



**HOME OF
INNOVATION**

We and the Sea

Maritime competence in Bremen and Bremerhaven



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‘The River Weser is the key locational factor’

5 questions to Martin Günthner, Senator of Economic Affairs, Labour and Ports

If you're responsible for economic policy in a port city, what do you have to focus on more than you would at a normal inland location?

Martin Günthner: In Bremen, one can see immediately that we have enormous maritime competence. This is mirrored not only in the urban landscape, but also, of course, in the actual structure of our economy.

One gets the impression that Bremen still markets itself to the outside world primarily through things like Werder Bremen football club, Becks, coffee and chocolate. Shouldn't the maritime cluster be spotlighted more in external marketing?

Martin Günthner: I don't think there's any truth to that. When people are asked what they associate with Bremen, then the answer mostly relates to the maritime dimension. Bremen and Bremerhaven are still associated very strongly with shipping. The rediscovery of the River Weser has also become increasingly important. The Weser is the key locational factor for the development of the State of Bremen.

In what respects?

Martin Günthner: We see a whole range of issues related to the river. There's the Überseestadt, a riverside urban development project. We are experiencing advances in the maritime industries, which nowadays are very involved in research and innovation. This includes

very new topics, such as development of the offshore wind energy industry – however difficult the details might sometimes appear at present. The combination of old and new, tradition and innovation is what makes Bremen and Bremerhaven so exciting as a location.

How important is it that Bremen is in the forefront of these developments, also at European level?

Martin Günthner: It's important that we continue to develop our local strengths. Here in the State of Bremen, there is an internationally outstanding assortment of competencies, in the form of various research institutes, the Alfred Wegener Institute for Polar and Marine Research, MARUM, the German Research Centre for Artificial Intelligence, the Fraunhofer institutes, the universities and the universities of applied sciences.

What kind of people are you actually dealing with in these maritime fields?

Martin Günthner: Well, you can forget the idea of maritime people wearing captain's caps. One is dealing with a very diversified, enterprising and wide-ranging set of experts: engineers, biologists, logistics specialists, marine researchers. I don't believe it's possible any longer to identify typically maritime people. There is a very wide range of expertise here, and that's also reflected in our diversity and internationality.

Built close to water

A riverside centre of commerce: Bremen's traditions are shaped by shipping





They're a magical attraction for people from all over the world – the Bremen Town Musicians, right beside the Town Hall.

To this day, the Roland Statue proudly towers over the hustle and bustle around Bremen's market place. This is where traders and merchants, as well as guests in the city meet. The stone statue, five and a half metres in height, was erected in 1404 as the guardian of Bremen's freedom as a commercial and shipping city. In tandem with the Town Hall, this giant Roland has been on the World Cultural Heritage List since 2004. The Town Hall and the Roland Statue symbolise the importance of the Hanseatic League, to which Bremen belonged from 1358 onwards, and are 'outstanding testimony to the civic autonomy and market freedom of European citizens'.

The Town Hall, built from 1405 to 1410, stands for Bremen's cosmopolitanism and hospitality. Every year, the Upper Hall of this more than 600-year-old building is the venue for social events like the *Schaffermahlzeit* banquet, the Captain's Day, or the Founder's Day of the East-Asia Association. The *Schaffermahlzeit*, the oldest banquet of friendship in the world, is organised by *Haus Seefahrt* and held every year on the second Friday in February. The ceremony has remained unchanged for four hundred years. *Haus Seefahrt* is a social facility founded in 1545 to support seafarers or their dependents who had fallen on hard times. Only the guest list has changed a little over the centuries – whereas it was originally merchants and captains who met for the *Schaffermahlzeit*, nowadays the banquet in the Upper Hall of the Town Hall is also attended by external guests from politics, the business community, the cultural domain



Schlachte: where merchants' sailing ships used to tie up, is today a boulevard for strolls and pub crawls.

and the academic community, in addition to members of *Haus Seefahrt*.

Two storeys down, in Germany's oldest wine cellar, the drinks on offer can be even more unusual than the traditional black 'seafaring' beer served at the *Schaffermahlzeit*: for more than 600 years, the 'Bremer Ratskeller' has stored German wines in its maze of cellars. Connoisseurs of wine from all over the world are drawn to the Hanseatic City by the Ratskeller and its rarities. They take their seats between gigantic old wine casks with exuberant carvings and choose from a list of around 600 wines. The 1653 Rüdeseimer Rosé, the oldest wine from the wood in the Rose Cellar, is not for tasting.

A walk past the Schütting, the seat of Bremen's merchant community, and down through the Böttcherstraße takes one quickly to Bremen's popular boulevard for strolling and pubbing: the Schlachte. Until the free harbours were enlarged in 1885, the Weser Promenade was Bremen's harbour and cargo handling centre for

Schütting: Bremen's chamber of commerce since 1537.





The Bürgerweide complex, comprising the ÖVB Arena, the Bremen Congress Centre Bremen and the trade fair halls, are close to Bremen's city centre.

goods from near and far. The Schlachte is full of maritime flair to this day. It is a berthing place for excursion and restaurant ships, and in summer it turns into Bremen's biggest beer garden. The maritime waterway begins just downstream from Beck's brewery, now ABInBev, on the other bank of the Weser. From there on, there are no more bridges for the rest of the trip down the Weser.

Anyone landing at Bremen Airport can take the no. 6 tram straight to Bremen's city centre, or even to the main railway station. After arriving on the square in front of the station, the journey continues with a short walk through the arcade to the north exit, from where one can already see the Messe Bremen Congress Centre with the ÖVB Arena and the Congress Centre Bremen (CCB).

Bremen's Bürgerweide fairground is bordered by the eight halls of Messe Bremen and the ÖVB Arena, which offer space for major concerts, the 'Bremen Six Days' and fairs like 'Boatfit'. Nowhere else is there such a specific focus on the concerns of skippers and boat owners as at the 'Boatfit' fair in Bremen. It is the 'in' place for sailors and motorboat users who have no desire to walk up and down rows of almost identical series-produced boats. There is always a bit of sawdust in the air here, because someone somewhere in the hall is sawing and drilling again. 11,000 visitors enjoy this atmosphere every year.



'Boatfit' is where boat owners, boat builders, sailors and lovers of water sports meet to swap ideas.



In the Mercedes C-Class Competence Center in Bremen, each car is produced in a single production line in complete accordance with the customer's wishes. 12,500 people work here.

Bremen's most beautiful star

The Mercedes C-Class is built worldwide under Bremen control



Andreas Kellermann



A few things under the Bremen star are different, after all, than under the one in Sindelfingen, and no-one knows that better than the manager of the Bremen Mercedes-Benz plant, 57 year-old Andreas Kellermann. He has meanwhile turned into a passionate Bremen citizen with a southern German accent: 'You only need to

look at the old trade relations of Bremen people, like the maritime trade with Asia, to understand why I find an interpreter for Chinese must faster here than in the south of Germany.' The cosmopolitanism of the old and free Hanseatic City is something that Kellermann experiences daily in his plant, when he manages the processes for worldwide production of the new C-Class in the USA, South Africa, China and in Bremen. 'When it comes to process control, logistics, or even lightweight construction, it's difficult for anyone to match our expertise.' Within the global network, the local team is at the forefront of shaping the future of Mercedes, with its intelligence and with an innovational pace worthy of emulation. In a talk given in Bremen's 'House of Science', Kellermann lists the kinds of knowledge that are needed to build every single car in a single production line totally in accordance with the customer's wishes. The range of models is also being extended: 'In the years ahead, you will see a great deal of innovation happening here.' Aluminium already comprises 50% of the new C-Class. Mercedes has succeeded in reducing the fuel consumption of even the sportiest and heavier vehicles to around 70 mpg. There's demand for that: only recently, the Bremen plant celebrated its six-millionth vehicle. Kellermann: 'We are already at 6.5 million and the production of one million roadsters is already a Bremen legend.'



Europahafen: where high-tech engineers work next door to whisky distillers, yacht chandlers, fashion designers, silversmiths and film producers. The city's biggest restaurants can also be found here.

