

Concept

Development of a Portable High Energy Nanofocus Computed Tomography System for Glass Reinforced Plastic Wind Turbine Blades / COncEPT

Project code: COOP-CT-2006-032949

ES programme: Framework Programme 6 (FP6)

Duration of the project: 2006.12.01-2008.11.30

The objective of the project

To develop a novel and portable computed tomography system to perform total structural integrity inspection of present and next generation composite wind turbine blades without taking them out of service.

Problem

Wind turbine blades are complicated for inspection, because of:

- ▶ Multilayered structure;
- ▶ Variable thickness;
- ▶ Anisotropic materials;
- ▶ Manufacturing non-homogeneities.

Testing techniques used for investigation

- ▶ Ultrasonic techniques:
 - ▶ Air-coupled testing 290 kHz;
 - ▶ Pulse-echo immersion testing using moving water container 2.2 MHz, 400 kHz;
 - ▶ Contact technique with wedge type transducers for investigation of leading edge 500 kHz.
- ▶ Radiographic techniques.

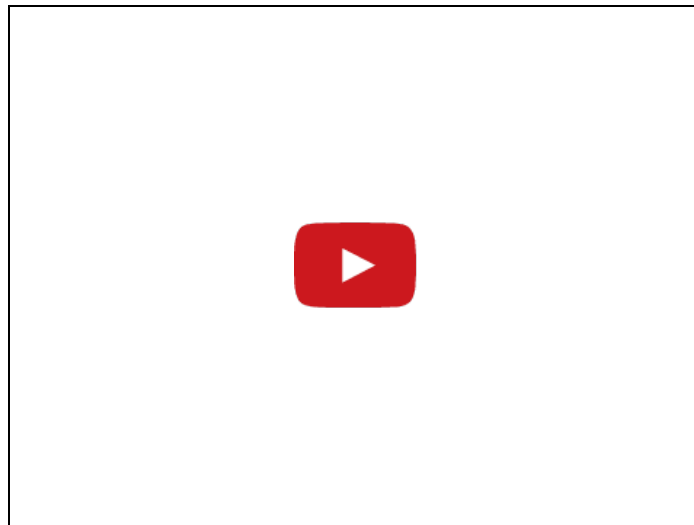
Ultrasound institute

Developed technique for validation of the results, obtained with X-rays. For that different ultrasonic techniques were used: air-coupled and contact using Lamb waves, pulse-echo immersion using bulk waves.

Project partners

TWI (UK), X-Tek (UK), Detection Technology (Finland), General High Voltage (UK), Innospexion (Denmark), Eon (UK), RWE nPower (UK), Kaunas University of Technology (Lithuania), London South Bank University (UK), Germanischer Lloyd (Germany).

Project homepage: <http://www.concept-project.eu.com/>



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5. **R. Raišutis, E. Jasiūnienė, R. Šlīteris, A. Vladišauskas.** The review of non-destructive testing techniques suitable for inspection of

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6. **E.Jasiūnienė, R.Raišutis, R.Šlitteris, A.Voleišis, M.Jakas.** Ultrasonic NDT of wind turbine blades using contact pulse-echo immersion testing with moving water container. Ultragarsas = Ultrasound. Kauno technologijos universitetas. Kaunas: Technologija. ISSN 1392-2114. 2008. T. 63. Nr. 3. p. 28-32. [INSPEC; 0,200]. [/pdf/](#)
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