

WINDFORCE

Guide

► **MAIN FOCUS:**

The Renewable Energy Act

Interviews with
ALSTOM and General Cable

Conference programme

Workboats in Water Show

North Sea Wind Farm Tour



WINDFORCE 2013
Bremerhaven

9th WAB Offshore Conference **4-6 June**

With the kind support of:

ALSTOM

 **General Cable**

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▶ **SAVE THE DATES!**

WINDFORCE 2014
Bremen

10th WAB Offshore Conference **17–19 June**
International Trade Fair **17–20 June**

WINDFORCE 2015
Bremerhaven

11th WAB Offshore Conference **9–11 June**

WINDFORCE 2016
Bremen

12th WAB Offshore Conference **7–9 June**
International Trade Fair **7–10 June**

WINDFORCE 2017
Bremerhaven

13th WAB Offshore Conference **13–15 June**

TABLE OF CONTENTS

Words of Welcome

Peter Altmaier	4
The Organisers	5
Markus Rieck – ALSTOM	6
Thorsten Schwarz – General Cable	7

Main Sponsors

ALSTOM	8
General Cable	10

Interviews

Reinhard Bahrke – ALSTOM	12
Thorsten Schwarz – General Cable	14

The Renewable Energy Act	16
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North Sea and Baltic Sea Wind Energy Projects.....	22
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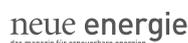
WINDFORCE 2013 Conference

Programme Overview	26
Conference Programme	28
Workboats in Water Show	56
Ship Profiles	58
Quayside Exhibition	62
WINDFORCE Dinner + Party	66
Excursion	68
WINDFORCE thanks its sponsors and media partners	74
Shuttle buses	76
Service / Imprint	78

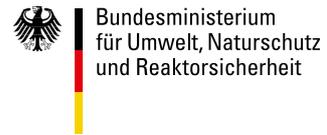
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Welcome Note from Peter Altmaier



Federal Minister for the Environment, Nature Conservation and Nuclear Safety
Patron of the conference



Dear Ladies
and Gentlemen,

The energy turnaround is the future project for Germany as an industrial location – and offshore wind energy is one of the key factors for its success.

This means that offshore wind power is not just one technology among many – it is essential for the energy turnaround and for Germany. Which is why I am very pleased to act as patron of the WINDFORCE 2013 conference in Bremerhaven. It is not a conference like any other – it is a conference that enjoys special attention. Those who are the driving forces of the industry are meeting for the ninth time at WINDFORCE in June. Where are we in the development of wind energy on the high seas? What are the opportunities and challenges now facing the sector? And this year in particular – how can offshore wind power become less expensive? Can cost reductions help this technology find even broader applications? As you can see, I have more than one reason for assuming the patronage of WINDFORCE 2013, and I do so with great pleasure.

The success of offshore wind power is of particular concern to me. For the energy turnaround we need substantial infrastructure to generate and distribute power. And we shouldn't play off centralisation against decentralisation. It is clear that offshore wind energy is still in rough waters. Offshore wind power is a young technology and technically very demanding. The volume of investment is large and the need for coordination significant. We need perseverance. If we want offshore wind energy, we will have to brave stormy weather.

Therefore it is all the more important to celebrate the industry's successes: firstly, expansion may not be moving ahead as rapidly as initially hoped, but it is nevertheless progressing. Secondly, and even better – offshore wind works! We have had excellent experiences with the first two German offshore wind farms, Alpha Ventus and Baltic 1. Alpha Ventus ran for nearly 4,500 full-load hours in each of the past two consecutive years!

Six wind farms with a total capacity of more than 2,000 megawatts are under construction in Germany today. Work on more wind farms will begin in 2013 and 2014. When these are completed, we will have installed a capacity of about 3,000 megawatts. Once connected to the grid, they will be able to supply 3.5 million households with offshore power.

The German government has done a lot to remove the obstacles facing the expansion of offshore wind energy. The Renewable Energy Act (EEG) introduced the acceleration model which provides for higher feed-in tariffs in the first years. We have launched a special credit programme for offshore wind energy. And we have made concessions to grid operators and set up a liability regime which makes their risks more manageable.

I can assure you that I also want offshore wind energy to be supported in the future as stipulated by EEG regulations. But to make that possible, we will have to look at feed-in tariffs in the context of the needed reform of the EEG. I would like to see a subsidy plan in place which drives innovation and does not stand in its way.

We are very aware of the value of wind power from the sea. Offshore wind energy has long been an economic factor for Germany, to the envy of others. German-based manufacturers of offshore wind turbines and their components turned over 1.6 billion euros last year. But that is only a small part of the larger picture – offshore wind has become hugely important for traditional shipyards, port industries, logistics companies, and Germany's steel industry.

Great work has already gone into developing the offshore wind industry. Many of the sector's pioneers are present at the WINDFORCE conference. Hats off to you! Let's make offshore wind energy a success story told beyond Germany, and let's do this together!

With kind regards,
Peter Altmaier
Federal Minister for the Environment,
Nature Conservation and Nuclear Safety

Words of welcome from the Organisers

WINDFORCE

wab windenergie
agentur

Ronny Meyer, WAB e.V. and Jens Eckhoff, Offshore Wind Messe- und Veranstaltungen GmbH



Dear WINDFORCE Participants,

Welcome back to Bremerhaven! We are very pleased to welcome you this year to the ninth offshore conference organised by the WAB Wind Energy Agency. Never has power production at sea been discussed more hotly than in recent days, weeks and months. So we are even more pleased to have this opportunity to talk intensely with you in the coming days about the continuing development of the offshore wind energy industry.

It is unequivocally clear to us that offshore wind is the foundation of the energy turnaround in Germany. Six wind farms are currently being installed in the North Sea and will soon generate another two gigawatts of offshore power. And yet it is clear that we are just at the beginning of the learning curve. Only when we have turbines at sea on a larger scale, actually supplying Germany with electricity, can we gain the insights we need to further develop and improve technology. Moreover, the potential for reducing costs is far from fully exploited. WINDFORCE 2013 is focusing on this equally hot topic.

Many countries have already adopted the German word Energiewende to describe what seems to be a real likelihood in Germany – the phaseout of nuclear energy and a growing reliance on renewable energies. But what we are currently experiencing casts legitimate doubt on the ability of some quarters in Germany's federal government to seriously see offshore wind energy as a key component in the mix of renewable energies. Proposals have been made to revise the

Renewable Energy Act (known as the EEG, which regulates feed-in tariffs) that can be understood as attacks on an entire industry. And warning words on the part of consumer advocates simply ignore the fact that offshore wind energy costs only 10 cents per kWh on average over twenty years – as set down by the EEG.

It is election campaign times in Germany and this characterises the year 2013. Political debate seems to be focusing on offshore wind energy. The consequences of the uncertainty facing our sector right now call for a lot of patience and a good dose of optimism. So it's even more important that we, in a strong network, talk together about the challenges posed by these questions, and that we find solutions and make demands on policy makers in the government.

WINDFORCE is Germany's most established event for talking about these issues with national and international experts. Sixty speakers in twelve theme sessions will give you comprehensive insight into the offshore wind sector. Our Workboats in Water Boat Show, featured this year for the first time, will integrate from now on the maritime industry as an integral part of the conference in Bremerhaven. And it is already clear that the all-day boat excursion that concludes the conference will be the crowning highlight of WINDFORCE 2013. This excursion to the German wind farms currently being installed in the North Sea will deepen, at a practical level, the impressions you gain from the conference's lectures and presentations.

May you have interesting and rewarding talks!

Ronny Meyer
WAB e.V.

Jens Eckhoff
Offshore Wind Messe und
Veranstaltungen GmbH

Words of welcome from Markus Rieck



Commercial Project Director - Offshore Wind, ALSTOM Deutschland AG



Alstom is pleased to be one of the major sponsors of the WINDFORCE 13 – direction offshore conference. We believe that the future for wind energy will be a bright one but at the same time, we are facing huge challenges to realize the German and European energy visions.

One of our key priorities is the integration of more renewable energy sources into the grids. The potential of wind energy, particularly from the offshore sources, is vast. Alstom is not only a world leader in wind farm connections and ‘smart’ wind power management, but we are also pioneering the way in offshore wind farm connections. Alstom has installed or is currently constructing offshore wind farm substations, which brings a total of over three Giga Watts of electrical energy to onshore electricity grid, with our latest reference in April 2013 for the Borkum wind farm.

Harvesting the energy potential of the wind in severe and unstable ocean conditions comes with great challenges. The further a wind farm is located from the shore, the more important is the reliability of the connection. We are meeting these challenges with innovation, having developed the HVDC MaxSine, a Voltage Source Converter (SVC) solution that enables the most efficient DC transmission of offshore wind power to the onshore grid. This technology will be used to realise the DolWin 3 grid connection for TenneT Offshore GmbH. After several contracts with HVDC VSC technology for example in the US and in Sweden and over 50 years of expertise in our excellence centre in Stafford (UK), we are very proud to combine this offshore expertise with the outstanding HVDC technology.

After more than one year of successful operation of the first Haliade 150-6MW prototype Alstom will install soon the second prototype of the cost of Belgium in the North Sea. This offshore wind turbine is equipped with a direct drive permanent magnet generator, with a rotor diameter of 150 metres. It has been adapted to the harsh environmental conditions offshore with its robust, simple and efficient design. The Haliade 150 is the most advanced offshore turbine of its kind.

Alstom will supply 240 wind turbines for the French tender to the consortium led by EdF Energies Nouvelles, which was contracted based on the quality basis of its bid with respect to competitive pricing, detailed technical and environmental studies, and an ambitious industrial plan creating an industry able to supply the French and European energy markets. The contract of the projects is worth over two billion euros with four new Alstom factories being built in Saint-Nazaire and Cherbourg in France. This creation of 5,000 jobs (1,000 direct and 4,000 indirect) will help to establish a French offshore industry following the German model.

Taking all these aspects into account, we are ready for direction offshore and so are you! Alstom is fully committed to support the WINDFORCE 13 conference in Bremerhaven. May we all enjoy a pleasant and successful event with fruitful discussions, conclusive presentations and interesting new contacts.

Markus Rieck
Commercial Project Director - Offshore Wind
ALSTOM Deutschland AG

Words of welcome from Thorsten Schwarz



Senior Vice President, General Cable Europe & Med



Election Campaign Politics Spell Disaster for the Energy Turnaround – So What?!

As so often in life – after you think you’ve seen everything – something absolutely unexpected happens! A German minister in a democracy that enjoys high

international regard publicly questions promised feed-in tariffs. And in so doing, particularly after we’ve gone through a period of hard but successful political work to stabilise the investment environment, he ends up undermining the situation and generating extreme uncertainty on the part of investors. And why? Because this effectively shields a traditional area of weakness in his party from political opponents in the upcoming federal elections: rising energy costs that favour big corporations.

I think many representatives of the offshore wind industry will find the price of this rather clever political move clearly too high. Relevant arguments in terms of lost investments in industrial capacity and above all the threatened jobs in economically underdeveloped coastal regions have indeed been promptly addressed.

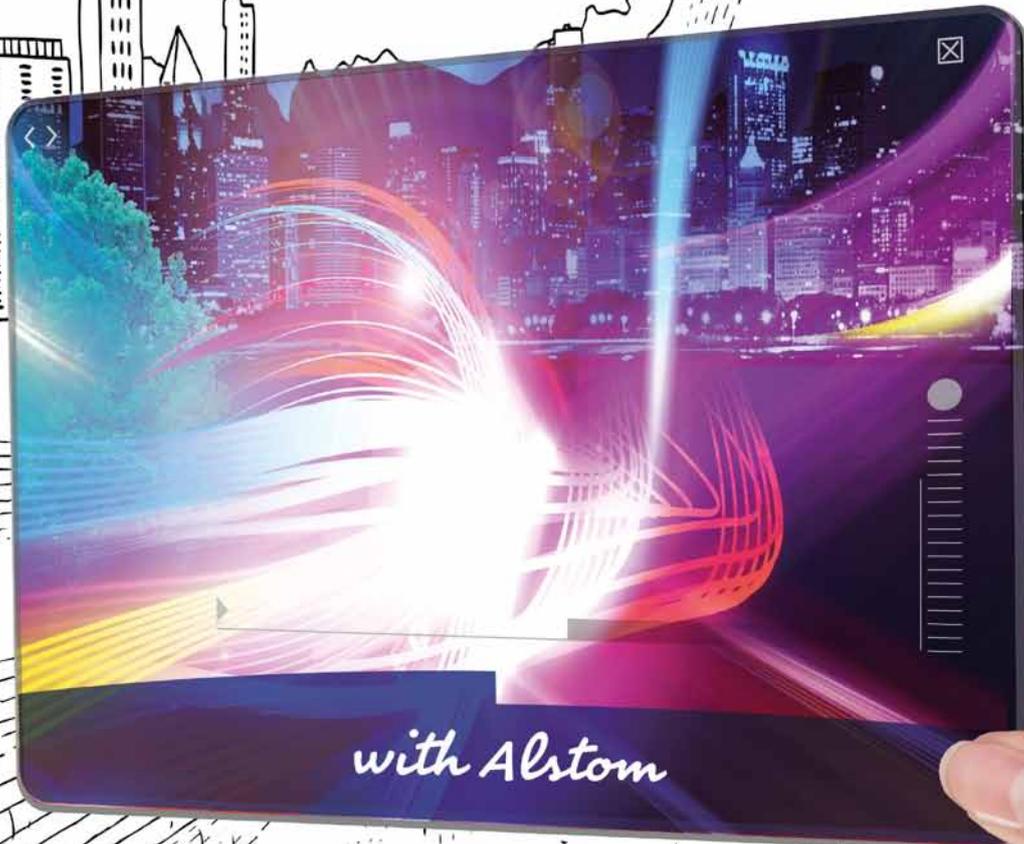
But is it really only such spineless turncoat politics that cause current uncertainty amongst investors? Don’t we have to ask ourselves, in all honesty, if this admittedly scandalous approach obscures more than structural weaknesses in business models and development models during construction? Would serious institutional investors be standing in line even if the environment minister’s weekend policy paper had never been published?

I am convinced that we shouldn’t let ourselves be too distracted by politics, especially during election campaigns; we should continue to work as usual on improving our industrial structures and finding solutions. The issues that need to be resolved without politics haven’t exactly gone away. To master a learning curve means nothing less than analysing lessons from earlier projects and transforming them into avoidance strategies for future projects. This process is exhausting, painful and sometimes even expensive. It also has nothing to do with political manoeuvring. In the end, the offshore wind industry can be sustainable and successful in the long run only if the sector’s overall construction and operating costs are competitive with other sources of energy. That’s why it’s important to work together.

A look at the programme of this year’s WINDFORCE conference shows me that WAB and its partners are again hosting an event where precisely these essential questions can be addressed and hopefully answered. I therefore wish for all of us that we engage in fruitful talks and find inspiration for continuing to improve on solutions for the industry.

Thorsten Schwarz
Senior Vice President
General Cable Europe & Med

Make a commitment to the future, with Alstom



POWER GENERATION

Alstom and its partners are committed to rising to the challenges facing our society. We reduce the environmental footprint of our clients, optimize the flexibility and reliability of their plants, and lower the cost of power generation.



ELECTRICAL GRID ENGINEERING

Alstom builds power grids for now and the future. We interconnect major grids, ensure an intelligent balance between production and consumption, and improve the integration of renewable energy.



RAIL SYSTEMS

Alstom is committed to enhancing the intelligence, comfort and fluidity of sustainable mobility. We develop, supply and maintain integrated, safe rail systems for public authorities, operators and passengers.

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ALSTOM
Shaping the future

ALSTOM



YOUR PARTNER FOR WIND ENERGY SOLUTIONS

The wind energy market is a constantly growing industry and an important contribution to climate protection. In this respect the sophisticated design of wind turbines and the electro-technical equipment plays a key role and is of major importance to secure maximum efficiency.

Alstom delivers turnkey solutions that are exactly tailored to the technical and economical needs of your project - now and in future times. Through our global expertise in wind turbine manufacturing and transmission in electrical grids we are able to design, realize and manage your entire onshore or offshore wind farm.

Alstom Grid is designing wind farm substations with high configuration flexibility, which ensures safe operation in harsh environments. Especially our self-floating and self-installing offshore substation concepts minimize the installation risk while ensuring commissioning quality and reduction of the ecological footprint. Our service teams give you full support to optimize the asset life-cycle through tailored condition-based maintenance.

