

SMM insights



SMM

8-11 sept 2020
leading international
maritime trade fair
smm-hamburg.com

A woman with dark hair is smiling and looking towards the right. In the foreground, there is a large, metallic industrial gear with several bolts. The background is blurred, showing what appears to be an exhibition or trade fair setting with other people and lights.

**driving the
maritime
transition**



Hamburg
Messe + Congress

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**Claus Ulrich
Selbach**

Business Unit
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Technology Fairs
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Photo: HMC/Michael Zapf



dear readers, dear friends and partners of SMM,

Shipping plays a key role in the international exchange of goods. While the carbon dioxide emissions of ships per tonne of cargo carried and kilometre travelled are lower than those of other modes of transport, one fact remains: if the shipping industry were a country, it would be the world's sixth largest emitter of CO₂. Nevertheless it has accepted its share of the responsibility, and not just in the wake of the current environmental debate. It has defined ambitious goals and is investing massive amounts of capital in new technologies to minimise the negative effects of maritime traffic.

Global environmental and climate protection policies and the digital transformation are two strong forces that will fundamentally change global logistics processes and the maritime industry in particular. The motto we have chosen for SMM 2020 – “Driving the Maritime Transition” – and this issue of SMM Insights reflect this situation.

As the the leading international maritime trade fair, SMM has taken the lead: For example, gmec, the global maritime environmental congress, was established as early as 2010. At SMM 2020, the sixth edition of this conference will again bring together leading experts to highlight pathways towards a climate-friendly shipping sector. By addressing this topic, we are actively seeking to establish a dialogue with environmental organisations and civic movements such as Fridays for Future. It is important for industry to interact with the public proactively, rather than merely reacting to it. After all, the maritime industry has many options to operate in a more climate-friendly manner. At the trade fair, the practical side of these environmental topics will be

represented by a wide range of sustainable technologies offered by leading manufacturers. Exhibition Hall A5 as well as the “Green Route” through all 13 halls will be entirely focused on eco-friendly solutions for the maritime industry.

SMM is the showcase of the global maritime industry, and its exhibitors and visitors are determined to support the global maritime transition, whether with regard to energy, green, or digital technologies.

Innovation is key, and this is especially evident in Smart Shipping. From fleet management to condition monitoring, through to weather routing, more and more maritime companies are embracing the tools of the digital age. We are far from having exhausted their potential, as the Maritime Future Summit will demonstrate in its discussions revolving around Artificial Intelligence; numerous solutions presented at SMM will show how these concepts can be implemented in practice. Being part of the event in 2020 will definitely be a rewarding experience.

These are fascinating times – for the industry and beyond.

We look forward to joining hands with you to develop its potential!

Sincerely yours,

Claus Ulrich Selbach

from start-ups to the EU Commission — SMM 2020 is a stage for the entire maritime world

SMM 2020 is already fully booked. More than 2,200 exhibitors from around the world can be confident that everything at the fair will run smoothly. But a good trade fair has to do more: "We are engaged in a continuous dialogue with our customers to pick up topics and moods that we can

incorporate directly into the planning of SMM," says Claus Ulrich Selbach, Business Unit Director – Maritime and Technology Fairs & Exhibitions at Hamburg Messe und Congress GmbH. For example, after the exhibition area demonstrating innovative 3D printing technology was a top attraction at SMM 2018,

additional space will be set aside for it at the next SMM. Interior design and equipment for passenger ships is another field of interest that will feature more prominently, following the highly successful debut of a new trade fair exclusively dedicated to this discipline in September (refer to page 16). There will also be a new category called SMMART Founders: "In 2020 we will offer innovative formats to maritime start-up companies that will help them succeed. There will be elevator pitches helping founders establish contact with investors in an efficient manner," says Selbach. The EU Commission will likewise seize the opportunity to make an appearance at this stage

of the maritime world, for the first time setting up a stand of its own and organising a conference. Furthermore, the German Federal Ministries for Economic Affairs and Energy (BMWi) and of Transport and Digital Infrastructure (BMVI) will both be represented with stands of their own for the first time, highlighting the German EU Council Presidency during the second half of the year.

With an action-packed programme, more than 90,000 square metres of exhibition floor full of captivating exhibits, and plenty of networking opportunities, the SMM will not only be an inspiring experience for visitors but also quite hectic. Therefore recreational areas will be set-up in 2020 where attendees can take a break, relax and enjoy a low-stress conversation in a calm atmosphere.



Foretaste: The new trailer raises anticipation for the upcoming SMM. smm-hamburg.com/trailer

Opinion | the human factor

Digitalisation is one of the focal topics at SMM 2020, along with environment and climate protection. But how "digital" can an analogue event actually be? And will digital technology increasingly replace all things analogue? No, it will not. Rather, the digital transformation aims to combine digital services with analogue experiences to merge two interdependent worlds so they can perform at their best and generate added value.

At Hamburg Messe und Congress we have long been making use of advanced technology for purposes such as user visitor registration, hall layout planning, communication with clients, or admission. 3D animations can produce a great impression of what a particular exhibition stand will look like. We use social media to inform exhibitors and visitors quickly and concisely about what

matters, helping them collaborate. Digital signage and apps provide visibility and help everybody plan their day.

Decision-makers in the maritime industry can find virtually any information of interest online; yet they come to SMM every two years. Why? Because there is nothing like experiencing the event directly on site, being able to meet up with business partners in person, shaking their hand and looking into their eyes. All these are things nobody could ever "digitalise". It is what we call the human factor, and it will never lose its importance.

SMM is a gathering that encompasses the industry's full scope of knowledge and expertise. This is where visitors can inspect innovative components personally, ask questions, and get answers. VR goggles make it possible to see



Solemn: Opening of INMEX SMM India at the Bombay Exhibition Centre.



Successful: More than 5,000 trade visitors attended the fair.

INMEX SMM India 2019 underpins its position as South Asia's leading maritime trade fair

The 3rd edition of South Asia's flagship fair INMEX SMM India was a full success for both, visitors and exhibitors. 5,000-plus top-ranking industry visitors attended the event at the Bombay Exhibition Centre, Mumbai in early October. More than 260 exhibitors from 22 nations presented the latest trends and innovative products from all major segments of the maritime industry. At the end of the three action-packed days, the exhibitors were highly satisfied with the quality of the visitors. The trade fair

was accompanied by a first-rate conference programme addressing current topics. For example, the second, highly successful edition of the CIMAC Circle India examined technology solutions for more sustainable ship operations, among other items. Several networking events provided attendees with opportunities for in-depth discussions and new contacts. Once again INMEX SMM India proved to be an ideal platform for maritime suppliers who wish to enter the South Asian market or expand their

business relations across the region. A joint venture of Hamburg Messe und Congress GmbH and Informa Markets, the trade event takes place every odd year. The dates for the next INMEX SMM India are 11 to 13 October 2021 at the Bombay Exhibition Centre, Mumbai.



