.

In the end of last year Stena AB announced that the company invests half a million USD in Katapult Ocean Accelerator Fund to support the development of new, sustainable ocean technology. This was received with great enthusiasm from this Norwegian initiative to do something concrete to save the oceans and our planet.

"We are very excited to have Stena AB on board as both a partner and investor in Katapult Ocean. It sends a signal that established maritime companies want to support start-ups developing sustainable ocean technology solutions. Entrepreneurs in this space need to know that there is a market and an interest for new ideas in the established industry", Maren Hjorth Bauer, CEO and co-funder of Katapult Ocean, stated in a press release.

CLAES BERGLUND, DIRECTOR Public Affairs and Sustainability, Stena AB, explains that sustainability is at the core of everything the company does.

"For us, staying innovative equals staying relevant. The maritime industry will need to innovate at pace over the next years to meet new regulations and expectations - set by ourselves and by policy. Staying close to the start-up community is a great way for us to stay ahead of the curve."

The Katapult Ocean Accelerator Fund will invest in start-ups from all over the world, developing technology that will make the ocean industries more sustainable and that have a positive impact on the ocean industries. The companies participate in a three months long accelerator program based in Oslo, supported by a global network of corporates, successful entrepreneurs, subject matter experts, business leaders and investors. Each company will receive an investment from USD 150 000 in return for an equity share.

STENA AB IS not only an investor but will also be a dedicated supporter of the start-ups as they go through the accelerator program.

"We provide mentors and technical support, as we think it is crucial that established industry collaborates closely with start-ups. Mixing experience with new ideas can be a powerful combination", says Claes Berglund.

During the winter batch one of start-ups in the Katapult Ocean Accelerator program underwent an intense three-month program focusing on growth and positive impact. It was rounded up with the Katapult Ocean Demo day in Oslo on 8 April 2019.

MAREN HJORTH BAUER also gave a presentation about Katapult Ocean at Nor-Shipping Ocean leadership Conference 2019.

"Together the eleven start-ups selected are targeting eleven of the sustainable development goals. Everyone is focusing at the ocean but this clearly shows how the ocean is linked to the rest of our planet."

She emphasized that solving these problems is also a business opportunity.

"That is why we built Katapult Ocean, to invest in and scale start-ups with a positive impact on our oceans. To do this we have built a global ecosystem. At the core of that is the Katapult Ocean Accelerator Program."

Katapult Ocean Accelerator Program now has more than 800 start-ups from 60 countries in the pipeline.

"So far we have made investments in eleven start-ups. Among these are start-ups supporting the green shift in shipping."

"For us, staying innovative equals staying relevant"

MAREN HJORTH BAUER mentioned some examples:

"We see data platforms that enable charterers to select the carriers with the best environmental footprints. And, very important as well, is the consumer power we have. Consumer power will increasingly shape this industry going forward."

Brim Explorer is a company that is targeting these consumers, she said.

"They have built a fully electric ship that takes passengers out to explore nature with no pollution and no sound."

Another of their portfolio companies is Evoy, who has developed an electric motor replacing the diesel engine in smaller boats.

"But are we able to make the long distance shipping greener? We see interesting products here as well. One project is using a combination of fuel cells and hydrogen to enable this. They'll have their first pilot ready in the end of this year. We see the development of autonomous wing sails that can be installed in a wide range of vessels to lower fuel emissions by up to 40 per cent", Maren Hjorth Bauer told the audience.

The next round of the accelerator program will take place autumn 2019.

Anna Forshamn from Stena AB coordinates the work between Stena and Katapult. She is also Director of the Katapult Ocean board and thinks that most of the projects are of great interest to Stena.

"All projects are linked to the ocean, where Stena naturally has a big interest. However, some of the projects and companies are naturally more interesting for us in the near future than some others."

"Stena is trying to find the perfect match between the project/company and Stena - that is to find those people within Stena who can support a project in terms of knowledge, experience and a wider network. Stena can also take part in some of the pilot testing if this is relevant for our business."

Anna Forshamn is convinced that Stena will benefit in many ways by participating in the program.

"Entrepreneurship, care for resources and business acumen is part of Stena's DNA. Collaborating with start-up companies in this format gives inspiration and fresh thinking to our own ways of working. Of course we also want to find interesting investments, she concludes.

Pär-Henrik Sjöström

Anders Bernhardsson *at the Powerhouse head quarters.*

MARIANNE OVESEN

The house of power

Powerhouse designs large generators with scientific excellence.

Main and emergency generators are Powerhouse's main products. You can find them everywhere, from ships and hotel rigs to hospitals, wind turbines and fish farms. The company also sells other products, such as complete propeller lines and entire containerized engine rooms including control equipment.

"The propeller applications we mainly sell in Sweden under the Mitsubishi brand while generator sets are sold world wide under our own Powerhouse brand", explains Anders Bernhardsson, CEO.

THE POWERHOUSE GENSETS are designed in the company's premises in Gothenburg. The mounting is done by contractors.

"It's not rocket science to mount a genset. But knowing how it should be done is pure science. It takes a lot of calculations to make it fit and all components compatible", says Anders Bernhardsson.

Richard Johansson, sales manager, agrees:

"I have a background as a technician which is extremely valuable, as we often discuss technical issues with our costumers."

To be able to offer the customers what they want, he and his colleagues need to be on their toes and keep up with the development. Although Powerhouse has customers in widely different areas, shipping companies and shipyards are the largest customer group and demand for environmentally friendly solutions is growing.

"For example, there is a great demand for hybrid solutions now. Next year, we will supply a generator with DC instead of AC to Northern Offshore Services' new catamaran, which is being built in Norway. With the DC generator, you can optimize the power by consuming less fuel", explains Richard Johansson.

ANDERS BERNHARDSSON SAYS that today the customers wants to be environmentally friendly and demand smaller engines that consume less fuel, but have access to excess capacity in battery banks.

"We have solutions for all of that, he concludes."

Powerhouse work a lot with the shipyards in China.

"We came in contact with them through the shipowners at Donsö. We have been fortunate enough to work with several of them and have been on their makers list. Now the shipyards also recommend us to other customers", says Anders Bernhardsson.

THE COMPANY'S FREIGHT forwarders have a challenging task in providing fast shipments of bulky and heavy engines to vessels, anywhere in the world.

"We always keep engines, generators and spare parts in stock. A ship that has suffered a failure cannot lay idle for several days. That's why we constantly have technicians traveling", says Richard Johansson.

It is also vital for both powerhouse and their customers that after sales works perfectly.

"We spend much of the time here at the office coordinating all services our customers need", says Anders Bernhardsson.

AN EXTREMELY IMPORTANT tool, both for repairs and for new sales of generators, is the online offer generator Marinpro.com, which is developed in-house. The customer specifies the demanded capacity and other parameters.

"Then they immediately get a list of the gensets we offer with the demanded features. And with all the available documentation included", Anders Bernhardsson states.

He adds that of course the customer can supplement additional wishes.

"And a Chief Engineer can at any time exactly see which spare parts or repair kits are needed to be ordered for a specific engine and generator. When the order is placed we either post the parts or let one of our technicians bring them to the vessel. Everything runs very smoothly."

Marianne Ovesen

SVENSK SJÖFART

Are smart ships the future?

Christina Palmén, Policy Advisor on safety, security & environment, Swedish Shipowners' Association, talks about smart ships.

How does your work regarding smart ships proceed?
"We have a smart ship working group within the Swedish Shipowners' Association and we have recently published a document with some of our considerations regarding smart ships. In the document we address issues related to different perspectives (shipowners, crew, authorities, manufacturers). It also includes considerations regarding safety & security, research & innovation and transport and logistic chain perspective."

What is the human role in the future?
"From our point of view, it is expected that in general, the future ships will be increasingly digitized and automated, and there are many opportunities with this technology that can and should be exploited. There are various initiatives and potential for smart ships in different segments and traffic areas. There are no reasons though, to increase either digitalization or automation just because the technology is available. The reasons to introduce smart ships must always be improved safety, efficiency and sustainability. Even on the highest level of digitalization and automation, human interaction will be necessary, with people either on board, or ashore. It is not expected that the required work force to operate the ships will be much less than today, although more (or all) personnel might be ashore. In fact, current experience suggests that the more high-tech that is installed on board, the larger and more qualified crew is required to handle it. The human role will remain central also in future shipping."

Any thoughts about research on smart ships?
"The shipping industry needs more research funds to develop and test new technology. In the area of smart ships, one suggested area in the Swedish Shipowners' Associations research strategy is the potential of digitalization. Where the focus is on developing an ever-smarter shipping that works in symbiosis with an all smarter ambient environment. In this area, synergies with society in general, and especially the different parts of the logistics system, are particularly prominent."

At international level, IMO has MASS (Maritime Autonomous Surface Ships) on the agenda, what is the focus for the work?
"We follow the work and the discussions on MASS at IMO. It is a good thing that IMO takes the lead, it is the right forum for this discussion. The work at IMO in this area is for the moment focused on the regulatory scooping exercise for MASS. The purpose is to look at how the safe, secure and environmentally sound operation of MASS may be introduced in IMO instruments. Sweden has an important role as chair of the MASS working group at IMO. Support from authorities and non-governmental organizations in the form of recommendations, guidelines, rules and regulations will be key for the implementation of smart ships."

Anything else you would like to add regarding the international aspect?
"Earlier this year World Maritime University published the report 'Transport in 2040: how automation and technology will impact the future of work'. The report concludes that the introduction of automation in global transport will be evolutionary, rather than revolutionary, and that despite high levels of automation, qualified human resources with the right skill sets will still be needed in the foreseeable future. Another interesting study on seafarers and digital disruption was published by ICS, International Chamber of Shipping. The study indicates that there will be no shortage of jobs for seafarers, especially officers, in the next two decades. While the size of crews may evolve in response to technological changes on board, there may also be considerable additional jobs ashore which require seafaring experience."

Pär-Henrik Sjöström

Swedish Shipowners' Associations document can be downloaded on:
www.sweship.se/wp-content/uploads/2019/05/Swedish-Shipowners-Associations-considerations-on-smart-ships.pdf)

TRANSPORTFÖRETAGEN

Caj Luoma *during the Maritime Convoy.*

Swedish shipping has a bright future

The Confederation of Swedish Transport Enterprises has launched a massive campaign for recruitment to the maritime schools.

The Swedish merchant fleet expanded in 2018 and Swedish shipping companies are now leading with their investments in new technologies and sustainable solutions. At the same time, however, the shipping industry is experiencing a shortage of personnel, both crews and officers.

To address this issue, the Confederation of Swedish Transport Enterprises (Transportföretagen) is working with the shipping industry to secure the supply of personnel in the future.

THE SWEDISH CONFEDERATION of Transport Enterprises, an employers' organization that includes the Swedish Shipowners' Employer Association, has commissioned a survey among its member companies to identify their personnel requirements.