Waterside living and working

Überseestadt: an old dockland area is transformed into Bremen's newest district

Someone who last arrived in Bremen's Europahafen with a cargo steamer in the 1960s will not recognise the area at all now. Where freighters once used to tie up side by side, yachts now berth alongside pontoons in the marina. Multistorey apartment blocks stand beside old warehouses. Bremen's newest quarter, the 300-hectare 'Überseestadt', continues to grow from one month to the next. This urban mix began when the University of the Arts moved to an old dockland warehouse building that also houses the Harbour Museum. Bremen's Überseestadt is one of Europe's biggest urban development projects: € 350 million are budgeted for public infrastructure here between 2000 and 2025. Private investors have invested € 430 million so far, and the figure will rise to one billion in the end. Squares, parks and totally new linkages have been created. Überseestadt also demonstrates that, even today, it is possible for working and living to harmonise: the 300 traditional enterprises originally located here have now become 660 companies in total, employing a workforce of 11500 instead of the previous 6000. If staff want to go shopping, they just need to go one harbour basin further on to the 'Waterfront', a booming shopping mall on the site of the former 'AG Weser' shipyard.



This is where development started: The University of the Arts in Speicher XI.



In calm or rough seas, the lifeboat service is on duty 24 hours a day, whatever the weather.

‘We are with you and will help you’

The DGzRS coordinates maritime rescue operations worldwide – from Bremen



Dirk Hinners-Stommel

One week a year, Dirk Hinners-Stommel is allowed to travel on a lifeboat. The dream of many a boy is a purely professional affair for the Director of the Maritime Rescue Coordination Centre in Bremen of the German Maritime Search and Rescue Service (DGzRS): ‘It’s important to know exactly the limits and possibilities of the resources’, says the 49-year-old captain.

The time is 2.55 am in the middle of a cold March night when a fishing boat on VHF Channel 16 reports red flares in the sky directly to the DGzRS centre in Bremen. ‘Sigrid’, an 18-metre fishing cutter, has burst into flames on the North Sea, ten nautical miles west of the island of Sylt. The crew escapes into the life rafts immediately after firing the parachute rocket flares. In the Maritime Rescue Coordination Centre in Bremen, a well-trained procedure is initiated for Dirk Hinners-Stommel and his colleagues. Two lifeboats, the ‘Vormann Leiss’ from Amrum and the ‘Minden’ from Sylt, are launched only minutes later. The seamen are rescued, taken care of and brought to the Danish island of Rømø. The rescuers extinguish the fire on board the ‘Sigrid’. Hinners-Stommel:

‘This case illustrates quite well how broadly sea rescue is defined nowadays: we help in the situation, provide initial medical care as first responders, arrange transportation and technical assistance.’ A great deal of know-how, technology and work is involved – all financed by voluntary donations and without any government funding. Anyone listening to the watch leaders at work will not notice any stress. Hinners-Stommel: ‘Many people who contact us have difficulty coping with the situation, of course. You have to be very calm and helpful, and take everyone’s situation seriously. Our message is: We are with you and will help you.’ A native of Bremen, he is a veteran of 20 years and three months now with the ‘Association’, as the almost 150-year-old nonprofitmaking organisation at the coast is called. ‘Working with the lifeboats is incredibly challenging, quite simply because something different happens every day. There’s a special attraction about being one of the ‘good guys’ as well. We give people out there at sea the feeling that they are moving within a safe zone.’

Bank account for donations: Sparkasse Bremen (bank code 290 501 01), a/c 107 2016, IBAN: DE36 2905 0101 0001 0720 16, BIC: SBREDE22. Or take the next opportunity to insert money into one of the collection lifeboats! www.seenotretter.de eMail: info@seenotretter.de





Coral reefs are grown artificially in the AquaLab of the Centre for Tropical Marine Ecology.



At the DFKI, neuroinformatics researchers study the perception of space use the 'VirtuSphere'.

Science as job creator

Universities and institutes are an excellent factor within the economy

More than 30,000 young people are currently enrolled at universities and other higher education centres in Bremen and Bremerhaven. The two Weserside cities are hard to beat when it comes to internationality and course options, and in some respects are even officially 'excellent'.

The University of Bremen receives around 86 million Euro in extra funding from the national Excellence Initiative. This Excellence university has much to offer on a centralised campus that is easy to navigate. At present there are 19,000 students on 100 different degree courses. Institutes and high-tech companies for the first job after graduating are in the immediate vicinity, in the Technology Park beside the university, where around 500 companies employ a workforce of 7500. A special feature of the Bremen system is the private Jacobs University in Bremen-Nord, where the campus language is English. Students from more than 400 countries live, learn and research there in four colleges. One of the goals is to train global citizens to be leaders. The Jacobs University regularly achieves top scores in rankings and competitions. A similar feeling of ushering in a new era is also experienced in many forward-looking new faculties at the Bremerhaven University of Applied Sciences, which doubled the number of enrolled students after realigning itself with the needs of the regional economy. This is where young people come to study wind energy, the cruise industry or logistics, or how to handle gigantic diesel engines for ships. That is also taught at the Bremen University of Applied Sciences, which covers an even broader range of subjects and has 8000 students on 70 different degree courses. The transfer of knowledge from higher education to industry is organised

here by 40 institutes with a practical focus. Two thirds of the students do internships in Germany or abroad during their studies. Small, but beautiful: at the University of the Arts Bremen (HfK), 900 students learn and prepare for professional careers in the creative industry. The two main buildings are reason enough to enjoy attending the HfK – for the musicians, the freshly renovated 'Old Grammar School', a listed building in Bremen's old quarter, and for the artists the Speicher XI building in the midst of the new creative quarter, the Überseestadt. Graduates can keep up their curiosity here: in the State of Bremen, young researchers are attracted to the Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research (AWI), three Fraunhofer institutes, the Max Planck Institute for Marine Microbiology and MARUM. The German national research centre for aeronautics and space travel (DLR), the Center of Applied Space Technology and Microgravity (ZARM) with its drop tower, or the German Research Centre for Artificial Intelligence all offer excellent prospects to people with natural intelligence who want to follow the call to Bremen.

The ZARM drop tower at Bremen University: landmark for microgravity research, visible from afar.





Tim Freudenthal wants to look even deeper into Earth's history.

Drilling into the past

Looking back through millions of years of Earth's history

Tim Freudenthal and his team don't just get to the bottom of the Earth's past – they drill deeper. In the large hall of MARUM, the Centre for Marine Environmental Science at the University of Bremen, they are working on a colossus made of titanium, steel and aluminium that will allow them to look back millions of years into the planet's climate history. The 'MeBo 200' is a seafloor drill rig that, as its name suggests, can recover 200-metre long drilling cores from water depths of up to 2000 metres. 'In many respects, building such an underwater robot is much more difficult than building a space probe – we are dealing with pressures that are hundreds of times greater underwater, radio is not available as a monitoring tool, and supplying such a device with electric power is very tricky', says Tim Freudenthal, the Project Leader at MARUM. A geologist with a doctorate in palaeoclimate research, Freudenthal has been solving such tricky problems for more than ten years now to arrive at the perfect seafloor drill rig.

A native of Bremen, he helped to acquire € 2.4 million in research funding for the first 'MeBo 70', which extracted 70-metre drilling cores. When the initial partners from Australia jumped ship, Freudenthal learned to find reliable partners in the North of Germany. After several trial runs, the 'MeBo 70' became a research hit. 'You savour those moments of success when you get fellow researchers from all over the world asking for you. At the moment, the research ship schedule until 2015 is already in place and we are also booked out already for three years after that', says Tim Freudenthal. 'We have now scheduled the trials for the 'MeBo 200'.'



The MARUM-MeBo seafloor drill rig is launched from the SONNE research ship.

Designing the 'MeBo 200' meant the developers having to think constantly in terms of 'lighter', 'smaller' and 'more efficient': the transport frame is designed for a 20-foot container, like its precursor. However, the new robot must provide much greater magazine capacities if it is going to extract 200-metre long cores. The drill rig itself weighs nine metric tons. The undersea cable, which not only holds the rig, but also supplies it like an umbilical cord with all its needs, weighs another three metric tons. € 8 million in funds from the Federal Ministry of Education and Research are invested in the project, and the university also provides money for personnel expenses.

Freudenthal knows that he and his people are conducting pioneering research into the Earth's climate history. Off the coast of China, the drill rigs will boost monsoon research. This allows the slopes of gigantic undersea mountain ranges in tsunami regions to be studied. Once the 'MeBo 200' is deployed, Tim Freudenthal and his team will be able to look even further back into climate history.