Read more at:
inmex-smm-india.com

the technology in action. Specialist conferences explore and discuss the breadth and depth of all the core topics of concern to the industry. Quite frequently, colleagues and business partners continue this conversation in the evening hours, after the fair complex has closed its gates, over a glass of beer or wine.

As fair organisers we support companies in presenting their advanced products and services in the most compelling way possible. We stage themes and create experiences that help our visitors' businesses thrive. And we create the right atmosphere for people to mingle, get to know each other and build the trust that is essential in business life.



For the entire international maritime community, SMM is the place to be when it returns every other year. And since all the key players of the industry from all continents come here for this four-day gathering, their visit is highly efficient. After all, business deals are made between people – with a handshake providing that crucial personal touch.

Bernd Aufderheide,
President and CEO,
Hamburg Messe und
Congress GmbH



understanding the needs of the industry

OUTLOOK How do maritime companies assess their perspectives? What are the propulsion technologies of the future? Where will digitalisation have the strongest impact? The SMM Maritime Industry Report 2019 delivers answers.

Where is the shipping industry heading? To find answers, Hamburg Messe und Congress GmbH again asked shipowners, shipbuilding companies and suppliers around the world to assess the current economic and technological developments, following up on the first survey conducted in 2017. Roughly 1,500 industry players from around the world, mostly company executives, took part in the new survey for the SMM Maritime Industry Report (MIR). This makes the SMM MIR 2019 one of the most comprehensive maritime industry surveys ever conducted.

RETROFITS PREFERRED

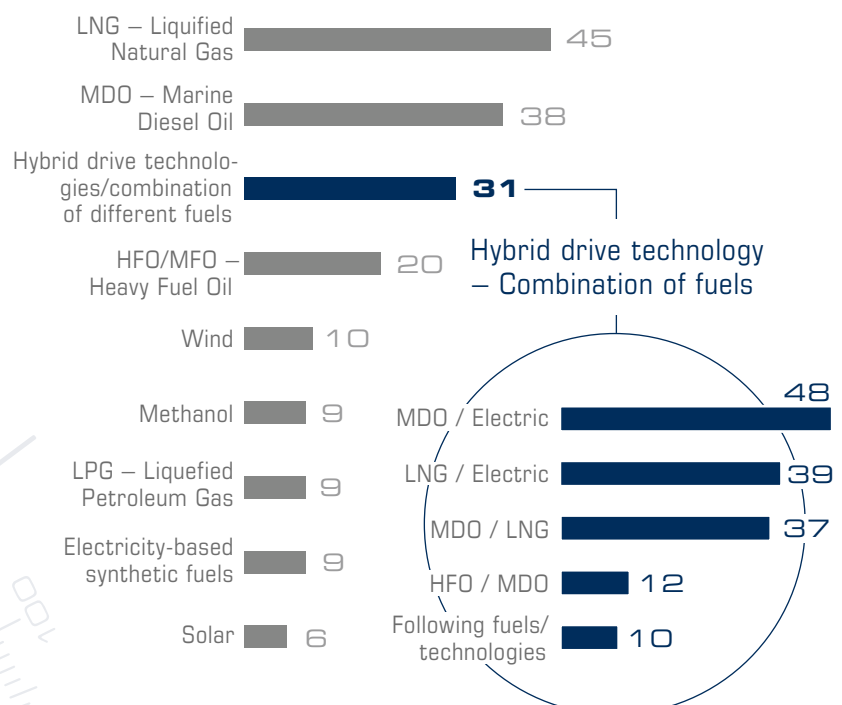
Companies are facing enormous challenges: First and foremost it is the tightened environmental regulations that require rapid action. The abandonment of high-sulphur fuel by most shipowners in response to the 2020 sulphur cap is just the first step. In the medium term the shipping industry's CO₂ footprint must be reduced substantially (refer to page 8). "The most urgent question facing the shipping industry today is what the fuel of the future will be," says Ralf Nagel, Managing Board Member of the German Shipowners Association (VDR). According to the MIR, ship operators currently prefer LNG (45 per cent) over all other ship fuels. This is especially true for cruise companies which are determined to live up to their environmental responsibility. According to the Cruise Lines International Association (CLIA), the current global orderbook lists 26 LNG-powered vessels.

"More and more companies are taking active measures to reduce emissions from ships," says Dr Reinhard Lüken, Managing Director, German Shipbuilding and Ocean Industries Association (VSM). Hybrid solutions are also on the shortlist,

according to the SMM MIR. In particular, combinations of battery technology with marine diesel oil (MDO; 48 per cent) or LNG (39 per cent) are high up on shipowners' agendas. Both are suitable options to meet the increasingly stringent environmental regulations. All in all, more than two thirds of responding shipowners say they must invest in their fleets in service to comply with the sulphur cap. Only 29 per cent intend to replace their tonnage with newbuilds. The general interest in building new ships is relatively low among owners: →

choice of fuel

LNG has the highest single share, but MDO and HFO/MFO combined remain higher. Preference for MDO/LNG declined notably compared with last time.





Networking: At SMM, visitors can speak directly with experts.

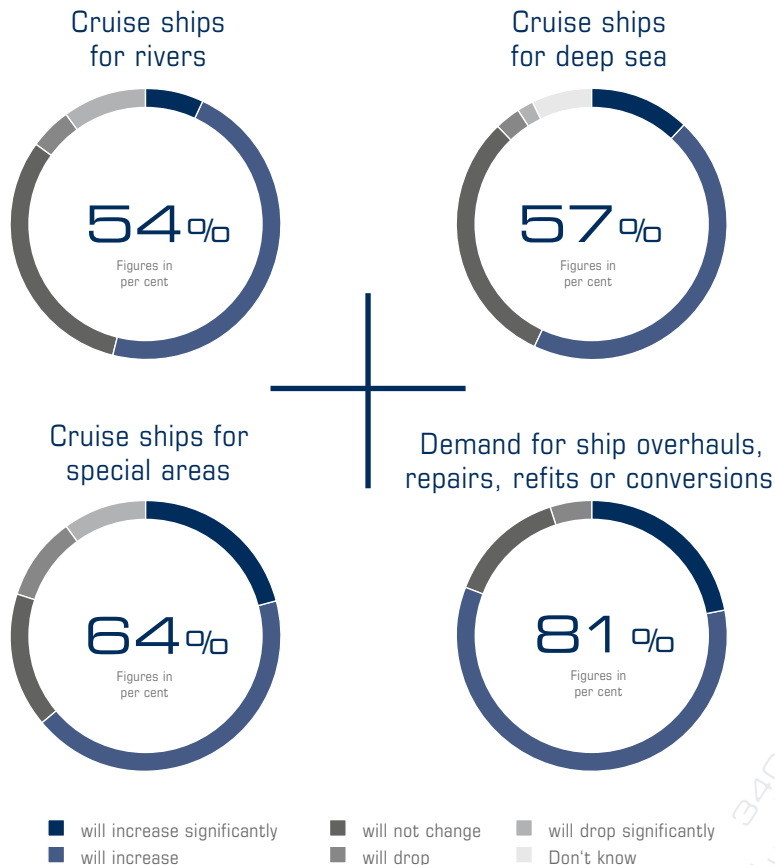


Eyecatcher: The corridors of the halls are lined with exciting exhibits.