Caj Luoma, head of skills supply at the Confederation of Transport Enterprises, tells us that 800 engineering and nautical officers, crewmembers and motormen will be needed over the coming five-year period according to a recent Swedish report ("Tempen på sjöfartsbranschen"). And that is not the end of the story - ferry traffic needs other professionals such as chefs, waiters and cleaning staff.

"This recruitment is vital for the entire Swedish economy, since 90% of all imports and exports are transported at sea. It is essential to reverse the trend of declining applications for maritime training."

"ONE OF THE main tasks is to promote modern shipping and the professions, courses and career paths that are available so that more people can become qualified to work in the shipping industry", Caj Luoma says.

> *"This recruitment is vital"*
>
> **Caj Luoma, Confederation of Transport Enterprises**

At the beginning of the summer the Confederation of Transport Enterprises and the Swedish Maritime Administration arranged a "Maritime Convoy" (Sjöfartskonvojen) to raise awareness and interest in shipping.

THE ICEBREAKER ATLE stopped at Swedish ports from Lysekil in the west to Luleå in the north on a campaign to describe work in the maritime sector and explain which courses lead to different jobs. Visitors were invited on board to look over the whole ship, see how the crew live and work and meet both crewmembers and trainees. Tents were put up on the quayside with exhibitions on the maritime sector and different activities. Representatives from various players in the sector were there to answer questions.

CAJ LUOMA IS very pleased when he reports that the Maritime Convoy had 27 000 visitors in its eleven ports of call and there was a lot of interest and commitment among the visitors.

"The Maritime Convoy also attracted much attention in the media, which plays an important role in reaching out and informing people about modern Swedish shipping - an industry with a great future and excellent job opportunities."

One of the most frequently asked questions during the Maritime Convoy was whether jobs would be lost with the development of technology and automation.

"It was particularly important to emphasise that these jobs are sustainable and that there will be large recruitment needs in the future too. Technical developments will present new exciting opportunities rather than a threat."

According to Caj Luoma people also need to know that work at sea can now be combined with a normal family life on everyday terms. Seafaring is not like it was in the past, when crews were away from home for very long periods.

"Two working weeks at sea with the same amount of leave are now common, meaning that modern family life or recreational interests are easy to combine with a maritime profession."

ANOTHER MAJOR EVENT will take place on 2 September, the day before the Donsö Shipping Meet, when there will be a unique opportunity for students, teachers and career guidance counsellors to learn more about the shipping industry and maritime courses and career paths.

The aim is that everyone can go on board the new, environmentally friendly tankers and try out different tasks in the maritime professions. They will be able to test rescue suits, navigate a ship in a simulator and generally get to know about life on board. Students from various maritime courses and other players in the shipping industry will be there to discuss relevant issues.

SWEDISH SHIPPING IS currently attracting a great deal of political interest at the national level too, since it is seen as an important part of the Swedish transport infrastructure.

"The Swedish Minister for Education, Anna Ekström, will be present on the big recruitment day of 2 September, which is really exciting and important for us. Naturally we have many questions we want to put to the minister but the most important thing is that she, just like the public, will learn a lot about the shipping industry", says Caj Luoma.

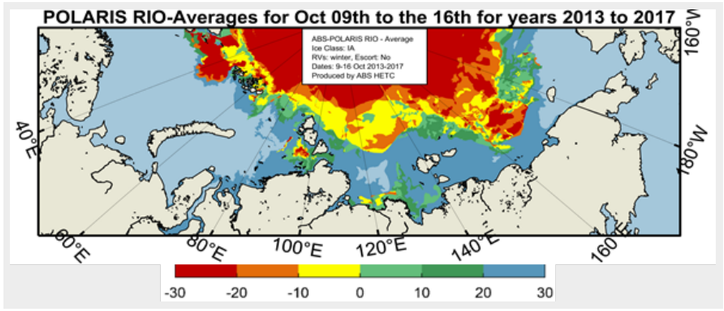
Pär-Henrik Sjöström

The Swedish Confederation of Transport Enterprises is an umbrella organisation for associations and companies in the transportation sector in Sweden.

The Swedish Confederation of Transport Enterprises' aim is to represent the entire transport sector.

They have eight member associations, which altogether organise 10 100 companies with around 217 000 employees.

Read more on: **www.transportforetagen.se**



ABS

”One of the most formidable challenges”

The use of advanced tools and methods is an efficient way to manage operational risks in of polar shipping.

Interest in shipping via the Northern Sea Route - and increasingly, the Northwest Passage - continues to grow, despite the demands it places on operators and their assets. As the opportunities for transit grow, owners must understand the decisions they need to take and the issues they must account for, to achieve safe polar navigation, underlines the classification society ABS.

“While ice class rules provide a clear construction standard, ice class and cold climate operational notations only offer a broad indication of a vessel’s operational capabilities. An approved methodology must be used to determine the operational limitations and the master and navigation officers must be instructed in its use”, says James Bond, Director, Advisory Services, ABS.

ABS NOTES INCREASED interest from owners seeking guidance on how to make their vessels safer and compliant for polar operations and to do this, facilitates the Operational Assessment mandated under the Polar Code, through a hazard identification (HAZID) workshop.

“This process identifies risk control measures for ship systems and equipment, including lifesaving appliances and survival resources, ice condition monitoring and vessel specific operational limits in ice, ergonomics, habitability and winterization. The outcomes drive the content of the mandatory Polar Waters Operation Manual for the ship”, explains Daniele Bottino, Manager, Business Development Sweden, Finland and the Baltics, ABS.

To inform the workshop, ABS applies the IMO Polar Operational Limitation Assessment Risk Indexing System (POLARIS) methodology, to establish the ice operational limitations for the specific ship. Air temperature profiling is also undertaken to support operational decisions related to continued equipment operability and ice accretion risk.

IN ADDITION TO support with regulatory requirements, ABS provides a range of Advisory Services to help owners understand the broader opportunities of operating in these locations. ABS tools, unique to industry, provide a means to evaluate charter windows of opportunity for a given ice class for existing ships or prospective new construction.

Key to the owner’s commercial decision is a techno-economic evaluation. This is a unique decision support process which identifies inputs such as life cycle costs, net savings, payback period, saving-to-investment ratio and internal rate of return which can be used to establish a base case and alternative scenarios.

“An approved methodology must be used”

James Bond, Director, Advisory Services, ABS

ANALYSES OF POTENTIAL transit routes and operations through various ice covered waters at different times of year can be carried out for early stage charter planning, to select an appropriate ice class, or during operational phases to set limitations. Using supplied ice class information, voyage dates and AIS data, the ABS POLARIS software will pull the ice data and generate a colour-coded risk assessment infographic along the entire route.

“As an acknowledged leader in the area of ice accretion, ABS is able to advise on environmental conditions that are conducive to icing occurring and how to minimise its build-up during a voyage, analysing prevailing weather conditions to enable operators to select their preferred speed and route”, James Bond says.

“**ABS UNDERSTANDS THAT** sailing in Polar waters represents one of the most formidable challenges for shipowners, their crews and their assets. With more owners interested in the opportunity of using these northern routes, ABS is working as the trusted partner to support safer, compliant and optimised polar shipping operations”, Daniele Bottino concludes.

ABS has offices in Sweden, Denmark, Norway and Finland in support of the Northern European clients.

Pär-Henrik Sjöström

GREEN CITY FERRIES

From innovation to commercial success

Echandia Marine and Green City Ferries have made electric drivetrain technology in commuter applications a commercial reality.

Working with shipyards, operators, owners and suppliers including Sweden's largest provider of electricity for mobility solutions - Vattenfall - the company has made inroads in what was once considered to be an impenetrable market.

Hans Thornell, CEO of Green City Ferries, explains.

"Operators and regional service procurement agencies are prone to keeping to what they know best on the water. When we started out the mindset of the market was very different to what it is today."

Echandia and Green City Ferries were then intimately connected businesses which together developed and built the world's first electric commuter vessel, E/S Movitz.

"IT WAS A long process, but we were determined to succeed, and we did, anticipating local expansion."

But since then the political climate in Stockholm and Gothenburg has hardened.

"The reason is that existing contracts are long-term and despite what has been achieved within public transport on land, the same thinking does not apply on water. There is no tax levied on the fuel the (current) operators use unlike electric vessels where full taxation applies. This is something that we and others continue to lobby against."

"We made a decision to restructure our business model in early 2019 and separated the companies. Now, Echandia concentrates on battery systems solutions while Green City Ferries is focused on developing the electric commuter ferry side of our business allowing us to concentrate on two, independent core businesses", says Thornell.

Newbuildings and conversions are offered beginning with a pre-study of a vessel's route/operational environment, its proposed system design and then detailed planning for an installation is defined.

ELECTRIC DRIVELINES CUT maintenance costs and slash operational costs by 80% with remote monitoring of system performance allowing changes to be made while a vessel is in operation.

Echandia Marine offers complete battery systems based on Toshiba's LTO (Lithium-Titanium-Oxide) cells.

"They are a new-generation, lightweight LTO-battery with an output that offers instant, high-power delivery and they can be super charged", says Thornell.

"Ensuring this is Echandia's Battery Management System (BMS)."

Electricity is now classed as a fuel according to DNV while the charging system has also been DNV classified.

TO DATE, SEVEN complete battery systems have been sold in an order for newbuildings placed by Arriva (operating on a contract for Movia) as part of their Copenhagen services. The new Arriva vessels are being built by Damen.

The Damen Ferry 2306 E3 ships will carry 80 passengers with the first delivery scheduled for 2019.

"The ships require fast charging on a frequent basis (17 times a day) which means around 5,000 charges per year. Using an LTO solution we can guarantee 10 years of battery lifetime", says Thornell.

Heliox has developed the charging solution. Wireless communication from land to the bridge is used that detects any problems the supercharging station may have when a vessel is in port. This is also used to optimize the charging process.

BB GREEN – or Airiel as she is called - made headlines around the world when she was launched three years ago. Built by BJB (Latitude Yachts) yard in Riga she was a proof-of-concept vessel that validated that the technology worked.

Air supported vessel (ASV) concepts have been around for a long time, even in larger applications but BB Green was the first vessel to prove the concept in commuter operations at high speeds using electric power.

"Reduced water resistance is a key factor", says Thornell.

"The ship uses an ASV solution which reduces drag, but more importantly she is battery powered and that is a first. We were one of the main partners in the EU funded project BB Green. We discovered during sea trials that we needed to cut weight on board. In the concept vessel we averaged 27 kilos of battery weight for each provided kWh. Now with Toshiba's LTO batteries this has been reduced to 16 kilos per kWh."

PÄR-HENRIK SJÖSTRÖM

"Reduced water resistance is a key factor"

Hans Thornell, CEO Green City Ferries

BB Green was EU funded and her total cost was EUR 3,125 million.