Frank Arendt

100% scanning

More container security thanks to X-ray eyes and Geiger counters

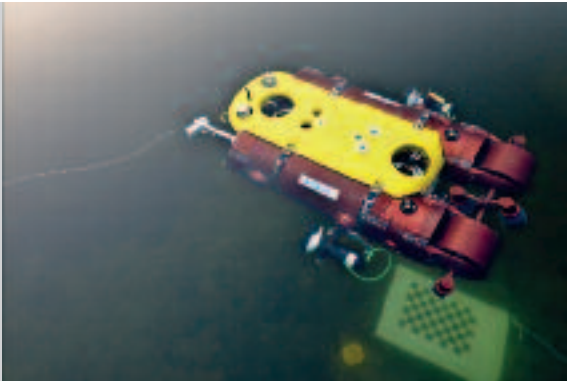
For more than ten years, Frank Arendt has been looking for ways to look inside steel boxes – without opening the door. A graduate in mathematics, he is not a magician, but Professor at the Bremerhaven University of Applied Sciences and Head of the Department of Information Logistics at the Institute of Shipping Economics and Logistics (ISL). In autumn last year, Arendt finished a key research project, ECSIT, which was conducted on behalf of the Federal Ministry of Education and Research. It is now clear how up to 2000 containers a day can be scanned in Bremerhaven for export to the USA and checked for radioactivity, without having to even touch them. What is needed is not a wave of the magic wand, but sophisticated technology. 'We have worked with many partners to develop a multistep process: if a suspicious area can be seen on the 2D X-ray of the container, it then enters a totally new 3D scan', explains Frank Arendt. The Geiger counter is simultaneously in operation. 'What you need to know is that the counter also indicates radioactivity when you have bananas or granite in the container, because these emit natural radioactivity.' So an isotope analysis is then performed, which shows whether high-grade stone tiles or a 'dirty' bomb was to be shipped to the USA. ECSIT is an anti-terrorism research project set up in the wake of the 9/11 attacks. The H.R.1 Act in the USA is also called the '100% scanning law', not without reason. 'The law was supposed to enter into effect in 2012, but implementation has been postponed until July 2014. However, the fact is that we still have no information about how the Americans actually intend to implement it', says Arendt. Several enquiries, also through the Consulate-General, went unanswered, according to Arendt. The answers as far as feasibility were concerned were found by the ISL itself and its partners, such as the Bremen



Senator of Economic Affairs, Labour and Ports, or Eurogate, the Bremerhaven University of Applied Sciences, the University of Bremen, two Fraunhofer institutes, dbh Logistics IT AG, Steria Mummert Consulting GmbH, SAP AG and Smiths Heimann GmbH, a developer of X-ray equipment. The Bremerhaven University of Applied Sciences designed emergency procedures, while lawyers from the law faculty at the Bremen University clarified the legal issues. The ISL, for its part, focused on computer simulations for the overall operation of the container terminal. It is clear, meanwhile, how such checks could be carried out – at a cost of up to 100 Euro per container. Another 35 million Euro would have to be invested in Bremerhaven's overseas harbours, purely to create the necessary infrastructure. Frank Arendt: 'Neither the terminals, the shipping lines or local government wants to pay for that. The goods being exported to the USA would ultimately become more expensive.' Even without a crystal ball, the logistics specialist dares a look into the future: 'Unless a security incident occurs, the USA will postpone implementation of the law again and again.'

As many as 2000 containers a day must be scanned in Bremerhaven if the new U.S. legislation is to take effect. © Smiths Detection





Underwater robots learn to learn at the DFKI.



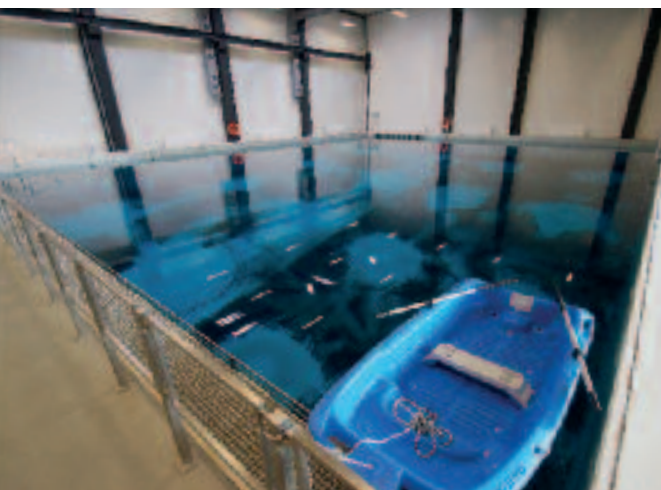
Jens Mey is in charge of new building at the university institute.

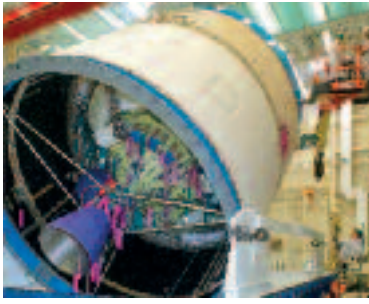
Where robots go swimming

Ocean conditions prevail in the new underwater testbed at the DFKI

The German Research Centre for Artificial Intelligence (DFKI) comes straight to the point when showing visitors the kind of research it conducts: in the foyer of the institute's new building, one can look through armoured glass towering higher than oneself at the underwater robots and what they are doing. 'The glass was originally meant to be installed in a submarine. We got it cheap,' says Jens Mey, casting a glance inside the 24 by 20 by 8-metre immersion tank. This testbed, unique in Europe, is eight metres deep and allows researchers to test their maritime technologies in salt water conditions resembling the Baltic – without losing sight of the systems equipped with artificial intelligence. The DFKI develops concepts for using intelligent robots under and on the water, e.g. in building and operating offshore wind farms, or for minimising the impact of deep-sea mining. Mey's office is in the new DFKI building in Bremen, and it is from here that he forges new partnerships with scientific institutions, industry and users: 'With the DFKI, we are now one of the most

important centres for robotics in the whole of Germany,' says the Deputy Head of the Robotics Innovation Center at the DFKI, while demonstrating some of the key facilities available at the Institute, such as the Pressure Chamber Lab. Everything in the new building is signposted in English, including the Pressure Chamber Lab, where engineers from external institutes are also found sometimes, testing how their innovative creations behave at a simulated depth of 6000 metres. The DFKI nurtures partnerships with many regional companies, and is similarly networked in dozens of projects with public-sector facilities and international customers. In the underwater testbed, which also includes laboratories and essential equipment such as a 12.5-tonne crane, replicas of underwater infrastructures and seabed formation will be created so that the underwater robots can prove themselves under realistic conditions. In the hall next door, there are two smaller tanks in which systems have to operate in conditions of absolute darkness, for example, as in the depths of the ocean. The underwater robot segments already built and tested by the DFKI are also found here. All the development work carried out at the DFKI applied research with a specific focus. Robotics expertise from Bremen is also helping in the race to mine resources from the deep sea. Mey: 'It's all about sustainable extraction of resources from the deep sea. That means it's important to develop and apply minimally invasive techniques. It's imperative that the generations after us are not confronted with any negative impacts of our activities in the ocean.'





