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Introducing HIPRWIND high power, high reliability offshore wind technology

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Abstract

In September 2010, the European Commission awarded an 11 M€ grant to a consortium of 19 partners coordinated by Fraunhofer IWES, in order to develop and carry out research on a floating wind turbine in the MW range. The HiPRwind project is funded within the 7th Framework Programme of the EC.

Key data

EU project awarded in the 2010 FP7 Energy Call.
Total budget: 19.8 million €. EU contribution: 11.0 million €.
Period of execution: November 2010 to October 2015.
19-partner consortium coordinated by Fraunhofer IWES

Consortium

A strong consortium with experience in offshore developments:

Industry
Acciona Energia (Spain)
Acciona Wind Power (Spain)
ABB (Switzerland)
Bureau Veritas (France)
IDESA (Spain)
Mammoet (Netherlands)
Technip (France)
Vicinay Cadenas (Spain)

R&D SMEs
Micromega (Belgium)
Olav Olsen (Norway)
Wölfel berat. Ing. (Germany)
1-Tech (Belgium)

Universities
NTNU (Norway)
University Siegen (Germany)

Research org.
Fraunhofer IWES and IZFP
Narec (UK)
SINTEF (Norway)
Tecnalia-Robotiker (Spain)
The Welding Institute (UK)

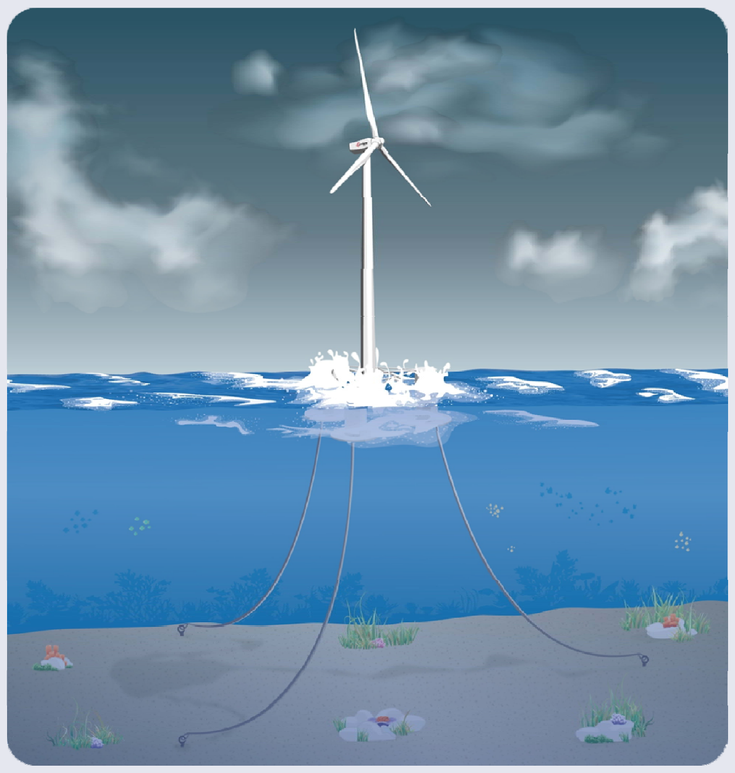
Schedule

- Project start, Nov. 2010
- Structural design milestone, Nov. 2011
- Commissioning, Summer 2013
- Project end, Nov. 2015

Design | **Fabrication** | **Installation and commissioning** | **Operation, Research and development**

Design, Procurement, Construction and Installation

The DPCI process in HiPRwind involves strong industry partners such as Acciona, IDESA, Vicinay Cadenas, Technip and Mammoet supported by a design team including Olav Olsen, NTNU, Bureau Veritas and TWI. The first year of the project is dedicated to defining a technically and economically sound solution. A positive decision following the concept developed at the end of 2011 will trigger the final design and fabrication of the floating support structure and mooring system, while an existing 1.5 MW turbine will be adapted for operation on the floater.



Research and development

Advanced floater & moorings:
- Design optimisation based on field experience
- Code validation
- Upscaling

Controls, power and grid:
- Multi MW converter prototype for offshore applications
- Floating windfarm grid study
- Controller

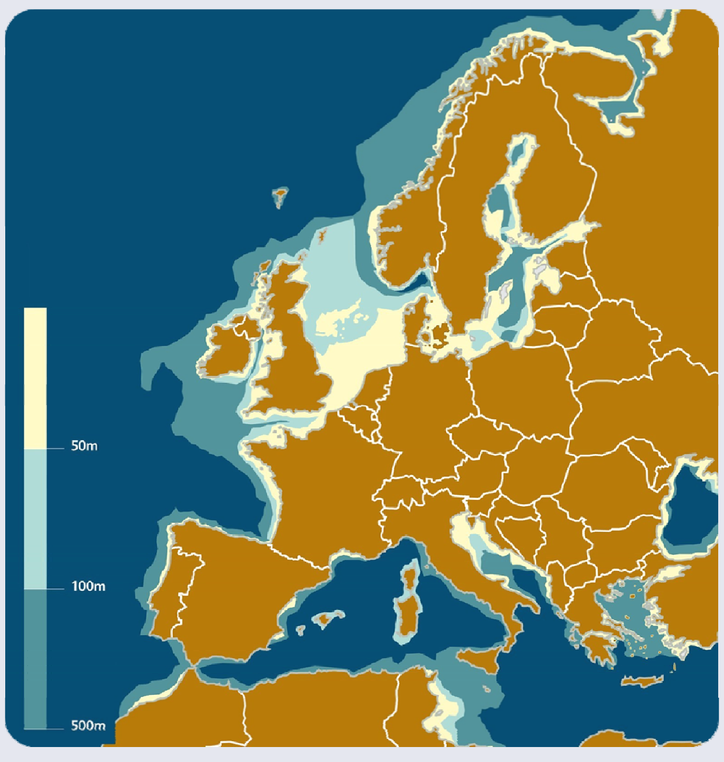
Platform operation

Condition Monitoring & SHM:
- Detailed monitoring
- Improved load models
- New sensors and methods

Advanced rotor concepts:
- Novel rotor concept
- Test installation
- Material & structural tests

- Fully functional floating wind turbine installation deployed at real sea conditions
- Availability of field test data from a floating wind turbine
- Overcome the gap in technology development between small scale tank testing and full scale offshore deployment
- Significant reduction of the risks and costs of deep water wind technology

Intermediate depth waters: major wind resource



The deployment of large wind turbines on fixed structures is limited up to around 50 m water depth. Floating wind turbine technologies are needed for all deeper areas. In many parts of Europe such as France, Spain, Portugal, Italy, Greece and Norway there are significantly larger offshore wind resources available in waters deeper than 50 m but still relatively near to the shore. In other relevant markets worldwide such as the US, Canada, Japan and future markets on the Southern hemisphere, the continental shelf is even smaller and floating technology is the key to the offshore wind market takeoff.

Dissemination and public activities

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As a first European project on floating wind energy, HiPRwind intends to establish network activities to encourage communications and information exchange related to floating offshore wind projects.

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EWEA 2011 BRUSSELS EUROPE'S PREMIER WIND ENERGY EVENT

EWEA 2011, Brussels, Belgium: Europe's Premier Wind Energy Event