Alstom builds and operates wind farms globally since 1981, with more than 2,500 turbines currently installed or under construction in more than 150 wind farms, delivering over 3,800 MW.

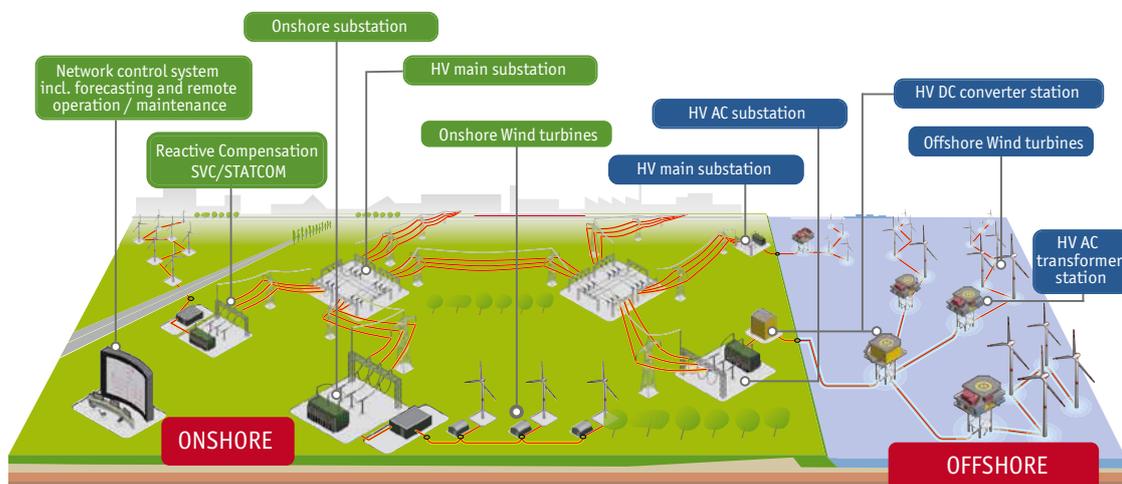
It designs, assembles and installs onshore wind turbines spanning 1.67 MW to 3 MW, providing solutions for most geographic and weather conditions.

Alstom has installed the first unit of the Haliade™ 150 – 6 MW: the first new generation large offshore wind turbine, incorporating its highly reliable ALSTOM PURE TORQUE® technology.



ABOUT ALSTOM

Alstom is a global leader in the world of power generation, power transmission and rail infrastructure and sets the benchmark for innovative and environmentally friendly technologies. Alstom builds the fastest train and the highest capacity automated metro in the world, provides turnkey integrated power plant solutions and associated services for a wide variety of energy sources, including hydro, nuclear, gas, coal and wind, and it offers a wide range of solutions for power transmission, with a focus on smart grids. The Group employs 92,600 people in around 100 countries. It had sales of € 20 billion and booked close to € 24 billion in orders in 2012/13.



WE HAVE
DELIVERED SUBSEA
CABLE PROJECTS
FOR MORE THAN
A CENTURY – WE
KNOW THE OCEAN
INSIDE OUT.

NSW 

NSW® is General Cable's competence center for submarine solutions, combining global expertise from three European locations and delivering high quality turnkey projects. NSW® is a leading supplier for submarine power cables, submarine telecom cables and turnkey solutions as well as custom-made special offshore cables for oil and gas, geophysical, oceanographic and seismic survey system applications.

Turnkey solutions for the future, delivered today.

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 **General Cable**



General Cable



Turnkey solutions for the future, delivered today.

General Cable Corporation (NYSE:BGC), a Fortune 500 Company, is a global leader in the development, design, manufacture, marketing and distribution of copper, aluminum and fiber optic wire and cable products for the energy, industrial, and communications markets.

With sales of over 6 billion USD, 57 manufacturing locations and over 14,300 workers who provide service to a global network of clients worldwide, General Cable Corporation, a company in constant expansion and development, comprises General Cable North America, General Cable Europe & Med, and the Rest of the World.

Its Nordenham facility in Germany forms General Cable's global competence center for submarine cable solutions. A wholly-owned subsidiary of General Cable since 2007, NSW has been one of the world's leading companies in the field of submarine telecommunication cables for over 111 years. Starting already in 2007, General Cable has invested in NSW's production and offshore installation capacities with the aim to turn NSW into a major player in the upcoming windfarm markets.



Today, NSW can draw upon extensive experience in delivering and laying cables for the growing offshore wind industry. The company supplies individually tailored solutions for power transmission, both for in-field cabling of the wind turbines, and also for connecting windfarms to transformer substations. NSW [®] Submarine Power Cables are supplied in all the required lengths.

NSW has an unrivalled track record of successfully delivering submarine cable installation projects. Reliable completion of projects in the North and Baltic Seas has made NSW a much-in-demand partner for national and international power utilities. Apart from NSW's long-term experience, customers benefit from state-of-art production facilities, tailored installation equipment, and, last but not least, NSW's ideal location directly at the North Sea.

www.generalcable.com

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Interview with Reinhard Bahrke of Alstom Europe:

“The liability regime and the offshore grid development plan are indeed two key contributions towards speeding up the expansion of offshore wind energy.”



Reinhard Bahrke, RVP Central Europe, Alstom Grid

▶ **Alstom is acting as major sponsor of the WINDFORCE conference for the fifth time since 2009. What is the benefit of this event for your business?**

Alstom was one of WAB’s founding members, but this is not the only reason we are involved with the WINDFORCE conference. Offshore wind energy is one of Alstom’s growing areas of business. That’s why it’s important for us to find out about all the relevant developments in offshore wind energy. For years, the WINDFORCE event has provided this opportunity to exchange in-

formation. Here we always meet our customers, our suppliers and many industry insiders. We don’t find this depth and quality anywhere else.

▶ **The German government has launched the new liability regime and the offshore grid development plan, two projects meant to accelerate the expansion of offshore wind energy. Do you think that’s enough?**

The liability regime and the offshore grid development plan are indeed two key contributions towards speeding up the expansion of offshore wind energy. For the first time, we now have two core elements in place that are essential for creating stable general conditions for the industry’s future development. The coordination we need to install offshore wind farms, starting with overall planning, designing the grid connection systems, and the actual construction has to be much better synchronised than it is now. We need stable and long-term policies to ensure planning and investment security for the manufacturing industry and its suppliers in major projects of this kind.

▶ **Do you think Tennet will manage expanding the grid for offshore wind farms in the North Sea by itself?**

There is no question that Tennet is one of the major players for offshore projects in the North Sea. But Tennet isn’t alone. All projects have several partners. To make sure that expansion is efficient with planned projects, we need excel-

lent coordination and cooperation amongst wind farm operators, grid operators, and the industry. This is in everyone’s interest. This is the only way we can get the planning reliability that we need to see through big projects and face tough challenges at sea.

▶ **Tennet is looking for partners in order to finance the grid connections needed in the North Sea. Could Alstom be one of those partners in future or do you see the group continuing in the role of supplier?**

Right now I see us staying in the role of supplier for grid connection systems. But this doesn’t mean that we wouldn’t ever take other decisions. There are some things you just have to rethink every day, but I won’t say more about that at the moment.

▶ **What requirements must be met so that Alstom would invest in more production sites specifically for offshore wind energy?**

We are already making investments. An excellent example is our new gearless wind turbine with a capacity of six megawatts and a rotor diameter of 150 metres: the Haliade. This wind turbine was made for several projects in France. From 2016, Alstom will supply 240 turbines of this type in a first step. A new production plant will be built for up to 1,000 new employees. We will continue to invest. For us, these are steps on the way to creating an industrial centre of excellence in the field of renewable energy.



Alstom will be among the leading providers in Europe in this area. In Germany, the Haliade is included in bids for tender that we are submitting for several offshore wind farm projects planned for the North and Baltic seas. With our substations, our HVDC (high-voltage direct current) transmission systems, and more recently our wind turbines, we offer a really broad range of products which few competitors can match.

► What does that mean in terms of tenders for offshore wind farms? Do divisions in your group seek agreement with each other in order to submit attractive offers? Will they soon jointly submit bids for tenders?

Our Grid and Power business divisions in fact already go the same way for marketing and sales. We very clearly gear our efforts to an individual project. Both divisions don't stand in each other's way; on the contrary, they complement each other extremely well.

► Let's go back to the Haliade. When do you think the first offshore wind turbine from Alstom will start operating in the North Sea?

I will not name a date. But we at Alstom would be poorly advised if we didn't attempt to get our wind turbines to the start in Germany's North Sea as soon as possible. We're not a global market leader so far in wind turbine production, although our growth rate is impressive. We see wind turbines as an extension of our portfolio with which we intend to attract customers and

orders in the offshore business segment. We are sticking to our strategy to pursue organic growth.

► For months the offshore wind industry has been facing demands that costs should be reduced up to 30 or 40 percent by the end of the decade. Do you think these numbers are realistic for your products?

We work on the cost optimisation of our processes as a matter of course. Whether 30 or 40 percent is feasible, I really can't say. What I can say is that we need to standardise more in offshore projects. We successfully completed the installation of the transformer substations for Alpha Ventus, and more recently for the Trianel Borkum West project. Now we're in the home stretch for Global Tech I. The steel skeletons for our transformer substations in the Baltic 2 and Meerwind projects are under construction. But all of these substations are unique and we are still far removed from industrial standardisation. Of course the conditions for grid connection are different for all the projects mentioned here, but I still say that if there were uniform standards, we could save a lot of costs.

► And the bottom line is the message that Alstom will remain committed to offshore wind energy?

Definitely. Right now we are in the bidding and pre-qualification phase for several projects. The substations for Baltic 2 and Meerwind will

be shipped to out to sea this year, which shows that we are expanding our leading position in this area. We continue to rely on AC platforms, but we also want to advance DC technology. Right now I see us uniquely positioned to offer specialised solutions. The market continues to rely on us. In February, Tennet awarded Alstom the contract for the offshore grid connection of DolWin3 in direct current technology – a contract with a volume of more than one billion euros. The offshore wind sector has taken on an important role within the Alstom group. And our board of directors and our management are both working to expand this commitment.

Interview with Thorsten Schwarz of General Cable

“Offshore wind is the only renewable energy that has base load capability, which means it can genuinely compete with coal-fired and nuclear power plants.”



*Thorsten Schwarz, Senior Vice-President
General Cable Europe & Med*

▶ **General Cable is once again a major sponsor of the WINDFORCE conference. Where do you see the benefits of this event for your business?**

General Cable was quick to recognise the potential of offshore wind energy in Germany and we built a new production plant in Nordenham in 2007. Thanks to this investment, we are among the leading businesses in the offshore wind sector in this country today. That’s why we are interested in the industry’s sustainable expansion. Particularly now, while we are still in the development phase, we need a neutral platform where all stakeholders can meet and exchange with each other. Since its inception, WAB has positioned itself very well with its WINDFORCE

conference. We have the feeling too that WAB’s importance has grown in recent months. So we have no doubts about wanting to be available to WAB and the WINDFORCE conference as a sponsor.

▶ **So far only 300 megawatts of wind power capacity have been installed in Germany’s North and Baltic seas. As one of the pioneers of the German offshore wind industry, are you disillusioned?**

Why? Present operating experience with these 300 megawatts shows that the full-load hours of offshore wind power are much higher than was assumed in the original business plans. This puts the offshore wind industry in an excellent position in the debate on Germany’s future electricity mix. Offshore wind is the only renewable energy that has base load capability, which means it can genuinely compete with coal-fired and nuclear power plants. Offshore wind is indeed a real alternative to fossil fuels and will therefore have to count as one of the fundamental mainstays of the energy turnaround, regardless of the debate on costs.

▶ **The German government has launched the new liability regime and the offshore grid development plan, two projects meant to accelerate the expansion of offshore wind energy. Do you think that’s enough?**

Both initiatives are excellent examples that show how political institutions, public authorities and the industry can work together to advance two new key reforms. But these factors alone won’t be enough to expand offshore wind

energy. In recent weeks we have unfortunately had to experience how political manoeuvring ahead of federal elections later this year has called these initiatives into question. The debate on the so-called electricity price brake has deeply unsettled investors. And that’s why we, as well as the manufacturers of foundations and turbines, are still waiting for follow-up orders. During the past two years, the grid connection issue kept us very busy. Now this problem is solved, and that should be triggering the second wave of investment. But precisely in this situation we are now facing a debate on the electricity price brake, with the consequence that investors are getting nervous again and backing out because they don’t see the adequate planning reliability they need.

▶ **What measures do you think the German government needs to take to ensure it doesn’t lose sight of its goal of expansion to 10 gigawatts by 2020?**

Planning reliability for investors really is the most important thing. That’s easy to say, but it really is key for expansion. The government would be well advised to concede offshore wind energy the same learning curve that it did for photovoltaics. We must see that offshore wind energy is competitive after a very few years when it’s compared with other renewable energies. The average feed-in tariff for offshore over 20 years is already at the same level today as it is for photovoltaics, which have been subsidised in Germany since the early 1980s. Apart from the fact that a shorter learning curve may be subsidised in the context of the original “sprinter bonus” model, for example, we have



already seen delays with grid connection in the past two years alone. These two years represent a substantial loss in the learning curve. Without these delays, we would already have eight to ten offshore wind farms in operation. Therefore it would only be fair if government policy would extend current feed-in tariffs – or adjust them only very slightly – for two years. Then we could compensate for delays in the early stages and catch up, and we would still be within a significantly shorter subsidised learning curve than other forms of energy have been. This would not cost more money compared to previous plans. We still need a reliable feed-in model for a few years so the industry can gain experience and lower its costs.

► What requirements must be met so that you will continue to invest in your Nordenham plant or build a new production site?

In the extrusion process, which is at the core of cable production, there are no major differences between manufacturing land or sea cables. Due to their continuous long length, submarine cables have to be equipped with fittings for logistical purposes, and therefore manufacturing must be done close to a seaport. Regarding land cables, we still have to contend with a lot of excess production capacity and the related decline in prices. Added to that, competitors from low-wage countries are bringing their products to the European market. So it is very difficult right now to make investors appreciate why it makes sense to invest in a specialised market like submarine cables, especially when there is so much uncertainty.

We have always said that if the UK's offshore wind expansion programme is extended to the full, and if Germany's plans are implemented in their entirety, then there will be a real shortage of submarine cable. But these two "ifs" are not visible right now, so for us the idea at present of building a new production site is followed more by question marks than by exclamation marks. With improved market conditions, our group is willing to re-evaluate investments again.

► The issue of cost reduction is high on the offshore wind industry's agenda right now. What options do you have for reducing costs in your production line?

As a cable manufacturer, we can't escape this debate over costs. But we also have to keep in mind that customer needs and the regulatory environment are forces that pull in the opposite direction. For example, there is a kind of technical trade war going on right now with cable-laying vessels. Ships that installed cables for the first generation of wind farm projects are now not being approved for reasons that aren't entirely clear to us. Setting higher standards for cable laying simply drives up costs, and we must be aware of that. But we are working to exploit potential cost reduction as far as we can for our part of the business. The cable pull-in, the assembly of cables on offshore structures, takes the most time at sea and therefore costs the most money. We have been working together with our customers for a year on plans that would fundamentally shorten this process. So we see savings not necessarily being in cable production but in cable laying.

► General Cable is not the only one complaining about a dent in orders in the offshore wind business. It must help to belong to a group that also acquires orders from the oil and gas industry. To put it bluntly, are the old energy sources now rescuing your business?

A year and a half ago, we started exploring the oil and gas industry, an interesting market for us. We have increased our sales and marketing activities in this segment for some time because, as mentioned, there have been too many delays in offshore wind energy. Thanks to these new contracts, we are able to utilise the Nordenham plant well. The future of the energy industry and our future too don't depend exclusively on one energy source. That would be an extremely unhealthy situation for us as a supplier. During our company's 114-year history, we have always had a wider range of customers and have done well with this approach. This does not change our interest in wanting a more rapid pace of expansion in offshore wind energy. We are deeply convinced of this technology. Even the question of pricing comes full circle here. Due to their strong economics, customers in the oil and gas industry can offer suppliers better pricing than the offshore wind industry can. If the offshore wind industry is not able to rely in the long term on adequate feed-in tariffs, then this market, compared with the oil and gas industry, will no longer be attractive enough for suppliers like us. And then the threat could loom that the energy turnaround would peter out.