Photos: HMC / Nico, Katrin Neuhauser

cruise ship orders

The demand for all cruise ship types remains high. 54% of survey participants from shipyards believe that the demand for river cruise ships is increasing. They expect the biggest boost to come from cruise ships for special areas (57%). More than 80% see repairs increasing up to the end of 2020.



→ Fewer than one third intend to order new vessels before the end of the coming year. Gas carriers (15 per cent) top the newbuilding shopping list.

BOOMING SEGMENTS

Installing scrubbers, ballast water management systems and new propulsion technology, shipyards specialising in commercial ships are staying busy mainly thanks to the demand for overhauls, repairs, retrofitting and conversion jobs. 53 per cent of yard operators are expecting an increased need for tanker repairs between now and the end of 2020, and 48 per cent are anticipating the same for container ships. As for the newbuilding market, however, other segments are expected to grow: 64 per cent of shipbuilders believe orders for RoPax ferries and expedition cruise ships will increase, and 59 per cent see the demand for naval vessels growing. The well-filled orderbooks benefit the supply industry, as well. Among all the participating stakeholder groups, the outlook of suppliers is brightest, with more than one third anticipating excellent sales opportunities. 74 per cent say they are able to sell their innovative technologies, an outcome that shows in the Maritime Industry Score: The improved mood in the industry compared to 2017 (from 54.6 to 56.8) is mainly a result of the supply industry's positive expectations.

INCREASING DIGITALISATION

Apart from environment and climate protection, digitalisation is the strongest driver of the maritime transformation. In particular, innovation enabling autonomous shipping is receiving plenty of public attention, whereas the SMM MIR shows that industry stakeholders view self-controlled ships as rather a futuristic vision. Just under 70 per cent of respond-

ents from shipping companies cannot imagine unmanned ships sailing the oceans in the near future.

On the other hand, many see promising potential in increasing digitalisation, for example in the form of land-based fleet operation centres processing ship operation data. "New digital and propulsion technology developments help us manage highly complex equipment, allowing us to operate the sophisticated organisms we call ships in a much more climate-friendly manner around the world," says Martin Johannsmann, chairman of the board of the German Mechanical Engineering Industry Association (VDMA). Unsurprisingly, the share of respondents who believe that cyber security is a very important concern is as high as 83 per cent.

HIGH INTEREST IN SHIP INTERIORS

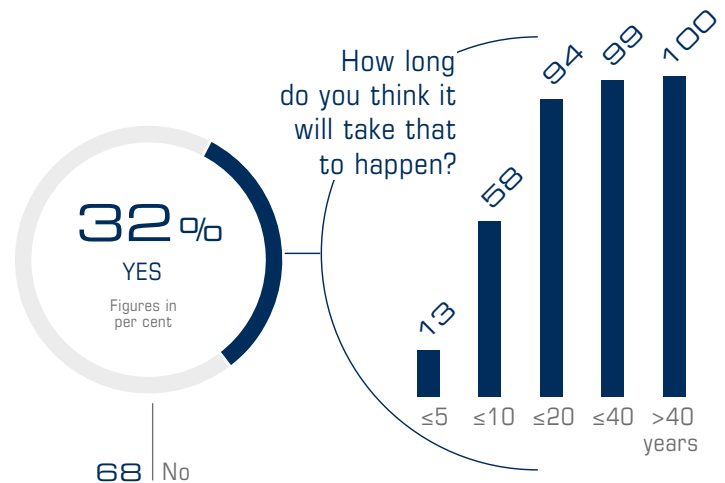
In view of the persistent boom of the cruise industry, the SMM MIR 2019 survey included questions specifically addressing interior design and equipment for passenger ships. Approximately 40 per cent of participants in the study indicated a need for products and services related to ship interiors within the next 12 months. Shipyard executives in particular are highly interested in system suppliers offering turnkey solutions. In response to this growing demand, Hamburg Messe und Congress GmbH arranged the Cruise & Ferry Route at SMM 2018, and dedicated an exclusive exhibition area just for marine interiors. The highly positive feedback received from exhibitors and visitors alike prompted the organisers of SMM to create a new trade fair: MARINE INTERIORS Cruise & Ferry Global Expo. This industry fair, which will regularly take place in non-SMM years in the future, had its successful debut in September 2019 (see page 16).

AN INDUSTRY IN MOTION

Generally speaking, the SMM MIR provides fascinating insights into the mood across the industry, says Claus Ulrich Selbach, Business Unit Director – Maritime and Technology Fairs & Exhibitions at Hamburg Messe und Congress GmbH. "The maritime industry is clearly undergoing a process of profound change that will be a prevailing topic in the discussions at SMM 2020 and the accompanying conferences," says Selbach. Presenting innovative technologies and comprehensive expertise, the leading international maritime trade fair will definitely give visitors the ingredients they need to tackle the challenges of the future, as promised by the motto of SMM: "Driving the Maritime Transition".

can you imagine using unmanned shipping commercially?

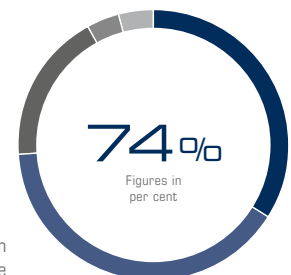
The perception of commercially used unmanned shipping has hardly changed, about 1/3 of shipping managers believe it will become a reality within the next 20 years.



customer attitude towards innovations

Product innovations of the suppliers are accepted by the market: 74% say that they can sell their innovations at least occasionally.

- They are purchased regularly
- They are purchased occasionally
- They are purchased rarely or never, but most customers have shown interest in them
- They are purchased rarely or never, but some customers have shown interest in them
- There is little or no interest in innovations



SMM MIR: the background

The SMM Maritime Industry Report (MIR) is prepared jointly by Hamburg Messe und Congress GmbH (HMC), the organiser of SMM, and the market research institute mindline GmbH. It is a comprehensive study that reflects how SMM exhibitors and visitors assess the sector's economic and technological development. The Maritime Industry Score summarises the economic expectations. The SMM MIR was conducted for the first time in 2017. The current study additionally covered aspects relating to ship interiors. The participant demographics reflect the full breadth of industry segments, with 62 per cent of respondents representing suppliers, 18 per cent shipowning companies, 13 per cent shipyards, and 7 per cent interior designers. Nearly one third of respondents are exhibitors at SMM, while the remainder are visitors.



the green revoluti

RESPONSIBILITY Environment and climate protection are at the top of the maritime industry's agenda. But the ambitious goals announced by IMO can only be achieved through innovative technologies. SMM 2020 in Hamburg will point the way towards emission-free shipping.