THE CONFIGURATION OF the production vessel has been changed based on data from Airiel's sea trials.

"The new BB Green 24 can take 147 passengers. The hull is lightened, the driveline is more powerful, and the test platform batteries will be replaced with lighter LTO units", says Hans Thornell. "Another significant change is the bow height which has been lowered so that bow docking is possible. The bridge has also been redesigned to give a full 360 view."

Green City Ferries' fast electric vessels have gained considerable attention in Norway.

"Within the coming six years some 75 zero emission commuter newbuildings will be required", says Thornell.

"This is a development driven by legislation and new regulations that will come into force on January 1 next year around Oslo require that all public transport, including commuter vessels, has to operate on renewable fuels. I wish I could say that the same thinking was applied in Sweden, but we are far away from that becoming a reality."

CURRENTLY THERE ARE fourteen routes up for tender in Norway that will either be electric, or hydrogen powered, and Green City Ferries is part of the process.

"Our ferries can easily be powered by hydrogen. The technology is already here, but the problem lies in hydrogen infrastructure, finance and the tender process", explains Thornell.

Interest in the company's vessels has now reached over the English Channel as The City of London authorities look to solve a problem.

"I will speak at the Greening Inland Shipping Conference held by the Port of London Authority in a few weeks' time."

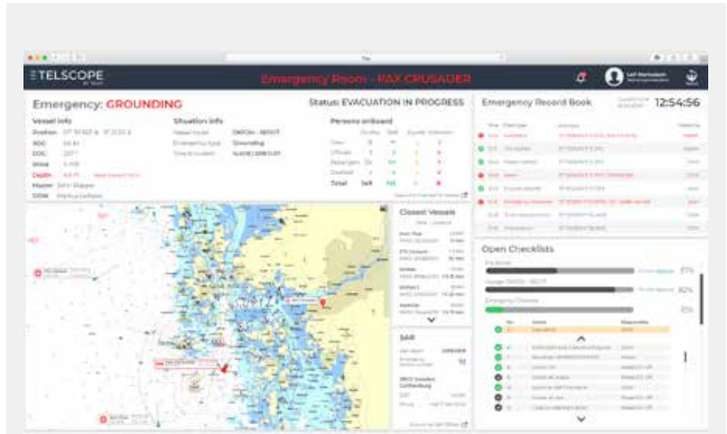
In London, there will be a new ferry service between Canary Wharf and Rotherhithe (costs for the proposed, now scrapped pedestrian and bicycle bridge project would have exceeded GBP 600 million under Boris Jonsson's plan).

"Three slow-speed, double-ended ferries will be required, but that makes far better financial and movability sense for commuters", says Thornell.

Construction of Green City Ferries' first commercial high-speed ferries will begin before the end of this year.

"There is no EU funding involved, the project is purely commercial and will operate in Norway", he concludes.

Daniel Cooper



TELKO

Improving shipboard safety and security

Electronic record books, advanced cyber risk management and a newly developed, ship-adapted TelScope platform are the current main focus areas of Telko AS.

Telko AS was established in 1974 and has since the introduction of TECDIS worked in close cooperation with Furuno Norway.

TECDIS was one of the first ECDIS systems approved by IMO's standards. Since the launch in 2004 TECDIS has continually been updated and improved, and today it supports functions such as Admiralty Information Overlay (AIO), C-Map T&P, radar overlay, videoswitching, Navtex and sensordata over IP (IEC 61162-4, also known as NMEA-450).

A total of 2000 vessels are today equipped with navigation systems developed by Telko and distributed by Furuno.

TWO YEARS AGO Furuno became a co-owner of Telko together with two other investors. A subsidiary, Telko International AB, was established in Gothenburg. The aim was to create simple and ship-adapted software applications. This new platform is named TelScope. First out on the market were the recently released electronic logbooks, including all electronic record books in digital format, such as deck log, radio log, garbage record book and ballast water log.

"OUR AIM WAS to make it easier for users on board and on shore. TelScope uses Sensordata from different sensors on board such as GPS, gyro compass, log, AIS as well as data from the engine control system", explains Martin Ekholm, Vice President Sales Europe on Telko International AB.

He underlines that log keeping today demand total focus from the personnel.

"All information should be noted at the actual occasion. Using TelScope this is tone by pushing a button and all data needed for log keeping is collected and presented."

"The only thing the user has to do is to report the time for each log entry, all other data is available in TelScope", he adds.

TELKO WILL LAUNCH a cooperation with Orolia during DSM19. With its robust, accurate GNSS-based systems and proven technologies, Orolia has become a world leader in Resilient Positioning, Navigation and Timing (PNT) solutions. Telko will be the first ECDIS manufacturer in the world who can integrate and inform users about Cyber-related risks like M-SecureSync.

IMO Resolution MSC.428(98) - Maritime Cyber Risk Management in Safety Management Systems mandates vessel administrators to ensure that cyber risks are appropriately addressed by the 1 January 2021.

Maritime cyber risk refers to activities which may result in shipping-related operational, safety or security failures as a consequence of information technology or operational systems being corrupted, lost or compromised. Cyber risk management means identifying, analysing, assessing and communicating a cyber-related risk and accepting, avoiding, transferring or mitigating it to an acceptable level.

M-SECURESYNC IS AN ultra-precise platform for multi-constellational GNSS timing sources, incorporating vulnerability scanning and the highest standards for extreme reliability, security and redundancy. The system provides a robust comparison source for existing navigation platforms.

M-SecureSync incorporates an Interference Detection and Mitigation (IDM) Suite, allowing M-SecureSync to detect interference, intentional jamming and advance spoofing signals that could weaken, block or compromise critical navigation signals. This will be visual displayed in TECDIS.

Pär-Henrik Sjöström

Builder of Donsö vessels

Chairman Yan Sun of AVIC Ship, the shipyard that has built many of the Donsö vessels, talks about Donsö Shipping Meet.

"The word must be 'Professional'"

Yan Sun of AVIC Ship

AVIC

AVIC Ship supports DSM19 as . What contributed to make this decision?
"All owners from Donsö and the DSM exhibition are a big family of innovative professionals, focusing at the niche market especially for chemical tankers and gas carriers, leading the European shipping market, and even the shipping trend worldwide.

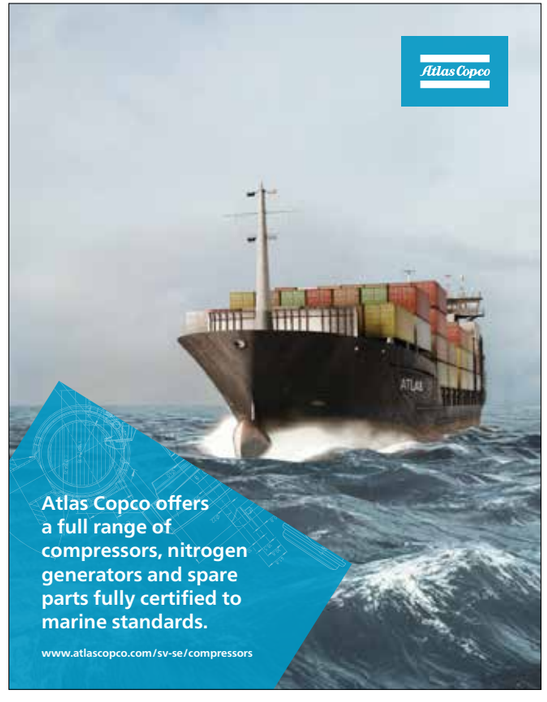
"The growth and development of AVIC Ship has been effected and inspired deeply by the culture and spirit of this big family. We are expecting to join the family, to grow up, lead the shipping trend and create our future with Donsö hand in hand."

Which are the biggest opportunities and challenges in the shipping industry today?
"In my opinion, the greatest opportunity and challenge is economical and innovative design based on energy conservation and environmental protection."

What are your expectations?
"I am looking forward to an improvement of the environmental protection technology and high efficiency of vessel types in the future."

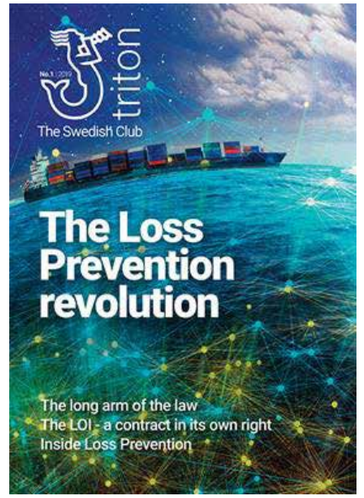
What is your best memory from DSM17?
"What impressed me most was that I visited the base and environment on Donsö where the shipowners grew up, developed and enlarged their markets. I was shocked and so exclaimed in great surprise that it was amazing, great achievement, and deserving to be recorded into history of leading the global shipping market as well as making remarkable achievements from such an exquisite island.

How would you describe DSM in one word?
"The word must be 'Professional'."



Lars A. Malm, *The Swedish Club.*

THE SWEDISH CLUB



The next generation of loss prevention

A pilot project from The Swedish Club means that shipowners can now be offered real time personalised loss prevention.

Four of The Swedish Club's members are participating in the pilot project called Trade Enabling Loss Prevention (TELP). Using the latest AIS technology in combination with statistics and expertise The Swedish Club can map a risk profile for an individual vessel at every stage of its voyage. It can then provide members and their vessels with timely, tailored advice when they are approaching areas of particular risk.

OVER THE LAST ten years the Loss Prevention team has carried out detailed analysis of the entire fleet, examining where the ships have been trading, based on AIS, and what casualties have occurred. This has provided the Club with a risk profile, frequency and claims cost for every port and sea area in the world, based on its own statistics.

"TELP is a new generation of loss prevention", explains Lars A. Malm, Director Strategic Business Development & Client Relations.

He is convinced that by providing this proactive approach and advice, The Swedish Club can help members to trade more safely.

"As soon as one of the ships in the pilot project is flagged as sailing for a destination identified as high-risk, we can send them tailor-made loss prevention advice based on where they are going, the type of vessel they are operating, and the cargo."

THE INFORMATION FED back from TELP can for example include problems with pilots or towage, difficulty with Customs or other authorities, navigational challenges in the approach channel, frequent issues handling certain cargoes, weather patterns to look out for, or identifying areas where there have been frequent groundings or collisions.

The information exchange can also go both ways. AIS does not give information about what cargo is being carried, but if the members provide that information then the Club can provide very specific guidance and advice relating to that particular cargo.

"For many years The Swedish Club has been meticulously recording loss codes for each casualty. It means that for every cargo claim, the Club knows what type of cargo was involved, where and why the issue occurred, where the cargo was loaded and where it was discharged. For every collision or grounding, we know where, how and why it happened."