Upper stage of the Ariane



'Columbus' Spacelab



Loading Airbus wings at Bremen Airport

Bremen lends wings

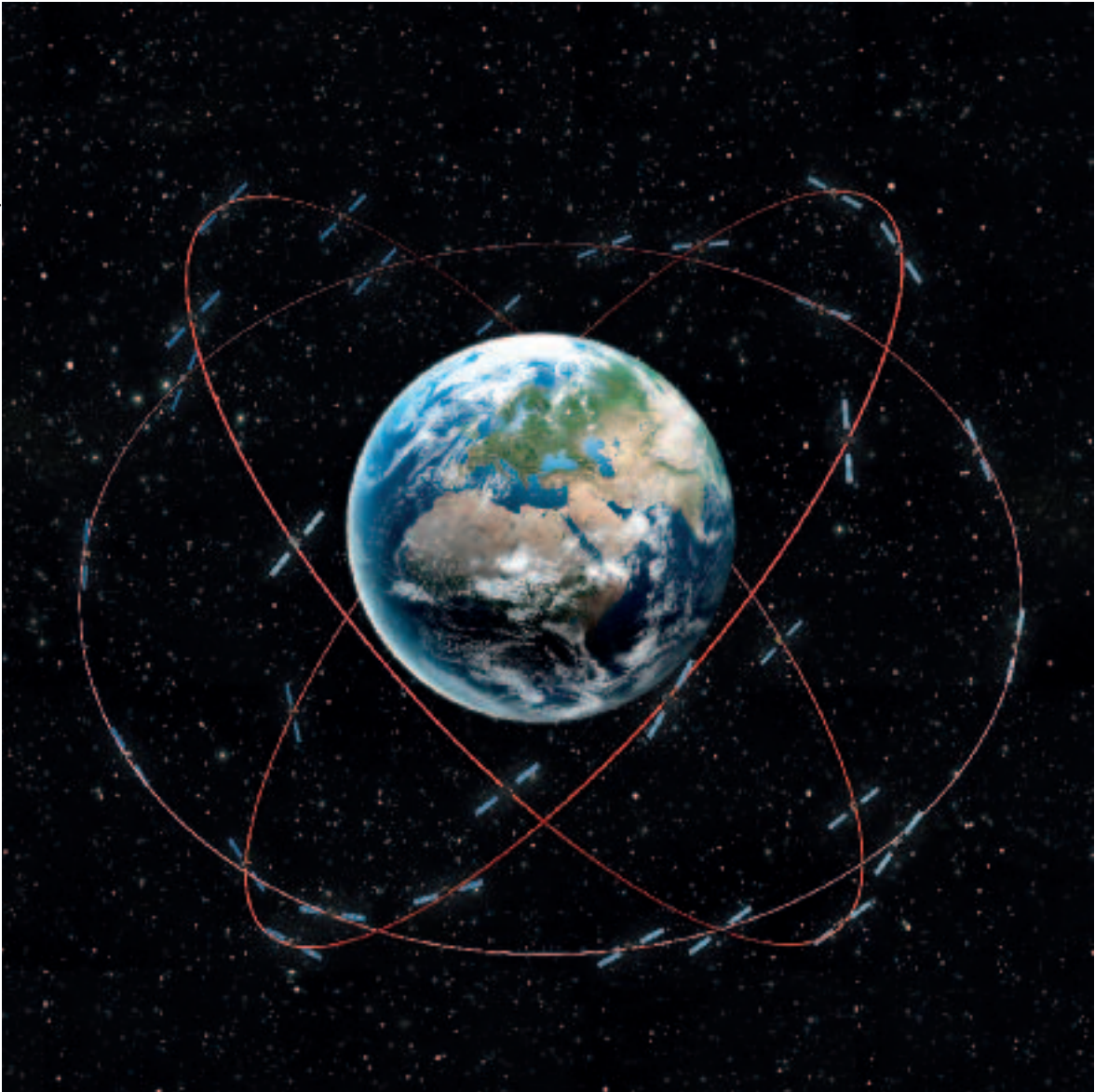
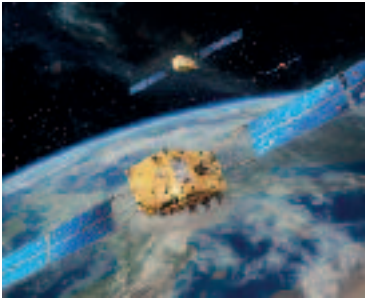
A strong location for the aerospace industry

Shipping, aviation and space travel – Bremen plays an avant-garde role whenever there is something to be moved. Today, the city has the greatest per-capita aerospace know-how of all municipalities in Germany. A total of 12,000 people in 140 enterprises and 20 research institutes generate two billion Euro in total annual revenue. 'In our innovation and cluster strategy, aerospace is defined as an area of key future importance', is how Bremen's Senator of Economic Affairs, Martin Günthner, explains the political priorities that have been set. Joint efforts are aimed at positioning Bremen better when it comes to tendering at federal and European level. The needs of the growing aerospace industry were a central aspect when designing Airport City and the Technology Park at the university as high-tech industrial estates and business centres in the 1990s. The latest project sponsored by BremenInvest, the city's business development agency, is the EcoMat research and technology centre. Within a few years, around 500 scientists and technicians in Airport City will be jointly developing new materials, production technologies, surfaces and construction methods, for example in the field of light engineering. Airbus is also involved. Founded in 1970, the company now has more than 3000 employees at its Bremen plant, making it the biggest employer in Bremen's leading cluster, aerospace. This is where the wing fittings for the A 330 are made, and where the fuselages for the A 400 M military transporter are assembled. At Airbus Defence and Space in Bremen, a current workforce of 1000 is building five Automated Transfer Vehi-

cles (ATVs) for delivering food, fuel and spare parts to the international space station ISS. In collaboration with the space division at Airbus, the firm of OHB is involved in building components for the Ariane rocket. OHB makes booster casings, fuel tanks and other tank structures for the European carrier rocket. 22 of the 30 satellites needed for the new 'Galileo' navigation system are from OHB. In the 'Who Makes What' for the aerospace industry, there is hardly a single field in which Bremen is not represented: engineering consultancies design cargo systems for the air freight industry, space transport agencies book flights on carrier rockets, and there are partnerships with China and Turkey. Remote earth observation, monitoring climate change, developing mobile radio communication, weather forecasting and in-flight refuelling systems – all these are additional fields in which Bremen companies in this cluster operate.

Work on the Automated Transfer Vehicle (ATV).





22 'Made in Bremen' satellites currently orbit the plant at a height of 23,260 kilometres, and tell ocean navigators where they are to the nearest four metres. With a couple of tricks, it is even possible to locate containers to the nearest centimetre. Know-how in the construction of orbital systems and space vehicles, acquired by OHB in Bremen over a period of 30 years, is the reason why the EU, through the European Space Agency (ESA), commissioned the Bremen firm of OHB to take charge of the 'Galileo' satellite navigation system. This involves the toughest of quality checks: before being launched into space, each of the Galileo satellites must prove in testing that it remains operational even after the gravitation shocks inside a carrier rocket, under extreme heat and the cold temperatures of outer space. 'Galileo' is scheduled to be fully operational with all its functions and services by about 2020. This means that seafarers, too, have some time left in which to save up for this cutting-edge replacement for today's GPS devices.



On the Lesum estuary, the 'Deutschland' training ship offers tours of the ship and overnight accommodation. It is moored beside the River Weser cycle path in Vegesack. Every first Saturday of the month, it is also possible for couples to get married on board the ship.



The old harbour in Bremen-Vegesack is the oldest artificial harbour in Europe.



One of the most modern footbridges in the world spans the old harbour.

Maritime northing

By the Lesum and Weser rivers: living among superyachts and old sailing ships

The most beautiful view of Bremen-Nord is to be had from a boat. If one turns into the River Lesum in Vegesack, one is suddenly surrounded by hundreds of yachts. Behind the river banks full of reeds and old trees rises the edge of the geest. This legacy of the Ice Age is called the 'Bremen Alps' by the locals, not without irony. As many as two centuries ago, these naturally higher areas were greatly appreciated by Bremen merchants as sites for the magnificent summer residences they built above the Lesum and Weser rivers. Parks like those laid out by Baron Knoop, or Wätjen, the shipowner, count among the most beautifully landscaped parks in Germany. Although the small yachtbuilding yards by the Lesum still care for classical wooden sailing yachts, as they did in the days of Kaiser Wilhelm, the new boats they build are more likely to be made of the latest composite materials. Customers of the Lürssen shipyard in Vegesack can have every imaginable wish fulfilled. The rule of thumb here, like at Abeking & Rasmussen, the other superyacht yard on the other side of the Weser, is that one metre of ship can be had for one million Euro and upwards. For the crews of the super-rich, there's never a dull moment in Vegesack, with its pubs in the historical harbour quarter. Here at the Museum Harbour and in the Stadtgarten park, there is plenty going on almost every summer weekend – be it the Harbour Festival, the Loggermarkt or, in August, the 'Festival Maritim', the internationally renowned sea music event. On the site of the former Vulkan shipyard, behind the 'maritime mile', workers weld, sweat and hammer again as in days gone by, except that now they are building towers for wind turbines. Lürssen and the BVT shipyard are also building

ships again on the yard. A little further downriver, red-brick buildings mark the site of what used to be the Bremen 'Wool Combing Works', the 'Bremer Wollkammer'. Back then, ships from Australia used to moor alongside each other to land wool for Europe. Today, this historical industrial architecture is being made fit again for many new uses. Blumenthal is also where Bremen's only moated chateau can be found. 'Burg Blomendal' is now a centre for all kinds of events. Back in the Middle Ages, knights from the castle used to attack and plunder merchant ships from Bremen.



