



## Wind Blade Using Cost-Effective Advanced Lightweight Design

Issue 5 December 2016

The research leading to these results has received funding from the European Union Seventh Framework Programme (FP7/2007-2013) under Grant Agreement no.309985



Christmas Greetings



### Project Nearing Its End

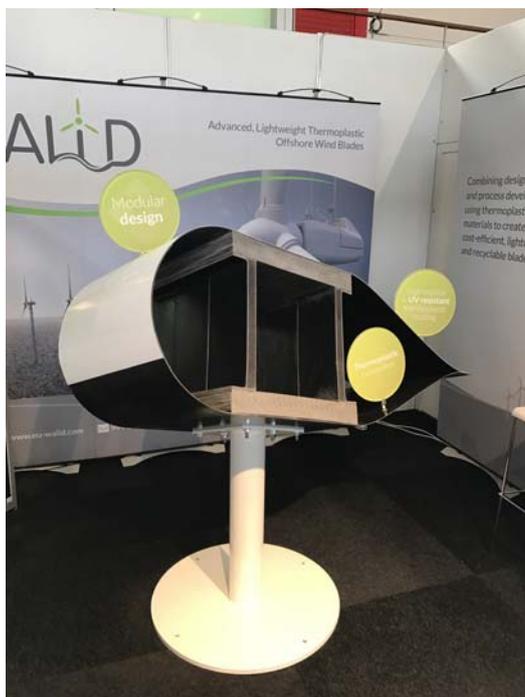
In January 2017 WALiD will come to the end of its four year duration.

The project's key objectives during this time have been to develop the technology required to produce highly durable blades able to withstand the challenging environmental offshore conditions.

The WALiD partners have achieved these objectives by developing new designs of the blade root, connection concept and tips which have led to substantial weight savings. They have also replaced the shell core with thermoplastic foams, enabling faster processing via automated processes by modifying the density of the core material to the specific load and in doing so, have optimized the weight and stability profile. The design of the shear web has been improved by replacing existing thermosets with thermoplastic composite structures leading to further weight savings. Finally, they have developed a highly durable thermoplastic coating by improving environmental resistance, anti-icing

properties and durability against abrasion combined with a new predictive simulation model.

In addition to this work the WALiD partners produced a demonstrator to highlight the key benefits of the project. This was recently part of the display at the Offshore Energy stand in October and will be used after the project has ended to highlight to potential end-users the commercial relevance of such a wind blade and the potential for full scale production.



#### Inside this issue:

#### For more info.....

PARTNER'S FEATURE	2
OFFSHORE ENERGY	3
NEW OFFSHORE WINDFARM	4

#### Windrad at WindEnergy

Windrad Engineering attended WindEnergy in Hamburg on 27th to 30th September 2016 where they handed out flyers and held technical discussions with interested parties. This event is held every two years and attracts around 35,000 visitors.

#### Rapra at Recoup

Smithers Rapra attended the RECOUP Plastics Recycling Conference on 29th September 2016 in Peterborough, UK. The conference focused on the challenges and opportunities facing organisations in the area of plastics recycling. In addition, a number of presentations were given by managers who were happy to share their experience and answer questions.

#### For more info.....



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## Partner's Feature



Windrad Engineering began trading in 2002 in the wind energy sector. The portfolio of Windrad Engineering covers the whole range of expertise that is necessary to develop a load and cost effective wind turbine. Simulation, design, structural analyses and technical consulting are their core competences, both for Onshore and Offshore projects. To procure necessary components and systems they rely on a large number of proven suppliers.

In addition, Windrad Engineering has a strong focus on research and development. Their projects are partially funded by public grants and conducted in close cooperation with Universities or Research Centers.

To-date Windrad Engineering has proven competence and innovative capacity in more than 300 projects for almost 50 customers worldwide.

### **Main tasks of Windrad within WALiD**

Windrad Engineering is responsible for the development of an innovative 90 meter blade design based on the new WALiD specific materials and available manufacturing options. This comprises, on one hand, the determination of design loads by means of an aeroelastic simulation for a generic offshore turbine using WALiD blades and on the other, structural analysis for the blade components and holistic blade design by FEM calculations. It is also the responsibility of Windrad Engineering to take care of test plans for the new blade design or newly developed blade components in terms of a prospective certification process.

### **Fraunhofer ICT Publishes Paper**

Fraunhofer ICT published a paper which was presented at the ITHEC 2016 conference on 11th - 12th October 2016 in Bremen, Germany. The paper entitled "Wind blades using cost-effective advanced lightweight design - innovative solutions for wind blades made of advanced thermoplastic materials" was presented to around 280 participants from both industry and research.



## Demonstrator Launched at Offshore Energy



Several consortium members attended the Offshore Energy 2016 event held at RAI in Amsterdam on 25th and 26th October.

This two day event was the perfect opportunity to showcase the demonstrator and key benefits developed in the project together with other materials such as tape, foam and sandwich samples. Project literature was also available from the WALiD stand and a large TV monitor screened the latest project video.

The stand created a lot of interest with visitors keen to learn about the latest developments and results in

the project.

In addition to the various project literature available, information leaflets had been designed to fit into the current press packs. These gave an overview of the technology developed and results achieved during the project and will be a useful selling tool in the future.

A series of interviews took place during the conference at the Offshore Wind Expertise Hub and Hans Knudsen from Comfil was invited to speak about WALiD. During this interview, he outlined the advantages of the WALiD blade and explained the use of thermoplastics and end of life approach in the project.





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### Check out our new video



A final video has been produced and is available for download from the 'Home' page of the project website and also from your YouTube:

<https://youtu.be/il-sanGdSb0>.



This video is the third one to be produced in the project and gives an overview of the technology developed in the project in the areas of the coating, blade root, shear web and spar cap.

## New Offshore Wind Farm in France

From 2021 the second offshore wind farm in the area will be operational in the Pays de La Loire, France.



This particular wind farm will generate enough electricity to cover the annual consumption for around 790,000 people. For aesthetic reasons and to reduce the impact on fishing, the individual wind turbines will be spaced well apart and placed in a line rather than the usual staggered positioning. It is expected that this project will create hundreds of jobs.

More detailed information can be found by selecting the link below:

<http://www.mre-paysdelaloire.com/news/the-yeu-noirmoutier-offshore-wind-farm-a-project-mobilising-the-whole-pays-de-loire/>

### Project Partners:

Fraunhofer Institute for Chemical Technology (Germany), Smithers Rapra & Smithers Pira (UK), TNO (Netherlands), PPG (Netherlands), Norner (Norway), Comfil APS (Denmark), Loiretech (France), Coriolis Composites (France), NEN (Netherlands), WPS Windrad Power Systems (Germany)

### Key Facts:

**Project acronym:** WALiD

**Project Title:** Wind Blade Using Cost-Effective Advanced Composite Lightweight Design

**Project Duration:** 01.02.13—31.01.17

**Website:** [www.eu-walid.com](http://www.eu-walid.com)