"THIS HIGHER DEGREE of interaction and communication between the Club and member will add much more value", says Lars A. Malm. He continues:

"We are very excited by the project and are sure it will carry value for our members. We believe that by providing this proactive approach and advice, we can help members to trade more safely."

Whilst the pilot project has a degree of manual involvement, on rollout the service will be delivered to the Club's members electronically through an automatic system.

Pär-Henrik Sjöström

GASUM

The power of LNG

Gasum is aiming at a substantial growth of their international marine LNG bunkering services. The plans for the future also include an expansion of their LNG bunker vessel fleet.

Jacob Granqvist, who has recently been appointed to the newly-created position of Sales Director of Gasum's marine LNG business, will together with his team drive the company's plans to expand its marine LNG services internationally.

He informs that Gasum is building upon its success in the Nordic LNG marine market. Following concerted actions to expand the LNG supply chain to make LNG more accessible, it has carried out more than 2500 LNG bunkering operations for the marine market since 2017, a 38 per cent rise over the two previous years.

"PUT SIMPLY, OUR expansion plans are driven by the marine LNG market. Whether they operate container ships, tankers or cruise ferries within our reach, our aim is to provide operators with a reliable, cost-effective source of LNG that is easy to access", says Jacob Granqvist.

He emphasizes the importance of having a greater physical presence in key areas.

"To that end, we aim at expanding our LNG bunker vessel fleet and are in the initial phases of establishing an international network of cooperating parties."

Already, Gasum is in the final stages of securing a permanent LNG bunkering base in north west Europe in order to support this busy shipping market.

WITH ITS EXPERIENCE and proven track record, Jacob Granqvist is confident that Gasum is on track for success in the larger international LNG marine market.

"To help our customers be more competitive, while reducing emissions and costs, we are much more than a supplier of a commodity. We work closely with customers to formulate the best LNG bunkering management solutions and services and guide them through the process."

He thinks that it is important that the customers know that they will always have ready access to LNG - be it a ship-to-ship bunkering at open sea or truck-to-vessel in port.

"They can operate with confidence. This is a cornerstone of our business, and will be instrumental in growing the marine LNG services", Jacob Granqvist adds.

ACCORDING TO GASUM, LNG consumption within the global marine and shipping sectors is rising. Consumption is expected to accelerate even more rapidly, as compliance with the IMO 2020 Sulphur regulation, which requires over 85 per cent reduction in Sulphur emissions, comes into effect next year. IMO has also set a target to reduce GHG emissions by at least 50 per cent by 2050.

"These environmental regulations make LNG a very attractive alternative for compliance", Jacob Granqvist says.

WITH MORE THAN 20 years in the maritime, shipping and energy industries, Jacob Granqvist has in-depth knowledge of the challenges faced by today's vessel operators. He joined Gasum from sustainable solutions provider Neste, where he worked in key management roles within shipping and marine fuels and services for six years.

Jacob Granqvist's previous experience was in the shipping and maritime industries. He holds a Master's Degree in Science, Maritime Law, Logistics, Organisation and Leadership from the University of Abo Akademi, and is a Master Mariner from the Abo Navigations Institute in Finland, today known as Aboa Mare.

JACOB GRANQVIST SAYS that LNG is rapidly becoming more commonly used as a cost-effective marine fuel.

"LNG is suitable for all vessel types, including ferries, passenger ships, tankers, bulk, supply and container ships. Switching to LNG completely removes SOx and particulates, and reduces NOx emissions by up to 85 per cent. In addition, LNG reduces CO2 emissions by more than 20 per cent, he informs.

Pär-Henrik Sjöström

MAN PRIMESERV

Remote monitoring with PrimeServ Assist

PrimeServ Assist from MAN Energy Solutions, using 24/7 near real-time data stream for remote monitoring and optimization.

Remote, online monitoring of engine systems on board vessels improves safety - and saves money. That has already been proven with MAN PrimeServ's PrimeServ Assist. Today 30 vessels and plants are connected to a PrimeServ Assist Remote Operation Center.

"It may start with a tiny anomaly, not even noticeable even to an experienced engineer. But it won't go away on its own. Sooner or later it will have consequences", explains Henrik Malm, Head of MAN PrimeServ Sweden, Finland & the Baltic countries as well as responsible for sales of PrimeServ Assist in northern Europe.

HENRIK MALM HAS a background as a seagoing engineer and knows what he is talking about. He mentions lots of examples when experts in PrimeServ Assist Remote Operation Centers have detected problematic trends by monitoring and evaluating data. In addition, they are supported by MAN-developed algorithms that continuously scan and analyze the received data to detect anomalies that could indicate machinery availability, safety or performance issues.

After proper evaluation, a message is sent to the vessel or in the customer office. Based on these notifications the engineers can take the actions necessary to ensure that the operation can continue safely at maximum efficiency and without interruption.

Besides the pro-active part of the PrimeServ Assist service, customers can also follow up with the experts using voice or text chat 24/7 on the MAN CEON platform.

PRIMESERV ASSIST REQUIRES a connection to the MAN CEON platform. The MAN CEON platform is an intuitive cloud-based user interface that displays data and information on the machinery. It can be accessed securely from any permitted device with an internet connection.

Data from machinery is collected by a local gateway device on board the vessel. The data is transferred via secure satellite or land link using secure SSL/TLS transmission to the MAN CEON platform, where data is stored, processed and made accessible to the customer and PrimeServ Remote Operation Center experts.

In the remote operation center experts monitor and evaluate data and provide status notifications and proactive advice to the customer.

"Our experts evaluate the resulting output and if anything is off, they'll formulate a plan of action for the engineers on board", explains Henrik Malm.

HENRIK MALM MENTIONS an example from real life. On a two stroke main engine abnormal temperature spikes are detected in a cylinder unit.

Shortly thereafter experts in the PrimeServ Assist Remote Operation Center are alerted and evaluate the data. They contact the ship through the MAN CEON platform and inform that the liner wall temperature fluctuations indicate either abnormal wear of the piston rings or damage to the piston ring pack.

To investigate further, they advise to perform a cylinder condition inspection through scavenge ports and attach step-by-step instructions. A focused maintenance and adjustment job can then be started.

Pär-Henrik Sjöström

"It won't go away on its own"

Henrik Malm, Head of MAN PrimeServ Sweden, Finland & the Baltic countries

ALFA LAVAL

Products for compliance

Ship owners face an ongoing challenge of staying compliant with ever-evolving rules, while trying to minimize the influence on operations and profitability.

Building on knowledge from more than a century of collaboration with vessel owners, operators and builders, Alfa Laval has developed innovative, type-approved compliance technologies with a track record of dependability.

A STRICT FUEL sulphur limit of 0.1 per cent already exists for those sailing in ECAs, but as of 2020 all vessels will need to comply with a 0.5 per cent global fuel sulphur cap. And newly built vessels face stricter Tier III NOx limits in NOx Emission Control Areas.

At sea since 2009, Alfa Laval PureSOx allows vessels to meet fuel sulphur limits without resorting to low-sulphur fuels. It has a long reference list and an unbeaten track record - with every system ever sold in operation and in compliance. Hybrid PureSOx systems use Alfa Laval's centrifugal separation technology for water cleaning in closed-loop mode, and open-loop systems are delivered hybrid-ready for easy future upgrading.

To meet NOx reduction demands, Alfa Laval PureNOx technology supports the Exhaust Gas Recirculation (EGR) process. EGR, which lowers combustion temperature by directing exhaust gas back into the engine, inhibits NOx formation but requires effective water cleaning. PureNOx, which provides this through centrifugal separation, has become the established choice for EGR water treatment. Today it is available as PureNOx LS (Low Sulphur), a streamlined solution for low-sulphur fuel that enables even more cost-efficient EGR.

Joining PureSOx and PureNOx is Alfa Laval PureVent, which deals with an overlooked aspect of vessel emissions: crankcase gas, containing oil droplets and particles that pose health and environmental hazards, especially when in port. PureVent is a centrifugal oil mist separator that removes the oil, soot and unburned fuel, recovering oil that can be recirculated through the separator for use as engine lubrication.

WHILE NEW LEGISLATION is putting focus on air emissions, the familiar problem of water discharge remains. Bilge water must be cleaned to just 15 ppm before discharge overboard, with local regulations posing even stricter limits.

Alfa Laval has adapted its high-speed centrifugal separation technology to create a reliable solution, providing continuous bilge water treatment in real-world marine conditions. Alfa Laval PureBilge reduces oil-in-water content to less than 5 ppm, even on rough seas or in the presence of difficult emulsions.

SPECIES THAT HITCH a ride in ballast water tanks have long posed a threat to local ecosystems at the deballasting site. To combat the problem, IMO and the USCG have each established their own strict regulations.

Having been the first with a commercially available ballast water treatment system, Alfa Laval has amassed over a decade of practical experience in this new application. Alfa Laval PureBallast 3 is the third generation of Alfa Laval's technology, which uses an enhanced form of UV treatment. This includes low-clarity waters with UV transmittance as low as 42 per cent. Besides having IMO and USCG type approval, PureBallast 3 is the market's first solution approved according to IMO revised G8.

IN ALL OF these areas, Alfa Laval has shown that environmental regulations can be met with minimal impact to vessel operations, as well as low lifecycle cost. Having understood the legislative challenges early on, the company has developed effective ways to protect both marine ecosystems and maritime business interests.

Beyond its proven portfolio of compliance products, Alfa Laval also has a strong body of expertise. That includes regulatory insights that are readily shared with customers, but also deep know-how and project management competence acquired in many years of working with compliance systems and their installation. Furthermore, as a well-established marine supplier, Alfa Laval has capacity to handle today's retrofit demands and the service network to support vessels into the future.

Pär-Henrik Sjöström

HGLUND

Høglund enters new business segments

Høglund has engaged in two new business segments and established Høglund Gas Solutions and Høglund Power Solutions.

In times with increasingly strict requirements for emissions, the Norwegian company Høglund Marine Automation has committed to creating smarter, cleaner and more efficient ships - offering customers new levels of performance and reliability, while protecting the environment for future generations.

In line with this commitment, Høglund has engaged in two new business segments and established Høglund Gas Solutions and Høglund Power Solutions.

THE NEW COMPANIES have developed Gas and Battery Hybrid Propulsion solutions, contributing in both reducing fuel consumption and emissions.

The main products of Gas Solutions are LNG Fuel Gas Supply System, LNG Cargo Handling System, LNG Gas Control System and LNG Gas Safety System.

Power Solutions provides Electric Hybrid System-design, installation and training, containerized turnkey Energy Storage Systems as well as Energy Management Systems.

The investment in new technology has paid off. Høglund has already has secured contracts for retrofit of Fuel Gas Supply Systems for six of Hurtigruten's passenger vessels and for the LNG Cargo Control system on Bergen Tanker's Oslo Tank. On the power side, PSV Island Clipper has recently executed sea trials, after Høglund Power Solutions retrofitted the vessel with an 875 kWh battery pack.

