

DURALEGE

Innovation Fund Denmark



DTU





DURALEGE

Innovation Fund Denmark



WELCOME

to the International Symposium on

Leading Edge Erosion of Wind Turbine Blades

February 4-6, 2020, Roskilde, Denmark



The symposium is organised in the framework of two Innovation Fund Denmark projects

EROSION:

Wind Turbine
Blade Erosion -
Reducing the
largest
uncertainties



DURALEGE:

Durable leading
edges for high tip
speed wind
turbine blades



4-6 February 2020



Organisation

Organizing Committee

- Kenneth Thomsen (Head of Program Materials and Structures, DTU)
- Bent F. Sørensen (Professor, Dr.techn., DTU)
- Ignacio Martí (Head of Program Offshore Wind Energy, DTU)
- Kim Branner (PhD, Senior Researcher, DTU)
- Christian Bak (PhD, Senior Researcher, DTU)
- Peggy Friis (Senior Advisor, DTU)
- Yukihiro Kusano (Senior Researcher, Dr. techn., DTU)
- Jakob I. Bech (PhD, Senior Development Engineer, DTU)

Organisers

- Leon Mishnaevsky Jr. (PhD, Senior Researcher, DTU) DURALEEDGE project
- Charlotte Hasager (Professor MSO, PhD, DTU) EROSION project

4-6 February 2020



Previous workshops

Workshop on Solutions for Leading Edge Erosion (27 November 2018)

OffshoreEnergy.dk/DTU Wind Energy

Henrik Bøhmer/Charlotte Hasager (EROSION project)

Energy Innovation Cluster

Workshop on Main Factors for Leading Edge Erosion (22 February 2018)

OffshoreEnergy.dk/DTU Wind Energy

Henrik Bøhmer/Charlotte Hasager (EROSION project)

Workshop – Erosion Day (27 February 2017)

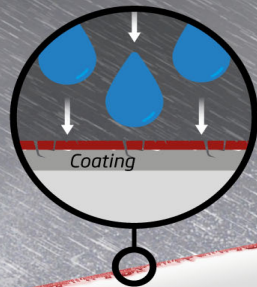
DTU Wind Energy

Yukihiro Kusano (DTU internal project)

4-6 February 2020

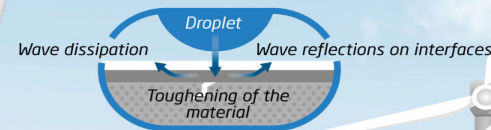
LEADING EDGE EROSION DAMAGE

Erosion damage is mainly generated during heavy precipitation (big drops of rain or hail), which occurs in a very little fraction of the turbines operation time.



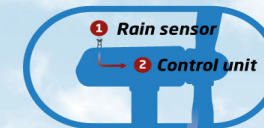
MATERIALS

Optimization of protective system:
Microarchitected coatings with computationally optimized structures.



MEASUREMENT DEVICE

Low-cost prototype for precipitation measurement on site and real time warning device. Maintenance-free rain sensor giving information on drop-let size distribution and rain rate.

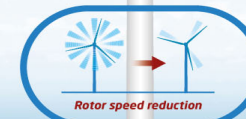


EROSION SAFE MODE

A safe mode control based on the measured precipitation to control the wind turbine, reducing the tip speed under severe conditions – preventing aerodynamic degradation and reducing maintenance cost.

Heavy rain

>10 mm/h, 8,8 hours/year



Life time extend

25 years

SUPPORTED BY

Innovationsfonden

