

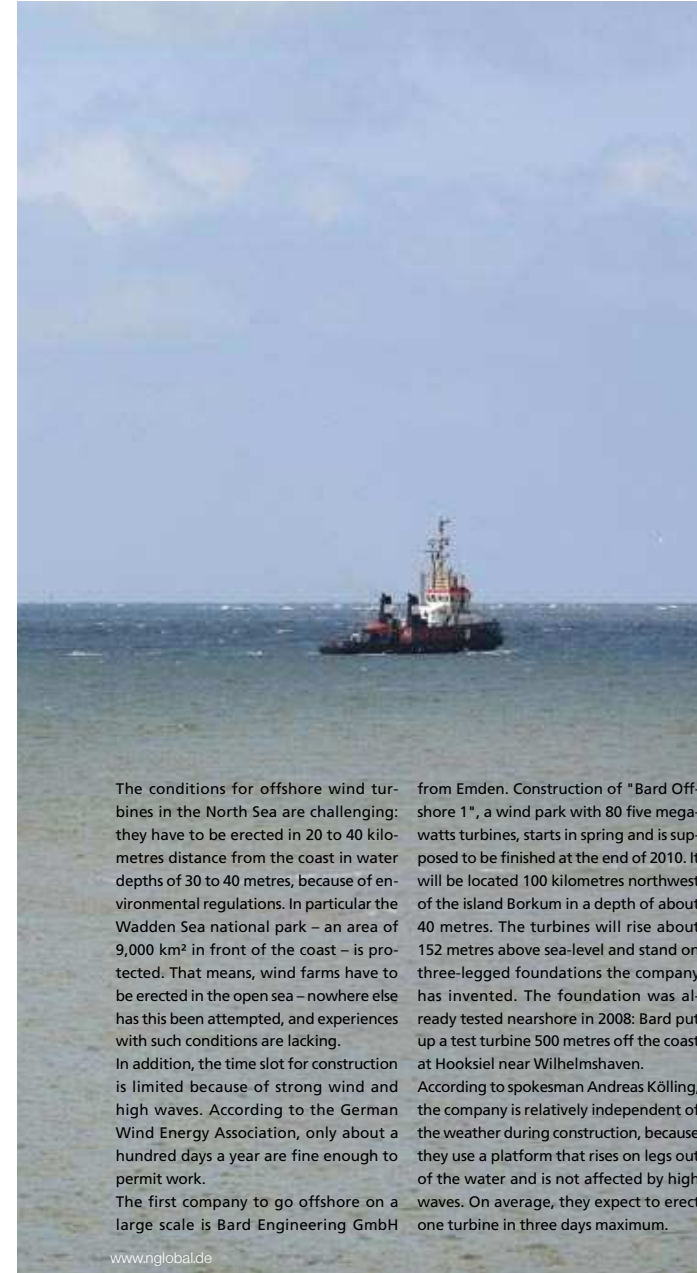


Going Offshore

This year will see the long awaited start of offshore wind power in Germany. Off the coast of Niedersachsen in the North Sea the first two offshore wind parks are planned to be erected starting in spring. Apart from three test turbines nearshore, no offshore wind park has so far been realized in Germany.

Text: Julia Koch

www.nglobal.de



The conditions for offshore wind turbines in the North Sea are challenging: they have to be erected in 20 to 40 kilometres distance from the coast in water depths of 30 to 40 metres, because of environmental regulations. In particular the Wadden Sea national park – an area of 9,000 km² in front of the coast – is protected. That means, wind farms have to be erected in the open sea – nowhere else has this been attempted, and experiences with such conditions are lacking. In addition, the time slot for construction is limited because of strong wind and high waves. According to the German Wind Energy Association, only about a hundred days a year are fine enough to permit work.

The first company to go offshore on a large scale is Bard Engineering GmbH

from Emden. Construction of "Bard Offshore 1", a wind park with 80 five megawatts turbines, starts in spring and is supposed to be finished at the end of 2010. It will be located 100 kilometres northwest of the island Borkum in a depth of about 40 metres. The turbines will rise about 152 metres above sea-level and stand on three-legged foundations the company has invented. The foundation was already tested nearshore in 2008: Bard put up a test turbine 500 metres off the coast at Hooksiel near Wilhelmshaven.

According to spokesman Andreas Kölling, the company is relatively independent of the weather during construction, because they use a platform that rises on legs out of the water and is not affected by high waves. On average, they expect to erect one turbine in three days maximum.

www.nglobal.de

Apart from the turbines, a living and transformer platform will be set up, where in the future a service team of 20 people will be on stand-by for maintenance work. They will use a special boat on tubes, a patented product by the shipyard Abeking & Rasmussen from Lemwerder, Niedersachsen. Abeking & Rasmussen have long been a supplier for the wind industry, building rotor blades for companies like Repower and GE Wind.

Bard has hired 500 people in 2008 and thus increased its workforce to more than 700 employees.

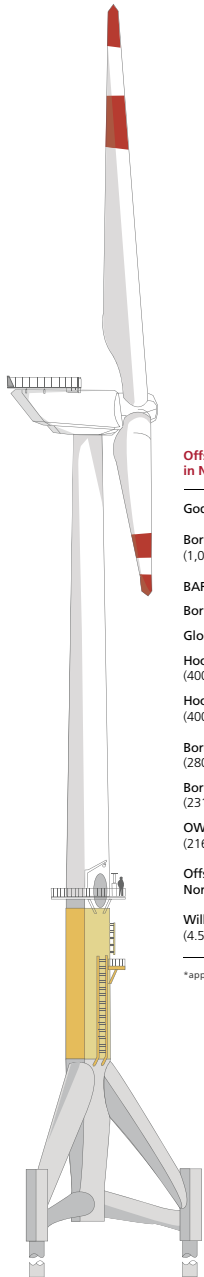
Bard has invested almost 100 million euros at its locations in Emden, Cuxhaven and Bremen and wants to extend its facilities still more: A training centre and a second rotor blade production are planned.