HØGLUND MARINE AUTOMATION was established in 1994 in Tønsberg, Norway, with aim to provide reliable and user-friendly automation systems for the marine industry. This was accomplished by utilising durable off-the-shelf components, obtaining competitive and cost-effective solutions, offering availability of spare parts all over the world, while the software was developed with focus on intuitive and easily configured user-interfaces.

Characteristics of the system are for example high speed redundant communication network based upon IP standard technology, standard programming languages, the support of standard solutions for all commonly used marine components and integrated logging system and playback facilities.

Høglund Marine Automation also offers Ship Performance Monitoring, playback and retrofit.

There is lifetime guarantee on the software. Any faults in software will be rectified free of charge throughout the lifetime of the vessel. A secure remote access application is utilised for diagnostics on all systems, ensuring quick and efficient service to customers.

HØGLUND'S INTEGRATED Automation System (IAS) is based on ABB Process Controllers together with the ABB I/O system. The AC800 is modular and scalable, making it suitable for systems ranging from a few hundred signals to those comprising several thousand.

Profibus is used for I/O communication and Distributed I/O is recommended, as both cable and installation costs are reduced, when IO cabinets are located close to the process equipment. The AC800 supports most commonly used protocols and can also be set up as a redundant system. The controller utilizes a redundant IP network with communication up to the Operator Station.

The IAS operator stations are Windows based and communicate with the process controllers through OPC standard. All operations, alarm & event handling and playback analysis will be handled from these operator stations. Mimics are designed with own developed software and are easily created and presented, using standardized display components.

Pär-Henrik Sjöström

Stiftelsen Sveriges Sjömanshus belönar

Belönad för globalt kommunikationssystem

Sjökapten Benny Pettersson är mannen bakom det världsomfattande AIS-systemet som hjälper fartyg att hålla reda på varandra ute till havs. I maj fick han Sjömanshusstiftelsens hedersbelöning på 20 000 kronor för sitt viktiga bidrag till den globala sjösäkerheten.

År 2004 beslutade IMO (International maritime organization) att AIS skulle bli standard på fartyg med en bruttodräktighet över 300. AIS (Automatic identification system) är ett öppet kommunikationssystem som låter alla fartyg inom VHF-radions räckvidd att utbyta information med varandra om sådant som kurs, fart, namn, längd och bredd. Men idén till AIS:en föddes redan 1965, då Benny Pettersson som lättmatros befann sig mitt i en vinande Tyfon på ett lastfartyg utanför Japans kust. Med vindhastigheter upp emot 70 meter i sekunden stod den unga mannen på bryggan och önskade att de hade haft bättre instrument ombord.

– Sikten var absolut noll och vi kunde inte se någonting på radarn heller, berättar han. Samtidigt visste vi att det fanns fler fartyg där ute och risken för en kollision var överhängande.

”Risken för en kollision var överhängande”

Tanken på ett väderoberoende system som ger en tydligare, exaktare och mer informativ bild av omkringliggande fartyg har sedan följt Benny Pettersson genom hela hans karriär; först som manskap och befäl ombord och därefter som lots i Sjöfartsverket. På Sjöfartsverket lärde han också känna Rolf Zetterberg och Bo Trygge som tillförde ett tekniskt kunnande och i takt med den elektroniska utvecklingens framsteg kunde nya funktioner läggas till det ännu outvecklade systemet.

– Från början tänkte jag mest att man ville kunna se andra fartyg och deras positioner. Men i mitten av 80-talet blev jag skickad till USA för att titta på de elektroniska kartor som börjat användas där och det öppnade helt nya möjligheter, säger Benny Pettersson.

Fotograf: Bengt Wanselius

Sjökapten Benny Pettersson.

Men det skulle alltså dröja ytterligare 20 år innan IMO fattade beslut om att införa AIS. Under tiden reste Benny Pettersson runt i världen för att övertyga IMO:s medlemsstater om systemets förträfflighet. Minst 70 procent ja-röster krävdes för att förslaget skulle gå igenom, men det visade sig inte blir några problem. När det väl kom till omröstning bifölls det med överväldigande majoritet, berättar Benny Pettersson.

Efter så många års planering och hårt arbete måste det ha känts otroligt skönt?

– Ja, det gjorde det förstås. Men jag hade också väldigt roligt och fick uppleva massor under arbetets gång.

benny.pettersson1@gmail.com

LANKHORST ROPES

Mooring Manual from Lankhorst Ropes

Lankhorst’s Mooring Manual helps operators to make sense of MEG4 guidelines.

The fourth edition of Oil Companies International Marine Forum’s (OCIMF) Mooring Equipment Guidelines (MEG4) marks a significant change for oil, LPG and LNG tanker operators with the focus more than ever on the safety of the vessel’s crew and terminal staff.

Lankhorst Ropes announces a new Mooring Rope Manual providing vessel operators with an in-depth review of fibre mooring ropes and assistance with the Mooring System Management Plan and Line Management Plan introduced in the MEG4 guidelines.

“MEG4 IS A step-change in mooring equipment guidelines for the safe mooring of oil tankers and gas carriers at terminals”, says Feike Jan Bergstra, area sales manager, Lankhorst Ropes.

“Our Mooring Manual is designed to help operators to make sense of the MEG4 guidelines and successfully implement them with minimum disruption to their businesses.”

The Lankhorst Ropes approach is both comprehensive and practical. An in-depth introduction to mooring ropes - their construction, characteristics and certification, is followed by tips on rope selection to suit the vessel and mooring conditions. For the development and implementation of the ship’s Line Management Plan (LMP) and Mooring System Management Plan (MSMP), the Lankhorst Manual reviews the OCIMF’s recommendations. As an aid to assessing the completeness of the LMP and MSMP, the Lankhorst Manual takes a FAQ approach to the OCIMF Ship Inspection Report (SIRE) Vessel Inspection.

“GOOD INTERACTION BETWEEN the fleet operator and rope manufacturer is critical to the successful implementation of MEG 4”, claims Feike Jan Bergstra.

“At one level this can mean guaranteeing the correct type approval rope testing is carried out in accordance with OCIMF MEG4, while at another it involves assisting with rope maintenance and the on-going collection of rope usage data to ensure compliance with the recommended retirement criteria of 75 per cent of the Ship Design MBL.”

Lankhorst Ropes has already tested its ropes to meet MEG4 recommendations and recently received DNV/GL type approval certificate for its Lankoforce rope both jacketed and unjacketed.

Pär-Henrik Sjöström

ANNA LUNDBERG

Drawn to the industry

In her 10th year at Northern Energy & Supply (NES), Elin Kristensson has taken on a more active role than ever.

Elin Kristensson has always been a gifted salesperson. She developed the talent during the early years of her career when she used to work in a fish shop and at several clothing stores. But she has always been drawn to the shipping industry.

She has an affiliation to craftsmanship and the ability to use a wide range of technology to solve problems. She thinks that it comes from growing up as a fisherman's daughter.

"My father is a fisherman and I have always been fascinated by that kind of work. I knew I wanted to work with sales, preferably within heavy industry."

SHE MET HER husband - David Kristensson from the island of Donsö and Group CEO of Northern Offshore Group (NOG) and CEO of Northern Offshore Services (NOS) - at a young age. At first, she had no plans to start working in his family's company.

"Then one day I got the question: 'Do you want to try?' And I did. I soon realized that this is a lot of fun."

That was in 2009. She stayed at NES and her passion for selling and developing the company's business grew. When she went on parental leave in 2017, she had been sales director for a few years and had developed a particular, almost geeky, interest for lubricants.

NES is part of the NOG Group together with NOS and the newly acquired offshore shipping company Mareel Ltd. The Group shares it roots with several of Donsö's other tanker companies. NOS operates some 40 offshore vessels, including the bunker and supply vessels that NES uses in its various supplier activities.

ELIN KRISTENSSON DESCRIBES NES as the problem solver who takes on special assignments and provides that little extra.

"The last time I was on call a ship's captain was conducting cable laying and he needed to have a pelican hook delivered at six o'clock the next morning. At the time it was eight o'clock on a Sunday evening. We managed to solve that, of course. Every time it is something new."

NES HAS THREE business areas: Energy, recycling and logistics. Their largest individual product is lubricating oils and they have been marine distributors for ExxonMobil since 2010. They also sell fuel. When it comes to recycling, they handle of slop, sludge and other waste products from ships. Within the logistics segment they take on various special assignments and act as a carrier and supplier of everything the maritime industry may need. With their warehouses, vehicles and ships they carry out everything from crew changes to freight deliveries, ship-to-ship assignments and towing.

THREE YEARS AGO, the Northern Group's energy company merged with the Group's supply company and formed what is today NES. Elin Kristensson now heads a team of nine office employees. They have commercial responsibility for five vessels with a total of 26 onboard employees, a staff she praises.

"I work with a fantastic crew here in the office and the people who work on our vessels are tough and flexible. Together we always find solutions to our customer's problems."

WHEN ELIN KRISTENSSON returned to work last autumn after a year and a half of parental leave, much had changed at the company. Her decision to become managing director of NES grew during the end of her leave. She felt it was the right time for her to take the step into something new. Still building her new role, she describes herself as a very hands-on director.

She wants to be involved in the sales work as much as possible. She thinks her foremost strengths are her passion for the business, her eye for details and being a good representative of the company.

"I realized this is a lot of fun"

Elin Kristensson
CEO Northern Energy & Supply

As CEO she says she initially had to spend time getting the complete picture of the company's needs, understanding how each and everyone got their job done, how they sell.

"How would I do it? Should something change? We have since looked at our various business areas and value offerings to find out what we do well and what we could do better. I myself make sure to emphasize the positive - you have to have fun at work to be able to cope through the most stressful days".

Anna Lundberg

Terntank – Pioneers for safety and sustainable shipping

The surrounded sea has provided us the living for decades and the protection of the marine environment has been important for us and also a driving force in our operations.

Terntank continuously strives to be way ahead of legislators in safety and sustainability. We are always at the forefront of new technology and have made major investments in environmentally friendly vessels saving energy and cutting down the emissions. Our customers are the leading oil companies in Europe. We provide them with clean shipping solutions and help them minimise their environmental impact in their supply chain.

A well functioning and sustainable society relies on efficient and sustainable maritime transport. In Terntank, maritime safety and the well being of our crew have always been of top priority. Terntank is commited to the UN Sustainability goals.

We have selected five goals that are especially important to us:

TERNTANK
Shipping, Chartering & Ship Management

S 364 Rockall.

BENT MIKKELSEN

Made in Denmark

Danish shipyards are renewing the fishing fleet based on the Swedish west coast.

Over a period of about 40 years, the fishing vessels have grown in size from about 38.8 meters to almost 70 meters in length. As a result, the west coast fishermen in Sweden have got new opportunities for fishing in the Atlantic and in Norwegian waters.