The Renewable Energy Act

A successful past, an uncertain future

The Renewable Energy Act (the Eneuerbare-Energien-Gesetz or EEG) is an important pillar for the development of offshore wind energy in Germany. Thirteen years after the EEG's entry into force, the government has decided to fundamentally reform the legal regulations designed to subsidise renewables – but the process of legislation can take time, and will likely not be initiated before federal elections take place late in September.



Until new regulations are actually adopted, subsidy mechanisms of the future will look been deterring potential investors for some threat to the existence of the wind energy

no one is certain what the like. This limbo, which has time now, poses an increasing industry.



The history of the EEG has been a success story so far.

According to Germany's environment ministry, more than 65 countries around the world have used it as a model for similar regulations. When the law came into force in 2000, renewable energies made up 6.8 percent of Germany's power supply. In the meantime, this share has gone up to 25 percent, putting renewable energy sources in second place behind brown coal (lignite). This increase is primarily due to two regulations in the EEG. The first is that renewable energy facilities have priority regarding their connection to

the grid and grid operators must also first buy the electricity generated by these facilities. The second is that the EEG specifies fixed feed-in tariffs for each of the various technologies. These are guaranteed for 20 years to the operators of facilities, including offshore wind farms. In general, the later a facility is connected to the grid, the lower the amount of guaranteed remuneration it receives. This degression is meant to provide the incentive to reduce costs and make renewable energies more competitive. However, given

the ever-increasing volume of green power that needs to be integrated into the system, experts now largely agree that a fundamental reform is needed to ensure the success of Germany's energy turnaround and to keep the power supply reliable and affordable. Several past adaptations of the law have already had direct impact on offshore wind energy, as the following overview of significant EEG amendments shows.

How it all began and the 2000 Renewable Energy Act (EEG)

The EEG had a precursor called the Stromeinspeisungsgesetz (Act on the Sale of Electricity to the Grid) which, for the first time in 1991, obliged power utilities to purchase the electricity generated from renewable sources in their area of supply, to feed it into the public grid and to remunerate producers. For example, the act prescribed that the minimum remuneration for wind energy should amount to 90 percent of the average sales revenue of the power utility. Shortly before the EEG went into force on 1 April 2000, this was the equivalent of about 8.25 cents per kilowatt hour (kWh) which, depending on the location, could already mean that a wind turbine on land operated economically. Early in the 1990s, offshore wind energy had not yet become an option in Germany and therefore it was not expressly mentioned in this first law promoting renewable energies. When this law was later replaced by the more comprehensive EEG, things looked different – even though the construction of Germany's first offshore wind farm was still a few years away. For wind turbines built at sea, the original version of the Renewable Energy Act saw to an initial remuneration that was the equivalent of about 9.1 cents per kWh for the first nine years, followed by a remuneration of 6.19 cents per kWh for the next eleven years, as long as the facility went into operation on or before 31 December 2006.

The offshore wind strategy and the 2004 Renewable Energy Act (EEG)

Early in 2002, the German government published its strategy paper for wind energy at sea (Strategie der Bundesregierung zur Windenergienutzung auf See) as part of its national sustainability strategy, and thus for the first time laid down specific development objectives. A capacity of at least 500 megawatts (MW) was to be installed in Germany's North and

Baltic seas by 2006, the paper said. By 2010, this value was to increase to between 2,000 and 3,000 MW, and by 2030 to between 20,000 and 25,000 MW. After the first offshore wind farms had been approved, the 2004 amendment to the EEG granted the emerging industry improved subsidies that were intended to create additional incentives for investment.

The period of time in which operators received the higher (initial) feed-in tariff of 9.1 cents/kWh was extended from nine to at least twelve years, and this could be extended even further, depending on water depth and distance from the coast. The original deadline of 31 December 2006 for commissioning was extended to the end of 2010 for offshore wind turbines. And while the guaranteed feed-in tariffs for other kinds of renewable energy decreased by a certain percentage depending on the year of their commissioning, the beginning of degression for offshore wind turbines was pushed back to 2008.

EEG



According to its legal wording, the purpose of the Renewable Energy Act (EEG) is “to enable the sustainable development of the energy supply in the interest of mitigating climate change and protecting the environment”. The EEG is thereby meant to reduce macroeconomic costs, taking long-term external effects into account, to conserve fossil energy resources, and to support the development of technologies for generating electricity from renewable energy sources. The legislation prescribes successive goals to reach: the share of renewables used in Germany’s power supply should be at least 35 percent by 2020, 50 percent by 2030, 65 percent by 2040 and 80 percent by 2050. Renewable energies are expected to cover at least 18 percent of gross final energy consumption by 2020.



The sprinter bonus and the 2009 Renewable Energy Act (EEG)

When the German government enacted another amendment to the EEG in 2008 which went into force on 1 January 2009 and extended the act from 21 to 66 paragraphs, the construction of Alpha Ventus, Germany’s first offshore wind farm in the North Sea, was about to begin. Offshore wind energy, which previously had been handled together with land-based wind energy, was given its own paragraph. The written justification to the amendment stated that offshore development had progressed more slowly than expected because the cost of “this completely new technology” was higher than originally assumed. To enable Germany to enter the offshore wind energy industry, the initial feed-in tariff was raised to a level comparable with levels in other EU countries, and in return the second-phase feed-in tariff was lowered. The bottom line was then effectively a significant increase to 13 cents per kWh for the first twelve years of operation, and turbines connected to the grid by 1 January 2016 would even benefit from a sprinter bonus of 15 cents per kWh. The period of validity for the initial feed-in tariff was extended for those turbines installed outside the twelve-mile zone and standing in water depths of more than 20 metres; this amounted to half a month for every additional nautical mile from shore, and to 1.7 months for every additional metre of water depth. This regulation was adopted unchanged from the previous version and is still valid today. For the remaining time left until the expiry of the subsidy after 20 years, it set the feed-in tariff at only 3.5 cents per kWh – instead of the previous 6.19 cents per kWh. The degression was pushed back again, this time to 2015, and from then it was to amount to 5 percent per year.

The energy turnaround and the 2012 Renewable Energy Act (EEG)

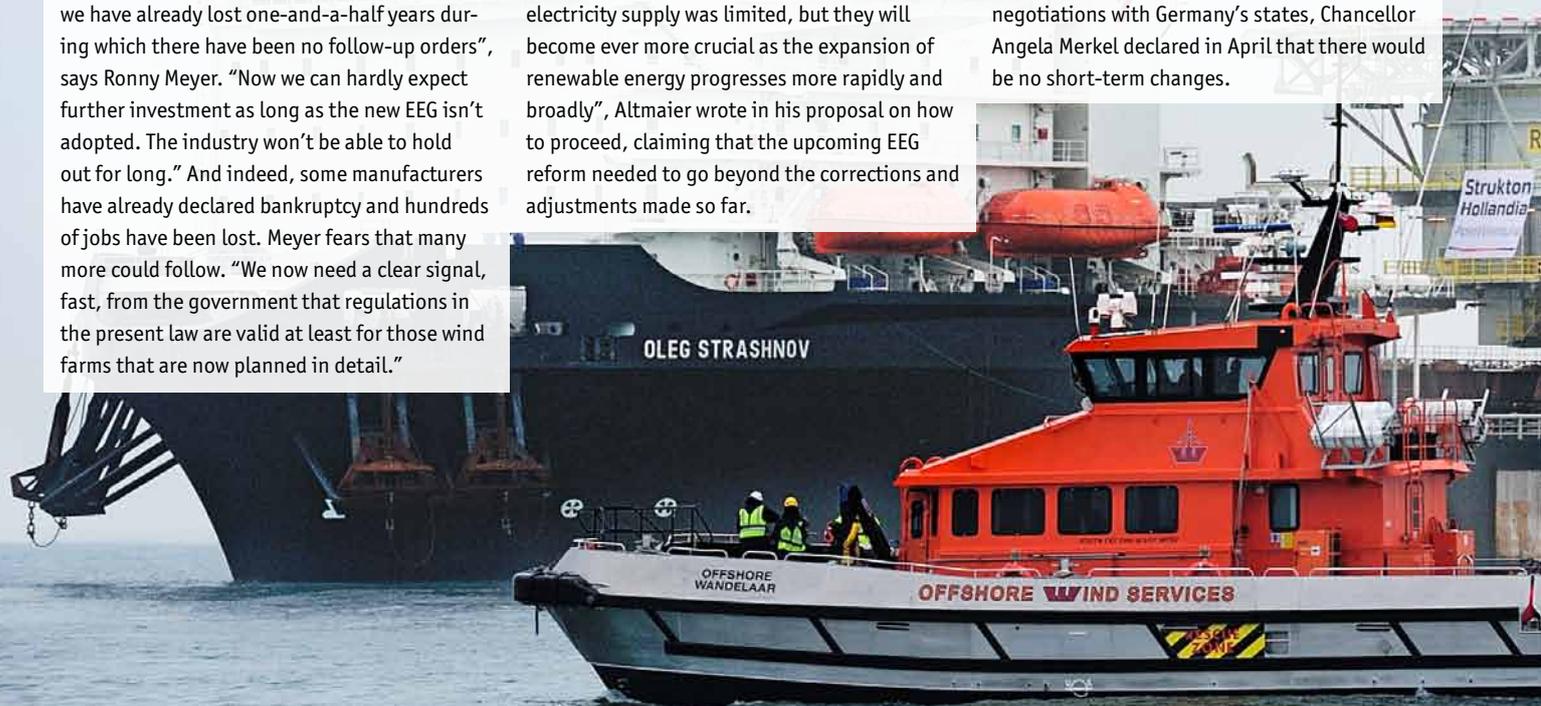
The nuclear disaster in Japan in March 2011 led to a U-turn in Germany’s energy policy –within a few weeks the German government decided to completely phase out nuclear energy by 2022. Offshore wind energy was again defined as a mainstay for the electricity supply of the future – but here developments were not progressing as planned, with the result that subsidy conditions were improved again within a more comprehensive EEG amendment. “Only when several offshore wind farms have been built and we have gained relevant experience can we expect risks and costs to go down”, wrote the environment ministry in a commentary on these changes. Since 1 January 2012, the deadline for the sprinter bonus has no longer been in place and therefore the initial feed-in tariff is generally 15 cents per kWh. The new amendment also introduced an acceleration model, valid until 2018, in which wind farm operators can opt for a higher initial feed-in tariff of 19 cents per kWh to refinance their projects more rapidly – but which is paid for only eight years instead of twelve. And finally, the beginning of the degression was pushed back another three years to 2018, with a percentage rate of 7 instead of 5 percent. Looking back, Ronny Meyer, managing director of the WAB Wind Energy Agency, believes that the sprinter bonus was a very significant milestone in developments: “That this was integrated into the initial feed-in tariff along with other improvements was extremely helpful for the further development of offshore wind energy in Germany.”

The current debate about the Renewable Energy Act (EEG) of the future

In the meantime, the first phase is successfully underway. In addition to the Alpha Ventus test field, the Baltic 1 wind farm in the Baltic and parts of Bard Offshore 1 in the North Sea are already feeding power into the grid. Several other wind farms are currently under construction. By the end of 2015, installed capacity is expected to reach about 3,000 MW. But it is becoming more and more clear how unlikely it is that the German government's political objective of 10,000 MW by 2020 can be achieved – especially because there is now no telling how and, in particular, when the second phase will proceed. At last year's WINDFORCE 2012, the dominant themes were the problems and delays facing grid connection. In this context, the government has since then improved framework conditions in various ways. Meanwhile, it is the uncertainty about future feed-in tariff levels that make calculations for other projects virtually impossible and seriously impede investment. "Because of the problems with grid connection, we have already lost one-and-a-half years during which there have been no follow-up orders", says Ronny Meyer. "Now we can hardly expect further investment as long as the new EEG isn't adopted. The industry won't be able to hold out for long." And indeed, some manufacturers have already declared bankruptcy and hundreds of jobs have been lost. Meyer fears that many more could follow. "We now need a clear signal, fast, from the government that regulations in the present law are valid at least for those wind farms that are now planned in detail."

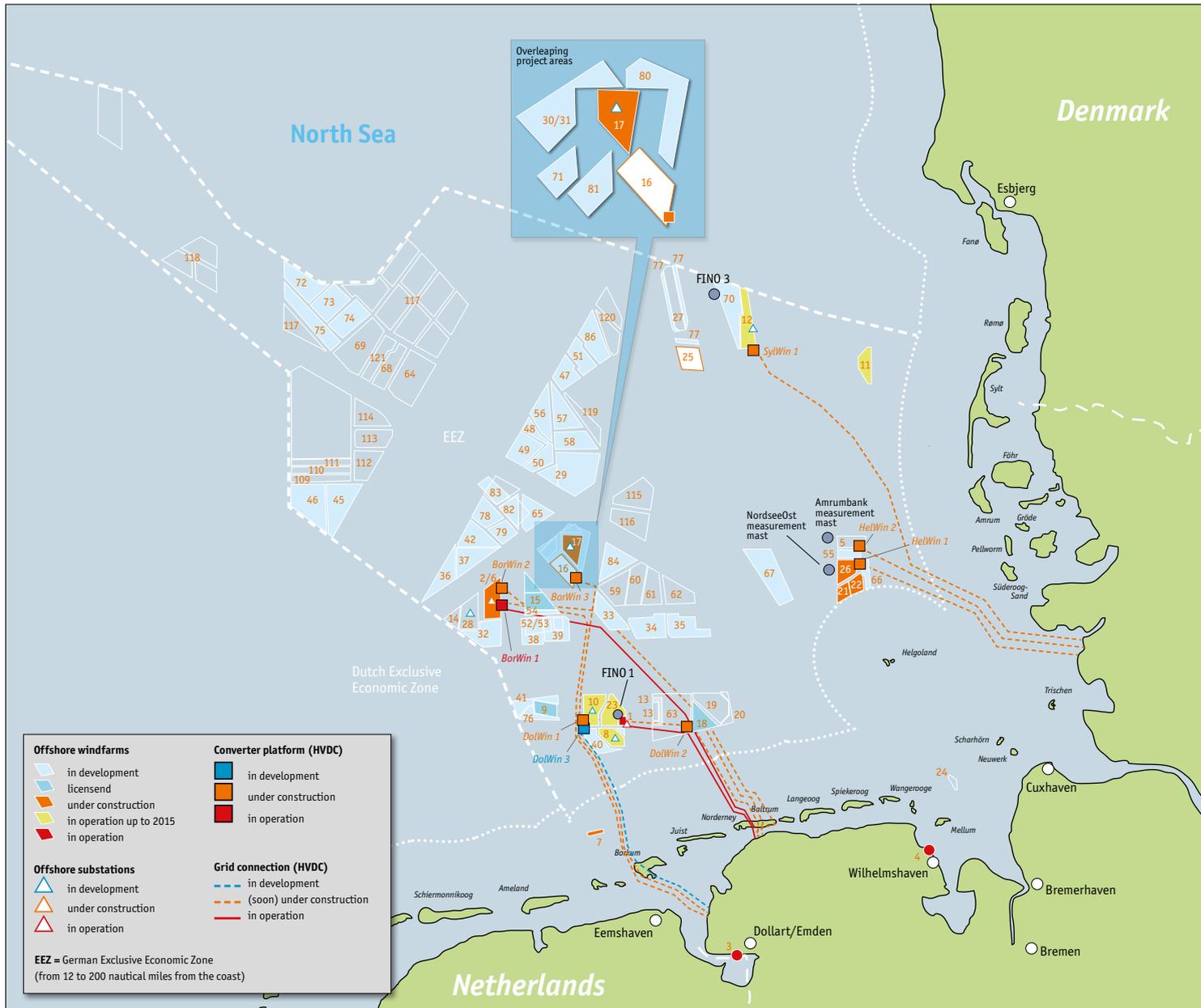
But why is a fundamental revision of the EEG necessary? Peter Altmaier, minister for the environment, argues that inadequate depression regulations have in some ways led to overcompensation, and that this could prohibit the most rapid possible achievement of commercial viability for renewable energies. It raises the risk that implementing the energy turnaround could generate avoidable additional costs for households and businesses. Moreover, the current law is focused only on the quantitative expansion of renewable energies and has no influence on their qualitative composition, production time, distribution throughout the country, or their interaction with energy production from conventional sources and the expansion of grid networks. A major problem so far in the energy turnaround is the lack of coordination between players at various governmental and non-governmental levels. "The deficiencies mentioned here were of little importance as long as the share of renewable energies in the electricity supply was limited, but they will become ever more crucial as the expansion of renewable energy progresses more rapidly and broadly", Altmaier wrote in his proposal on how to proceed, claiming that the upcoming EEG reform needed to go beyond the corrections and adjustments made so far.