In Knoop's Park in Bremen-Nord, at the 2014 'Summer in Lesmona' music festival, the Deutsche Kammerphilharmonie Bremen celebrates classical music under the 'Sail away' banner, while the audience enjoys its traditional afternoon tea and picnic. The orchestra, under its conductor Paavo Järvi, spends the rest of the year travelling the world as Bremen's ambassadors for classical music.



The Abeking & Rasmussen boat and yacht building yard was established on the banks of the Weser in 1907.



Vegesack is an old whaling town: the 'Whale Jaw at the Look-Out' is a reminder of those days.

'Vegesack is known everywhere'

Superyacht owners come and go around the old Harbour Warehouse

Bremen's oldest harbour warehouse is now a listed building and a shelter for Bremen's history. At the same time, it stands for the development of the Bremen-Nord region into a world-class centre for superyacht building. Christina Voigt takes visitors around the display cases, showing how the present-day maritime centre of Vegesack grew from a few dwellings 'where the paths subsided'. The 'Spicarium' in the Harbour Warehouse is a kind of Art and Science Centre, in which visitors of every age can add to their knowledge through play. It would be fair to call this Germany's most modern folk museum: one can hear the mice nibbling at sea biscuits and can also see how the animals' shadows scatter as soon as visitors appear. Voigt: 'Our biggest and most beautiful exhibit is the warehouse itself.' Three men escape a rain shower by running into the white building. They can put their umbrellas into 'Kantjes', as the herring vats used to be called here. On an illuminated map of the River Weser, details from its history can be found on a slidescreen, where suddenly one sees how Europe's oldest artificial harbour was built in the years from 1618 to 1623. In those days, the River Weser was so silted in the upstream direction towards Bremen that ocean-going ships only came as far as Vegesack. Christina Voigt tells the story: 'An elderly lady was here recently with her nephew. She herself had mended fishing nets at the Bremen-Vegesack fisheries company.' The young man learned here that Bremen-Vegesack was once the home port for Europe's biggest fleet of herring luggers. Christina Voigt again: 'The house provides an identity. How are people supposed to know where to go if they don't know where they come from?'

Albert Schweizer, the sail maker, has come down two floors for a coffee. He knows straight away what the 'Spicarium' boss is talking about: 'My customers can sense this special maritime touch here. You just need to look out the window and see the 'Deutschland' training ship on the one side and the superyacht shipyards – Lürssen, and Abeking and Rasmussen – on the other side. We've got everything here.' In the evening, when he walks across the harbour bridge to the old maritime pubs, he'll always meet the captain of some 'big boat' somewhere, the rather diminutive term they use here to refer to superyachts with a length of a hundred metres or more: 'That's the way it is all over the world in the superyacht scene – Vegesack is known everywhere.' Schweizer himself specialised in single-masted boats early on – in his occupation as a sailmaker and at dozens of international regattas. In spring, this international German champion in offshore sailing is helmsman on the 'Leu'.

An old warehouse building in Vegesack is home to the 'Spicarium'. In the interactive exhibition, visitors learn everything about shipbuilding and shipping, history and science.





Nowhere else in the world are as many private superyachts built as here at the Lürssen shipyard.

The boat was designed by Judel/Vrolijk & Co in Bremerhaven and built at the Winkler boatyard in Vegesack. Albert Schweizer is also working on a boat with the yacht designers, under the roof of the old warehouse building: 'If you want to know more about the BD 80, then ask the boys up above.' Straight after the first hellos, the two designers, Tim Ulrich and Immo Lüdeling, make it quite plain that, in their business, a basic principle is that one does not talk to outsiders about yacht prices and customers. However, just about everything they can then tell and show us is nothing short of spectacular: Nautors Swan, the world-famous Finnish makers of finest luxury sailing yachts, commissioned the small firm of 'beiderbeck designs' in Vegesack to design the Swan 105, a sailor's dream more than 30 metres in overall length. The BD 80 is almost 24 metres in length and gives its German owner a panorama view of the sea from the saloon, thanks to a couple of clever design

tricks. The huge yacht can be handled by two crew members on their own. Then there's the design of a 35-foot, 44-knot motor boat for Germany's highly renowned Knierim yard, or the gentle and loving refit of the 40-metre motor yacht 'Be Mine'. Tim Ulrich: 'That particular yacht brought things full circle for our company – it was designed in the 1980s by Jörg Beiderbeck, our founder, so it has returned home on this project, so to speak.' Design projects also include support during the construction phase as well, which necessitates continual trips abroad. Sailing trials are also part of the job for the two graduates in 'Naval Architecture', both of whom are passionate sailors. That can mean off the coast of Miami, or Monaco. Ulrich: 'But when we then invite our customers to come and visit us, none of them contradicts us when we say that we have the most beautiful office in the world.'



Excavated in 1961, the 'Hansekogge' sailing ship, built in Bremen in 1380, now stands in the German Maritime Museum in Bremerhaven.



From its base in Bremerhaven, the Alfred Wegener Institute studies the Earth's climate, biosystems and geosystems.

The Tall Ships capital

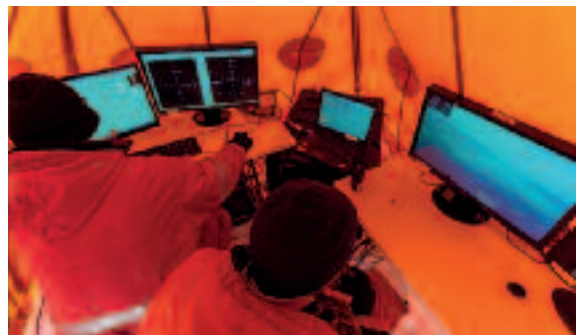
Bremerhaven has completely reinvented itself again with maritime economy and research

Bremerhaven is Germany's only large city on the North Sea coast and also one of the youngest cities in the republic. When the first ship entered the newly-built harbour back in 1830, there were just 16 houses on the area of Weser estuary land that had been bought by the city of Bremen. Today, just under 110,000 people live around the two gigantic harbour complexes in the north and south of the city. Bremerhaven is an important export centre for Germany and the whole of western Europe. After the decline of the fisheries and shipbuilding industries, the city effectively reinvented itself. Today, the economy of this city by the sea stands on more pillars than before. The fisheries harbour is now a food processing centre: anyone in Europe who eats fish fingers will almost certainly have a product from Bremerhaven on his or her plate. The area around the impressive double lock to the Fischereihafen is now a research harbour. The Alfred Wegener Institute, a Helmholtz centre for polar and marine research, has been based here for more than 25 years. It now has more than 900 staff, who study the relationships between the global climate and the special ecosystems in the world's oceans and on land. The icy worlds of the Arctic and Antarctic are the main focus of research work. The Institute, which is funded by the Federal German Ministry for Education and Science, by the State of Bremen and the States of Brandenburg and Schleswig-Holstein, manages from Bremerhaven the operations of what is now the third German research station in the Antarctic, 'Neumayer III', which was built by the Bremerhaven firm of J. Heinr. Kramer and KAEFER,

as well as the voyages of the 'Polarstern' research and supply ship. The work of the polar and marine researchers also includes North Sea research and contributions to biological monitoring on the high seas. The southernmost part of this harbour is reserved for the wind industry, which makes practically everything that is needed to build and install offshore wind turbines towering more than a hundred metres above the sea. Research institutes work in close vicinity to this up-and-coming industry.

The container terminal in Bremerhaven is one of Europe's 'top ten'.





The 'Polarstern' research ship travels 16,275 kilometres over the ocean from Bremerhaven before it reaches the 'Neumayer III' research station operated in the Antarctic by the Alfred Wegener Institute. Researchers at the station have a very varied working day that is extremely dependent on weather conditions. The decision to work outdoors, or indoors in the station, is based on the current weather situation. The researchers from the Alfred Wegener Institute install buoys on ice floes, for example, or study the plants, animals and micro-organisms in the sea ice habitat, or control a diving operation of an underwater robot from a monitor.

