

Wide Spectrum of Research for Offshore Wind Energy

New Fraunhofer IWES presents research highlights at the European Offshore Wind Energy Conference in Stockholm

Fraunhofer Institute
for Wind Energy and
Energy System Technology

Kassel/Bremerhaven/Stockholm. September 16th, 2009 – „We offer the complete research spectrum for advancing offshore wind energy systems“, Dr. Hans Gerd Busmann and Prof. Dr. Jürgen Schmid are justifiably self-assured. They are the directors of the new Fraunhofer Institute for Wind Energy and Energy System Technology IWES with locations in Bremerhaven and Kassel. Along with their research catalogue, the scientists are currently presenting selected highlights at the leading European offshore wind energy conference in Stockholm.

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Highlights presented at the European Offshore Wind Energy Conference

Research at the offshore wind energy test site alpha ventus

„Alpha ventus“, the first German offshore wind park testing and demonstration project, is initiating the utilisation of wind energy in the German North and Baltic Seas. The main focuses in the associated German research initiative, RAVE, are the reduction of costs, increased efficiency, advancing the availability of wind turbines, improving the technology for developing offshore wind energy, its ecologically responsible application as well as technologically optimising the turbines with regard to ecological impact. RAVE is sponsored by the Federal Ministry for the Environment, Nature Conservation and Reactor Safety (BMU) and is co-ordinated by Fraunhofer IWES. It joins the scientific activities of the plant manufacturers and a multitude of research institutions. In total the BMU has allocated 50 million Euro for the research and further development of wind energy utilisation at sea.

Rotor Blade Competence Center

With its first test center for rotor blades of up to 70 m in length and in future a further center for rotor blades of up to 90 m in length, the Fraunhofer IWES is able to test the statics and dynamics of current and next generation rotor blades and their components thus contributing to their optimization. Closely linked with experimental and numerical procedures, new test methods are being developed, new construction methods are being tested and endurance tests are being carried out.

Technical Reliability

When large sums ranging into millions are to be invested it is essential to identify as precisely as possible the most appropriate materials, construction methods and components and to determine how they can be ideally put together to result in an efficient and resilient total system. The distinctive features of wind turbine construction at sea require that not only the technical reliability of such be substantiated more and more by computer-operated calculations but that assembly parts and components are also tested and their effectiveness verified. To this end, Fraunhofer IWES offers its services in the fields of developing and adaptation as well as the use of simulation tools and methods.

Wind Power-Management-System WPMS

An essential component of state of the art of prediction prognosis and energy management systems is the concise presentation of relevant information and the compatibility with information and communication technologies (ICT) of the users.

The calculation models for the determination of current and expected wind power feed-in (online and prediction models) which were developed by Fraunhofer IWES, have been integrated during further development and adaptation into a comprehensive system called Wind Power Management System WPMS.

The R&D spectrum of the new Fraunhofer IWES

The research areas of the new Fraunhofer IWES will include the whole wind energy spectrum from materials development to grid optimization as well as energy systems technology for use of all forms of renewable energies:

- Engineering and operation of wind energy turbines and parks
- Development of components: rotors, power trains and foundations
- Fluid elasticity and dynamics
- Environmental analysis for wind and ocean energy technology
- Control and system integration of decentralized energy converters and storages
- Energy management and grid operation
- Energy supply structures and systems analysis

Through the fusion of the institutes in Bremerhaven and Kassel and the development of further infrastructures and fields of competence, the present products and services offered by the individual sites will be considerably consolidated. This will be rounded off simultaneously by the planned development of the mainly fundamentally-oriented key research areas of the four cooperating Universities of Hanover, Bremen, Oldenburg and Kassel. After a developmental phase of about five years, a total of more than 200 employees will carry out research and development for both national and international partners.

The specialist expertise of Fraunhofer IWES integrates in a broadly trans-disciplinary manner all the relevant technical disciplines with emphasis put on electrical engineering, energy systems technology, mechanical engineering, civil engineering, physics of fluids and energy meteorology. Through the partner institutes of the Fraunhofer-Gesellschaft, especially the Energy Alliance (www.energie.fraunhofer.de), the expertise of the other Fraunhofer institutes is directly on hand.

Collectively, the network of Fraunhofer IWES and cooperating universities will receive considerable financial support from the federal government and the German states concerned which is to be used to broadly extend this R&D cluster making it an international force to be reckoned with and to further strengthen the German research in this field.

The new Fraunhofer IWES

January 1st 2009 saw the foundation of the new Fraunhofer Institute for Wind Energy and Energy Systems Technology IWES. This new Institute consists of the former Fraunhofer Center für Windenergie und Meerestechnik CWMT in Bremerhaven which has now been joined by the Kassel Institut für Solare Energieversorgungstechnik ISET after the necessary formalities for the transfer have been completed. Furthermore Fraunhofer IWES will establish two Fraunhofer project groups in Hanover and Oldenburg.

The Fraunhofer IWES is member of the Fraunhofer-Gesellschaft, the leading German applied research organisation.

More Information:

Conference: www.eow2009.info

Fraunhofer IWES in Bremerhaven: www.iwes.fraunhofer.de

Fraunhofer IWES in Kassel: www.iset.uni-kassel.de

Fraunhofer-Gesellschaft: www.fraunhofer.de