The SMM year 2020 marks a turning point in international shipping. A lower global limit for the sulphur content of ship fuels will be in force as of January 1: Instead of the current 3.5 per cent, the allowable maximum will be 0.5 per cent. For decades, heavy fuel oil was the fuel of choice for shipowners; soon they will be unable to use HFO unless they install large and expensive exhaust gas cleaning systems, or scrubbers on their vessels. The new limit, called Sulphur Cap, is just one of the measures taken by the international shipping industry to reduce its ecological footprint.

By the year 2050, CO₂ emissions from shipping are to be cut in half compared to the reference year 2008. What is more, according to the commitment announced by the International Maritime Organization (IMO), the industry wants to be able to operate entirely without carbon

on

the International Maritime Organization's (IMO) climate protection roadmap



emissions (refer to infographic) by the year 2100.

The industry stakeholders are fully aware of their responsibility; after all, the ship is the most important mode of transport in international trade. "Environment protection and climate change are core concerns of the public, and it will be my priority to induce the shipping industry to accept this reality and deliver solutions that will fulfil the world's environmental expectations," said the Turkish ship owner Şadan Kap-

tanoğlu following her election as the new president of BIMCO.

IDENTIFYING THE BEST CONCEPTS

With its motto "SMM 2020 – Driving the Maritime Transition", the leading international maritime trade fair directly addresses the massive changes the industry is undergoing. From efficiency improvements to LNG fuel, battery technology and fuel cells through to synthetic fuels and power-to-X technology, "the race for the best concepts has just begun," says Dr Uwe Lauber, Chairman of the Mechanical Engineering Industry Association – Marine Equipment and Systems, VDMA. As CEO of MAN Energy Solutions SE, →

BIMCO: The world's largest shipowners association represents roughly 1,900 members from more than 120 countries.



New build:

"AIDAcosma", equipped with state-of-the-art environmental technology, will enter service in spring 2021.

Photo: Simon Kratzer/MAN; Helle Moss/BIMCO; AIDA Cruises (2); CMA CGM; Scandlines; Reederei Hartmann



»Environment protection and climate change are core concerns of the public.«

Şadan Kaptanoğlu,
president of BIMCO

→ the world's largest ship engine manufacturer, he is fully aware that "decarbonising maritime logistics must begin with decarbonising the fuels used". The users agree: "What we need in order to achieve the ambitious IMO climate goal is nothing less than a technology revolution," says Alfred Hartmann, president of Verband Deutscher Reeder (VDR), the German Shipowners Association. "We need a full-fledged innovation push in research and development. And we need alternative fuels that can be produced sustainably in a carbon-neutral way."

While it will be a long way until we reach that goal, the industry is producing an enormous amount of innovations that show its potential. One option is

to use LNG as an intermediate ship fuel. Passenger ships have begun adopting the technology: According to the Cruise Lines International Association (CLIA), 44 per cent of cruise ships on order at the world's shipyards will use LNG as primary fuel (refer to Cruise Market, Page 16/17). "AIDAnova" and "Costa Smeralda", both launched recently, have taken the lead.

LNG AS A LOGICAL BRIDGE TECHNOLOGY

But the merchant shipping segments are not lagging behind; "Jaques Saadé" will be the first of nine new LNG-propelled megaboxers to join the fleet of CMA CGM as of 2020. With a capacity of 23,000



»Decarbonising maritime logistics must begin with decarbonising the fuels used.«

Dr Uwe Lauber,
Chairman of the
Mechanical
Engineering Industry
Association – Marine
Equipment and
Systems (VDMA)



Pioneer: The container ship "Sajir", built in 2014, gets a conversion to LNG propulsion on behalf of Hapag-Lloyd.

Photo: By Alf van Beem - Own work, Public Domain, Wikimedia 76854305



Award: "AIDAnova" was the first cruise ship ever to be awarded the "Blue Angel" German eco-label.



Tribute: The world's first LNG-powered 23,000 TEU container ship was named after CMA CGM founder Jacques Saadé.

TEU, they will be among the world's largest container ships. LNG propulsion lowers CO₂ emissions by 20 per cent, while emissions of sulphur and particulate matter are eliminated almost entirely.

The conversion to LNG propulsion of the 15,000 TEU container ship "Sajir" will cost \$25–\$30 million. The engine manufacturer MAN SE and the classification society DNV GL will be partners to the project. "We offer a fully integrated, complete solution. In addition to the conversion of the engine, this also includes the entire gas treatment system for supplying gas to the main engine, including the pilot oil module, and the auxiliary engines from MAN Cryo and a 300 bar high-pressure pump vaporator unit (VPU system) from MAN SE," said Wayne Jones, Chief Sales Officer MAN SE. A potential technology of interest for large cargo ships, highly efficient Combined Gas and Steam Turbines (COGAS) have achieved efficiency levels in excess of 60 per cent in land-based installations.

United European Car Carriers, an operator specialising in transporting motor vehicles, has recently exercised an option for a third newbuild with an LNG and battery hybrid power system on board. The new vessel, which will be built by Jiangnan Shipyard Group, China, will enable the company to exceed the IMO goal to reduce CO₂ emissions by 40 per cent by the year 2030: "When our third battery hybrid LNG PCTC is delivered in 2022, it ushers in a new era for short sea shipping in Europe," says Glenn Edvardsen, CEO of UECC.

The energy transition at sea is progressing: The cruise ship "AIDAprima" will be able to operate on electricity alone for up to 60 minutes at a time. 300 metres long, and offering space →



»We need alternative fuels that can be produced sustainably in a carbon-neutral way.«

Alfred Hartmann, president of the German Shipowners' Association (VDR)



Refit: The Scandline hybrid ferry "Copenhagen" will be equipped with a rotor sail in 2020.



»We offer a state-of-the-art technology based on the ancient concept of sailing but using 21st century aeronautical technology.«

Cristina Aleixendri,
Co-Founder of
bound4blue



→ for 4,000 passengers, the vessel will receive a lithium-ion-battery pack manufactured by the Norwegian company Corvus Energy within the scope of a pilot project.