There's more in store

Bremerhaven attracts tourists to the North

Maritime to the bone, the three core tourist areas in Bremerhaven, the 'city by the sea', are the 'Havenwelten' close to the city centre, the 'Schaufenster Fischereihafen' in the south and the 'Überseehäfen' in the north of Bremerhaven. 'Havenwelten Bremerhaven' is the visible result of one of the biggest urban development projects in northern Germany. The 'Klimahaus® Bremerhaven 8°Ost' offers visitors a journey right around the world, along the eighth degree of longitude from and back to Bremerhaven. Within two hours, visitors here wander through Switzerland, via Sardinia, before sweating in Niger, visiting Samoa and, just before the destination, a North Sea hallig. Right beside it in the Havenwelten, the German Emigration Center is Europe's biggest hand-on museum on the theme of emigration. Between 1830 and 1974, around 7.2 million people emigrated via Bremerhaven. The German Emigration Center now has an extension in which more than 300 years' history of immigration to Germany is presented. There's more, though, than communication of knowledge: under a glass dome, visitors will also find the Mediterraneo, a special shopping experience in a Mediterranean atmosphere with water displays, a market, arcades and the typical flair of the South. A must for families with children: a visit to the 'Zoo by the Sea', where Nordic wildlife and a family of polar bears live right beside the dyke. Another attraction of Havenwelten Bremerhaven is the 'Atlantic Hotel Sail City': its skyscraper architecture offers guests a view of the Outer Weser from every room. On the roof of the building, 85 metres up in the air, a public viewing platform has been installed that provides a far-reaching view over the Weser estuary. The hotel also includes the Bremerhaven Conference Center, where events for up to 540 participants can be held. Getting to the Havenwelten with one's own boat is quite easy: after passing through the modern lock for small craft, the Lloyd Marina beside the historical Simon-Loschen lighthouse has more than 200 berths. Havenwelten also includes the German Maritime Museum, first opened in 1975, and the associated Museum Harbour. The museum, which is important beyond the immediate region as a research museum, is on the verge of extensive redesigning and refurbishing. The second tourist resort in the city is the historical area around the



The archive in the German Emigration Center.

fisheries harbour, more than a century old. The 'Schaufenster Fischereihafen' brings together the fish industry, the food industry and tourism. The area was developed in a series of construction phases. Guests here will find a rich assortment of restaurants, cafés, information, entertainment and overnight accommodation. Classy restaurants and cosy dockside pubs line up in the former 'Packing Hall IV'. Other culinary delights include fish delicatessens, smokehouses and a 'sea fish cooking studio' providing valuable tips for making fish dishes. Then there's the harbour itself. The only way to get to the colossal ships at the container terminal is with the Harbour Bus, although anyone with a car can go exploring on their own. Viewing platforms invite you up to look at the giant wind energy components in the Kaiserhafen – at eye level. At the Nordschleuse lock, one can watch the captains of the huge car transporter ships while they manoeuvre. From the cruise terminal viewing platform at the Columbus Cruise Center Bremerhaven, in contrast, one can wave to one's loved ones when they depart on a cruise.

The Museum Harbour, with the 'Wilhelm Bauer' submarine.





Every time 'Sail' comes to town, the dyke in front of the 'Havenwelten', with Klimahaus Bremerhaven 8° Ost, the German Emigration Center, Mediterraneo, the German Maritime Museum and ATLANTIC Hotel Sail City, is turned into Germany's longest grandstand. Yet even without this international 'Tall Ships' festival, the calendar of maritime events is well filled.



Torben Fuhrmann

A new aft section for a clean getaway

The BVT shipyard is turning the 'MS Ostfriesland' into Germany's first gas-powered ferry



Graphics © 2013 www.marigraph.com

Powering a ferry ship with liquefied natural gas means rethinking the entire ship. At the BVT shipyard in Bremen-Vegesack, Torben Fuhrmann and his 60-strong team are building a completely new aft section for the 'MS Ostfriesland' ferry ship. When the vessel is back in service after the 13 million Euro refit and as Germany's first-ever gas-powered ferry, she will be 14 metres longer than before, at 92 metres, and really clean in every respect. Emissions of nitrogen oxides will be cut by seventy per cent, and hardly any sulphur dioxide or carbon dioxide will be emitted. Particle emissions will be practically zero. Particle filters are old hat – instead, the 30-year-old project manager has to figure out the best way of storing 42 cubic metres of liquefied natural gas (LPG) with a temperature of minus 165 °C. Fuhrmann: 'The cold poses a small challenge for the material, for a start – only a stainless steel tank can be used. But it's worth it: the idea behind the liquefied gas is simply to carry as much energy on board as possible, in the smallest possible space.' Liquefied natural gas takes up about one six hundredth the volume of natural gas as such. Behind the tank there is a separate box in which the gas can heat up and expand before being ignited in the special ship's engines. In another production hall, Torben Fuhrmann climbs up into a tent the height of a house, under

which the two main engines of the ferry already stand: 'We were there when these two engines here were put through trials at Wärtsilä, the makers, in Vaasa, Finland. The two auxiliary generators from Mitsubishi, each producing 380 KW, are on the way.' The ship certification bodies responsible for establishing technical standards also had little experience in this field: 'At the moment, everybody still finds gas-powered propulsion a bit difficult.' On the other hand, this clean technology is predestined for use in the Wadden Sea National Park, and the tougher exhaust emission standards that will soon be applicable to oceangoing ships do not pose the slightest problem. However, Fuhrmann still needs to devise a few solutions before nothing but fine white smoke rises from the funnel. Gas is vented via a venting mast in the event of malfunction. A dual safety concept is applied throughout the system: the Mitsubishis run in a closed room monitored by special sensors, and double-walled pipes fitted with detectors that trigger an alarm if any gas leakage occurs are used as a basic principle for all gas lines to the main engine. Fuhrmann: 'We are actually building a complete ship that could also operate without the fore section.' The latter, however, will be severed from the old 'MS Ostfriesland' at the Bredø shipyard in Bremerhaven, then attached to the new aft section.

Our aim: 'zero emissions'

Founders of 'Innoven' want to green the shipping industry



In the wake of 'Le Taifun', the second research ship is already being prepared for launch.



Martina Kuhlmann and Rolf Rohden are proud of two start-up prizes, the one from Bremerhaven awarded just months after they set up.

4 April 2011 – that was the day that Martina Kuhlmann and her husband, Rolf Rohden, established 'Innoven', two start-up prizes and two ship sales ago. Yet the latter were just initial steps on the path towards designing and building a ship that no longer causes any pollution at all. They want to give birth to their 'baby' within 15 years and they intend to call it 'Zero Emission Ship'. A prototype is already engraved on the glass railing in the head office conference room: 'Please don't take any photos of that yet,' says Rolf Rohden. However, he then details some of the special features of this whale-shaped structure 150 metres in length: 'The ship will have a hull which is hydrodynamically optimised to minimise wave and wind resistance, and a wind energy converter on top for propulsion. All the sub-projects that we work on until then will flow into this ship – from propeller optimisation to use of engine exhaust gas.' Shipping is in bitter need of such advances. Gathering the funds required is also part of their 15-year plan, and it is amazing how much of that plan the two of them have already achieved in such a short time.

The pair were awarded the Bremerhaven Start-Up Prize in 2011 just after they arrived in the city. Martina Kuhlmann: 'We were still in the early days when you still have the odd sleepless night. In that situation, the prize was doubly important for us, of course.' The decision to locate in Bremerhaven was absolutely right in any case: 'We have never regretted that, because we have a unique maritime infrastructure here, with great sup-

pliers and close collaboration with the university and the institutes here.' Beside the Bremerhaven award, a miniature sea buoy, stands a steel and glass cylinder, the 2013 German 'Founder' Prize. Kuhlmann cites the unique features of the new enterprise: 'We basically see ourselves as product developers for the wind energy and shipping industries. Unlike others, however, we also offer prototype construction and testing – for example, when a rudder or an optimised propeller has to be tested, we do that on our own ship.' That, and the figures in their 15-year business plan, obviously convinced the jury for the German Founder Prize. Rohden: 'The ship pays its way by servicing wind farms, but we also have a number of development projects for which we use the 'Le Taifun'.' The rapid success achieved by the two graduates in marine engineering and physics can be explained by the fact that both worked for almost 18 years in a major wind energy company and know everybody in the industry by name. Although the testing ships are smaller now, the couple can take all the decisions themselves. Martina Kuhlmann: 'Our day is so rich and varied, there's something new happening all the time. And you don't need to ask any committees, you just decide yourself.' Another of those decisions is floating 500 metres away on the other side of the fisheries harbour. Rohden just nods. It's the new, second ship that he is getting ready for launch: bigger and more capable of deep-sea operations – in short, the next step in the 15-year plan until the birth of their miracle ship.