One specific issue in the current federal election campaign is the amount of the EEG surcharge with which Germany's electricity consumers are presently financing the expansion of renewable energies. At the turn of the year, consumers had to pay a significant increase in the surcharge of nearly 1.7 cents per kWh, bringing the surcharge up to a total of 5.28 cents per kWh today. Further increases in coming years are already in sight. To counteract this and to keep the surcharge stable at least in 2014, Altmaier early this year presented his idea of an "electricity price brake" which proposed various measures to be implemented before the general election. This paper caused a loud outcry in the industry – mainly because the minister's plans would have intervened in the continuance of present regulations, and to some extent would have significantly reduced the feed-in tariffs for existing facilities and for facilities commissioned on or after 1 August 2013. In the end, Altmaier's proposals failed. After fruitless negotiations with Germany's states, Chancellor Angela Merkel declared in April that there would be no short-term changes.



The electricity price brake is no longer on the table, but the confusion it created and the damage already incurred have far from disappeared. For the time being, international observers are under the fatal impression that there is no investment security in Germany. "Policy makers have simply not understood that we should not alienate investors", Ronny Meyer points out. In the offshore wind energy sector, several years pass between an investment decision being taken that is worth more than a billion euros and the first revenue coming in. Stable conditions and planning reliability are essential for the volume of money and the periods of time involved. It's only when there is dependability that investments of this kind can really be activated and new contracts awarded. Meyer therefore calls on policy makers to exercise damage control. "The feed-in tariff that is valid today must now be made binding for those investments already made in offshore wind energy projects and for those to be activated in the near future."





NORTH SEA

No	Project name	18	Gode Wind I	19	Gode Wind II	20	Gode Wind III	21*	Meerwind Süd	22*	Meerwind Ost	23*	MEG 1	24	Nordergründe	25*	Nördlicher Grund	26*	Nordsee Ost	27	Sandbank 24	28	Weja Mate																																																																																																																		
OPERATIONAL																																																																																																																																									
1	alpha Ventus	29	Aiolos	30	Albatros	31	Albatros 1	32	Aquamarin	33	Area C I	34	Area C II	35	Area C III	36	Austerngrund	37	Bernstein	38	Bight Power I	39	Bight Power II	40	Borkum Riffgrund II	41	Borkum Riffgrund West II	42	Citrin	43	Diamant	44	Euklas	45	GAIA I	46	GAIA II	47	GAIA III	48	GAIA IV	49	GAIA V	50	Global Tech II	51	Global Tech III	52	He Dreht II	53	Hochsee Testfeld Helgoland	54	Horizont I	55	Horizont II	56	OWP Gannet	57	OWP Heron	58	OWP Seagull	59	OWP Petrel	60	Innogy Nordsee I	61	Jules Verne	62	Kaikas	63	Kaskasi	64	Meerwind West	65	Nautilus	66	Nemo	67	Nordpassage	68	Notos	69	HTOD 1***	70	HTOD 2	71	HTOD 3	72	HTOD 4	73	OWP West	74	Sandbank 24 Extension	75	Sea storm I	76	Sea storm II	77	Sea Wind I	78	Sea Wind II	79	Sea Wind III	80	Sea Wind IV	81	Skua	82	Weiß Bank (Cancelled)	83	Witte Bank	84	Prowind 1	85	Prowind 2	86	Prowind 3	87	Neptun (A)	88	Neptun (B)	89	Neptun (C)	90	Neptun (D)	91	Neptun (E)	92	Enova Offshore NSWP	93	TAGU	94	Mainstream	95	Norderland	96	HTOD 5***



BALTIC SEA

No	Project name	WIND FARMS UNDERGOING LICENSING PROCEDURES
OPERATIONAL		
88	Breitling / Rostock	94 Adlergrund 500
89	Baltic 1	95 Adlergrund GAP
LICENSED WIND FARMS		
90	Arkona Becken Südost	96 Adlergrund Nordkap
91**	Baltic 2	97 Arcadis Ost 1
92	Geofree	98 Arcadis Ost 2
93	Wikinger (ehem. Ventotec Ost 2)	99 ArkonaSee Ost
		100 ArkonaSee West
		101 ArkonaSee Süd
		102 Baltic Power East
		103 Baltic Power West
		104 BalticEagle
		105 Beltsee
		106 Beta Baltic
		107 Strom-Nord
		108 Windanker

* In operation up to 2015
 ** In operation up to 2013
 *** HTOD - HOCHTIEF Offshore Development Solutions HTODS S.á.r.L.



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WeserWind GmbH

Innoven GmbH, www.innoven.de

Windhaus

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www.iwes.fraunhofer.de

Planned quay length of 100 metres

IWES Rotor Blade Test Center

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In the north

Offshore quays as far as one can see



Container Terminal 1

MWB Motorenwerke Bremerhaven AG
www.mwb.ag

Lloyd Offshore Bremerhaven GmbH
www.lloydwerft.com

Offshore-Terminal ABC-Halbinsel

Contact: Nils Schnorrenberger
schnorrenberger@bis-bremerhaven.de
www.bis-bremerhaven.de

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“Because the effort in drawing in business and research has been so successful, the OTB will add to this attraction and continue to maintain Bremerhaven’s role as a premier location for expertise.”

Andreas Wellbrock, Managing Director BLG WindEnergy Logistics

Experience Bremerhaven’s ports and industrial areas tailor-made for your offshore project!

Over the last ten years Bremerhaven, which has always been associated with logistics and maritime industry, has worked hard to make the offshore industry feel at home at the Weser estuary! Today the entire value chain of the wind energy business is represented here, able to benefit from this unique development.

When good becomes perfect ...

Ports, which can handle heavy load, space for the pre-assembly and the shipping of offshore wind turbines: Bremerhaven scores with a very attractive port infrastructure. And still we can offer more: Recent development activities generated new commercial as well as industrial space. Also the planned OTB Offshore Terminal Bremerhaven will expand our position as the European port and industrial centre for the offshore wind market.

The energy turnaround starts at our quays! **Be part of it!**

Conference Programme Overview

TUESDAY, 4 JUNE 2013

- 1 p.m. Opening of registration
1.30 p.m. Opening of Workboats in Water Show
- 5 p.m. **OPENING OF THE CONFERENCE / KEYNOTE SPEECHES – ROOM 1**
Words of welcome from:
- Ronny Meyer, Managing Director, WAB
 - Dr Joachim Lohse, Senator for Environment, Construction and Transport, Freie Hansestadt Bremen
 - Markus Rieck, Commercial Project Director – Offshore Wind, ALSTOM Deutschland AG
 - Thorsten Schwarz, Senior Vice President, General Cable Europe & Med
- 6.30 – 7.30 p.m. **PANEL DISCUSSION – ROOM 1**
Offshore wind energy as the foundation of the energy turnaround –
 New jobs under reliable conditions
- 7.30 – 11 p.m. **RECEPTION / NETWORKING – FOYER OF THE CONFERENCE CENTER**

WEDNESDAY, 5 JUNE 2013

- | | | | |
|---|--|--|---|
| <p>9.30 a.m. – 1 p.m.</p> <p>{11 – 11.30 a.m.
Coffee break}</p> | <p>SESSION A
ROOM 1</p> <p>Cost reduction – what can we learn from other Countries and Sectors?</p> | <p>SESSION B
ROOM 3</p> <p>Projects – first lessons learned and outlook</p> | <p>SESSION C
ROOM 2</p> <p>IWES technical session – structural health and condition monitoring</p> |
|---|--|--|---|

————— Lunch and Workboats in Water Show —————

1 p.m. – 3 p.m.

- | | | | |
|-------------------|--|--|---|
| <p>3 – 5 p.m.</p> | <p>SESSION D
ROOM 1</p> <p>Cost reduction II – technical pathways to cost reduction</p> | <p>SESSION E
ROOM 3</p> <p>Offshore turbines – innovations and operational experience</p> | <p>SESSION F
ROOM 2</p> <p>Nature conversation – research findings and technical solutions</p> |
|-------------------|--|--|---|

————— WINDFORCE Dinner —————
 REpower Systems Bremerhaven
 7.30 – 11 p.m.

WINDFORCE 2013

Bremerhaven

THURSDAY, 6 JUNE 2013

<p>9.30 a.m. – 1 p.m.</p> <p>{11 – 11.30 a.m. Coffee break}</p>	<p>SESSION G ROOM 3 Offshore vessels – new build experiences and future concepts</p>	<p>SESSION H ROOM 1 Offshore grid – technical and political solutions</p>	<p>SESSION I ROOM 2 IWES technical session – maritime technologie</p>
<p>————— Lunch and Workboats in Water Show —————</p> <p>1 p.m. – 3 p.m.</p>			

2 – 2.45 p.m. **WORKBOATS IN WATER SHOW DISCUSSION**

<p>3 – 5 p.m.</p>	<p>SESSION J ROOM 3 Financing – closing the gaps in financing</p>	<p>SESSION K ROOM 1 Maintenance and logistics – challenges and answers</p>	<p>SESSION L ROOM 2 IWES technical session – support structures</p>
<p>————— WINDFORCE Party —————</p> <p>7.30 – 11 p.m.</p>			

FRIDAY, 7 JUNE 2013

ALL-DAY TOUR TO WIND FARMS IN THE NORTH SEA: OFFSHORE WIND ENERGY "LIVE"

Departure from Hamburg 6 a.m.
Departure from Cuxhaven 9 a.m.

Return to Cuxhaven around 7 p.m.
Return to Hamburg around 9 p.m.

We reserve the right to change the programme without prior notice.

▶ Simultaneous German / English
as well as English / German
translation is available
throughout the entire conference.



WINDFORCE 2013 Conference Programme

TUESDAY, 4 JUNE 2013

5 p.m. **OPENING OF THE CONFERENCE / KEYNOTE SPEECHES**

ROOM 1

Words of welcome from:

- ▶ Ronny Meyer, Managing Director, WAB
- ▶ Dr Joachim Lohse, Senator for Environment, Construction and Transport, Freie Hansestadt Bremen
- ▶ Markus Rieck, Commercial Project Director – Offshore Wind, ALSTOM Deutschland AG
- ▶ Thorsten Schwarz, Senior Vice President, General Cable Europe & Med

6.30 –
7.30 p.m.

PANEL DISCUSSION

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ROOM 1

Offshore wind energy as the foundation of the energy turnaround – New jobs under reliable conditions



Presenter: Andreas Neumann, Radio Bremen TV

Andreas Neumann is an ARD television editor with Radio Bremen. He is presenter of the regional TV programme “buten un binnen” as well as special broadcasts on Channel 1, Channel 3 in North Germany and 3Sat. For a number of years he presented the Morgen programme and his own comedy radio programme on Bremen 1. He is also admitted as a lawyer in Bremen.

- ▶ **Stephan Kohler**, Deutsche Energie-Agentur (DENA)
- ▶ **Dr Klaus Meier**, wpd AG/Chairman of the Executive Board of the WAB
- ▶ **Jean Huby**, AREVA Wind GmbH
- ▶ **Dr Georg Nüsslein**, CSU/Member of the German Bundestag
- ▶ **Thorsten Staffeldt**, FDP/Member of the German Bundestag
- ▶ **Ralph Lenkert**, Die Linke/Member of the German Bundestag

7.30 –
11 p.m.

RECEPTION / NETWORKING

sponsored by



FOYER OF THE CONFERENCE CENTER

Opening of the Conference – Room 1



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Answers for energy.

WEDNESDAY, 5 JUNE 2013

9.30 a.m. – **SESSION A** – Cost reduction
1 p.m.



Chair: Wind Energy Agency WAB, CEO, Ronny Meyer

Ronny Meyer became managing director of the Wind Energy Agency in August 2010. He combines a technical understanding of the industry with extensive knowledge of energy provision and the energy market.



1 Cost reduction pathways for Germany

Stiftung Offshore-Windenergie, Managing Director, Andreas Wagner

Since May 2008 Andreas Wagner has been working as managing director of Stiftung Offshore-Windenergie, the German Offshore Wind Energy Foundation, with offices in Varel, Lower Saxony and Berlin. Prior to that, he worked for GE Energy on european technology external programmes and was head of the public affairs, marketing and communication activities of the European wind business sector. From 1998 to 2000, Andreas was head of the Federation of German Wind Power (FGW). He started his professional career as scientific assistant of Dr Hermann Scheer, MP. Andreas holds a Masters in Political Science.



2 Efficient pile driving, a combination of knowledge and standardisation

MENCK, Sales Manager Windpower Europe, Nils Raab

Nils Raab holds a diploma degree in Industrial Engineering with key aspects of Marketing and Mechanical Engineering of the University of Applied Sciences in Lübeck, Germany. Since 2006 Nils Raab has worked in the wind power business. At Nordex he started his career and gained experience in the technology of a wind turbine and the onshore wind energy market. At Roxtec, a specialist for certified cable seals, he was the Sales / Project Manager responsible for the Baltic 1 substation of EnBW. Last year he began work at Menck as Sales Manager in charge of the European offshore wind energy market.



3 Reducing costs: DONG Energy's approach to industrialisation

DONG Energy, Head of Regulatory Affairs & Stakeholder Management, Manfred Dittmer

Manfred Dittmer is a graduate in commercial law. From 2002 to 2005 he was a senior consultant in funding consultancy and project development with Arthur Anderson / Ernst & Young in Hamburg and Brussels. From 2005 to 2011 he was responsible for public funding/state aid law, public affairs, national and international location projects at Conergy AG, Hamburg, as well as part of the innovation management team at CO2 Handel & CDM/JI Projekte. Since 2011 he has been working at DONG Energy Renewables Germany as head of regulatory affairs, stakeholder management and strategy.

Coffee break

11 a.m. – 11.30 a.m.



4 Standardizing offshore installation processes

Siemens Wind Power, Senior Project Manager, Niels Bjaert, Denmark

Certified Senior Project Manager working for Siemens Wind Power since 2007. Holds two world records: PM for the Horns Rev 2 project finished in 2010 and for the London Array project, yet to be finished. Niels Bjaert holds a degree in B.Sc.E.Eng and has completed studies in management, sales and marketing, economics, and different project management skills. He has worked in project management in various energy businesses for more than 15 years. He also has five years' experience in general management and has been active in sales worldwide for 10 years.



5 Lessons learned from the Big Six

A2SEA Deutschland, General Manager, Martin Huss

Chief Sales Officer of A2SEA A/S and General Manager A2SEA Deutschland GmbH since 2012. Sales and Marketing Director of A2SEA 2002-2007. More than 18 years of experience in the offshore and marine sector from managing positions at Vestas Wind Systems, Airtricity, SSE (Scottish and Southern Energy Plc) and A2SEA. Considerable sales and management experience from similar positions at Deutsche Wind Consult GmbH, KOCKS Consult and Miljöteknik Aps. Founding member of WAB Wind Energy Agency as well as EEHH – Hamburg Renewables Cluster Agency.



6 Offshore wind energy – decrease costs and increase value

Vattenfall Europe Windkraft, Programme Manager LEC Reduction, Dr. Johannes Kammer

Following his geography studies in Hamburg, Johannes took up a position with Vattenfall Europe Windkraft GmbH. Since 2011 he has been coordinating the joint venture for the DanTysk offshore wind farm. In 2012 he took on the role as Programme Manager for LEC Reduction at Vattenfall Offshore Wind, an initiative of BU Offshore Wind Projects and BU Generation Wind. Before joining Vattenfall Johannes worked with REpower Systems AG and conducted his PhD studies on "The wind energy industry: Evolution of parties and corporate structures in a growth industry with spatial perspective".

————— Lunch and Workboats in Water Show —————

1 p.m. – 3 p.m.

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WEDNESDAY, 5 JUNE 2013

B

9.30 a.m. – **SESSION B** – Projects
1 p.m.



Chair: Project Manager for Political Communication, Offshore-Wind-Allianz (OWIA) Berlin Office, Urs Wahl

Urs Wahl joined WAB in 2011 and moved to the OWIA Berlin Office in October 2012. Previously he has worked for Thales Instruments and also for a member of the European Parliament. Mr. Wahl has studied Political Science at the Universities of Bremen, Germany and Tampere, Finland.