TAIL WIND FOR THE INDUSTRY

The power of wind has been assisting the multi-purpose cargo ship "Fehn Pollux" since a Fletner-type rotor sail was installed on board last year – a time-honoured technology that is seeing a revival: the German-Danish ferry operator Scandlines, for example, intends to retrofit a rotor sail on its hybrid ferry "Copenhagen". The new unit, 30 metres tall and five metres in diameter, will reduce the ship's CO₂ emissions by an estimated 4 to 5 per cent. Sails that can be completely retracted are the speciality of the Spanish start-up company bound4blue which presented a prototype of its "Wing Sail System" at SMM 2018. "We offer a state-of-the-

art technology based on the ancient concept of sailing but using 21st century aeronautical technology", says Co-founder Cristina Aleixendri. For the SMM 2020, she has promised a breathtaking surprise.

DNV GL now offers a new class notation called "WAPS" for wind-assisted propulsion systems and has formed a strategic cooperation partnership with the Japanese shipbuilder Oshima to develop an eco-friendly bulk carrier dubbed "Ultramax 2030". This concept combines LNG-propulsion, sails, solar panels and batteries to achieve an Energy Efficiency Design Index (EEDI) that is 50 per cent lower than that of comparable current vessels. Meanwhile, Oshima and the shipowner MOL have received Approval in Principle from the classification society Class NK for an extensible hard sail system. The two companies expect this technology to reduce greenhouse gas (GHG) emissions by eight per cent, for example, on a trip between Japan and North America.

Design: Oshima Shipbuilding and classification society DNV GL jointly develop new bulk carrier designs to reduce emissions. The first joint project: "Oshima Ultramax 2030".



Flexible:

bound4blue has developed a foldable and autonomous wingsail system to be fitted onto a wide range of vessels.

Milestone: The 2017-retrofitted "Wes Amelie" will use liquefied synthetic natural gas produced from renewable electrical energy as drop-in fuel.



Using fuel cells – a technology companies such as Meyer Werft and Thyssen Krupp Marine Systems are currently studying in depth – could achieve an even better environmental outcome. Fuel cells generate electricity directly from hydrogen and can be used to power an electric motor. While the energy yield of current fuel cells is not sufficient to provide full propulsion power for large ships, it is sufficient for the "hotel load". But the development continues at high speed.

The key question will be at what environmental cost the fuel can be produced. The name of the key technology is "Power-to-X": It denotes fuels such as hydrogen or synthetic gases produced with the help of renewable power. Methanol, methane and bio-diesel are other synthetic fuels scientists are studying.

SMM: THE PLACE TO BE

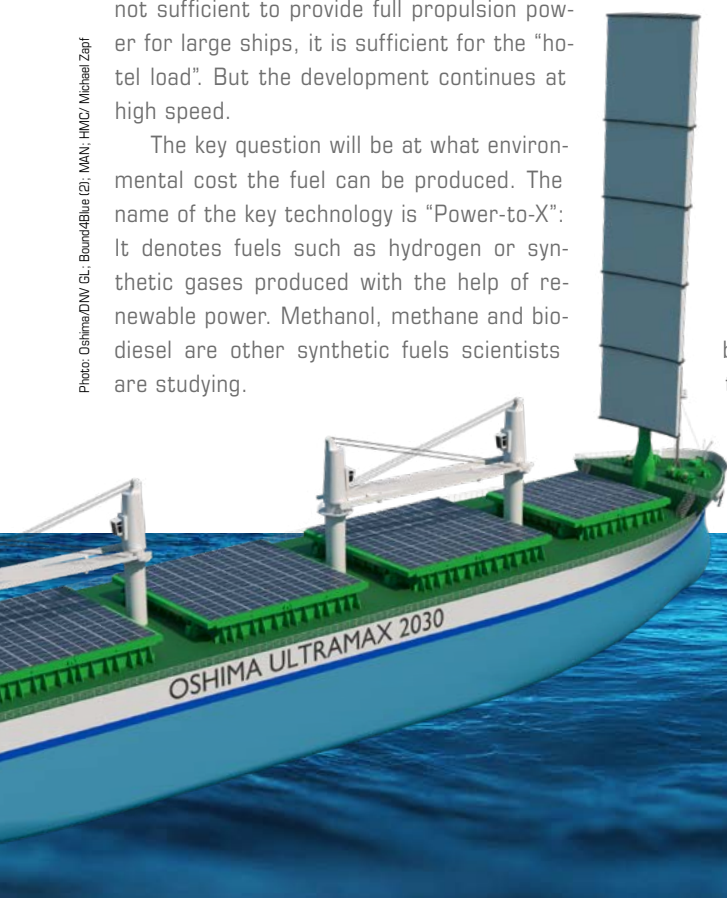
SMM 2020 will lend fresh impetus to these efforts. "Environment and climate protection are at the top of the maritime industry's agenda. As the industry's most important platform, SMM brings together all the key players. The manufacturer exhibits focus on innovative, practical solutions," says Carin Steinbach, Deputy Project Director SMM. The conference programme held in parallel with the exhibition will likewise revolve around the energy transition. At the gmec, the global maritime environmental congress, various panel discussions featuring distinguished experts from around the world will examine a range of aspects of the general topic "green shipping". "I am certain that after this year's SMM many market stakeholders will have a better understanding of where the maritime transition is heading," says Steinbach.



»As the industry's most important platform, SMM brings together all the key players. The manufacturer exhibits focus on innovative, practical solutions.«

Carin Steinbach,
Deputy Project
Director SMM at
Hamburg Messe und
Congress GmbH

Photo: Oshima/DNV GL, Bound4Blue (2), MAN, HMC/ Michael Zapf



Expedition:

"Crystal Endeavour" will travel to remote areas such as the Arctic.



sustainable enjoyment

TRENDSETTER The cruise boom shows no signs of slowing; shipowners are investing in vessels with sophisticated entertainment technology, elegant interiors and advanced propulsion systems. SMM 2020 is an important showcase for these developments.

The popularity of cruises continues to rise: According to the Cruise Lines International Association (CLIA), the number of passengers grew by 6.7 per cent globally in 2018, more than the worldwide tourism industry as a whole. For the current year CLIA expects a total of roughly 30 million travelers, with the United States and China at the top of the list. Shipbuilders and suppliers benefit from this trend: The global order book counts more than 120 newbuilding projects to be completed by 2027. Apart from giant ships with capacities exceeding 5,000 passengers, there is an increasing number of smaller, specialised vessels designed for unusual destinations.

The market share of European shipyards and suppliers in this sophisticated segment is high, and project dimensions are enormous: More than 800 partner companies on average are involved in building a large cruise ship. They are in charge of installing items such as 40,000 square metres of carpeting, 2,000 kilometres of electric wiring, or 1,800 toilets. In many cases, the value of a single ship can exceed the billion-dollar limit by a significant amount.

Expedition vessels are highly sought after: A ship like "Crystal Endeavor", scheduled for delivery by MV



Innovation: "Roald Amundsen" is the first of three hybrid cruise ships to expand the Hurtigruten fleet in the coming years.

Werften during the first quarter of 2020, accommodates no more than 200 passengers.