Fitting spoilers and removing windscreen film – in Bremerhaven they can do anything.



Frank Berger supervises quality in the car terminal.

The clean hands workshop

The BLG workforce satisfies the special wishes of new car buyers

Imagine being a car mechanic and never getting your hands dirty from the cars. In Europe's bigger car workshop, the 267 employees basically only work on new cars. They make sure that even the most extravagant special wishes of customers from all over the world are met on 560,000 vehicles that are imported or exported annually. 'Such a vehicle comes from South Korea with grey upholstery. Leather upholstery is fitted here in new

quality standards.' Frank Berger is responsible for quality management at BLG Automobile Logistics GmbH in Bremerhaven and knows the high standards that manufacturers require. Some makes of car have their own offices here and send their own inspectors through the facilities. The assembly complexes in the northeastern part of the seaport are the extended workbench of many car makers. Berger: 'For Hyundai, for





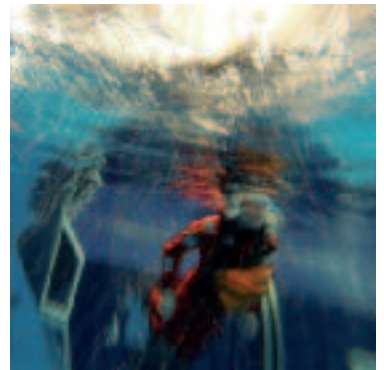
A state-of-the-art car transporter churns out as many as 7000 vehicles. No problem for Europe's biggest car park.

example, it is not worth building cars on the production line in Asia to suit the wishes of European customers. They do the mass production there, then things like radios, in-dash navigation systems, tow bars and other extras are installed here.' One discovers here that European car buyers love to treat themselves to things from the list of options. The fitters in Bremerhaven can do anything relating to the vehicle, be it paint finishing, sticking on film, fitting parts, sealing cavities or just polishing. They have even managed to do conversion work for cotton pickers. 2.4 million square metres of space are reserved in Bremerhaven for vehicles. The tiny, coloured rectangles covering an area of 240 World Cup football pitches can even be seen from outer space. Around 2.2 million cars are handled annually via Bremerhaven. That means top rank in the table of European car ports. The automotive division at BLG, the Bremen port operations company, has another 100 branches as far apart as Duisburg, St. Petersburg and South Africa. Berger's telephone rings and now he just has to make sure that a car transporter is properly unloaded. One of these floating boxes the height of a church tower can carry as many as 7000 cars at a time. Berger: 'The cars are packed in so tightly that you can't get in or out of them. It can only

be done with a particular system.' Nothing would work here without a system: at the 'FPR', the 'First Point of Rest', every car is meticulously inspected. Berger: 'We have specially trained checkers who notice everything. If we overlook anything, then we bear the liability as the party responsible, and nobody here wants that, of course.' Berger and his management colleagues have to keep the workforce continuously up to date with regard to the different models and work involved for 690,000 vehicle services. These mostly relate to the following makes (this is a long list, so be warned!): Isuzu, Citroën, Suzuki, Skoda, Audi, Seat, VW, Ford, Mitsubishi, Daimler, Opel, Jaguar, Land Rover, Peugeot, Kia, Hyundai, Fiat, Porsche, BMW and Mini! For Frank Berger, that variety is exactly what makes the job so special: 'You are always faced with new requirements from more and more new customers. The business is enormously enjoyable. One side-effect is that we are very familiar with every make of car, of course, with those you see often and also with those that are not even on sale yet.' So anyone who wants to know something about new cars should ask one of the car people in Bremerhaven – the ones with the clean hands.

‘Brace, brace, brace!’

Falck Safety gives helicopter underwater escape training



‘Brace, brace, brace!’ The command is aimed at getting the crew into the right protective position: one hand on the window frame, the other under the seat. ‘Impact!’ – the helicopter has hit the water and the cockpit immediately fills with water. The men inside now have only a few seconds to escape from the sinking wreckage. Helicopter underwater escape training or ‘HUET’ for short, involves six training sessions like the one described.

‘HUET’ is now required training for all areas of work in which air transportation is essential, be it on a drilling rig or at the top of an offshore wind turbine. The HUET certificate is actually valid for four years, but most wind farm operators stipulate a refresher course every two years. The morning session is dedicated to theory, and the afternoon is spent falling into cold water at 19 degrees Centigrade in a marine rescue suit. 2,700 trainees are put through the courses annually at the Falck centre in Bremerhaven.

The harbour's gallery



Michael Kellmer

In the wave chamber you get very close to the big ships



Michael Kellmer loves his job in the harbour's 'cellar'.



The columns take the force out of any storm surge.

Nobody can get as close to the big ships, without being noticed, as Michael Kellmer and his men from the harbour maintenance department at bremenports, the port management company. Practically speaking, they work in the underworld of the Bremerhaven container port. Their job involves maintaining the wave chamber that extends for five kilometres under Europe's longest tidal quay. That can mean getting their feet wet in salt water. Michael Kellmer steers the pickup through a gate at the northern tug harbour, which almost looks almost like the door of a bank safe: 'This here is the first dyke line. When there's a storm surge, everything here is shut.' Today, the water keep coming for half an hour after high tide. The water line is already almost level with the edge of the gallery of columns. Golden rays of light shine into the concrete chamber wherever there are no ships moored at the quay.

Where it gets dark, one is suddenly standing in a canyon with one steel side and one concrete side. When viewed at close quarters, even the smallest dent in a giant container ship becomes a work of art. The vessels seem colossal in proportions. Michael Kellmer steers around lumps of flotsam that have got caught here, bringing bits of plastic with them. Bremen's port management company 'harvests' about 10,000 cubic metres of flotsam a year from the harbour. 'There's many a cubic metre of civilisation's trash in there as well, though – from plastic helmets to plastic containers for hazardous goods, with a skull symbol on top. Sorting all that is a lot of work', says Kellmer. The wave has come, surging and foaming through the row of columns into the wave chamber. In the light, the endless row of columns is reflected on the wet floor of the chamber. Kellmer explains that the design for the wave chamber was invented when the first part of the tidal quay was built back in the late 1960s: 'The chamber prevents the waves from crashing over the quay and obstructing the loading and unloading of cargo. The structure takes the force out of any storm surge.' During construction of Container Terminal 1, the chamber sections were still lowered as prefabricated parts by a floating crane. Ways were subsequently found to make them more cost-efficiently by casting the concrete on site.



‘Tour de Wind’

Bremerhaven is already Germany’s capital for offshore wind energy

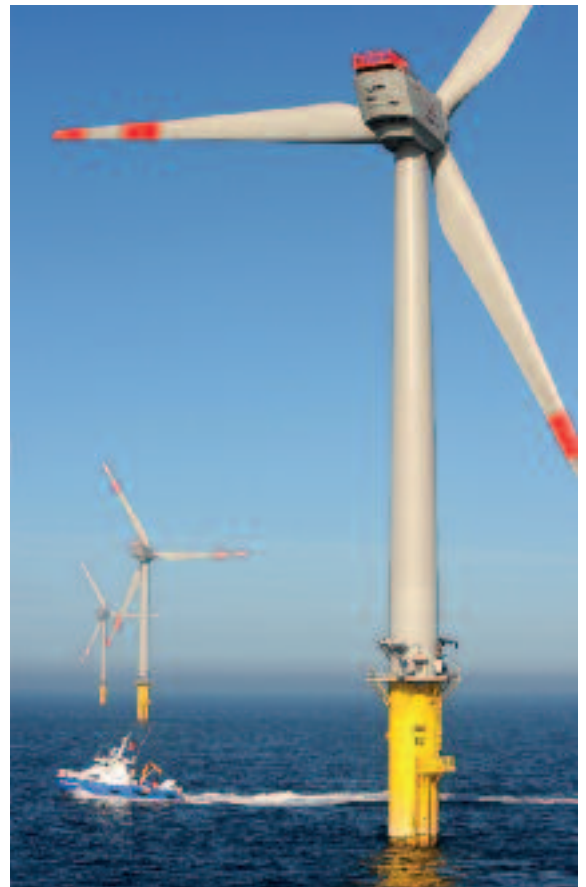
When Nils Schnorrenberger, head of the business development division at BIS Bremerhaven, stomps through the sand washed onto the Luneplate island, he doesn’t worry about his leather shoes. Here, with a view of the nacelles in which giant windmills generate power, he sees how much the ‘energy transition’ idea has been translated into reality since 1999. He is never tied to his desk for long – at short notice, he’ll invite visitors to jump into his VW bus for an amazing ‘Tour de Wind’ showing everything that Bremerhaven, as a centre for

mately to final installation in deep water is becoming increasingly manageable. Behind the recently enlarged and modernised Kaiserschleuse lock stand the 46-metre tripods on which the wind turbines are mounted. They look as if the church towers of a new worldview have been lined up beside each other. At one section of former container quay, the specially designed installation ships operated by the wind energy companies lower their long legs into the bed of the River Weser so that they can receive complete wind turbines on board.



