

Remote participation

Due to the Corona situation, the Risø Symposium will be held as an online event with remote participation only.

It will be ensured to maintain the Risø Symposium as a high-quality conference, well organized and with high-level scientific presentations based on peer-review papers, and still with the possibility for the participants to discuss and interact with each other, but now using conference online tools



Registration

The registration fee is DKK 2000 (approx. EUR 270) and covers online access to oral presentations, contribution to discussions, and publication of presented paper.

Registration deadline is **15th Aug 2020**.

Contact

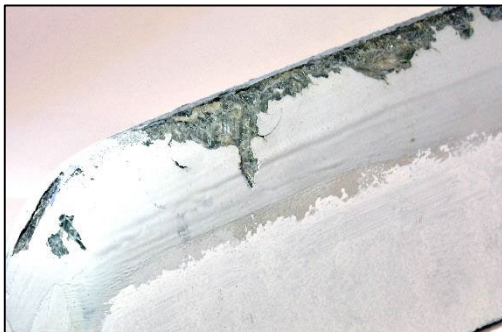
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41st Risø International Symposium on Materials Science

Materials and Design for Next Generation Wind Turbine Blades

7 - 10 September 2020

Online event

Arranged by
Composite Mechanics and Structures
DTU Wind Energy, Denmark



41st Risø International Symposium

The focus of the 41st Risø Symposium is new requirements for materials and design for next generation wind turbine blades. Over the last 40 years, wind turbine blades have grown an order of magnitude. Today, the longest blades are exceeding 100 meters and weighing 50 tons. Because of this growth in blade size, the cost of wind energy can now compete with fossil-based energy sources on market terms. Together with a wish in society for a zero-emission future, the wind energy sector is foreseen to further expand. This will require new solutions and approaches for next generation wind turbine blades, such as improved mechanical performance and structural reliability, coupled to more sustainable solutions including end-of-life considerations.

In order to address those new requirements for next generation wind turbine blades, the following topics focused on composite materials and their influence on the wind turbine blades will be addressed at the symposium.

Manufacturing

Existing and alternative manufacturing technologies; constrains and new opportunities, process characterization e.g. cure kinetics and residual stresses

Mechanical properties and performance

Key design properties such as stiffness, compression strength, fatigue resistance; materials development for hybrid composites, bio-based, and thermoplastic composites; adhesive joints and fibre/matrix interfaces; structural design and performance of blade structures

Experimental characterization and testing

Micro and macro structural characterization using X-ray tomography and ultrasound; challenging test methods for composites for static and fatigue testing; development of test methods for structural elements, e.g. ply-drops and wrinkles, and full scale testing of blades

Polymer matrices and coatings

Smart composite materials including nano-reinforcement, self-sensing, self-healing, energy storage, energy harvesting; surface coatings, de-icing, leading edge erosion

Sustainability, life-time extension and end-of-life

Repair, sensors, structural health monitoring, recycling, repurposing, decommissioning, life-cycle analysis (LCA)

Invited speakers

Leif Asp (Chalmers University of Technology, Sweden)

Structural battery composites - what are they and can they be used in wind turbines?

Xiao Chen (Technical University of Denmark)

Fracture and damage of composite wind turbine blades: field observations, laboratory experiments and numerical modeling

William Curtin (EPFL, Switzerland)

Unidirectional strength: "global" and "local" load sharing models and implications on size-scaling, fatigue, and hybridization

Jesper Hattel (Technical University of Denmark)

Numerical and experimental analyses in composites processing: Heat transfer, resin cure and residual stresses

Steffen Laustsen (Siemens Gamesa Renewable Energy)

Challenges in preventing leading edge erosion

Lars Overgaard (Envision Energy)

Advancing blade performance through applied composite material science

Mark Spring (Lloyd's Register, UK)

Through life management and life extension of wind farms

Yentl Swolfs (KU Leuven, Belgium)

State-of-the-art models for mechanical performance of carbon-glass hybrid composites in wind turbine blades

Bent F. Sørensen (Technical University of Denmark)

Micromechanics testing and modelling to enhance the damage tolerance of composite structures

Jim Thomason (University of Strathclyde, UK)

Upgrading and reuse of glass fibres recycled from end-of-life composites

Contributing speakers

About 40-45 speakers from academia and industry.

List of speakers can be found on the [website](#).

International advisory committee

- Kristofer Gamstedt (Uppsala University, Sweden)
- Roberts Joffe (Luleå University of Technology, Sweden)
- Hiroyuki Kawada, (Waseda University, Japan)
- Marino Quaresimin (University of Padova, Italy)
- Michael Sutcliffe (University of Cambridge, UK)
- Ramesh Talreja (Texas A&M University, US)
- Michael Wisnom (University of Bristol, UK)

Proceedings papers

After a peer-review process, the proceedings papers will be published in the open access journal [IOP Conference Series: Materials Science and Engineering](#).

The papers are abstracted and indexed in Web of Science, Scopus, and other databases.