In the summer 2019 Karstensens Shipyard in Skagen, which is Denmark's largest shipyard for large and advanced fishing vessels, had an order book including five vessels for Swedish fishing companies. They will be delivered from late 2019 to late 2020 according to plan.

AS A RESULT, Karstensens again stands for a substantial renewal of the Swedish fishing fleet. This has been the case for more than a decade, although it is not visible in the statistics. Several Swedish fishing companies have chosen to have their vessels registered in Denmark. This is a possibility with the current EU legislation, offering for example free access for Swedes (and other EU citizens) to act as captains on Danish fishing vessels.

Thus, e.g. Astrid Fiskeri A/S is a Danish subsidiary of Astrid Fiske AB. The company is owned by the Johansson family on Rörö and their 69.95 m long fishing vessel S 264 Astrid has Skagen as home port. Astrid was delivered as a newbuilding from Karstensens Shipyard in 2014 directly to the Danish flag.

The same company also owns the 69.9 m long S 364 Rockall, which was delivered from Karstensens in 2017.

IN ADDITION TO that, Themis Fiskeri A/S with their address in Skagen is owner of several fishing vessels under the Danish flag. One of these is the 63 m long S 144 Themis, which in 2018 was delivered from Karstensens. Themis Fiskeri A/S owned by the Ryberg/Lorentsson families on Rörö.

Another Swedish company in Denmark is Fiskeri A/B Ginneton, which together with the Claesson family owns the company Gifico ApS, which operates the 62.6 m long fishing vessel S 205 Ceton under the Danish flag. The ship was purchased second-hand in 2013 and was delivered from Karstensens Shipyard in 2006 as E 349 Cattleya to Esbjerg.

The current order at Karstensens Shipyard consists of two sister ships, which have been ordered by Torönland Fiskeri A/B in Fiskebäck and owned by two branches of the Ahlström family. The 49.95 m long vessels will be named GG 207 Torland and GG 204 Torön. They will replace two Flekkefjord-built ships which were sold to Far East Russia last year.

In addition, Fiskeribolaget Kristin, Donsö, has ordered a new building for delivery to the German flag with the name NC 330 Kristin. The company and the newbuilding are registered in Cuxhaven where the company has had several ships in operation. Kristin will be 49.95 m long and is expected to be delivered at the end of 2019.

THE LATEST ORDER for Karstensens Shipyard is newbuilding 457, which will become Vingaskär when the ship will be delivered in September 2020. The hull is being built by Karstensen's Polish branch yard in Gdynia. The 34 m long GG 500 Vingaskär will be of a new design for fishing vessels in Scandinavia. She is commissioned to Mats Johansson and family with address on Styrsö.

Also Astrid Fiske A/B has signed for another large trawler from the yard in Skagen. She will become GG 64 Astrid-Marie and is expected to be delivered in October 2020. The ship will be 63.85 m long.

The newbuildings from Karstensens Shipyard are designed by the shipyard's own design office, which over the years has accumulated expertise in very large fishing vessels. The reference list contains more than 25 vessels in excess of 50 m in length.

HVIDE SANDE SHIPYARD Vestværftet has not built directly for Swedish fishermen, but has assisted with design and consultancy on several newbuildings and repair-jobs. Thus, the Vestværftet had a strong influence on the building GG 181 Västerland, which was delivered

GG 707 Arkö.

PREBEN ANDERSEN

S 264 Astrid *and the smaller GG 764 Astrid.*

BENT MIKKELSEN

Esvagt Supporter, *ex GG 207 Torland.*

BENT MIKKELSEN

in 2010 from Ö-varvet on Öckerö, to Hönö.

In fact, the newbuilding was commissioned from the Vestværftet, which however did not have the capacity to handle building and fitting out and therefore in cooperation with the owners chose to let Ö-varvet do the fitting out part.

THE NEWBUILDING GG 707 Arkö, which in 2018 was delivered from Tjörnvarvet in Rönnäng to Arkö Fiske A/B in Rönnäng, was a similar case. The Hvide Sande-based shipyard also has assisted in several refits of existing fishing vessels in Poland.

The very first time a Swedish fishing company took delivered a newbuild from a Danish shipyard was in October 1968, when Karstensens Shipyard on behalf of Ørskov Staalskibsværft delivered the 38.5 m long LL 56 Stella Polaris to Kungshamn.

THE FOLLOWING TWO newbuildings were contracted at the Nordhavnsværftet in Copenhagen, which purchased the hulls from Falkenberg Varv. The two newbuildings became GG 204 Torön and GG 205 Ganthi V, both with a length of 38.8 m. They were very large fishing vessel at their time of delivery in 1976. Another Torland and another Ganthi, as well as a Ginneton, were later built in Denmark for the same Swedish owners. GG 205 Ganthi and GG 203 Ginneton were delivered from Johs. Kristensens Skibsbyggeri A/S, Hvide Sande in 1987.

GG 207 TORLAND was delivered in January 1989 to Fiskebäck and was in service until 2001. Subsequently, the very well-maintained ship was sold to Denmark, where Esvagt A/S purchased and converted her into a standby/guard vessel in the North Sea under the name Esvagt Supporter.

It was not until early 2019, when the ship was sold to a Belgian shipping company to conduct geological investigations on the seabed.

Bent Mikkelsen

Newbuildings with Swedish connection

Vessels on order August 2019

Ordered by	Shipyard	Type	Dwt	Del	Remarks
Donsötank	Wuhu Shipyard, China	Prod/chem	22 000	2021	LNG & "battery-ready"
Donsötank	Wuhu Shipyard, China	Prod/chem	22 000	2021	LNG & "battery-ready"
Furetank	Avic Dingheng Shipbuilding, China	Prod/chem	16 300	2020	LNG
Göteborgs Universitet	Nauta Shiprepair Yard, Poland	Research		2019	900 t, Skagerak
JT Cement	Ferus Smit, Holland	Bulk (cement)	8 000	2019	LNG
Kvarken Link	RMC, Finland	Ropax		2021	LNG
Marinvest+Waterfront	Hyundai Mipo, Korea	Prod/chem	49 000	2019	Methanol
Marinvest+Waterfront	Hyundai Mipo, Korea	Prod/chem	49 000	2019	Methanol
Mercy Ships	CSIC, China	Hospital	4 500	2019	Project: Stena RoRo
N-O-S	Grovfjord Mek. Verksted, Norway	CTV	34 m	2020	Hybrid, Energizer
OljOla	PaxOcean, China	Bunker tanker	5 600	2019	Cooperation Stena Oil
Rederi AB Gotland	GSI, China	Ropax		2019	LNG, Thjelvar
Stena	AVIC Weihai Shipyard, China	Ropax		2019	3100 lm, Stena Estrid
Stena	AVIC Weihai Shipyard, China	Ropax		2019	3100 lm, Stena Edda
Stena	AVIC Weihai Shipyard, China	Ropax		2020	3100 lm
Stena	AVIC Weihai Shipyard, China	Ropax		2020	3100 lm
Stena	AVIC Weihai Shipyard, China	Ropax		2021	3100 lm
Stena	AVIC Weihai Shipyard, China	Ropax		2021	3100 lm, LNG
Stena	AVIC Weihai Shipyard, China	Ropax		2022	3600 lm
Stena	AVIC Weihai Shipyard, China	Ropax		2022	3600 lm
Stena	AVIC Weihai Shipyard, China	Ropax		2023	LNG
Thun Tankers	Avic Dingheng Shipbuilding, China	Prod/chem	17 500	2019	L-class
Thun Tankers	Avic Dingheng Shipbuilding, China	Prod/chem	17 500	2019	L-class
Thun Tankers	Avic Dingheng Shipbuilding, China	Prod/chem	17 500	2020	L-class
Thun Tankers	Ferus Smit, Holland	Prod/chem	7 999	2020	LNG, E-class
Wallenius SOL	China	Roro		2021	LNG
Wallenius SOL	China	Roro		2021	LNG
Wallenius Wilhelmsen	Tianjin Xingang Shipyard, China	PCTC	23 700	2019	Tannhauser
Wallenius Wilhelmsen	Tianjin Xingang Shipyard, China	PCTC	23 700	2019	Nabucco
Västtrafik	Uudenkaupungin Työvene, Finland	Passenger		2019	Battery, Elvy
Älvtank	Avic Dingheng Shipbuilding, China	Prod/chem	16 300	2019	LNG, Ramelia

Tom Olander *(to the left) and Axel Ahlström.*

PÄR-HENRIK SJÖSTRÖM

Market matching

Over the last few years, Jool has emerged as a leading provider of debt financing for small and mid sized companies.

Jool's business concept is based on matching businesses in need of growth capital (acquisitions, organic growth, construction, etc.) with capital-intensive institutions and private individuals.

Jool is now diversifying its Swedish operations by offering a shipping finance option – a possibility that, so far, has only been available to its Norwegian clients.

"We want to enter the Swedish market because we see that the traditional way of financing shipping operations here is on the decline. It is an addition to our portfolio which has previously been highly focused on real estate and property development", says Tom Olander, co-owner and founder of the Jool Group.

OLANDER SAYS THAT shipping financing provides Jool with a particular niche opportunity through not positioning themselves as a player competing for the largest contracts.

"There's a sweet spot for shipping investments in the USD 5 to USD 20 million range. From what I have seen, it is generally easier to gain finance for larger vessels while the situation is getting tougher for smaller companies seeking capital."

Here he sees that Jool can provide a complementary funding alternative.

"WE OFFER A higher loan-to-value ratio than a traditional bank while charging a little more in the form of interest, meaning that a shipping company can say, invest in two vessels instead of one. The downside is obviously slightly higher capital costs. On the up-side, bottom line figures show a huge difference as you can achieve more leverage on your own equity."

Jool provides both short-term bridge financing solutions and longer-term debt financing with an emphasis on corporate bonds and direct loans.

"We match healthy companies that need to finance their growth strategies, such as acquisitions or project development, with strong investors and institutions. We specialize in corporate bond offerings as a means of raising finance from trustworthy investors. Among our existing investors are credit funds, pension funds and others in search of yield on their managed capital, so it is a wise move for them to consider investing in our bonds", says Tom Olander.

ACCORDING TO HIM, there is no other financial institution in Sweden that offers this type of financing for investments in the shipping sector.

"In Norway, there are a couple of such companies and we collaborate with them in the smaller investment segment. Here we already have established channels with shipping companies."

He explains that a typical arrangement can be that the client has a secured loan forming the foundation of a deal.

"Then we can fold our solution on top of that. Smaller shipping companies may not be able to raise more than 50% of the required capital through secured loans, so if we lend them a further 30% on top, they will only need 20 in equity in order to close the deal."

Tom Olander says that this is common practice when acquiring smaller vessels as raising excessive sums of equity capital is not required.