Nils Schnorrenberger is Bremerhaven’s ‘go to’ man for all things to do with wind energy

wind energy, can offer firms. As a manager at BIS, the Bremerhaven Investment Support and Urban Development Company, he was involved from the start: ‘One of the most fascinating things was when the first large wind turbine was built by Multibrud in 2004. Today, companies build turbines with those dimensions in series for the offshore wind farms. However, it was only then that we noticed just how enormous the task was that we had set ourselves.’ By ‘we’ he also means the WAB, the Wind Energy Agency that Schnorrenberger helped to create as a network and melting pot for ideas. A good ten years later, the technology is still gigantic in scale, but everything from production to transport and ulti-





Schnorrenberger: 'Here we have found a good solution for shipment for a foreseeable period ahead.'

The journey continues through the centre of Bremerhaven. The firms in this new industry have set up their headquarters in modern office complexes. The Bremerhaven University of Applied Sciences trains tomorrow's wind energy experts. Beside an old lock, the maintenance teams practise abseiling down the towers of wind turbines. Further to the south, wind energy companies have taken over abandoned shipyard areas. Right behind the dyke, a research institute is designing the rotor blades of the future, and an entire, newly-established Fraunhofer Institute focuses purely on issues relating to wind energy and energy system technology. The shape of the institute building is reminiscent of a rotor blade contour. The researchers here will soon look out at a harbour that is unique in the world. A good solution for shipping these giant windmills out to sea is to be turned into a perfect one here in Bremerhaven: the hinterland behind the 'Offshore Terminal Bremerhaven' (OTB) is being planned by the BIS. A wide road for heavy transport has already been built through the southern part of Bremerhaven. The tripods, weighing 900 metric tons each, as well as all the other components of the wind turbines made by the producing firms, can soon take the easy route via the dyke and roll straight onto the special-purpose ships. 'That will then be the perfect solution, obviating the need for transportation on pontoons to the northern harbours, which means that different dimensions can be built because there are no locks acting as limiting factors', says Schnorrenberger. The regional airport will have to be relocated so that it can be used as a runway for these future giants of green technology.



Plan A

Scenario for the Bremerhaven Offshore Terminal

The foundation structures, more than 50 metres in height, are carried slowly on special-purpose vehicles towards the dyke. Behind the supports for the wind turbines, the generator nacelles and hubs look lightweight by comparison, even though they, too, weigh hundreds of tonnes. The rotor blades, up to 80 metres in length, look almost delicate as they snake over the dyke. Pre-installation work begins on the 250,000 sqm waterside site. The WTGs are then loaded on board the installation ships for the offshore wind farms, which are already moored alongside the 500-metre quay of the 'Bremerhaven Offshore Terminal', waiting for the next set of 'construction kits' and the right weather to install the wind turbines out at sea.

The scenario for workflows in and around the Bremerhaven Offshore Terminal has been worked on for a long time already: as many as three oceangoing ships with draughts of up to 14 metres are to be served here simultaneously at the quay. Where the runway of the local airport used to end is where a ramp-and-bridge construction now begins with a gentle gradient for such heavy transport. bremenports, Bremen's port management company, is to organise the planning and construction of the OTB.



‘Aren’t you a beauty!’

Heino Runge cares for the water buffalo on the compensation area for CT-4

‘Oh, you’re a beauty, so you are. And you know that, too, the way you’re looking at me.’ That’s the way Heino Runge talks to a cute four-legged creature weighing a good 400 kilograms and covered in thick hair. Every Friday after finishing work at bremenports, Runge visits his water buffalo in the wide expanse of the Luneplate island in the south of Bremerhaven. He sits on a bale of straw and talks to the animals, and the herd comes and listens. ‘I’m basically the official stroker of buffalo here and on top of that the biggest farmer in the whole rural district of Cuxhaven,’ jokes Runge, who is actually responsible at Bremen’s port management company for looking after and developing the various measures for environmental compensation. Around Runge’s little farm, bremenports has two pastures each covering 40 hectares. As senior bull with a live weight of 900 kilograms, Valentino has the command here over 13 cows and always gets extra stroking from Runge: ‘The animals are really great. They’ll eat just about anything that grows here, even thistles and nettles. They have a completely different mentality from our rather spoilt Friesian cows.’ They also let guests come near them, such as geese, grey heron and little egret, says Runge.

Everywhere between Cuxhaven and Bremen, Heino Runge looks after areas that bremenports has upgraded environmentally as habitats where many species of fauna and flora can find shelter. Anyone who still wants to build harbours in Europe is responsible for the destruction of sensitive natural resources and must compensate for the loss, as caused in this case by construction of Container Terminal 4. The environmental planners have turned the old, 1000-hectare area of alluvial land on the Luneplate island into a nature park in particularly impressive fashion. To the south of the buffalo pastures, a new, 220-hectare ‘tidal polder’ has been created, where brackish water from the River Weser will flow with the tides through a small barrage.

The result is a paradise for birds: ‘One can follow the spectacular sight of huge flocks rising into the air in the mornings, filling their bellies on pastures in the district, then all returning again in the evening to sleep’, says Runge.

His buffalo on neighbouring pasture two don’t want stroking right now, but their extra portion of winter fodder. Rainer Knabber, the farmer under contract to Runge, climbs over the fence with a bucket in his hand. That looks brave, and the man does in fact have to beat a quick retreat again, without the bucket, because a bossy cow has driven Tino, a young bull, straight towards the feeder with her horns. Runge laughs when all seven animals are quietly eating again: ‘The alpha cow here still lays down the line. Tino will have to grow up a bit more before he can have anything to say here.’ Maybe he can whisper into the little bull’s ear how to treat the ladies.

When the Bremerhaven Container Terminal was extended by 1681 m to include CT 4, covering 90 hectares of storage area, a 630-hectare ‘compensation area’ was created not far from the terminal. It is now an ideal grazing ground for a herd of water buffalo.





The Bremerhaven Container Terminal, the world's longest continuous tidal quay, provides fourteen berths for large container ships.



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Contacts:

The Senator of Economic Affairs, Labour and Ports
Zweite Schlachtpforte 3
D-28195 Bremen
www.wirtschaft.bremen.de

WFB Wirtschaftsförderung Bremen GmbH (BremenInvest)
Langenstrasse 2-4
D-28195 Bremen
www.wfb-bremen.de

BIS Bremerhavener Gesellschaft für Investitionsförderung und Stadtentwicklung mbH
Am Alten Hafen 118
D-27568 Bremerhaven
www.bis-bremerhaven.de

VIA BREMEN Foundation
Martinistrasse 50
D-28195 Bremen
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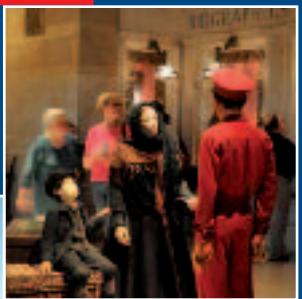
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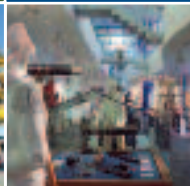


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TouristTel: +49 (0)471 - 41 41 41
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