7 Service plans for EnBW Baltic 1 and EnBW Baltic 2, and initial operating experience with the EnBW Baltic 1 offshore wind farm

EnBW Erneuerbare Energien, Head of O&M department Offshore Operations, Michael Boll

Michael Boll has 25 years relevant experience: 1987 – 1999 grid operation Badenwerk AG, September 2001 EDF head office “research & development”, January 2005 EnBW Regional AG Head of Grid construction “technics networks”, July 2008 Senior Manager renewable energies electrical installations and grid connection. Since September 2009 he has been Head of O&M department Offshore Operations.



8 Sustainable methods for successful power cable installation

General Cable - Norddeutsche Seekabelwerke, Senior Vice President Sales & Marketing Turnkey Projects and Managing Director NSW GmbH, Thorsten Schwarz

Thorsten Schwarz joined Norddeutsche Seekabelwerke GmbH (NSW) as Senior Vice President Sales, Marketing and Projects in 2009. Shortly afterwards he was appointed Managing Director. From October 2012 onwards Thorsten Schwarz, in parallel to his Managing Director role for NSW GmbH, took on a Corporate Sales role for the Europe & Mediterranean group of General Cable, looking after the turnkey projects in HV/EHV land cable and subsea cable markets with production capacities in Germany, France, and Spain. A graduate of the University of Stuttgart, Thorsten Schwarz holds an aerospace engineering degree as well as an Executive MBA degree from INSEAD.



9 How to build Denmark’s largest wind farm

DONG Energy Wind Power A/S, EPC Director, Claus Bøjle Møller, Denmark

EPC Director for Anholt Offshore Wind Farm since the project start-up in 2009. Project manager for development and construction projects at DONG Energy for seven years. More than ten years’ experience in the wind industry. M.Sc.Eng from the Technical University of Denmark.

Coffee break

11 a.m. – 11.30 a.m.



10 Construction status and progress of Riffgat offshore wind farm

Offshore Wind Farm RIFFGAT, Leader asset management Wind Ressort, Wilfried Hube

Head of group installing offshore wind farm project, and general manager of Alpha Ventus project; since 1989 in various divisions of EWE and managing director of EWE since the offshore test field project began.



11 Thornton Bank Phase II and III

REpower Systems SE, Vice President Offshore Projects, Cornelius Drücker

Starting within REpower as the Senior Project Manager for the Ormonde Offshore Wind farm, Mr Drücker was promoted to Vice President Offshore Projects in 2010. He is responsible for the execution of all offshore projects after contract signature up to hand-over to the client. With the academic background of a degree in Civil Engineering, Mr Drücker has specialized in offshore activities and has worked since 1998 in multiple global projects, including civil (Öresund bridge), oil & gas (installation and removal of fixed and floating structures) and wind (from soil investigation to wind farm installation).



12 Hochtief for GlobalTech 1: lessons learned/industrial tripod

Hochtief Solutions, Project Manager, Lutz Siemers

Lutz Siemers, born in 1965, holds a degree in Civil Engineering from the University of Applied Sciences in Lübeck (1989). He has been involved in different roles in large civil and offshore wind projects (since 2003) in countries such as Germany, Denmark, United Kingdom, France, Thailand, Indonesia and Nigeria. Since 2009 Lutz has worked for HOCHTIEF SOLUTIONS AG and is in charge of HOCHTIEF's involvement in the GLOBAL Tech 1 offshore wind project as project leader. The work comprises the installation of 80 tripod foundations and AREVA M-5000 wind turbine generators.

————— Lunch and Workboats in Water Show —————

1 p.m. – 3 p.m.

WEDNESDAY, 5 JUNE 2013

9.30 a.m. – **SESSION C** – Structural Health
and Condition Monitoring



Session C — Room 2



**Chair: Fraunhofer IWES, Senior scientist competence centre rotor blade,
Dr Alexandros Antoniou**

Dr Alexandros Antoniou is a senior scientist in the Fraunhofer IWES institute, responsible for scientific development in the department of Competence Center Rotor Blades. He is a stress analyst with expertise in composite material/component/wind turbine blade simulation and testing. In the framework of several scientific projects, he has also been working in the field of non-destructive evaluation & structural health monitoring of composite structures with a focus on ultrasonic techniques, i.e. conventional ultrasonics, acoustic emissions and acousto-ultrasonics.



13 Condition monitoring of rotor blades:
approaches, algorithms, experiences

Bosch Rexroth Monitoring Systems, Head of Sales & Marketing, Dr John Reimers

John Reimers has been Head of Marketing and Sales at Bosch Rexroth Monitoring Systems for seven years, three of these years at former IGUS ITS before Bosch Rexroth took over. He brought the Rotor Blade Condition Monitoring System BLADEcontrol onto the market and played his part in making it standard or optional equipment for many wind turbine types. Having already worked in the energy sector before, he brought a great deal of technological expertise to the promoting of BLADEcontrol.



14 From laboratory to field measurements for wind turbine
condition monitoring

**Centre for Renewable Energy Sources and Saving (CRES), Head of the blade testing laboratory, Laboratory for Wind & Wind Turbine Testing, Wind Energy Department,
Dr Denja Lekou, Greece**

Dr Denja Lekou is a mechanical engineer with a PhD in the structural reliability of composite structures. From 1995 to 2000 she worked in the Mechanical Engineering & Aeronautics Department of the University of Patras as a postgraduate student on research projects related to wind energy. From 2000 she started her cooperation with the wind energy section of CRES and since 2005 she has been Head of the Blade Testing Service of the wind turbine testing laboratory of CRES. Her main areas of work include the structural design of composites structures and the mechanical testing of blades, wind turbines and components.



15 CMS-based prognosis of the residual life of drive-train
components in wind turbines

**Fraunhofer IWES, Department for Drive and System Technology, Senior Scientist,
Dr Katharina Fischer**

Katharina Fischer graduated in electrical engineering in 2002 and was awarded a PhD degree in mechanical engineering in 2008, both from Leibniz University, Hanover, Germany. From 2009, she worked as a postdoctoral researcher at Chalmers University of Technology in Gothenburg, Sweden, until she joined the Fraunhofer Institute for Wind Energy and Energy System Technology (IWES) in Hanover, Germany, as a Senior Scientist in autumn 2012. Her research interests include the reliability, failure analysis, condition monitoring and maintenance of wind turbines.



16 Condition and structural health monitoring – components of an integrated monitoring plan for wind turbines

Wölfel Beratende Ingenieure, Business Area Manager, Carsten Ebert

Carsten Ebert is Manager of wind energy and structural dynamics business areas at Wölfel Beratende Ingenieure. He joined the company in 2008 and developed with his team structural health monitoring solutions, especially for the wind energy industry. Furthermore he is coordinating and analysing complex measurement campaigns in structural dynamics and vibrations at different industrial sectors. Prior to that he worked as a scientific assistant and wrote his dissertation in the field of structural health monitoring. Mr Ebert studied civil engineering in Leipzig (Germany).

Coffee break

11 a.m. – 11.30 a.m.



17 Asset condition monitoring for offshore wind turbines

GMA Group / Mistras Group, Managing Director, Prof Phillip T. Cole, Great Britain

Phillip Cole is Managing Director of Mistras Group Limited and Executive Vice President of Mistras Group Inc., a listed company on the New York stock exchange. Mistras specialise in Asset Integrity using inspection and advanced on-line methods. Prof. Cole is a physicist and electronic engineer, and has more than thirty years experience in applying non-destructive testing and integrity monitoring to a wide range of steel and concrete process equipment and civil structures, know-how that has more recently also been applied to wind turbines.



18 Foundation monitoring – an overview of methods and measurement solutions

airwerk, Technical Director, Jens Krieger

In the last 15 years Jens has planned and implemented meteorological and structural measurement systems for many offshore wind farms including Alpha Ventus, Arkona Becken, AmrumBank West and Robin Rigg. Since joining airwerk GmbH as Technical Director in 2011, his main focus has been on consulting on and creating measurement concepts and implementing measurement systems to determine the structural integrity of offshore wind turbines. This involves all aspects of foundation monitoring, e.g. the integration of MetOcean data with measurements of structural stress, inclination, corrosion and scour.



19 Communication Offshore – Online between sender and receiver

DOC Deutsche Offshore Consult, Senior Consultant, Jürgen Mackeprang

Jürgen Mackeprang, a graduate in transport engineering, has been working in the field of on- and offshore wind energy since 1994. He began as Project Engineer for heavy lifts and fleet management on behalf of BUGSIER and was involved in one of the first near-shore wind farms, Tunoe Knob in 1995. Further appointments included Project Manager T&I for Multibrid/Pfleiderer with the first M5000 and from 2005 Marine Surveyor and consultant for Möller & Partner in various projects both on- and offshore. Since 2012 he has been working at Deutsche Offshore Consult GmbH (DOC) as Senior Consultant Project Management Marine Operations with the main focus on Heavy Lift, Offshore Transportation and Installation.

Lunch and Workboats in Water Show

1 p.m. – 3 p.m.

WEDNESDAY, 5 JUNE 2013

3 – 5 p.m. **SESSION D** – Cost reduction II



Chair: German Environment Ministry, Head of wind energy and hydropower division, Dr Stefanie Pfahl

Dr Pfahl has been working for the German Environment Ministry since 2005. She has been head of the unit for wind energy and hydropower since March 2013. She had previously worked in international environmental policy making, on resource efficiency issues and environmental product policies.



20 Life cycle cost reduction through new thermal sprayed coatings

International Zinc Association, Director of Technology and Market Development, Dr Frank E. Goodwin, USA

Dr Frank Goodwin serves as Director of Technology and Market Development at International Zinc Association. Dr Goodwin joined International Lead Zinc Research Organization (ILZRO) in 1982 and was Executive Vice President of ILZRO at the time of the merger between ILZRO and IZA in 2004. He earned his S.M. and Sc.D. degrees in Materials Engineering from the Massachusetts Institute of Technology in Cambridge, Massachusetts, USA together with a B.Sc. degree (with distinction) in Materials Science and Engineering from Cornell University, Ithaca, New York.



21 Innovative logistics systems for reducing power generation costs

BLG Logistics Solutions, Projektmanager FuE, Michael Görge

Michael Görge is responsible for research and development projects at BLG WindEnergy Logistics, with a focus on the areas of logistical process modelling and design and the simulation of complex flows of materials. A qualified industrial engineer, Mr Görge worked for five years as a scientific research associate at the BIBA-Bremer Institut für Produktion und Logistik prior to taking up his appointment at BLG.



22 Challenging the elements of nature for offshore wind farm construction

GeoSea, Business Development Manager, Bas Nekeman, Belgium

After graduating from Delft University of Technology, The Netherlands, and working in marine and civil contracting for ten years, Bas Nekeman began work in the offshore wind industry in 2010. While the two sectors are similar in many ways, he found there were just as many differences. Following installation work on foundations for the Borkum West II wind farm, Bas now represents GeoSea in Germany in the acquisition and development of new projects. Alongside his responsibility for developing technical and commercial proposals, he is also project director for foundation installation at Borkum Riffgrund 1.



23 Serial production of lattice structures for the foundations of offshore wind turbines

WeserWind GmbH Offshore Construction Georgsmarienhütte, Manager R&D, Dr Sigurd Weise

Sigurd Weise graduated in mechanical engineering from Rostock University in 1992. From 1992 to 1998 he worked as a research engineer in the laser welding of structural steels at BIAS, Bremen; From 1998 until 2009 he was production and plant manager in Tailored Blank manufacturing for automotive industry. Since 2010 he has been working at Weserwind, research and development.



24 The influence of marine warranty surveyors on the progress of construction

Nordwest Assekuranzmakler, Managing Partner, Dr Patrick Wendisch

Patrick Wendisch graduated in Mechanical Engineering and Business Administration and gained a doctorate in Macroeconomics, Growth Economic Policy. He practised his engineering and industrial insurance career at: Munich Re, South Africa; Allianz, HH; Albingia, HH; Hartford Steam Boiler, USA; Commercial Union, London. He is Managing Partner of Lampe & Schwartz Group and of Nordwest Assekuranzmakler (Company of Lampe & Schwartz Group). Dr Wendisch has written several studies for public and private projects and lectured in engineering insurances and offshore wind insurance.

WINDFORCE Dinner

7.30 p.m.

For details see page 66

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WEDNESDAY, 5 JUNE 2013

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3 – 5 p.m. **SESSION E** – Offshore turbines



Chair: FRAUNHOFER INSTITUTE FOR WIND ENERGY AND ENERGY SYSTEM TECHNOLOGY – IWES, Director of the institute, Prof Andreas Reuter

Andreas Reuter works as professor for wind energy at the Leibniz University of Hanover and is managing director of the Fraunhofer IWES with a total of 300 scientific employees and a well-established testing infrastructure. His education background is in aviation and space technology. After completing his doctoral thesis on fatigue in wind turbines at the TU Berlin, he has worked in the wind industry for 15 years for companies such as aerodyn, GE Energy and Bharat Forge as project engineer, director of engineering and managing director before returning to the scientific community in 2010.



25 Installing the first Haliade 6MW-150 offshore in the North Sea during winter

Alstom Wind, Vice-President wind offshore, Frédéric Hendrick

Frédéric Hendrick is 48 years old and currently vice-president Offshore for Alstom Wind. He previously held several industrial positions with Alstom Transport, where he was in charge of rolling stock manufacturing before heading the urban rolling stock (tramways & metros) section, for which he subsequently took responsibility for marketing. He graduated as an electrical engineer and began his career in the automotive industry, working for Peugeot for more than 12 years. He then worked for five years for Pechiney in various manufacturing positions before joining Alstom in 2005.



26 Offshore projects – single blade installation – M5000-135

AREVA Wind, CEO, Executive Vice-President Head of Wind Business Unit AREVA, Jean Huby

Jean Huby is a graduate of the École Polytechnique and the École des Mines and has a degree in economics from the Sorbonne. From 2002 to 2008 he occupied several management positions as a senior official with the European Commission before joining AREVA. In September 2008 he was appointed Senior Vice President of Strategy and was on the board of the former Multibrid GmbH, now AREVA Wind. Until May 2011 he was deputy CEO of AREVA Renewables. Since May 2011 Jean Huby has been Chief Executive Officer of AREVA Wind and Executive Vice President of the wind division within AREVA Renewables.



27 Siemens 6.0MW, the new standard for offshore. Producing more cost efficient energy

Siemens Wind Power, Senior Technical Sales Manager, Anders J. Jensen, Denmark

Anders Jensen has a Mechanical Engineering background. He has 26 years of experience within Siemens Wind Power, first as Head of Quality Assurance, then Head of Service for countries outside Denmark, Head of Projects, Gearbox Coordinator and Senior Proposal Manager in USA – acting as technical expert. He has also further experience with Environmental Certification of Siemens Wind Power, supplier qualification and as lead trainer in Americas for four years. He has previously done design work for wind turbines. At present, Anders is employed as Senior Technical Sales Manager in Siemens Offshore Wind.



28 Two-bladed, yaw-controlled wind turbines – lowering the offshore cost of offshore energy

Condor Wind Energy, CEO, Martin Jakubowski, Great Britain

Martin Jakubowski has worked in the renewable energy industry since 1990. In the nineties he set up the first green electricity utilities distributing electricity to private customers in Germany, Austria and the UK generated exclusively from renewable energies. Since 2000 he has been working on new concepts to lower the electricity generation cost in the offshore environment. He is the founder of Blue H Technologies and Condor Wind Energy, which are engaged in the foundation and wind turbine sides of the industry.

WINDFORCE Dinner

7.30 p.m.

For details see page 66



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Wind Accommodation Modul (WAM)



Windshuttle



Smart Access System (SAS)



Personnel Transport (PTV) 34



Offshore Support Vessel (OSV) 68

WEDNESDAY, 5 JUNE 2013

3 – 5 p.m. **SESSION F** – Nature conservation

F



Chair: IMARE – Institute for Marine Resources, Head of Institute, Dr Hanno Schnars

From 2000-2005 Hanno Schnars studied Chemistry and Physics with subsidiary subjects Pedagogy, Psychology and Philosophy at the Carl-von-Ossietzky University, Oldenburg. From 2005-2008 he worked as a research associate at the Institute for Pure and Applied Chemistry in the working group "Physical Chemistry I". In 2009 he became a Dr sc.Nat. From 2008-2012 he was a research associate at the Fraunhofer IWES and from 2011 deputy departmental manager of Support Structures and Monitoring and group leader of Monitoring and Corrosion. Since 2012 Hanno has been institute director and scientific chief executive of IMARE GmbH.