"Here, we may prefer to take on the entire loan instead meaning that the client can skip the bank loan part altogether."

THIS IS THE first time that Jool will participate at the Donsö Shipping Meet.

"An important member of our team at the event is Captain Axel Ahlström who has a background from Donsö and shipping before moving into finance and joining Jool. I believe that DSM19 is an excellent forum for informing the industry about our company's new offering on the Swedish market", he says.

Pär-Henrik Sjöström

PRIVATE

The art of good coaching

Good coaching is an important way to increase potential and enhance performance.

In the maritime context, coaching is mainly used to enhance and develop performance of individuals, but it can also be applied to teams in specific situations or events. Coaching is an extremely useful training tool for the development and support of officers.

Coaching should not be confused with mentoring, which is a long term continuous development process where many aspects and skills are worked on to achieve overall growth. Coaching focuses more on specific individual skills or events with a defined start and end, providing immediate impact.

The most obvious coach for officers learning ship handling skills would be the captain. Unfortunately, coaching is not something that a captain can simply 'pick up'. Like other competencies, it requires preparation as well as development of both a mindset and a manner of delivery. This makes all the difference between targeted, effective coaching and random advice in a trial and error operation.

PREPARING FOR A coaching session should start with the coach demonstrating to the person/people to be coached what will be expected.

A coaching session must be scheduled well in advance to enable the officers being coached to prepare themselves and make a plan. If the officers have attended a simulator ship handling course before a coaching session, it will provide a useful background to aid learning from a real-world experience.

DURING THE OPERATION, officers must 'think aloud', stating their intentions, reasons and expected outcome audibly and clearly to enable the coach/captain to easily follow what is going on.

If there is a deviation from the planned parameters, the captain should use specific coaching techniques to make the officer aware of the anomaly. The recommended technique for this is 'escalating intervention' based on probing: 'What is your intention?' and/or alerting: 'The speed is now 11 knots'. However, if this does not have the desired outcome, then a challenge needs to be expressed using words that raise attention such as: 'I suggest' or 'I recommend'.

The coach should refrain from giving direct advice or orders as this will mean a de facto but not formal taking over of the conn. Coaching is not telling people what to do, but helping them to discover for themselves what to do.

When everything is working out as planned, the captain should give only brief comments to confirm they are satisfied and for further encouragement. The coach/captain should avoid interfering with the operation as long as the ship is kept within agreed operating parameters. Officers must be allowed to come up with navigational decisions by themselves to learn and foster self-confidence.

COACHING CAN GO wrong if the coach is interfering or advising excessively. Constantly probing or alerting might result in mental overload and induce unnecessary stress and ill-considered decisions. If the captain is giving direct orders, they are not coaching, but turning the officer into a mere extension of their arm.

If the ship ends up in an undesired situation and the captain decides to take over the conn, it might harm the officer's self-confidence if this situation has not been explained during preparation.

AFTER THE OPERATION, the officer should make a print-out of the event and take some time alone to reflect on the whole experience and write down their impression of the operation. This reflection should include:

1. What went well?
2. Why did it go so well?
3. What can be improved concerning planning; strategy with regards to environmental conditions; operation – use of forces under control and use of navigation equipment; teamwork.

When all these are completed, the officer should have a face-to-face meeting with the captain to share their experience. This session is where the learning process gains momentum and the coach can provide some valuable advice and give recognition for a job well done.

Good coaching is an important way to increase potential and enhance performance and prepare a senior officer (potentially your successor) for promotion to Captain.

Hans Hederström

MARINESHAFT

Serving fishermen

In addition to repairs of propeller equipment and rudder arrangements MarineShaft in Hirtshals, Denmark, is specialized in repair and modification of RSW plants on fishing vessels.

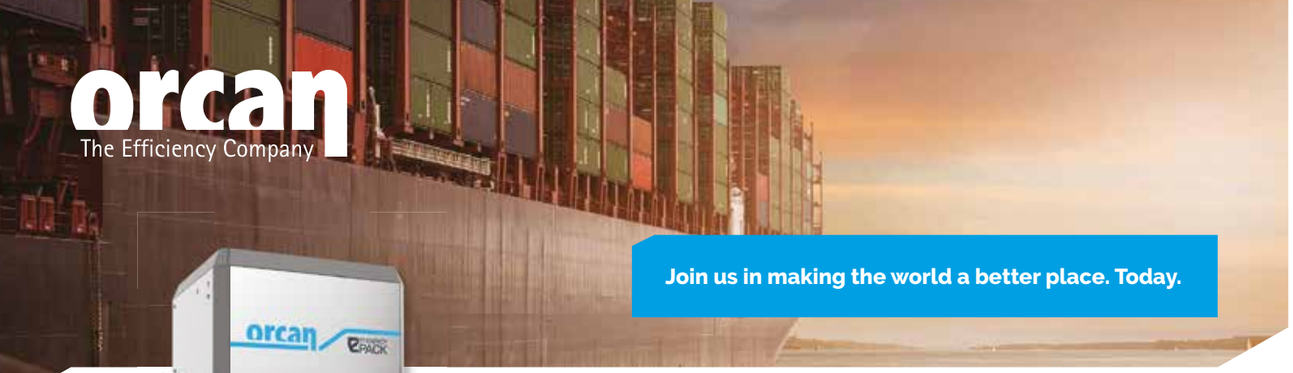
The company was this summer visited by the Norwegian trawler Grimsholm. In 2017 MarineShaft had modified the two RSW plants on board to increase capacity and obtain a better cooling storage. This solution saved the owner 80 per cent of the price compared to a new installation.

ANOTHER RECENT REPAIR vessel in this segment was the Faeroe trawler Arctic Viking. Last winter, when Arctic Viking was at the shipyard in Torshavn for class approval, two new freezers plants were supplied and fitted by MarineShaft. The service team also carried out a comprehensive service inspection of the entire freezer system on board.

BEFORE THAT MARINESHAFT has carried out repairs on the vessel for several times both in Hirtshals and in Torshavn. The owner is pleased:

"Small shipping companies like us with only one vessel often have limited administration, even in the technical field. The freezing technology is a very specialized area, so it may often be necessary to seek external technical assistance - even sometimes whilst at sea. Therefore, it is of great importance for us that the vessel can reach our supplier with technical skilled staff round the clock", says Anfinn E Dam from the shipping company P/F Lidin, the owner of Arctic Viking.

Pär-Henrik Sjöström



Recover your waste heat with the efficiency PACK

SAVE COSTS

The efficiency PACK can supply up to 100 kW of electricity or mechanical power per module, reducing fuel consumption and thus making it pay for itself within 2 to 4 years.

INCREASE EFFICIENCY

Extracting waste heat from exhaust gases, jacket cooling water, steam and thermal oil increases the vessel's energy efficiency, which is reflected by an improved EEDI.

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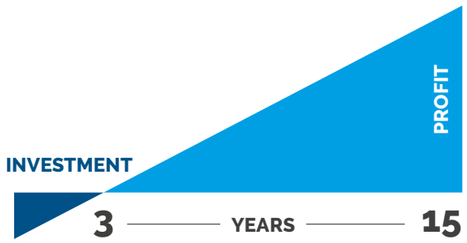
By lowering CO_2, NOx, SOx and particulate matter emissions, the efficiency PACK adds significantly to a sustainable future in marine transportation.

PLUG AND PLAY

The efficiency PACK requires only 1.5 m^2 of floor space, making it fit easily in virtually any engine room, and requires very little maintenance.



1,000,000
hours of operation

200
units sold woldwide

5,000
tons of carbon saved

ORCAN ENERGY – AT A GLANCE

Orcan Energy AG is a leading European CleanTech company offering efficient energy solutions based on Organic Rankine Cycle (ORC) technology for the conversion of waste heat into electricity. Orcan Energy AG was founded in 2008, employs 60 people and is headquartered in Munich, Germany.

Please contact our local partner for more information Sveadiesel AB P.O.B. 1326 SE-172 26 Sundbyberg
Tel.: +46 (0)8 – 7 64 66 10 Fax: +46 (0)8 – 29 57 90 mail@sveadiesel.se www.sveadiesel.se www.orcan-energy.com/en

DSM19 sponsors

Wärtsilä

MAIN

Wärtsilä is a global leader in smart technologies and complete lifecycle solutions for the marine and energy markets. By emphasising sustainable innovation, total efficiency and data analytics, Wärtsilä maximises the environmental and economic performance of the vessels and power plants of its customers. In 2018, Wärtsilä's net sales totalled EUR 5.2 billion with approximately 19,000 employees. The company has operations in over 200 locations in more than 80 countries around the world. Wärtsilä is listed on Nasdaq Helsinki.

WARTSILA.COM

Alfa Laval

GOLD

Whether you build ships or sail them, you need solutions that put you ahead. Alfa Laval partners with you to secure efficient and reliable operation, compliance and productivity. In short, our solutions increase performance – throughout the lifetime of the vessel.

ALFALAVAL.COM/MARINE

Avic Ship

GOLD

AVIC SHIP, the headquarter is located in Shanghai, mainly designs and manufactures all kinds of high-quality and value added vessels. Meanwhile, AVIC SHIP provides domestic and international customers with integrated services such as trading, construction, supply chain management, financing, monitoring managing and EPC projects.

AVICSHIP.COM

Bureau Veritas

GOLD

Bureau Veritas Group is one of the largest classification and certification societies worldwide with 75,000 employees and 400,000 customers in 140 countries. Bureau Veritas specialises in Quality, Health & Safety, Environment and Social Accountability Management. In the maritime field, Bureau Veritas provides Classification and Certification of Ships and Offshore Units. Furthermore Bureau Veritas provides second party Consulting and Outsourcing services.

VERISTAR.COM/PORTAL/VERISTARINFO

Gasum

GOLD

The energy company Gasum is a Nordic gas sector expert. Together with its partners, Gasum is building a bridge towards a carbon-neutral society on land and at sea. The company offers energy for heat and power production, industry as well as road and maritime transport. Gasum is the leading supplier of biogas and liquefied natural gas (LNG) in the Nordic countries. The company continues to strengthen the position and infrastructure of LNG and supplies LNG to maritime transport, industry and heavy-duty vehicles. The Gasum Group has around 400 employees in Finland, Norway and Sweden.

GASUM.COM

Høglund Marine Solutions

GOLD

Høglund Marine Solutions provide Automation & Power Management systems for refits and newbuilds, LNG Fuel Gas and Cargo Control systems and complete Power Solutions, with battery pack, switchboards, drives and motors. Our solutions are known for having a high level of integration and focus on obtaining low life-time costs and protecting the environment.

