

IN-SITU WIRELESS MONITORING OF OFFSHORE WIND TURBINE TOWERS AND BLADES

The INSIGHT project aims to develop novel measurement technology that will continuously monitor the structural integrity of wind turbine towers and blades. Non-intrusive measurement techniques will be developed to provide a complete analysis of the wind turbines' structural health. Wireless communications will be used to control the monitoring system and transmit the measurement data to an onshore base.

Project Aims

- Develop monitoring techniques for wind turbine **blades**, using **non-contact inductive displacement** sensors.
- Develop a permanently mounted system that will use a combination of **long range ultrasonic** and **acoustic emission** techniques to continuously monitor the structural health of wind turbine **towers**.
- Develop advanced **signal processing** methods for data analysis.
- Develop a **communications system** to transmit the measurement data onshore and control the monitoring system remotely.



Benefits

- Reduction in costs for offshore structure inspections
- Lower costs for blade and tower inspections
- Early detection of structural defects
- Minimisation of downtime and production loss for inspections
- Reduced risk to human life during the inspection of offshore assets
- Evidence to support the life extension of offshore structures
- Increased confidence in offshore wind turbine safety

Applications

While the INSIGHT project is initially being developed for monitoring wind turbine structures, the system lends itself to many other applications where structural integrity is of the utmost importance. Some example applications are:

- Renewable energy devices
- Offshore platforms
- Marine power devices
- Power plants

If you would like any more information about this project, please contact Chiraz Ennaceur.

Project Partners:

TWI

BCF Designs

Ericsson

Fugro Structural Monitoring

I.D.E.A.S.

Novalia

Physical Acoustics

RWE npower

Solent Composite Systems

Spree Engineering

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