29 Offshore Foundation Drilling – OFD®

Herrenknecht, Manager of the business sector for energy, Dr Marc Peters

Dr Marc Peters has a degree in civil engineering and a Ph.D. from the University of Aachen, Germany. Since 2004 he has worked for Herrenknecht AG. He started as a personnel assistant to the Board of Directors and has been responsible for research and development as well as product design for utility tunnelling since 2006. His main focus is on the further development of existing technologies in the fields of utility tunnelling, pipeline construction, shaft building, and renewable energies (offshore foundations for wind turbines). The market analysis of new trends and demands, the distribution of new products and methods, and trademark and patent management are also among his responsibilities. Since 2011 he has been director of the energy division at Herrenknecht.



30 Environmental impact assessment for conversation interests in offshore wind farms

IMARE – Institute for Marine Resources, Research Associate, Antonia Dix

Antonia Dix finished her studies at the Christian-Albrechts-University of Kiel with a degree in Biology in 2005 (Main Subject: Marine Biology, Subsidiary Subjects: Zoology, Physical Oceanography) From 2005-2011 she was employed at the Department of Conservation (Nature Conservation Authority of New Zealand), Monitoring of Avifauna. From Jan 2012 - Sep 2012 she worked for a Planning Agency (FÖA Landschaftsplanung GmbH, subject area "species conservation and project development"). Since December 2012 she has been Research Associate at the IMARE (Institute for Marine Resources GmbH), Department Wind Energy / Environment Wind.



31 Mitigation of offshore piling noise

TU Braunschweig, Institute of Foundation Engineering and Soil Mechanics, Research Associate, Benedikt Bruns

Benedikt Bruns studied civil engineering at the Technische Universität Braunschweig. Since 2006 he has been a research associate at the Institute for Soil Mechanics and Foundation Engineering. In recent years he has worked on different tunnel and harbour projects. His first contact with OWA were the research projects FIN03 and ESRa. He is currently working on the development and optimization of the new noise mitigation method of Hydro-Sound-Dampers. His key activities in the field of geotechnics are soil dynamics and all kinds of field measurements.

WINDFORCE Dinner

7.30 p.m.

For details see page 66

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17 – 20 JUNE 2014 IN BREMEN



THURSDAY, 6 JUNE 2013

9.30 a.m. – **SESSION G** – Offshore vessel
1 p.m.



Chair: Wind Energy, Senior Advisor, Christian Nath

Christian Nath studied Naval Architecture at the universities of Hanover and Hamburg. After graduating he worked as a visiting scholar at the University of California in Berkeley. Since 1978 he has been working for Germanischer Lloyd (GL) on various assignments, including wind energy projects, and has worked full time in the wind energy sector since 1989. For the period 1993 to February 2011 he was given responsibility for wind energy within GL and was chairman of the German Wind Energy Standardisation Committee during this time. He was a member of various standardisation committees at the IEC, CENELAC, DIBt and BSH. He retired on 1 January 2012 and works part-time as a senior advisor. He is a member of the steering committee of the European Wind Energy Technology Platform (TPWind) in Brussels. In April 2012 he was awarded the Poul la Cour Prize by the European Wind Energy Association.



**32 SWASH@A&R – yet another innovative vessel
by Abeking & Rasmussen**

**Abeking & Rasmussen Schiffs- und Yachtwerft Aktiengesellschaft,
Sales Director Commercial Vessels, Nils P. Olschner**

Nils P. Olschner studied at the University of Applied Sciences in Kiel and finished his studies with qualification as a Naval Architect. He worked in the project departments at different shipyards in Germany where he gained expertise in the design of specialized ships and project management, mainly for cruise ships and large ferries. Since 2003 he has been Sales Director, Commercial Vessels at Abeking & Rasmussen AG and is responsible for the offshore wind sector, especially for the innovative SWATH@A&R vessels.



33 Operational Performance of the Twin Axe 2610

Damen Shipyards Group, Business Development Manager Offshore Wind, Peter Robert

In his present position Peter Robert is responsible for Business Development activities within Damen Shipyards. His main focus will be the Offshore Wind market. With the political commitment in the EU to cut emissions, the demand for offshore wind energy is set to grow substantially over the next few years. In order to be able to realize the ambitious targets, Damen offers an integrated and complete range of vessels to support offshore wind in the development, installation and operational phase of an offshore wind farm.

Coffee break

11 a.m. – 11.30 a.m.



**34 Wind farm installation vessel propelled by innovative
propulsion units**

Speaker 1: A2SEA A/S, Chief Operating Officer, Hans Schneider, Denmark

Hans Schneider has been Chief Operating Officer of A2SEA since 2008 and was previously Project Director at A2SEA. Prior to this he was Chief Executive Officer (2005-2007) and Chief Operating Officer (2002-2007) at Royal Denship A/S. He has more than 20 years of experience in the

maritime sector, including eight years of experience in the Offshore Supply Fleet (for A.P. Møller Group). Since February 2012 he has been Board Chairman at Nikon Industries A/S.



Speaker 2: Voith Turbo, Sigurd Hildebrandt

Sigurd Hildebrandt has 30 years experience in shipbuilding. He started as an engineer at the Blohm + Voss yard, where after a short while he took over the responsibility for big export contracts. In 2001 he became Managing Director of a medium sized shipyard, where he followed up projects of building monopiles converting the yard's production capabilities to the renewable sector. For 5 years he has worked with Voith Turbo, first as International Sales Manager for Voith Schneider Propeller and now heads up the Hamburg sales office. Sigurd Hildebrandt holds an MSC degree in Naval Architecture.



35 Newbuilding experience from a classification perspective

Germanischer Lloyd GL, Ship Type Expert OSV and Working Vessels, Jan Schreiber

Jan Schreiber is a graduate naval architect and a practical shipbuilder. For 7 years Jan Schreiber has worked in classification as an approval engineer in the stability department of GL. He spent two years in planning approval in Korea. He contributes to the development of stability regulations as a member of the GL-team advising the German delegation at IMO. Jan Schreiber took over the tasks as GL's ship type expert for Offshore Service and Working Vessels in July 2012.



36 Fr. Fassmer Innovative Solutions based on proven experience – From Offshore Vessels to Smart Access Systems

Speaker 1: Fassmer, Head of R&D, Thomas Boekholt

During the first period of his professional life Thomas Boekholt sailed for as machinery engineer. At the early 80s he studied Naval Architecture & Marine Engineering. From 85 to 2001 he worked as Outfitting Manager on Shipyards. In 2001 he joined Fassmer and became Head of Deck Equipment and Boat Department. Beside of his daily business as Head of the R&D, he works as a lecturer for ship equipment at the Cruise Academy and is member of the Technical Committee on Risk Management of the GL.



Speaker 2: Fassmer, Sales & Marketing Manager, Thomas Sass

Thomas Sass is a German naval architect. He fulfilled his military service onboard a minesweeper in the German Navy and then studied naval architecture at Bremen University of Applied Sciences (Hochschule Bremen), graduating in 1996. He joined Fassmer as a Design Engineer in the same year. Four years later he moved to Parametric Technology Cooperation (PTC) as an Application Engineer. In 2001 Thomas returned to Fassmer as Project Manager and was responsible for the delivery of several special purpose vessels. His current position is Sales and Marketing Manager at Fassmer, with responsibility for the sales activities within the shipbuilding division.

————— Lunch and Workboats in Water Show —————

1 p.m. – 3 p.m.

2 p.m. –
2.45 p.m.

PUBLIC DISCUSSION

at the Workboats in Water Show

For details see page 48

THURSDAY, 6 JUNE 2013

9.30 a.m. – **SESSION H** – Offshore grid
1 p.m.



Chair: ECN (Wind Energy) We@Sea, Jos Beurskens, The Netherlands

Jos Beurskens currently works as an independent consultant on SET Analysis. From 1989 to 2004 he was head of the renewable energy and wind energy divisions at the Energy Research Centre (ECN) in the Netherlands. Between 1986 and 1989 he was a programme manager and researcher at ECN. From 1981 to 1986 he worked as manager of the National Wind Energy Programme. From 1976 to 1981 he conducted research into the application of renewable energy in developing countries. Jos is a founding member of the Netherlands Wind Energy Association (NEWIN, EWEA, EUREC Agency, European Academy of Wind Energy, International Meeting of Test Stations). In 2008 he was awarded the Poul la Cour prize, presented by Mr Janez Potočnik, EU Commissioner for Science and Research. In November 2009 he gained an honorary doctorate from the University of Oldenburg, Germany.



37 Grid connection of offshore wind farms – an update

Offshore Wind Energy Foundation, Chairman of the Board, Jörg Kuhbier

Jörg Kuhbier has been active since 1969 in various agencies of the City of Hamburg, and since 1981 as Senate director and senior official in the city's environment agency. From 1983 to 1991, he was a member of the Hamburg Senate, responsible for environmental issues, and supply, disposal and energy policies. Since 1991, he has been a lawyer in Hamburg and since 2000 a senior partner of the KUHBIER Rechtsanwälte law firm. Honorary activities include his positions as chairman of the board of the German Offshore Wind Energy Foundation and as executive director of the Offshore Wind Energy Forum.



38 Liability regularisation and system change for connecting offshore wind farms

TenneT Offshore, Member of the Board, Wilfried Breuer

Wilfried Breuer is an expert in power transmission technology and has more than 20 years of expertise in this sector. Since his graduation as an electrical engineer he has been working for several business units of Siemens AG in South Africa and Germany. He was Vice President of the Power Transmission & Distribution Group and CEO of the Business Unit Power Transmission Solutions at Siemens. Since March 2012, Wilfried has been working as Managing Director for projects at TenneT Offshore GmbH in Bayreuth. As Managing Director he is responsible for all offshore grid connection projects in the German North Sea.



39 Dynamic braking systems for offshore HVDC transmission

Alstom Grid – Power Electronics Activity, R&D Director, HVDC, Colin Davidson, Great Britain

Colin Davidson graduated in 1987 from the University of Cambridge, UK with a degree in Natural Sciences, specialising in Physics and joined Alstom (then GEC) in Stafford, UK in 1989. Since then he has held a number of technical and technical management positions in GEC, GEC Alsthom, Alstom and Areva, all in the field of HVDC, and is now R&D Director for Alstom's HVDC business. He is a Chartered Engineer, IET Fellow and has extensive experience of IEC standardisation activities in HVDC.

Coffee break

11 a.m. – 11.30 a.m.



40 An integrated approach to accessing emergency anchoring risks to subsea power cables

Intertek, Consultant, Saijie Sim, Great Britain

Mr Saijie Sim joined Intertek in 2011 and since then his focus has been primarily on subsea power cables: interconnectors, export cables and array cables. Saijie is currently researching novel methods to assess risks to cables and also on ways to optimise array cabling within offshore wind farms. Saijie is an Electrical Engineer by training and holds an MSc in Offshore & Ocean Technology from Cranfield University, UK.



41 Converting power into revenue

DONG Energy Renewables Germany, Head of Legal, Sven Martin Schindler

Sven M. Schindler is active in the wind business since 2001, when he started working as a lawyer for Germany's largest wind power project developer in Bremen. In 2007, he joined the German offices of a UK law firm, where he continued to work on complex financings and divestments of both onshore and offshore wind projects. Since 2011, he has been the Head of Legal of DONG Energy Renewables Germany GmbH advising on corporate and regulatory issues of DONG Energy's German offshore wind projects.



42 Subsea Cable Design

RWE Innogy, Project Engineer, Jan Jansen

Jan has been working as project engineer for the Nordsee Ost wind farm project of RWE Innogy since April 2010. He studied electrotechnology, with a specialism in energy technology, at the University of Applied Science in Hanover from March 2005 to February 2010.

————— Lunch and Workboats in Water Show —————

1 p.m. – 3 p.m.

2 p.m. –
2.45 p.m.

PUBLIC DISCUSSION
at the Workboats in Water Show

For details see page 48

THURSDAY, 6 JUNE 2013

9.30 a.m. –
1 p.m.

SESSION I – Maritime Technology



Chair: Fraunhofer IWES, Senior Scientist, Dr Julia Gottschall

Julia Gottschall (MSc, Dr. rer nat.) is Senior Scientist and Project Manager at Fraunhofer IWES based in Bremerhaven / Germany. She obtained a Ph.D. in applied physics from the University of Oldenburg and ForWind (Center for Wind Energy Research) in 2009. From 2009 to 2011 she worked as a scientist at Risø DTU (now DTU Wind Energy) and specialized in power performance testing and lidar applications, contributing also to the revision of the IEC 61400-12-1 standard as a member of the MT12-1 committee. Her current research focuses on offshore wind resource assessment and offshore lidar measurements in particular.



43 Offshore wind farm exploration and surveying – innovations and trends

Fi. Geo-Engineering, MARUM – Center for Marine Environmental, Managing Director of Fi. Geo-Engineering, Professor for Marine Engineering Geology at MARUM – Center for Marine Environmental Sciences and Faculty of Geosciences University Bremen, Prof Dr Tobias Mörz

Prof Dr Tobias Mörz holds a degree in geology (with applied geophysics and hydrogeology) from Eberhard-Karls University, Tübingen and gained a PhD from the Geomar Center for Marine Geosciences at Kiel University. As well as being Head of FH-IWES Group Offshore Geotechnics and of Geo-Engineering, a geo-technical engineering and consultancy company set up in 2009, Tobias has also been Professor for Marine Engineering Geology at the University of Bremen since 2003. He has conducted a wide range of research activities and written extensively in his specialist fields. In recent years, Tobias has been engaged in a number of project-funding activities for the offshore sector, including one currently underway for the German Environment Ministry.



44 Seismic substratum investigation for offshore wind farms in the North and Baltic Seas

Fraunhofer IWES, Research Associate in the department for assessing offshore ground construction sites, Florian Meier

Florian Meier studied geology at the University of Bremen from 1998 to 2003 and was awarded his degree. From 2003 to 2004, he worked as research associate at the Research Centre Ocean Margins (RCOM), Bremen. From 2004 to 2007, Florian gained a Masters in digital media at the HfK, Bremen. From 2007 to 2009, he worked as a freelancer at WohlgemuthPartners GmbH & Co KG. Since 2010, he has been research associate at Fraunhofer IWES.



45 Time saving innovation – Vibro hammer PVE 300M used as lifting accessory and piling tool

TÜV SÜD IS – Department Offshore Wind Energy, TÜV SÜD IS – Department Offshore Wind Energy, Björn Kramer

After finishing his studies in mechanical engineering at the TU Dresden in 1992, Björn Kramer worked for three years as a designer of cranes and railway bridges + Welding Eng. acc. DIN 18800/7. For 13 years he was employed at Germanischer Lloyd, firstly in charge of moveable

bridges (design, on-site inspection + testing), later for heavy cargo/offshore cranes (approval & damages), ropes and working as an internal trainer, then for non-standardised structures and re-design i.w.o. damage investigation. For two years Björn was Head of Design for KTA and military containers and their lifting equipment. For two years, he has been in charge of design approval, steel fabrication and testing for TÜV SÜD, Dept. Offshore Wind Energy Hamburg.

————— Coffee break —————

11 a.m. – 11.30 a.m.



46 Innovative offshore HVDC converter platform concept

IMPac Offshore Engineering, Project Management, Uwe Gierer

After studying industrial engineering at the Technical University of Berlin (1986–1992), Mr Gierer held several positions until 2000 as project manager, including in the strategic planning department of Lufthansa Airport Services in Berlin. From 2007 he has held various posts as project manager for ABB in Germany and in Algeria. Since September 2007 he has been with ALSTOM Grid (formerly AREVA Energietechnik) in sales for offshore wind energy, responsible for AC transformer substation projects in Germany and the Netherlands. From October 2012 he is working for IMPac Offshore Engineering GmbH in Hamburg as a Project Manager with the focus of marketing and sales for offshore wind energy projects.