Another ship featuring a high ice class is the Hurtigruten vessel "Roald Amundsen". She is the world's first hybrid cruise ship. Her innovative hull design and the combination of a diesel engine and battery packs lower fuel consumption and CO₂ emissions by 20 per cent compared to conventional ships of equal size.

SENSITIVE AREAS

This is significant because apart from offering adventure holidays, sustainability is an aspect of grow-

ing importance in the cruise industry, especially since expedition vessels often operate in highly sensitive, pristine waters. "The cruise industry is determined to make a greater contribution to the protection of maritime environments," says Helge Grammerstorf, the chairman of CLIA Germany. To date, shipowners have committed more than US\$22 billion to the construction of state-of-the-art cruise ships fuelled by liquefied natural gas (LNG). One of the pioneers is "AIDAnova" which will be testing the use of fuel cells as of 2021 as part of a research project called "Pa-X-ell2". All in all, 26 additional LNG-powered ships are currently on order or under construction, including the two sister ships "Smeralda" and "Toscana" of Costa Crociere, another subsidiary of the global market leader Carnival.



Look: The interior design on board "HANSEATIC nature" by Hapag-Lloyd Cruises is inspired by ice floes, corals and lava crevasses.

"The entire shipping industry benefits from the early adoption of innovative technologies by cruise lines – many of which did not exist five to ten years ago, such as exhaust gas cleaning systems (EGCS), LNG as a fuel for passenger ships, and shore-side power capabilities," says Michael Thamm, the Chairman of CLIA Europe and Group CEO of Costa Group and Carnival Asia.

NEW TRADE FAIR IN HAMBURG

Designing passenger cabins and public areas on board to suit the preferences of specific markets: This was the core topic of the MARINE INTERIORS Cruise & Ferry Global Expo which was held in parallel with the Seatrade Europe conference in September 2019. "Finding so much expertise in the field of cruise ship interiors at a single trade fair is unique in Europe," said Arjan Koole, Regional Sales Director at the kitchen equipment specialist Middleby Marine. Many of the same exhibitors will return to Hamburg to showcase their solutions in the 'extended area' of Marine Interiors@SMM 2020 or along the "Cruise & Ferry Route", which was very popular at SMM 2018.



Claus Ulrich Selbach
Business Unit Director Hamburg Messe und Congress GmbH (HMC)

"HAMBURG IS A LEADER"

The inaugural MARINE INTERIORS Cruise & Ferry Global Expo, which focuses specifically on interior design and equipment for cruise ships, took place at Hamburg's exhibition complex in September 2019. Claus Ulrich Selbach, Business Unit Director – Maritime and Technology Fairs & Exhibitions at HMC, summarises the experience:

MR SELBACH, WHAT IS YOUR ASSESSMENT OF THE DEBUT OF THE NEW TRADE FAIR?

“ We are very pleased with the great response MARINE INTERIORS had among exhibitors and visitors. This event augments our portfolio by an exhibition that focuses on outfitting and interior design, both of which are key topics. The successful debut with more than 100 exhibitors and roughly 2,800 visitors underlines our role as a leader in the maritime segment, with SMM as our flagship trade fair.

WHAT ASPECTS DID THE EXHIBITORS LIKE BEST?

“ We got plenty of positive feedback regarding the atmosphere at the fair and the quality of visitors and new business contacts. The conference programme with top-ranking experts was very popular, as well. What is more, participants commended us on the efficiency of the event because it was held in parallel with Seatrade Europe right next door, another key event for the industry.

WILL SHIP INTERIORS PLAY A ROLE AT SMM 2020, AS WELL?

“ By all means! We believe marine interiors and related subjects are extremely important topics in the industry, which is why we provided an exclusive area for marine interiors companies at SMM 2018 and will expand that space for the 2020 fair. Through SMM and MARINE INTERIORS Cruise & Ferry Global Expo we will be offering an industrial platform on an annual basis from now on so that stakeholders can stay informed about relevant innovations and continue strengthening their networks at both, the SMM in September 2020, and then again at the MARINE INTERIORS in September 2021.

**MARINE
INTERIORS**

Cruise & Ferry
Global Expo
Powered by SMM

11 – 13 September 2019, Hamburg
marineinteriors-expo.com

off to new S

DISRUPTION Autonomous shipping, artificial intelligence, 3D printing – leading-edge technologies and advancing digitalisation are about to revolutionise the shipping industry.

Digital processes have fundamentally changed the way ships are operated: For example, by using software solutions in areas such as procurement, crewing and reporting, ship operators and managers are able to run their businesses much more efficiently than just a few years ago. There is a strong trend to adopt cloud solutions providing company employees, including the crew on board, with access to software applications and data from any location using their laptops or mobile devices. "With cloud-based software, companies can optimise their entire fleet management, automate processes, improve communication, increase business performance and lower their costs," says Alexander Buchmann, CEO at Hanseatic Soft.

Similarly, digitally interlinked applications and components enable enormous performance gains during ship operation. Major shipping companies such as Maersk, Hapag-Lloyd, Schulte Group and Carnival Cruises have set-up fleet operations centres where employees can see the positions and fuel consumption of each of their ships on large monitors, along with relevant weather data. These land-based experts can then optimise the route and travelling speed of each vessel to save money while reducing emissions of noxious substances for the benefit of the environment. Another game changer is remote maintenance and

Control room:

At Carnival's Fleet Operation Center, employees have a round-the-clock view of the entire fleet.

hores

condition monitoring of wear parts, a service offered by engine manufacturers such as MAN or Wärtsilä (PCMS).

SHIPPING GETS SMARTER

Real-time monitoring makes it possible to predict the

reliability of individual components with high precision, and to identify anomalies and potential safety risks. "These early warnings provide a means to lower operating costs while maximizing equipment and component life," says Subrat Nanda, Chief Data Scientist at the classification society ABS.

Companies are constantly developing new, innovative CM applications. For example, the German transmission specialist Reintjes has developed a system that measures vibration to help avoid component damage or other unexpected incidents in gearboxes as early as possible.

Meanwhile, autonomous shipping is slowly but surely picking up speed. One of the pioneer vessels is "Yara Birkeland". This electrically-propelled, →



Photo: Carnival Maritime; sdscore/Shutterstock



Photo: Kongsberg; DNV GL

Big Data: More and more information from the maritime industry is being collected on the high seas and transmitted via the Internet.



»AI is a technology that offers far-reaching potential to many industries.«

Knut Ørbeck-Nilssen,
CEO of
DNV GL – Maritime

→ zero-emission container ship is scheduled for delivery during the first quarter 2020. It will transport fertiliser from the Herøya manufacturing site to the ports of Larvik and Brevik. After an initial, manned trial phase the ship, which measures nearly 80 metres in length, is expected to operate autonomously as of 2022. The Norwegian technology company Kongsberg is installing the required sensors as well as the electric propulsion, battery, and operations control systems. The automated mooring system was developed by MacGregor, a subsidiary of Cargotec.

