



Renewable Energies.

Germany's first test field for offshore wind energy.

A consortium of power supply companies is about to build Germany's first offshore wind park. The first turbines in the alpha ventus offshore test field 45km to the north of the Island of Borkum will be constructed in 2009. A total of 12 multi-megawatt turbines (5 to 6 MW) will be erected at a water depth of 30 m. The grid connection works have already commenced and the offshore substation was already installed in September 2008.

Uncharted territory for the project developer.

Project developers have not yet had any experience with the construction and operation of offshore wind parks at a comparable depth and at such a great distance from the coast of the mainland anywhere in the world. The experiences made here will therefore be of prime importance for the further development of offshore wind energy in Germany, as technological challenges can only be met when the first test turbines are put to practical use.

History.

- 1999/2001: Application by PROKON Nord GmbH for the construction of the Borkum-West wind park.
- 2001: Approval by the Federal Maritime and Hydrographic Agency (BSH).
- 2005: Establishment of the foundation *Stiftung Offshore-Windenergie*. PROKON Nord GmbH sells the utilization rights to the foundation.
- 2006: Establishment of DOTI GmbH & Co. KG to erect the wind farm.
- 2006: Lease contract between DOTI and the *Stiftung Offshore-Windenergie*.
- June 2007: Multibrud Entwicklungsgesellschaft mbH is signed up as general contractor for the construction and erection of six M5000 wind turbines.
- July 2007: Start of construction of the grid connection and the cable on the island Norderney.
- August 2008: Start of construction of alpha ventus.
- September 2008: Installation of the offshore substation for the grid connection.



A brief look at alpha ventus.

General information on the test field	
No. of turbines	12
Nominal capacity	5 MW per turbine
Total capacity	60 MW
Foundation	Tripod/ jacket-style foundations
Water depth	30 m
Distance from coast	45 km
Length of cable	70 km
Connection point	Emden in Lower Saxony

Participants in the alpha ventus test field.

The foundation **Stiftung Offshore Windenergie** holds the rights to the approved test field and lets sites for wind turbines to operators. It presides over the process between manufacturers, DOTI and the Federal Maritime and Hydrographic Agency (BSH), provides the general public with information and takes part in the political processes.

The **foundation's board of trustees** is composed of banks and financing companies, construction companies and suppliers, energy supply companies, offshore wind turbine manufacturers, wind energy lobbies, regional wind energy business associations, other organizations and associations, insurances, the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) with prime responsibility for offshore wind energy, the Federal Maritime and Hydrographic Agency (BSH) responsible for maritime shipping and ocean traffic and the ministries of the coastal Länder Bremen, Hamburg, Mecklenburg-Vorpommern, Niedersachsen and Schleswig-Holstein primarily responsible for offshore wind energy and any related questions.

The **DOTI syndicate of operating companies**, which comprises E.ON Energy Projects GmbH, EWE AG and Vattenfall Europe New Energy GmbH, buys the turbines from the manufacturer, rents the site in the test field and concludes contracts for maintenance, operation and ongoing development with the manufacturer.

The **transmission network operator E.ON Netz GmbH** supplies the 70 km connection to the grid connection point in Emden in Lower Saxony.

Accelerated grid connection.

The Infrastructure Planning Acceleration Act, which came

into force on 17 December 2006, obligates the network operators to connect wind parks to the national grid. When the first offshore wind turbine is commissioned, they will also provide the connection required to transport the electricity generated. E.ON Netz has already commenced grid connection works. The cables are being laid in the ground, crossing the island of Norderney. Cables for future wind parks can be pulled through an empty pipe system already built for Norderney. This will minimize environmental impact. The offshore substation was already installed in September 2008.

Research project in the test field.

The alpha ventus project is focused on research projects. The Federal Environment Ministry is going to provide financing in the region of 50 million Euros for a broad-based research programme. The research, which is led by the Institut für solare Energieversorgungstechnik (ISET - Institute for Solar Energy Technology) of the University of Kassel, will focus on the integration of wind energy into the power grid, currents through the wind park, pressure from wind and waves, the further development and adjustment of wind turbine components to offshore conditions and the development of new wind park control systems, and will also include parallel ecological research.

The erection of six REpower 5M turbines and six Multibrid turbines (M5000) is planned. While Repower turbines are already generating electricity in Beatrice Wind Farm off the coast of Scotland, the use of the M5000 turbines will constitute an offshore first.

For more information please visit offshore-wind.de and alpha-ventus.de. The foundation's website offshore-stiftung.de is also worth a visit, but is in German only.

If you would like further information, please contact

Deutsche Energie-Agentur GmbH (dena)
German Energy Agency
Energy Systems and Energy Services
Chausseestrasse 128a
10115 Berlin, Germany
Tel: +49 (0)30 72 61 65-784
Fax: +49 (0)30 72 61 65-699
kreuzkamp@dena.de
www.offshore-wind.de
www.dena.de