47 Experimental and numerical results for sea motion reaction and dynamic positioning (DP) of ships with Voith Schneider propellers (VSP)

Voith Turbo Schneider Propulsions, Leader R&D, Dr Dirk Jürgens

Dirk Jürgens studied naval architecture at the University of Rostock from 1983-1988. From 1988 until 1993, he worked as a research assistant at the University of Rostock and the University of Hamburg. In 1994, he finished his Ph.D thesis on the hydrodynamics of Voith Schneider Propellers. From 1993-1999, he worked at the Blohm & Voss shipyard in Hamburg as manager of the R&D group for the development of propulsion and manoeuvring devices. Since 1999, Mr Jürgens has been the head of R&D at Voith Turbo Marine.



48 momac Offshore Access System MOTS 500 –

Initial experience during the long-term test at EnBW's Baltic 1 offshore wind farm

momac, Managing Director, Stefan Leske

Dipl.-Ing Stefan Leske General Manager of momac GmbH & Co. KG since 1997. Experience in repair work of wind turbines (gearboxes and generators) since 1999. Development of robot-based offshore access systems since 2008.

————— Lunch and Workboats in Water Show —————

1 p.m. – 3 p.m.

2 p.m. –
2.45 p.m.

PUBLIC DISCUSSION

at the Workboats in Water Show

For details see page 48

THURSDAY, 6 JUNE 2013

sponsored by:



2 – 2.45 p.m. **WORKBOATS IN WATER SHOW DISCUSSION**

Venue: Workboats in Water Show, Weser quay

Bad weather: Room1 Conference Center Atlantic Hotel Sail City

The market for crew transfer ships in the offshore wind industry is growing very rapidly and projects are being developed further out at sea. Do we need internationally agreed safety regulations?



Moderation: Gesellschaft für Maritime Technik (GMT), Chairman Dr Walter Kühnlein

Dr Walter L. Kühnlein has worked for more than 25 years in the offshore industry. Since 1997 he has been engaged in the North Caspian Project, where he worked in the USA, Russia and Kazakhstan as Engineering and Project Manager, and until the present day as adviser for the first drilling project in the North Caspian Sea. Since 2008 he has had his own consultancy company SEA2ICE, dealing with the design and operational aspects of offshore structures. He also works offshore, as Installation Manager, as he believes that working offshore is necessary in order to develop operationally-optimized offshore concepts.

VESSEL 1: Swash@A&R



German Shipowners' Association (VDR), Marine Director, Wolfgang Hintzsche

Wolfgang Hintzsche is a captain and master mariner, holds a B.Sc. degree in economics/engineering, and has had 33 years of experience in shipping and shipbuilding. He has done service on minehunters and minesweepers, bulk carriers, and on ro-ro, heavy lift and semi-container vessels for Frigga, CF Ahrenkiel and Sloman Neptun. His work experience includes positions as sales and project engineer at ELNA, area sales manager at MacGregor, managing director at Jastram, technical director at Shipyard (SET), and general manager at the Peter Döhle crewing agency. Since 2006, he has been marine director at VDR.



Verband für Schiffbau und Meerestechnik, CEO, Dr Ralf Sören Marquardt

Ralf Marquardt was born in Hamburg in 1963 and graduated as a Naval Architect from the University of Hamburg in 1992. He produced a PhD thesis on the application of non-linear fracture mechanics in ship structural analysis procedures. From 1996 engaged in the structural design of liquefied gas carriers and their containment systems at LGA Marine Consulting GmbH. In 1999 he joined the "German shipbuilding and Ocean Industries Association" VSM as a policy advisor. Since 2005 he has served the association as Director. He is an accredited representative of the "Community of European Shipyards' Associations" to the "International Maritime Organization".

VESSEL 2: Damen Shipyards Twin Axe 2610



Workships Contractors BV, Operations Manager, Philip Woodcock

Philip Woodcock is the Operations Manager for Workships Contractors, where he oversees the technical and QHSE management of wind farm and offshore support vessels. Philip is a Master Mariner and has an MSc degree from the University of Wales. He sailed in the British Merchant Navy before going to work as a safety auditor for Carnival Corporation. He was a Nautical Surveyor for the Bermuda Ship Registry before joining Workships in 2009. Philip has represented wind farm vessel operators at Renewables UK, IMCA, the Offshore Health & Safety Summit and the IMO and writes for Offshore Wind Journal.



Damen Shipyards, Product Director High Speed Craft, Jaap Gelling

Jaap Gelling graduated on shiphydrodynamics in 1986 at Delft University of Technology. After serving for the Royal Netherlands Navy, he initially worked in a small (co-founded) marine propulsion development company. Since 1992, Jaap Gelling is employed by the Damen Shipyards Group. After jobs as propulsion specialist, Manager Corporate Research and Director Production & Services, since 2003 he is Director High Speed Craft. High Speed Craft is the Department which is responsible for all high speed workboats in the Damen Group. Product series of High Speed Craft are Patrol Boats, Interceptors, Crew Boats, Fast Suppliers, Pilot Boats and Tenders.

Being personally interested in maritime research & development, Jaap Gelling – together with his team – puts much effort in optimizing the design of Damen high speed vessels. A part of this work is "evolutionary": ongoing improvement of standardized ships. More "revolutionary" projects – like the development of the Sea Axe hullshape – are carried out in a joint research program with the Shiphydrodynamics Laboratory of Delft University of Technology.

Workboats in Water Show discussion – at the quayside



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THURSDAY, 6 JUNE 2013

3 – 5 p.m. **SESSION J** – Financing



Chair: Green Giraffe Energy Bankers, Managing Director, Jérôme Guillet, France

Dr Guillet is a founder of GGEB, created in early 2010 and focused on renewable energy financial advisory services. He has 15 years' experience in the energy project finance industry, with a specific focus on offshore wind. Under his leadership, GGEB helped close large non-recourse financings for the C-Power, Meerwind, Northwind and Walney projects in the past three years. He graduated from the Ecole Polytechnique in Paris and holds a Ph.D. in economics from the EHESS in Paris.



49 First offshore serial losses insurance closes controversial coverage gap

Munich Re, Senior Underwriter SER, Dr Mathias Hörmann

Mathias Hörmann studied electrical engineering and later gained a doctorate in satellite technology at the TU Braunschweig. He has several years of experience in the construction and testing of satellites at the Max Planck Institute for Extraterrestrial Physics. He worked for 20 years as a specialist in risk assessment and the underwriting of complex reinsurance risks. He is currently Senior Underwriter at Munich RE and responsible for the development of new insurance solutions with a focus on the wind energy industry.



50 The “real” capital expenditures

GL Garrad Hassan, Senior Offshore Engineer, Wilhelm Heckmann

Wilhelm Heckmann, a Senior Offshore Project Engineer, has worked since summer 2008 in the Technical Due Diligence team of Germanischer Lloyd Renewables Consulting & Engineering. Within GL GH he has project managed due diligence assignments for international financial institutions and utilities and particularly worked on O&M and CapEx cost reviews and calculations. Currently he is working in the GL GH project management team, turbine contract package, for the Borkum West II offshore wind farm project.



51 Butendiek financing secured – new routes in project financing for German offshore projects

wpd offshore, Managing Director, Achim Berge

Achim Berge has been responsible for wpd's offshore activities since 2001. In addition to overseeing the development of 10,000 MW of capacity, his track record includes the start-up of offices in Sweden, Finland, France and Italy, as well as the achievement of eight building permits for offshore projects, the construction of Baltic 1, Germany's first commercial offshore wind farm, and successful participation in the French offshore tender as well as reaching financial closure for the 80-turbine Butendiek project. Mr Berge holds Swedish and German law degrees.



52 The new German Energy Industry Act – what does it mean?

Marsh Hamburg, Renewable Energy Practice Leader, Ralf Skowronnek

Ralf Skowronnek's engineering degrees led to his career starting as turbine millwright and industrial engineer. Ralf (46) has had 20 years of experience in insurance, including underwriting, loss adjusting, risk consulting and insurance broking, as well as 15 years in renewable energy, seven of them in offshore wind. Marsh Hamburg Offshore has risk and claims experience with 5,000 MW of offshore wind capacity. In November 2011, the German government appointed Ralf and his Marsh team to be risk and insurance advisers on Germany's offshore grid.

WINDFORCE Party

7 p.m. – 11 p.m.

For details see page 66



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THURSDAY, 6 JUNE 2013

3 – 5 p.m. **SESSION K** – Maintenance and logistics



Chair: Renewable Energy Hamburg Cluster Agency, Managing Director, Jan Rispens

Jan Rispens studied electrical engineering at the TU of Enschede. From 1993 to 2000 he was a campaign coordinator for Greenpeace in Germany, working on climate change, energy efficiency policy and renewable energy. After that he was engaged as a Project Manager for offshore wind at the Deutsche Energie-Agentur GmbH, in which position he was responsible for cooperation between the German federal government and the states. From 2002 until 2010 he was Managing Director of the Wind Energy Agency Bremerhaven/Bremen (now WAB). Since 2011 he has been Managing Director of the Renewable Energy Hamburg Cluster.



53 Successful offshore installation campaigns

GL Noble Denton Germanischer Lloyd Industrial Services, Senior Vice President, Tobias Rosenbaum

Tobias Rosenbaum holds a Masters Degree in Mechanical Engineering from the Technical University Darmstadt and Trinity College, Dublin. His professional background is Project Engineering and Project Management in large-scale industrial projects as well as in the offshore wind industry. In 2001 he managed the initial R&D project leading to the 5MW Multibrid Offshore Wind turbine concept, now owned by AREVA. Since 2012 Tobias Rosenbaum has been Senior Vice President for Germanischer Lloyd Industrial Services, heading their GL Noble Denton organisation for Continental Europe and Russia/CIS.



54 Far offshore versus nearshore

Siemens Wind Power A/S, Senior Vice President, Wind Power Service, Ken Soerensen, Denmark

Ken Soerensen has an educational background as Master of Science in Electrical Engineering. During his professional career he has worked as principal at The Boston Consulting Group from 2000 to 2006, first in Copenhagen and later in Moscow. From 2006 to 2012, Ken Soerensen held different positions at BROEN A/S, last as Group Director being responsible for the Global District Heating & Gas business. On 9 March 2012 Ken Soerensen was appointed to the position of Head of Siemens Wind Service Product Line.



55 Access to offshore platforms as a key factor in the process chain operation of an offshore wind farm

Results from the experts of the WAB working group Service & Operation

HOCHTIEF Solutions Civil Engineering Marine and Offshore, Project Manager Offshore Services, Jörg Asmussen

After his study of mechanical engineering with a focus on energy and process engineering at the Technical University of Braunschweig, Germany (1990), Jörg Asmussen was first involved in the technical development and later in the design and application of renewable energy systems. After several years in the European energy industry, first as a project manager in the development and planning of distributed energy systems and onshore renewable energy sources (1998-2006), and later as a programme manager of a wave energy technology development program (2006-2008), Jörg Asmussen has been responsible since 2009 for the offshore wind operation and

maintenance business activities at HOCHTIEF Solutions AG, branch office Civil Engineering Marine and Offshore in Hamburg. Since 2011 he has been a spokesperson for the WAB professional group Operational Concepts within the WAB Service and Operation working committee.



56 Operation & Maintenance offshore in Germany – requirements and simulation

Deutsche WindGuard Offshore, Managing Director, Niels Erdmann

In 1995, Niels Erdmann graduated in mechanical engineering with a degree thesis at the German Wind Energy Institute (DEWI). Between 1996 and 2010 he worked initially as a project engineer at PROKON Nord Energiesysteme, with responsibility for all aspects of on- and offshore wind energy, then as general manager. He has also been managing director of the subsidiaries Multibrid, PN Rotor and Offshore Wind Technologie (OWT). Since 1 July 2010 he has been managing director of Deutsche WindGuard Offshore.

WINDFORCE Party

7 p.m. – 11 p.m.

For details see page 66



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THURSDAY, 6 JUNE 2013

3 – 5 p.m. **SESSION L** – Support Structures



Session L — Room 2



Chair: Leibniz University, Hanover, Head of Institute for Steel Construction, Prof Dr Peter Schaumann

Prof Schaumann received his doctorate in civil engineering after his studies at the Ruhr University in Bochum in 1984. After working in the steel industry and as a consultant he was appointed full professor for steel construction at Leibniz University in Hanover in 1996. In 2003 he became cofounder of the ForWind research center for wind energy. In addition to his professorship he has been a partner in SKI Consult since 2009 and has worked for Fraunhofer IWES since 2010. At present he is involved in numerous offshore wind farm projects as a technical expert.



57 The monopile is dead – Long live the monopile!

REpower Systems SE, Leading Expert Offshore Engineering, Marc Seidel

Marc Seidel has more than 15 years of wind energy experience in research and within the industry. Since 2004 he has been working for REpower Systems where he is part of the Offshore Engineering team. He has had engineering responsibility for several offshore wind projects, for example the Beatrice Demonstrator, Thornton Bank and Alpha Ventus.



58 Experience in building scour protection at an offshore wind farm from the perspective of a construction company

Nordsee Nassbagger- und Tiefbau, Project Manager / Area Representative Germany (GeoSea), Jörn Adameit

Since December 2012, Jörn has been working at GeoSea (DEME), Bremen. From June 2011 to December 2012 he worked at Nordsee Nassbagger- und Tiefbau GmbH (DEME), Bremen. During the period June 2007 to May 2011 he worked for Matthäi Bauunternehmen GmbH & Co. KG in Verden and prior to this at its site in Bremen, from December 2002 to May 2007. For just over three years, from October 1999 to November 2002, Jörn worked for Detlef Hegeman GmbH in Bremen. From April 1998 to September 1999 he worked for Consult Team Bremen (CTB), following 14 months with August Reiners Bauunternehmen GmbH in Bremen.



59 An optimized support structure for the 10 MW NOWITECH reference turbine

Norwegian University of Science and Technology (NTNU), Associate Professor Offshore Wind Turbine Technology; Vice-Chair NOWITECH Scientific Committee; Vice-President European Academy of Wind Energy (EAW), Prof Dr Michael Muskulus, Norway

In 2012 Prof-Dr Muskulus became Associate Professor in Offshore Wind Turbine Technology at the Norwegian University of Science and Technology (NTNU). He is Vice-president of the European Academy of Wind Energy (EAW) and Vice-chairman of Scientific Committee, Norwegian Research Center for Offshore Wind Technology (NOWITECH). In 2010 he gained a post-doctorate in offshore wind, under Prof. Geir Moe at the NTNU, Norway. In 2008 he was awarded a Ph.D in applied mathematics from Leiden University, The Netherlands. In 2004 he was a researcher at Max Planck Institute for Meteorology, Hamburg. In 2003 he was awarded an MSc in physics from Hamburg University.



60 Testing support structures

Fraunhofer IWES, Bremerhaven, Division manager support structures, Dr Holger Huhn

Since 2006, Holger Huhn has worked at the Fraunhofer Institute and, in his role as departmental manager with IWES, is responsible for applied research in the field of support structures for wind turbines as well as offshore environmental simulation and support structure monitoring. He previously spent seven years at IMS Ingenieurgesellschaft working in the planning and construction of civil engineering works. Holger Huhn gained a doctorate at Hamburg-Harburg on the subject of fatigue strength in steel construction.

WINDFORCE Party

7 p.m. – 11 p.m.

For details see page 66

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Workboats in Water Show



In 2012, work began on more projects out at sea. That is why from 2013 we extended the concept of the conference in Bremerhaven with a Boat Show. Our objective in organising the exhibition is to offer tangible presentation opportunities to both the international offshore wind energy industry and WAB's 390 members, and to link them to opportunities for successful networking discussions. Take advantage of this new show to find out more about workboats and make the right contacts for your business.