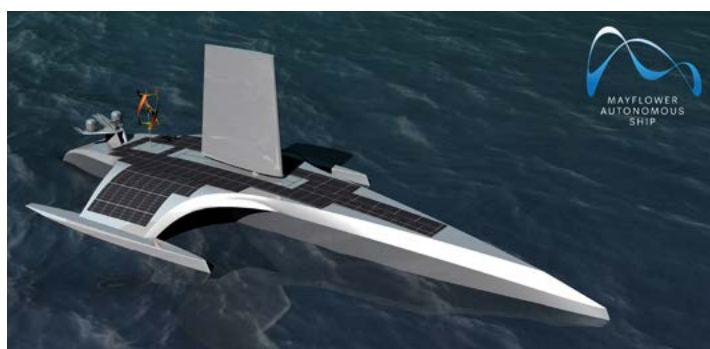
AUTONOMOUS NAVIGATION

Kongsberg had caused quite a media stir when the world's first autonomous car ferry "Falco" was commissioned at the end of last year. In a trial, the 54-metre vessel, which is equipped with lead-

ing-edge sensors, navigated entirely autonomously between the cities of Parainen and Nauvo in southern Finland, a distance of about 1.5 miles.

But all in all, the industry remains largely sceptical when it comes to autonomous ships. In the SMM Maritime Industry Reports 2019 (MIR) 68 per cent of respondents said they could not imagine deploying unmanned ships commercially. At the same time, however, the MIR indicated that the overall trust in technology has increased (see page 4).

Experts distinguish between remote-controlled ships, which are monitored or operated remotely by nautical staff, and fully autonomous ships. "Autonomous means that the ship makes complex decisions on its own without being subject to human interference," explains Melvin Mathews, Director - New Businesses, Wärtsilä. This can only be implemented by using artificial intelligence (AI) and



Support: The autonomous research ship "Mayflower" will help scientists understand the accumulation of ocean plastics.



Photo: Mayflower; Iridium

Connectivity: The Iridium network covers the entire Earth, including oceans, poles and airways using 66 satellites.

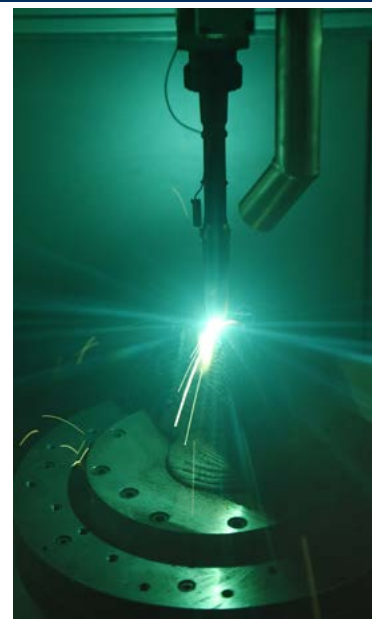


Photo: Rolls-Royce / HMC / Nico

Intelligence: The first autonomous car ferry "Falco" uses infrared, ultrasonic and thermal sensors as well as LIDAR, cameras, satellite and weather data to capture the ship's environment.

Technology: Industrial 3D printing is fast, low-cost and flexible.

Deep Learning. "By using machine-learning algorithms we can provide better-quality answers faster and more consistently. AI is a technology that offers far-reaching potential to many industries," says Knut Ørbeck-Nilssen, CEO of DNV GL – Maritime.

AI will be on board "Mayflower", an ambitious pilot project conducted jointly by IBM and the research Institute ProMare. A high-tech trimaran featuring an aluminium frame by Alutec as well as advanced navigation and sensor technology, the ship is expected to be the first autonomous vessel to cross the Atlantic Ocean in September 2020.

Artificial intelligence will also be at the top of the agenda of the next Maritime Future Summit during SMM 2020. At the conference, expert presentations and a final panel discussion will address these and other current developments.

In a project exemplifying the use of an unmanned vessel for purposes other than transporting cargo, the US company Sea Machines Robotics recently presented the world's first Autonomous Oil Spill Response Vessel which will be used to intervene in oil spills. It offers the advantage of avoiding exposure of crew members to hazards such as toxic vapours.

SUPPORT FROM SPACE

As the data volumes transmitted across global fleets continue to grow, ship operators depend on the availability of fast Internet access anywhere in the world. Major satellite operators are constantly upgrading their equipment. In 2018 Iridium

launched the last of their new 66 Certus® series satellites into orbit. These high-powered units now provide full L frequency band coverage of all of Earth's maritime surfaces. In 2020 Inmarsat will put the first of their sixth-generation I-6 satellites into space to significantly boost the performance and coverage of their L and KA-band services.

Both providers will be at SMM 2020. In addition, equipment suppliers such as Intellian and Glomex will exhibit communications hardware for maritime satellite transmission.

MORE SPACE FOR 3D PRINTING

It is fast, low-cost and flexible: Industrial 3D printing is the technology of the future. Also referred to as Additive Manufacturing, this technology builds up components layer by layer. It can process nearly any material. Maritime accessories from the smallest screw through to entire ship propellers can be custom-made using this technique, enabling just-in-time supply of spare parts that will greatly improve efficiency by increasing equipment availability.

At the last SMM visitors were able to watch this process in the "Maritime 3D Printing Show Area". At SMM 2020, an even larger amount of exhibition space will be dedicated to this innovative production technology. "Driving the Maritime Transition", the motto of SMM 2020, alludes to digital solutions that will bring efficiency in the shipping industry to new levels. The world's top suppliers will be present in Hamburg next September.

wide spectrum and co

CONFERENCES The SMM 2020 conference programme will cover all major indu



7 SEPTEMBER 2020

Maritime Future Summit

Held on the eve of SMM, the Maritime Future Summit will take a look at the industry's future. The focus of the event will be Artificial Intelligence (AI): How can self-learning systems make shipping more efficient? What constitutes a 'smart logistics chain'? What is the role of AI in the development of autonomous shipping technology? The event, once again co-hosted by the industry magazine HANSA, will bring together experts from academia and experienced professionals from shipping companies and other parts of the industry. To see what the market has to offer in support of the digital transition, SMM visitors can follow the "Digital Route". It features companies that are strong in digital solutions, from satellite communications to information-based fleet operations, and from remote equipment monitoring systems to autonomous shipping.

smm-hamburg.com/mfs



8 SEPTEMBER 2020

TradeWinds Shipowners Forum

Where is shipping heading? Shipping executives will discuss strategies to tackle these challenges and share insight on opportunities ahead to lock in success in the face of major changes driven by market uncertainties, regulation and compliance issues, shifting trade patterns and new technologies.

