

Optimization of boNding Structural assembly & Health mOnitoring for Renewable Energy

ONSHORE Project



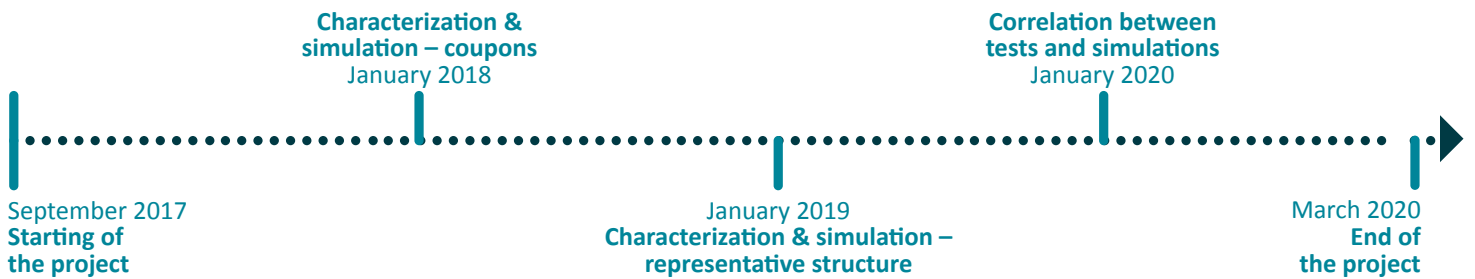
The ONSHORE project aims to propose a methodology to estimate the accumulated damage in bonded composite structures taking into account the effects of the implementation procedures on the mechanical strength of the assemblies. The objective is to characterize the behavior and damage of bonded composite materials at different levels (coupons and representative structure).

Technical and economic impacts

- ▶ To better estimate wind blades lifetime
- ▶ To evaluate the criticality of the defects in bonded joints of composite
- ▶ To secure the exploitation of wind blades

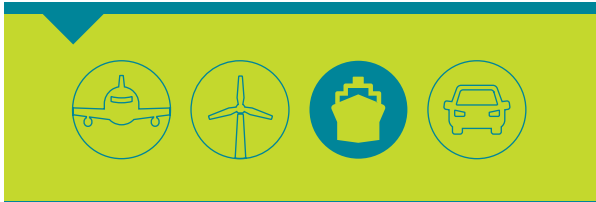
Keywords

Fatigue damage // Modeling // Simulation // Composite assembly // Wind blades



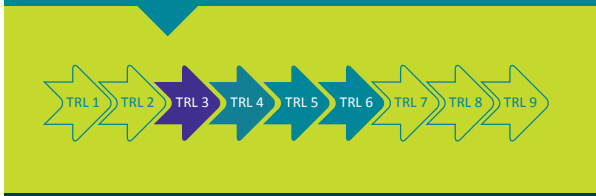
INDUSTRIAL CONTEXT.....

Onshore wind energy is a mature market with electricity production costs sharply decreasing. One of the main approaches to further reduce these costs is to improve our knowledge of the lifetime of major components of wind turbines, such as blades. This project will provide a novel protocol to estimate accurately the lifetime and residual lifetime of the wind blades to optimize their maintenance and management.



INNOVATIVES FEATURES.....

- ▶ Multi-level experimental approach.
- ▶ Integration of validated behavioral laws into numerical simulation codes for durability studies of wind blades.
- ▶ Global and innovative mechano-probabilistic methodology that allows for the optimization of the durability of bonded joints of composite structures in the framework of structural parts exploited by fatigue damage.



INDUSTRIAL APPLICATIONS

- ▶ Improving products, strengthening market position, explore new market segments and gain new customers.
- ▶ Ensuring market leadership in advanced technologies and engineering methods.
- ▶ Improving the financing conditions for innovative technologies.

Partners

- ▶ IRT JULES VERNE
- ▶ EDF

Budget

- ▶ 1100 K€

Equipment

- ▶ IRT Jules Verne's Mechanical Test facility

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