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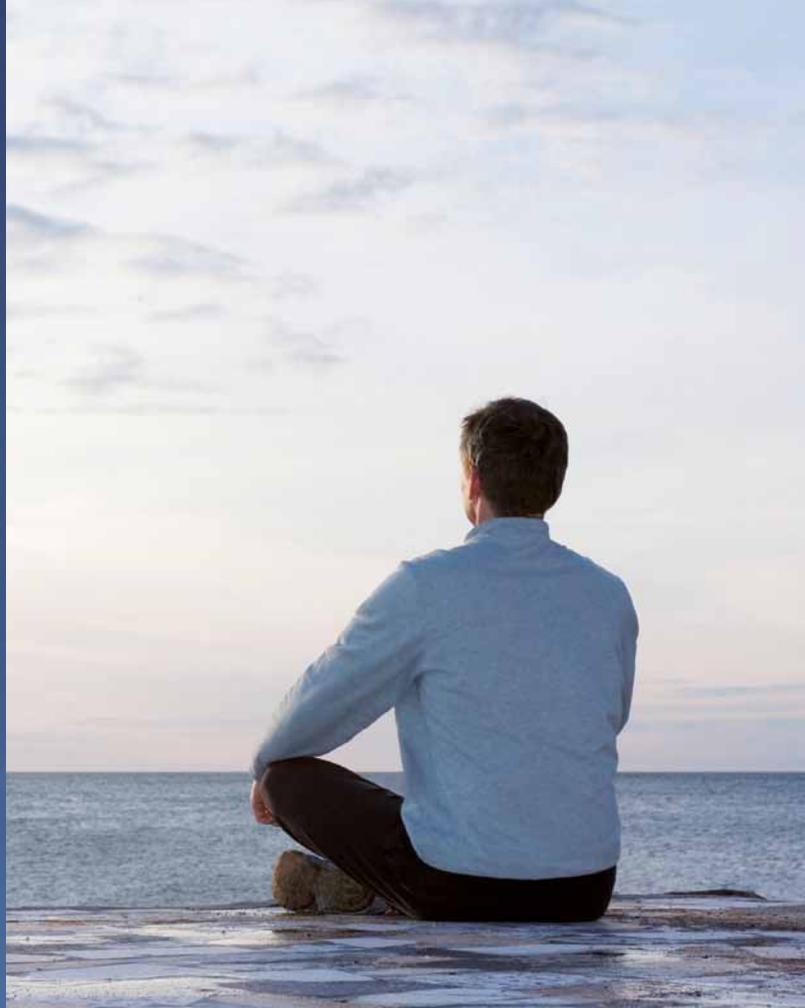
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The exhibition includes thirteen displays which inform about various aspects of offshore wind energy. Additionally, a short film gives a glimpse into constructing and operating the wind farms in the German North and Baltic Sea.

The idea of the touring exhibition is to promote a greater acceptance of offshore wind energy by actively informing the public on its benefits in keeping with its motto "Fascination Offshore – Wind from the Sea for new energy on land". The exhibition Fascination Offshore will be touring across Germany until fall 2014.

The project was planned by the German Offshore Wind Energy Foundation and funded by the German Federal Environment Ministry.



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WINDFORCE Party

THURSDAY, 6 JUNE 2013

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North Sea Wind Farm Tour on 7 June 2013

On Friday, 7 June 2013, the conference organisers are hosting an all-day boat excursion to see the German wind farms currently being installed in the North Sea. Offshore wind businesses will present the activities they are engaged in at each of the different project areas. Live demonstrations will also be a feature of the tour.



Image source: WAB

START: The ship will depart from Hamburg at 6 a.m. and from Cuxhaven at 9 a.m.
A shuttle bus will leave at 7.45 a.m. from the Atlantic Hotel Sail City in Bremerhaven for Cuxhaven.

END: The ship will arrive back in Cuxhaven approximately at 7 p.m. and in Hamburg roughly at 9 p.m.
A shuttle bus from Cuxhaven will return participants to the Atlantic Hotel Sail City in Bremerhaven, the main rail station in Bremen, and Bremen Airport.

VESSEL: Halunder Jet

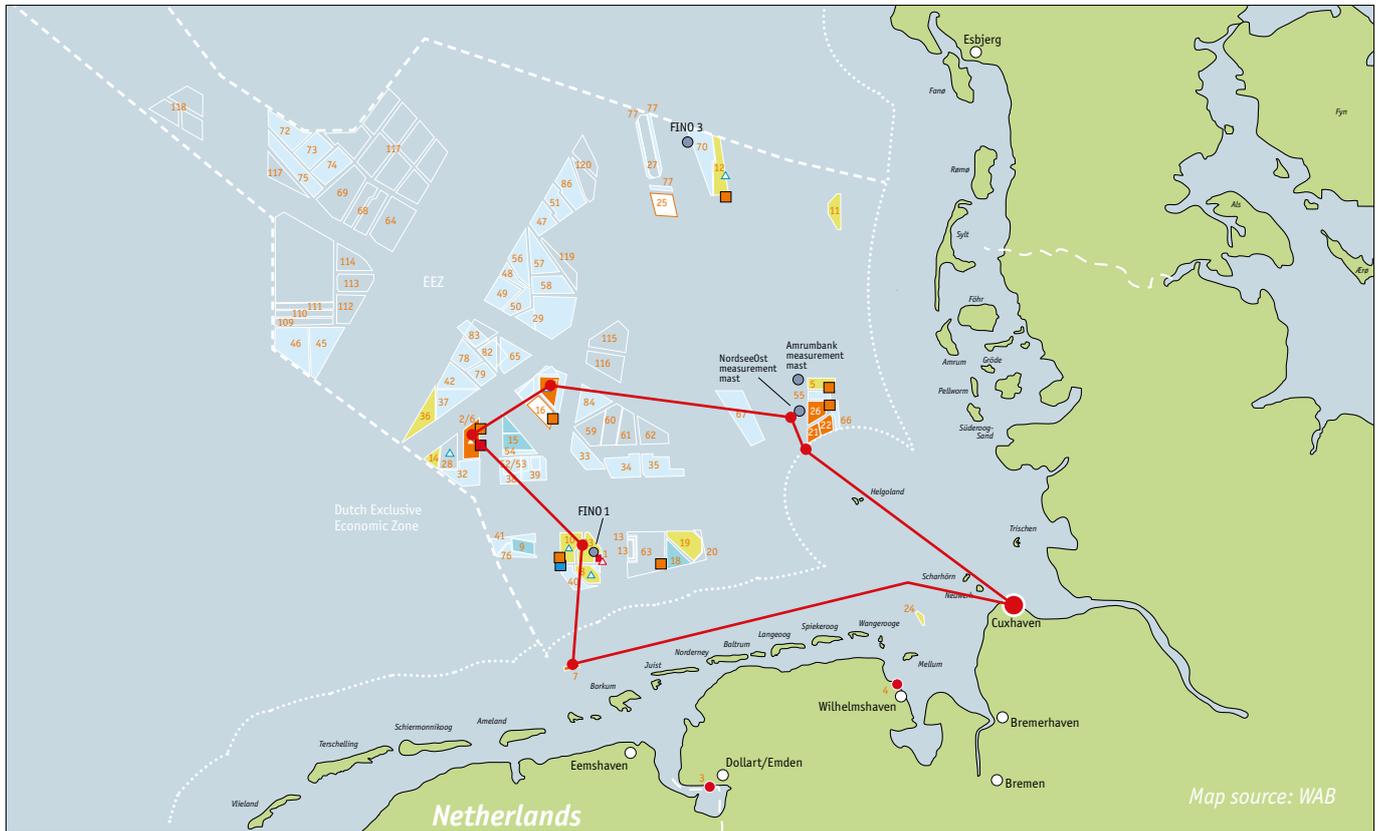
Type:	High-speed catamaran
Operator:	FRS Helgoline
Built in:	2003
Length:	52 metres
Width:	12.3 metres
Maximum draught:	2.5 metres
Maximum speed:	36.5 knots
Seating capacity:	570

The tour depends on the weather and the programme is subject to change.



Image source: WAB

The tour will visit the following wind farms:



PROJECTS: Meerwind Süd/Ost — Nordsee Ost — GlobalTech 1 — Bard Offshore 1 — Trianel Windpark Borkum — alpha ventus — Borkum Riffgat

WINDFARM: Meerwind Süd/Ost

Operator: WindMW GmbH
Number of turbines: 80
Turbine type: Siemens 3.6 - 120
Waterdepth: 22 to 26 Meter
Foundation: Monopile

Web: www.windmw.de



WINDFARM: Nordsee Ost

Operator:	RWE Innogy GmbH
Number of turbines:	48
Turbine type:	REpower 6M
Water depth:	19 to 24 Meter
Foundation:	Jacket
Web:	www.rwe.com/web/cms/de/961656/offshore-windkraftwerk-nordsee-ost/



WINDFARM: Global Tech I

Operator:	Global Tech I Offshore Wind GmbH
Number of turbines:	80
Turbine type:	AREVA Wind M5000
Water depth:	39 to 41 Meter
Foundation:	Tripod
Web:	www.globaltechone.de



WINDFARM: Bard Offshore 1

Operator:	Bard Engineering GmbH
Number of turbines:	80
Turbine type:	Bard 5M
Water depth:	39 to 41 Meter
Foundation:	Tripile
Web:	www.bard-offshore.de





M5000-135 The evolution of a proven technology

AREVA Wind GmbH
Henrich-Focke-Str. 4 · 28199 Bremen
More about AREVA Wind:
www.aveva-wind.com . www.aveva.com
Email:info.avevawind@aveva.com



WINDFARM:

Trianel Windpark Borkum

Operator:	Trianel Windkraftwerk Borkum GmbH & Co. KG
Number of turbines:	40 (Phase I) + 40 (Phase II)
Turbine type:	AREVA Wind M5000
Water depth:	28 to 33 Meter
Foundation:	Tripod
Web:	www.trianel-borkum.de

**WINDFARM:**

alpha ventus

Operator:	Deutsche Offshore-Testfeld und Infrastruktur GmbH & Co. KG (DOTI) (EWE 47.5%; E.ON 26.25%; Vattenfall 26.25%)
Number of turbines:	12
Turbine type:	6 AREVA M5000, 6 REpower 5M
Water depth:	30 Meter
Foundation:	6 Tripod AREVA M5000, 6 Jacket REpower 5M
Web:	www.alpha-ventus.de

**WINDFARM:**

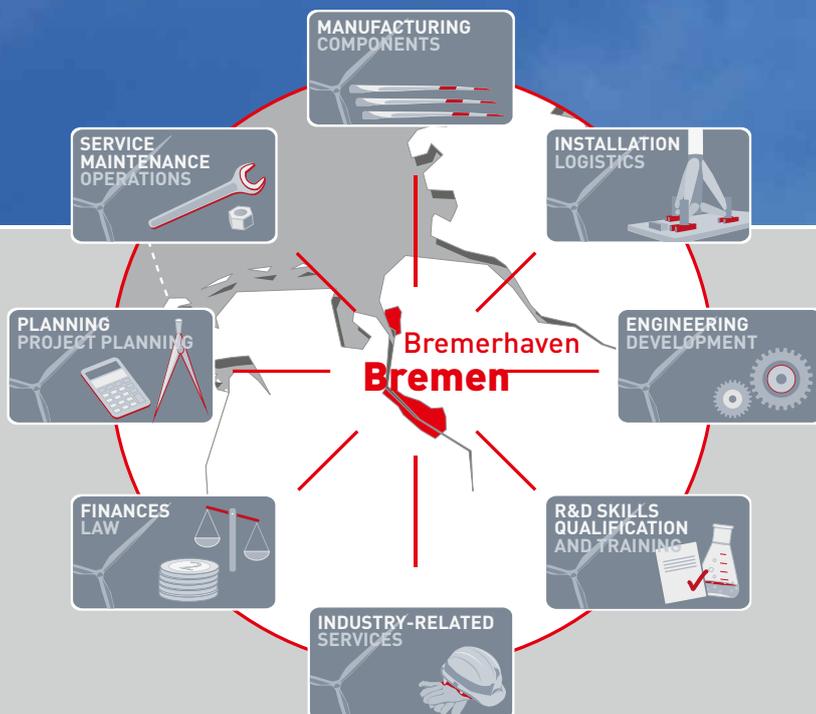
Borkum Riffgat

Operator:	EWE
Number of turbines:	30
Turbine type:	Siemens 3.6 - 120
Water depth:	18 to 23 Meter
Foundation:	Monopile
Web:	www.riffgat.de



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Windpower monthly
www.windpowermonthly.com

Shuttle buses

TUESDAY, 4 JUNE 2013

At 11.00 p.m. and 11.30 p.m.

Shuttle buses will run from the conference/reception venue Conference Center ATLANTIC Hotel Sail City to the following hotels: Hotel Haverkamp, Atlantic Hotel am Flötenkiel Bremerhaven, Comfort Hotel Bremerhaven, Hotel Adena, Hotel Amaris, Primula Hotel.

WEDNESDAY, 5 JUNE 2013

Morning shuttle bus service to the venue:

BUS 1

8.15 a.m. Primula Hotel
8.30 a.m. Atlantic Hotel am Flötenkiel
8.45 a.m. Hotel Adena

BUS 2

8.15 a.m. Comfort Hotel Bremerhaven
8.30 a.m. Hotel Amaris
8.45 a.m. Hotel Haverkamp

At 5.15 p.m. buses will leave for all above listed hotels.

Shuttle bus service to the WINDFORCE Dinner

BUS 1

6.30 p.m. Primula Hotel
6.45 p.m. Atlantic Hotel am Flötenkiel
7.00 p.m. Hotel Adena

BUS 2

6.30 p.m. Comfort Hotel Bremerhaven
6.45 p.m. Hotel Amaris
7.00 p.m. Hotel Haverkamp

BUS 3

7.00 p.m. Atlantic Hotel Sail City

At 11.00 p.m. and at midnight
Shuttle buses will leave the dinner venue for following hotels:

Atlantic Hotel Sail City, Hotel Haverkamp, Atlantic Hotel am Flötenkiel Bremerhaven, Comfort Hotel Bremerhaven, Hotel Adena, Hotel Amaris, Atlantic Hotel Sail City, Primula Hotel.

THURSDAY, 6 JUNE 2013

Morning shuttle bus service to the venue:

BUS 1

8.15 a.m. Primula Hotel
8.30 a.m. Atlantic Hotel am Flötenkiel
8.45 a.m. Hotel Adena

BUS 2

8.15 a.m. Comfort Hotel Bremerhaven
8.30 a.m. Hotel Amaris
8.45 a.m. Hotel Haverkamp

At 5.15 p.m. buses will leave for all above listed hotels.

Shuttle bus service to the WINDFORCE Party

BUS 1

6.15 p.m. Primula Hotel
6.30 p.m. Atlantic Hotel am Flötenkiel
6.45 p.m. Hotel Adena

BUS 2

6.15 p.m. Comfort Hotel Bremerhaven
6.30 p.m. Hotel Amaris
6.45 p.m. Hotel Haverkamp

At 11.00 p.m. and at midnight

Shuttle buses will leave the party venue for following hotels:

Atlantic Hotel Sail City, Hotel Haverkamp, Atlantic Hotel am Flötenkiel Bremerhaven, Comfort Hotel Bremerhaven, Hotel Adena, Hotel Amaris, Atlantic Hotel Sail City, Primula Hotel.

FRIDAY, 7 JUNE 2013

Morning shuttle bus service to the Atlantic Hotel Sail City:

BUS 1

7.15 a.m. Primula Hotel
7.30 a.m. Atlantic Hotel am Flötenkiel
7.45 a.m. Hotel Adena

BUS 2

7.15 a.m. Comfort Hotel Bremerhaven
7.30 a.m. Hotel Amaris
7.45 a.m. Hotel Haverkamp

Shuttle bus service from Atlantic Hotel Sail City to Cuxhaven:

At 8.00 a.m. Bremerhaven – Cuxhaven

After-excursion shuttle bus service from the Cuxhaven:

At 7.00 p.m. Cuxhaven – Bremerhaven – Bremen

Shuttle buses will run to Bremerhaven Central Station, Bremen Central Station and the Bremen Airport.

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Wir verfügen auch über WLAN zur freien Nutzung.

Jeden Wochentag von Montag bis Freitag servieren wir unseren Gästen ein Mittags-Lunch. Es beinhaltet das aktuelle Mittagsgeschicht und ein kleines Softgetränk zu 8 - 12€.

Neben unserem „a la carte“ Angeboten, möchten wir allen Teilnehmern ganz besonders unser flottes Business-Lunch-Menü in 3 Gängen, zu 25,00€ (max.1,5 Std.), anbieten. Nur mit Voranmeldung.

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Conference registration

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touristik@bis-bremerhaven.de

phone +49 471 94646-100

Taxi +49 471 40004

Police 110

Ambulance 112

VENUES

Conference Center in the ATLANTIC Hotel SAIL City

Am Strom 1

27568 Bremerhaven

www.atlantic-hotels.de/sailcity

Maritime Wind Dinner

REpower Systems SE

Labradorstr. 18 – 22

27572 Bremerhaven

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