Anchored by TradeWinds Editor-In-Chief Julian Bray, the event will provide well-known representatives of shipping companies and financial institutions from around the world with an opportunity to share their views. A network of ship financing institutions which have agreed to centre their business decisions on climate protection has issued the new "Poseidon Principles", a great example demonstrating the impact of the two current top trends, 'smart shipping' and 'green shipping', in the finance industry.

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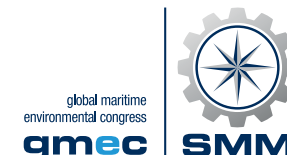


9 SEPTEMBER 2020

gmec — global maritime environmental congress

Protecting the environment and Earth's climate are the greatest challenges for mankind today and in the years to come. The maritime industry is no exception. The gmec Congress, co-hosted by Seatrade Maritime News, has been addressing these topics at each SMM since 2010. At the 2020 conference, the Sulphur Cap and decarbonisation as well as solutions helping the industry advance in this field will be focal topics. Representatives of the shipping industry, politics and NGOs will join to discuss the shipping industry's climate record. While LNG is definitely a viable bridge technology, achieving the IMO's ambitious goals will require much greater efforts. Battery and fuel cell technology in hybrid systems plays a major role in the current discussion, as do synthetic fuels and wind-assisted propulsion using hard sails, wing sails or rotor sails.

smm-hamburg.com/gmec



comprehensive expertise

strategy topics.



10 SEPTEMBER 2020

Offshore Dialogue

Oceanic research, exploration of deep sea mineral resources, and energy production at high sea are activities requiring sophisticated offshore technology. Organised jointly with GMT, the German Association for Marine Technology, this conference will cover the entire range of related topics. "We are convinced that the offshore segment has and will continue to have a key role to play in the energy mix," says Marc Becker, CEO of the wind turbine manufacturer Siemens Gamesa. An important reminder not only for Offshore Dialogue attendees: From 22 until 25 September, shortly after SMM 2020, WindEnergy Hamburg, the world's biggest wind energy event, will take place at the Hamburg exhibition complex.

smm-hamburg.com/od



10/11 SEPTEMBER 2020

MS&D – International conference on maritime security and defence

Safe shipping routes and the protection of the land-based port infrastructure are indispensable prerequisites for a healthy world trade. Coastguards and naval forces have the important task to mitigate conflicts in the maritime environment. Increasingly ships are confronted with asymmetric threat scenarios, such as terrorism or piracy. What is more, attacks directed against data integrity are occurring ever more frequently, making cyber security a major concern. At the MS&D, high ranking representatives of coastguards and navies will be joined by scientists and industry experts to investigate these issues. Numerous delegations from around the world will be attending this event, which is cohosted by the industry magazine NAVAL FORCES.

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11 SEPTEMBER 2020

Maritime Career Market

One topic all executives in the maritime sector are concerned about is a general shortage of skilled personnel. This is where the Maritime Career Market comes into play. As a platform for recruiters and jobseekers it is the right place to attract talent and highlight maritime job opportunities and careers. "This is the fourth time our SMM Maritime Career Market provides companies with access to potential future employees, and jobseekers with fascinating insights into career opportunities in the maritime industry," says Mandy Jordan, Project Manager Conferences at Hamburg Messe und Congress GmbH. The job fair also presents a wide array of information on training and education programmes. Job applicants will be able to have their application portfolios checked by human resources professionals. Another feature that is likely to attract plenty of attention once again will be the 'SMM Hackathon', which was hosted by Bosch Rexroth in 2018.

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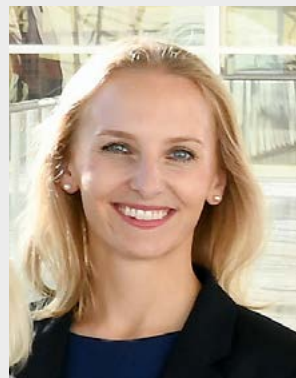
Competence: The well-rehearsed SMM team ensures that everything runs smoothly before, during and after the world's leading maritime trade fair.

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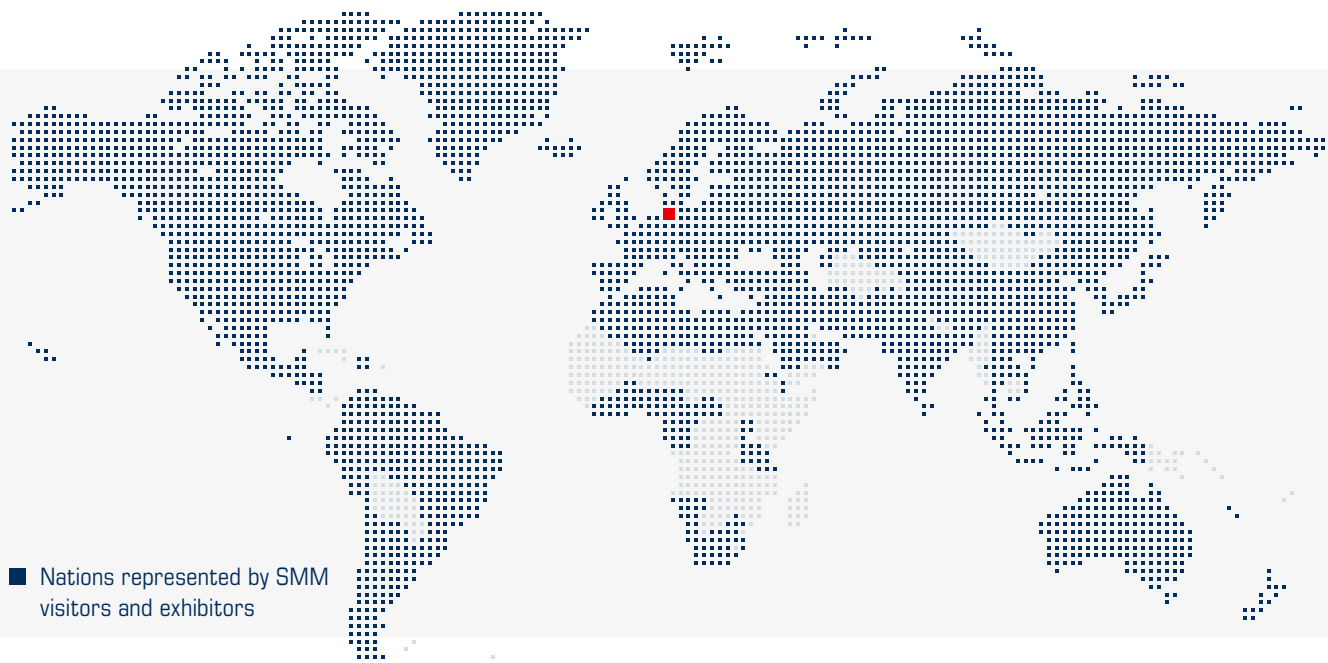
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