

## UpWind

**Project Acronym :** UPWIND

**Project Title :** Finding design solutions for very large wind turbines

**Coordinator :** Risø National Laboratory - DTU (Denmark)

**Website :** <http://www.UPWIND.eu>

### ABSTRACT

UPWIND looks towards the wind power of tomorrow; more precisely towards the design of very large wind turbines (8-10MW) both onshore and offshore.

The wind turbines of the future necessitate the re-evaluation of the turbine itself for its re-conception to cope with future challenges. The challenges inherent in the creation of such power stations necessitate the highest standards in design; complete understanding of external design conditions; the design of materials with extreme strength to mass ratios and advanced control and measuring systems all geared towards the highest degree of reliability and critically, reduced overall turbine mass. Wind turbines greater than 5MW and wind farms of hundreds of MW necessitate the re-evaluation the wind turbine itself, for its re-conception to cope with future challenges. UPWIND develops the accurate, verified tools and component concepts the industry needs to design and manufacture this new breed of turbine. UPWIND focuses on design tools for the all turbine components and addresses the aerodynamic, aero-elastic, structural and material design of rotors. Critical analysis of drive train components will be carried out in the search for breakthrough solutions. UPWIND will help European Wind Energy companies maintaining their favourable position in the global market, realising EU renewable electricity targets for 2010, and to attain the main objective of the Lisbon Agenda. UPWIND brings together the most advanced European specialists and experience. The technical and scientific components of the programme have been integrated through a visionary organisational structure, which ensures that scientific research answers industry needs. This has been achieved by organising the project in such a way that the (industrial) integration work packages guides the scientific work to a great extent. The findings of the project will be disseminated through workshops and through a website to the widest possible audience by EWEA which represents 220 companies from over 40 countries, including 98% of manufacturing industry, organisations and research institutes.

### PARTNERS

Aalborg University – **Denmark** ; Energy Research Centre of the Netherlands – **The Netherlands** ; Stichting Kenniscentrum Windturbine Materialen en Constructies – **The Netherlands** ; Delft University of Technology – **The Netherlands** ; Centre for Renewable Energy Sources – **Greece** ; National Technical University of Athens – **Greece** ; University of Patras – **Greece** ; Institut für Solare Energieversorgungstechnik Verein an der Universität Kassel – **Germany** ; Universität Stuttgart – **Germany** ; Elsam Engineering A/S – **Denmark** ; GE Wind Energy GmbH – **Germany** ; Fiberblade Eólica S.A. – **Spain** ; Garrad Hassan and Partners Ltd. – **United Kingdom** ; Werkzeugmaschinenlabor, Aachen University – **Germany** ; LM Glasfiber A.S. – **Denmark** ; Germanischer Lloyd Wind-Energie GmbH – **Germany** ; Ramboll Danmark A.S. – **Denmark** ; Fundación Robotiker – **Spain** ; VTT Technical Research Centre of Finland – **Finland** ; SAMTECH S.A. – **Belgium** ; Shell Windenergy BV – **The Netherlands** ; Repower Systems AG – **Germany** ; Det Norske Veritas, Danmark A/S – **Denmark** ; Lohmann und Stolterfoht GmbH – **Germany** ; University of Edinburgh – **UK** ; Instytut Podstawowych Problemow Techniki PAN – **Poland** ; Institute of Thermomechanics, Academy of Sciences of the Czech Republic – **Czech Republic** ; Lulea University of Technology – **Sweden** ; Council for the Central Laboratory of the Research Councils – **UK** ; Vrije Universiteit Brussels – **Belgium** ; QinetiQ Ltd. – **UK** ; Vestas Asia Pacific A/S – **Denmark** ; Smart Fibres Ltd. – **UK** ; University of Salford – **UK** ; European Wind Energy Association – **Belgium** ; Ecotècnia S.C.C.L. – **Spain** ; Fundación CENER - CIEMAT – **Spain** ; Fraunhofer Center Windenergie und Meerestechnik Bremerhaven - CWMT – **Germany**