HOGLUND.NO

The Swedish Club

GOLD

The Swedish Club was founded by shipowners in 1872 and is today a leading mutual insurance company, owned and controlled by its members. The Club writes Protection & Indemnity (P&I), Freight Demurrage & Defence (FD&D), Hull & Machinery (H&M), and Hull Interests, Loss of Hire, War Risks and any additional insurance required by shipowners or charterers. It also writes Loss of Hire for Mobile Offshore Units and FPSOs. The head office is located in Gothenburg, Sweden, and branch offices are located in Piraeus, Hong Kong, Tokyo, Oslo and London.

SWEDISHCLUB.COM

Ö-borgen

GOLD

Ö-borgen is a marine company in Öckerö in the archipelago of Gothenburg. Ö-borgen includes Ö-varvet, Hasslö Varv, Berg Marin, Power House, Imatech Marin & Industri and Marine Parts Europe.

OBORGEN.SE

Telko

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A reliable, efficient and user friendly experience. Our Electronic Chart Display and Information System is The North Sea Standard. From Færder Technology Park on the east coast of Norway, we have delivered more than 6,000 Electronic Chart Display and Information Systems (TECDIS) worldwide. We offer you simple navigation solutions that increase your efficiency in your everyday operations. By using our new solution, Telscope, you will have more time for navigation instead of administrative burden.

TELKO.NO

ABB

SILVER

As one of the world's leading enablers of sustainable transportation, ABB is committed to supporting the shipping industry's low carbon future through pioneering technologies. Through ABB's solutions, ship owners and operators can optimize ship performance, efficiency and operational safety.

NEW.ABB.COM

Alandia

SILVER

Alandia Marine is the unit within Alandia that handles marine insurances, the core business of the group. Since the founding in 1938 we have serviced the need of the shipping community and are today active in all of Scandinavia, in the three Baltic States and Continental Europe.

ALANDIA.COM

C-Survey AB

SILVER

On board inspection for safe return. We do inspection of LSA, FFE, Deck equipment, Engine Equipment, Gas detection equipment. Drug and Benzene test. Single point of contact for onboard inspection, testing and certification. Master will get all certificates before we leave the vessel. Always fixed price for the annual inspection.

CSURVEY.SE

Consilium Marine & Safety AB

SILVER

Consilium is one of the world's leading suppliers of fire and gas detection, navigation and emission monitoring systems for ships, property, transportation and the oil & gas industry.

CONSILIUM.SE

Cosmos Trawl

SILVER

At Cosmos Trawl we make first-class fishing gear. The company is well-known for its unique facilities, its good, reliable service and, last butt not least, its capable staff, whose skills have been handed down from generation to generation. We supply all kinds of high quality fishing gear for the sea-going fishing.

COSMOSTRAWL.COM

AB DFS

SILVER

Sweden's leading ship supplier provides global supply, logistics and forwarding services for maritime vessels. Dedicated and reliable, we are your link between land and sea. Count on us to provide you with whatever you need, whenever you need it.

DFS-AB.SE

DonsoData

SILVER

IT-Services at sea. DonsoData develops customized IT solutions between ship and shore. Our broad network enables us to offer everything from hosting and maintenance on existing systems to delivering total solution packages customized for the shipboard IT environment.

DONSODATA.SE

DNV GL

SILVER

DNV GL is the world's leading classification society and a recognised advisor for the maritime industry. The company enhances safety, quality, energy efficiency and environmental performance of the global shipping industry – across all vessel types and offshore structures. DNV GL invests heavily in research and development to find solutions, together with the industry, that address strategic, operational or regulatory challenges.

DNVGL.COM

Fayard A/S

SILVER

Maritime service hub for Maintennance, Surveys, Repair, Conversions, Retrofit of Scrubbers, SCRs, BWTSs and further. North Europe's largest and most efficient yard. 4 large graving docks and crane capacity up to 1200t. Large Workshops and internal logistics second to none in Northern Europe.

FAYARD.DK

Jotun Sverige AB

SILVER

Jotun has 9,000 employees in more than 55 countries. We supply paints that have been specially developed for unique conditions. The world of Jotun is diverse, but we have one common agenda: Jotun protects property.

JOTUN.COM

Json Handels AB

SILVER

Family business with 40 years of experience. Proud supplier of work-wear to Scandinavian shipping industry. Located on 9 different places in Sweden with main office in Gnosjö. Great knowledge to give your company the right tools to have control of the cost and logistic of work wear and profile products.

JSONHANDELS.SE

MAN Energy Solutions Sverige AB

SILVER

MAN Energy Solutions has innovated marine technology in fields such as dual fuel and gas supply, propulsion, exhaust after-treatment, and battery hybrid solutions. Building on our unique portfolio of technologies and services, we offer integrated system solutions that raise the efficiency, sustainability and profitability of the marine industries.

MAN-ES.COM

Morris Law

SILVER

International trade, commercial agreements, letters of credit, customs, financing, transportation, transactions, logistics solutions, insurance, charter agreements and sanctions. In our globalised world, trading with other countries on a day-to-day basis is both necessary and a matter of course. We at Morris will respond quickly to your enquiries and offer you sound guidance in all aspects relating to international trade. What's more, you will find us really pleasant to work with.

MORRISLAW.SE

Northern Energy & Supply AB

SILVER

The company is well established within the shipping industry and the business is divided into three segments; Energy, Logistics and Recycling. We offer environmental friendly and cost efficient lubricants and fuel. We offer the complete logistic chain between land and sea. We are taking care of the complete disposal chain of sludge and slops from vessels. The company is located in Gothenburg and is acting in the global market and service its customers all over Europe.

N-E-S.SE

Port of Gothenburg

SILVER

The Port of Gothenburg is the largest port in Scandinavia. 30 per cent of Swedish foreign trade passes through the port. The Port of Gothenburg is also the largest container- and energy port in Scandinavia, with the broadest range of shipping routes within and outside Europe.

PORTOFGOTHENBURG.COM

Somas Instrument AB

SILVER

SOMAS are producing and Selling triple eccentric designed butterfly valves for exhaust gas- and cargo applications – one of the most maintenance friendly valves on the market. Typical applications: Cargo valves, Turbo Waste-gate, EGR valves, WHR valves, Exhaust gas valves and Scrubber inlet Control valve.

SOMAS.SE

Steens T&E

For three generations we have carried out construction and groundwork in the South Archipelago, mainly on Donsö and Styrsö. We also operate in the Gothenburg region since many years.

STEENSTE.SE

Styrsöbolaget

SILVER

Styrsöbolaget is a shipping company engaged in freight and public transport in the harbour and southern archipelago of Gothenburg.

STYRSOBOLAGET.SE

Svenska Skeppshypotek

SILVER

Svenska Skeppshypotek has always had a presence in the Swedish shipping industry. We act as a neutral adviser, a discussion partner and a potential lender for investment in vessels. With our competence and commitment we are a secure financial partner with a specific understanding of the characteristics in shipping. Together with ship owners and ship owning companies we can strengthen the international competitiveness of the Swedish merchant fleet.

SVENSKASKEPPSHYPOTEK.SE

Swedish Maritime Administration

SILVER

The Swedish Maritime Administration (SMA) offers modern and safe shipping routes with 24 hour service. We take responsibility for the future of shipping. SMA is a governmental agency and enterprise within the transport sector and is responsible for maritime safety and availability.

SJOFARTSVERKET.SE

STM

SILVER

Sea Traffic Management (STM) connects and updates the maritime world in real time, with efficient information exchange, creating a safer, more efficient and environmentally friendly maritime sector. STM was conceived and is developed with the Swedish Maritime Administration as a leading partner.

STMVALIDATION.EU

Turkish Airlines

SILVER

Established in 1933 with a fleet of five aircraft, Star Alliance member Turkish Airlines has a fleet of 338 (passenger and cargo) aircraft flying to 306 worldwide destinations as 257 international and 49 domestic, in 124 countries.

TURKISHAIRLINES.COM

Wega

SILVER

Wega is a Finnish growth company acting on international energy markets and focusing on future solutions. We are dedicated professionals in energy sourcing, maritime sector and environmental services. Our aim is to ensure more sustainable and efficient use of energy and resources.

WEGA.FI

Stena AB – Partner

Stena ABs international shipping business has world-leading expertise in all maritime sectors, from shipbuilding and crewing to technical service, commercial operation, financing and marketing. Innovation and first class performance at every level of the business and a sharp focus on customer requirements are the principal reasons for success. The part of the business area shipping that takes part at DSM19 consists of Stena Rederi, Stena Bulk, Stena Line, Stena Oil, Stena RoRo, Stena Teknik, Concordia Maritime and Northern Marine Group.

STENA.COM

Donsöstiftelsen – Partner

Supports projects & operations at Donsö through funds from Donsö Shipping Meet and through donations.

DONSOSTIFTELSEN.SE

Danish Shipping – Cooperation partner

Danish Shipping is a trade and employer organisation for more than 90 shipowners and offshore companies. Half of the members of the organisation own ships registered in Denmark, the other half run their activities in Denmark under other flags of state. Altogether, the members of Danish Shipping own around DWT 33 million, which add up to more than 95 per cent of the Danish merchant fleet flying the Danish flag. Danish Shipping was established in 1884.

DANISHSHIPPING.DK

Finnish Shipowners' Association – Cooperation partner

The Finnish Shipowners' Association has 26 member companies from different shipping sectors. The association has represented the needs of shipowners in industrial and labour market policies both nationally and internationally since 1917. The Finnish shipowners are in the forefront of technology and environmental innovations and are strongly part of developing solutions for sustainable shipping.

SHIPOWNERS.FI

Swedish Shipowners' Association – Cooperation partner

The Swedish Shipowners' Association / Föreningen Svensk Sjöfart represents around 60 Swedish shipping companies operating worldwide. Our member shipping companies are at the forefront of environmental and safety issues representing an attractive future field of business sector. Over 90 % of Swedish trade pass through the shipping industry.

SWESHIP.SE

Sjöfartstidningen – Media partner

SILVER

Sjöfartstidningen is Sweden's leading trade journal specialized in all sectors of shipping from a Swedish perspective. Founded in 1905 and owned by the Swedish Shipowners' Association.

SJOFARTSTIDNINGEN.SE

EVOLUTION

Two new oil/chemical tankers have been added to the Sirius fleet The design was developed in cooperation between Sirius and FKAB, based on an efficient hull design with focus on fuel consumption. The two 7999 DWT tankers have ICE class 1A and are equipped with the latest technology to comply with future regulations, such as TIER III.

These additions to our fleet are prepared to be converted to run on LNG, with the deck strength and stability to mount two LNG-tanks on deck. With these optimized vessels, which are the most efficient in its segment, Sirius continues to invest in sustainable shipping to provide business with safety and environment in focus.

SIRIUS SHIPPING provides efficient transportation with safety and environment in focus. With a highly trained staff and well maintained product, chemical and LNG tankers, Sirius will meet your highest expectations. See our fleet at **www.siriusshipping.eu**

SIRIUS SHIPPING