Since the production facilities are located at the port, the components can be transported directly onto the ship.

Bard is waiting for approvals for ten more offshore wind parks, seven in the North Sea and three in the Netherlands. All shall comprise 80 turbines, potentially with more capacity, because the company is working on a 6.5 megawatts turbine.

Another pioneering project is a test field of twelve turbines. The wind farm "alpha ventus" will be situated 60 kilometres off the coast in a depth of 30 metres. Construction was supposed to start in 2008, but had to be delayed till 2009 because of the weather conditions. So far, only the transformer station has been placed. The five megawatts turbines by Multibrud and Repower are 148 metres high – only nine metres less than Cologne Cathedral – and they will produce enough electricity for 50,000 households.

"The importance of the project as a showcase is tremendous", says Thorsten Herdan, Vice-President of the Offshore Wind Energy Foundation. The foundation has leased



"The importance of the project as a showcase is tremendous."

Thorsten Herdan
Vice-President, Offshore Wind Energy Foundation

Offshore Windparks in Niedersachsen*

- Gode Wind (1,120 MW)
- Borkum West /Alpha Ventus (1,040 MW)
- BARD Offshore I (400 MW)
- Borkum West II (400 MW)
- Global Tech I (400 MW)
- Hochsee Windpark Nordsee (400 MW)
- Hochsee Windpark, He dreiht (400 MW)
- Borkum Riffgrund West (280 MW)
- Borkum Riffgrund (231 MW)
- OWP Delta Nordsee I (216 MW)
- Offshore-Windpark Nordergründe (125 MW)
- Wilhelmshaven (4.5 MW)

*approved, first construction phase

the wind farm licensing rights to Deutsche Offshore-Testfeld- und Infrastruktur GmbH & Co. KG (DOTI) – a joint venture by the energy companies EWE, E.ON and Vattenfall. The three partners share the risks as well as the research results. The project costs 180 million euros. Other companies are following: So far, 19 wind parks in the North Sea got a permit, 46 more are pending approval. The 2008 amendment of the Renewable Energy Sources Act makes offshore energy more financially attractive: Till 2015, a compensation of 15 Cent per kilowatt hour has to be paid, while onshore gets only 9.2 Cent. "Offshore wind turbines produce 40 to 50 percent more electricity than onshore turbines – and 150 percent more costs", points out Hermann Albers, President of the German Wind Energy Association (BWE). That is why he remains careful in his prognoses for the development of offshore. He predicts an installed capacity of 10,000 megawatts by 2020 in Germany, compared to 45,000 megawatts onshore. 10,000 to 15,000 people could be employed in the industry in the medium term. Prokon Nord Energiesysteme GmbH from Leer wants to start erecting 80 five megawatts wind turbines next year in the North Sea. The project was approved in June 2008. At the same time, the company will build an offshore wind park with 21 turbines in France. That project was the only



Photo: Flickr



Photo: Stiftung Offshore Windenergie



Wind turbine foundations for alpha ventus are shipped into Wilhelmshaven – each weighs 700 tons.



Photo: Stiftung Offshore Windenergie

one accepted from ten proposals in the first French offshore-wind energy tender. Another wind farm in the North Sea with 80 turbines is planned but not yet approved. Construction is supposed to start in 2011. Prokon Nord uses the wind turbines of its 49 percent subsidiary company Multibrid GmbH and the services of its 20 percent subsidiary OWT – Offshore Wind Technologie GmbH. It was the first company to get an approval for an offshore wind farm outside territorial waters in 2001. It later sold all rights to the granted project to the Offshore Wind Energy Foundation – it later became the test field alpha ventus. Plambeck Neue Energien AG from Cuxhaven plans to start building their first offshore park in 2010/2011. They are currently looking for suppliers. Two projects have been approved so far: The wind farm "Borkum Riffgrund" will consist of 77 wind

turbines in the first building phase and up to 180 turbines in the final stage, supplying over 750,000 households with energy. Total investment in the two building phases will total more than one billion euros. The planning, construction and operation of the park is to be accompanied by a research programme extending over several years intended to answer problems of environmental protection such as the effects on the marine wildlife. The second wind farm "Gode Wind" will have 80 turbines in the first phase, but is planned to be much larger in the end, too. In total, Plambeck wants to realize seven wind parks in the North and the Baltic Sea, with up to 680 turbines and an investment of six to eight billion euros. Two projects are currently waiting for permits. A law passed in 2006 helps the offshore pioneers and relieves them of some their costs: It obligates the operators of power

infrastructure. It built an offshore port with a heavy lift platform that is specially constructed to handle components of the offshore industry. As the only platform at the North Sea it can carry up to 90 tons per square metre. It can even handle completely mounted turbines. A 14 hectare offshore terminal that was specially constructed for the needs of the industry will be opened on 20 March.

Impact on Tourism

Cities and tourism boards have also begun to think about the possible impact of the offshore industry on tourism. The German Energy Agency (dena) organised a workshop about that subject in Cuxhaven. One of the results: It is important what associations the wind turbines evoke. So one of the tasks will be to provide information to the public and emphasize the importance of the industry for climate protection. Cuxhaven has already started that process by building an offshore information centre. Experiences from Denmark show that visitors are very interested.

There are plans for an information ship travelling the region. Tourism concepts could include wind theme vacations (offshore wind energy, flying a kite, sailing) or a CO2-free holiday.

WINDFARM PILOT PROJECTS IN THE NORTH SEA source: www.offshore-wind.de

