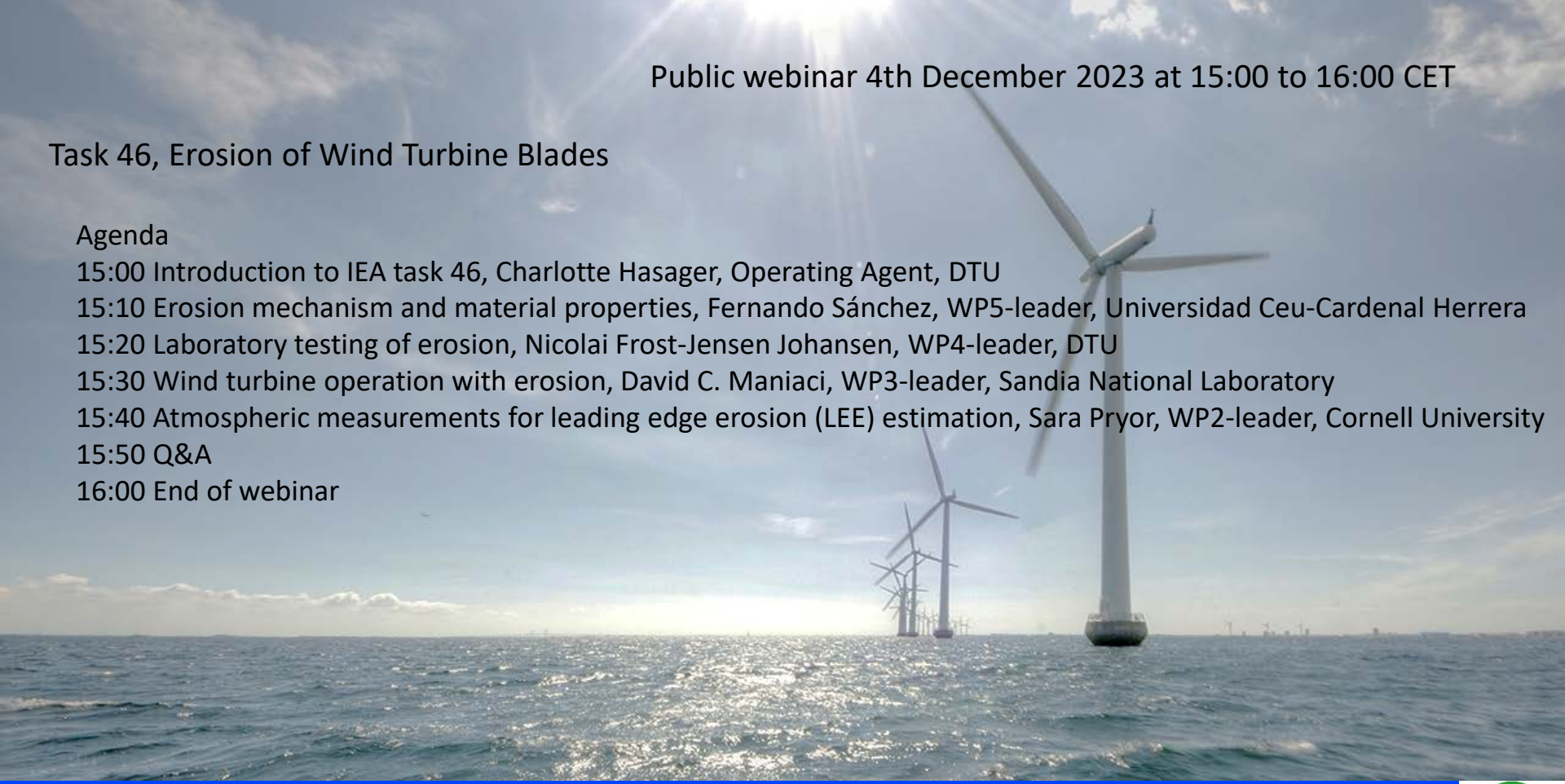


Public webinar 4th December 2023 at 15:00 to 16:00 CET

Task 46, Erosion of Wind Turbine Blades

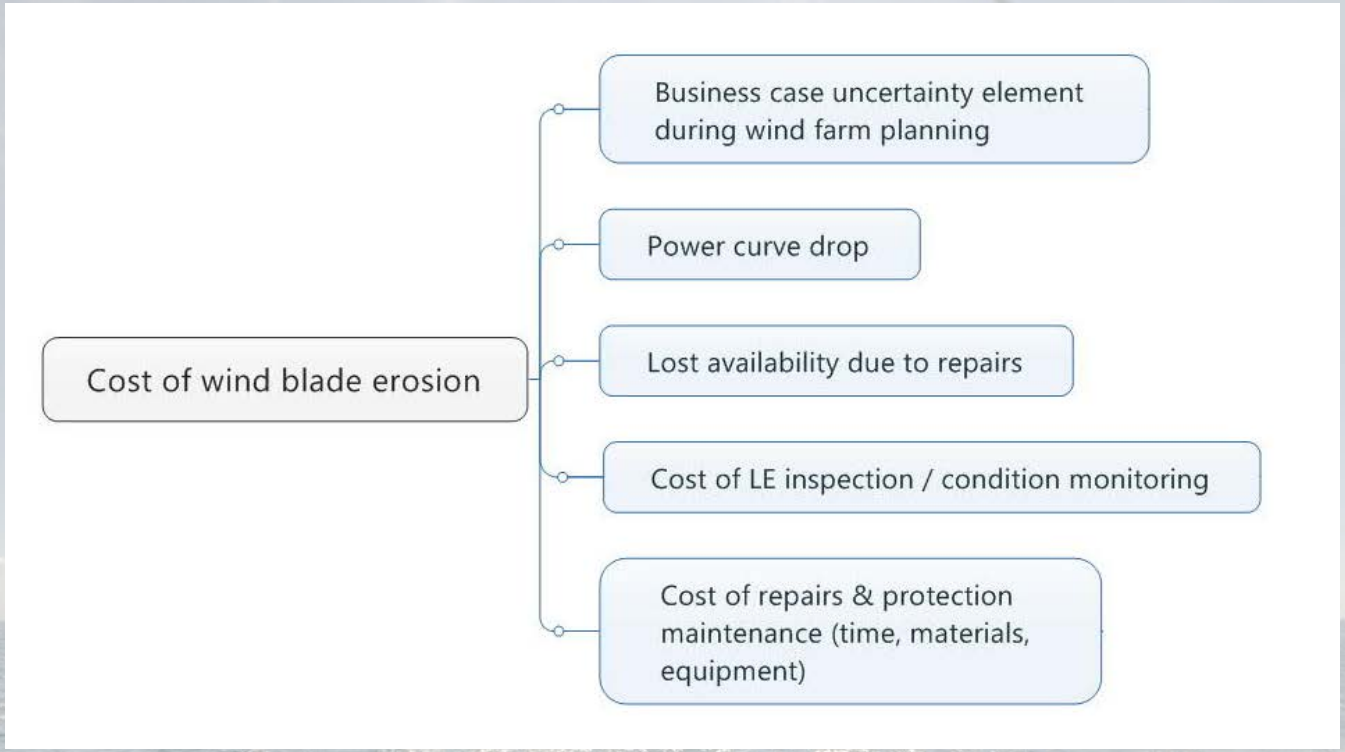
Agenda

15:00 Introduction to IEA task 46, Charlotte Hasager, Operating Agent, DTU
15:10 Erosion mechanism and material properties, Fernando Sánchez, WP5-leader, Universidad Ceu-Cardenal Herrera
15:20 Laboratory testing of erosion, Nicolai Frost-Jensen Johansen, WP4-leader, DTU
15:30 Wind turbine operation with erosion, David C. Maniaci, WP3-leader, Sandia National Laboratory
15:40 Atmospheric measurements for leading edge erosion (LEE) estimation, Sara Pryor, WP2-leader, Cornell University
15:50 Q&A
16:00 End of webinar

Why blade erosion is relevant?

- Still an unsolved issue: blades today require costly in-situ service
- Net Present Value of costs associated to blade erosion estimated 2-3% (offshore)
- Will get worse:
  - lifetime of offshore projects online by 2030 is 30 years
  - Higher tip speeds >100 m/s are envisioned for future wind turbine designs
  - New regions with high precipitation and UV loading are exploited
- Solving the erosion challenge will unlock system-level gains: lower loads, and wind turbine cost

Why blade erosion is relevant?



The purpose

- The purpose of this IEA Wind Task is to improve understanding of the erosion driving factors, develop datasets and model tools to enhance prediction of leading edge erosion likelihood, identify damage at the earliest possible stage and advance potential solutions.

Participants

- The work plan is delivered by 40 organizations from 12 countries:
  - 1 certification body
  - 5 wind turbine manufacturers
  - 6 wind farm owners
  - 8 coating manufacturers
  - 20 academic organizations

Country	Contracting Party	Participant Organization
Belgium	Belgian Ministry of Economy	Engie
Canada	Natural Resources Canada	WEICan
Denmark	Danish Energy Agency	DTU , Hempel, Ørsted
Finland	Business Finland	VTT
Germany	Federal Ministry for Economic Affairs and Energy	Fraunhofer IWES, Covestro, Emil Frei (Freilacke), Nordex Energy, DNV, Mankiewicz, RWE
Ireland	Sustainable Energy Authority of Ireland	Institute of Technology Carlow, University of Galway, University of Limerick
Japan	New Energy and Industrial Technology Development Organization	AIST, Osaka University, Tokyo Gas Co. Asahi Rubber Inc.
Netherlands	Netherlands Enterprise Agency	TU Delft, Eneco, Suzlon, TNO
Norway	Norwegian Water Resources and Energy Directorate	Equinor, University of Bergen
Spain	Centre for Energy, Environmental and Technological Research	Aerox, CENER, Nordex Energy Spain, Siemens Gamesa Renewable Energy, Universidad Cardenal Herrera - CEU
UK	Offshore Renewable Energy Catapult	ORE Catapult, University of Bristol, Lancaster University, Imperial College London, Vestas UK. Ilosta
US	US Department of Energy	Cornell University, Sandia National Laboratories, 3M

Who can participate in Task 46?

To participate in the research activities of Task 46, researchers must reside in a country that participates in the IEA Wind Agreement AND has agreed by official letter to participate in Task 46. The participating member country of the IEA Wind TCP must designate a lead institution that agrees to the obligations of Task participation (pay the annual fee and agree to perform specified parts of the work plan).

Active researchers (performing part of the work plan) benefit from meetings and professional exchange during the term of the Task. Countries participating in the Task benefit from the information developed by the Task. The value of the research performed is many times the cost of the country participation fee or the labor contributed to carrying out the work plan.

For more information, contact the Operating Agent Charlotte Bay Hasager or the IEA Wind Secretariat.

https://iea-wind.org/task46

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About Task 46

Leading-edge erosion (LEE) has been identified as the main factor substantially reducing both blade lifetime and energy output over time. Field repairs are costly due to lost availability and challenging access and weather conditions. It is crucial to understand the impact of leading-edge erosion on the performance of wind plants to be able to determine the cost/benefit of proposed mitigation strategies.

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Organisation of work

Task 46 work packages

Climatic conditions driving erosion (WP2)

Sara C. Pryor (Cornell University)

Wind turbine operations with erosion (WP3)

David C. Maniaci (Sandia National Laboratory)

Laboratory testing of erosion (WP4)

Nicolai Frost-Jensen Johansen (DTU)

Erosion mechanics & material properties (WP5)

Fernando Sánchez (Univ. Cardenal Herrera CEU)

Management (WP1) Charlotte Hasager (DTU)

Thank you

Operating Agent

Charlotte Hasager, DTU

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