SP4 Aerodynamics Loads & Control

FALCON 30 50 Workshop

Online Edition

EERA SP4 announce the workshop **F**uture of **A**erodynamics, **L**oads and **Con**trol 20**30** 20**50** - **FALCON 30/50** to be held the 25th February 2021.

In this workshop, the most recent advances and the technological challenges in the field of Wind Turbines Aerodynamics, Loads and Controls will be analyzed with the aim of meeting the 2030-2050 Green Deal objectives.

The Green Deal is an integral part of the European Commission strategy to implement the United Nation's 2030 Agenda and the sustainable development goals. The European Commission will seek for achieving climate neutrality by 2050 by presenting an impact assessed plan to increase the EU's greenhouse gas emission reductions target for 2030 to at least 50% and towards 55% compared with 1990 levels in a responsible way. A set of transformative policies will be designed.

Energy efficiency must be prioritized as well as the use of renewable energies. Offshore wind energy is particularly mentioned in the Green Deal by stating that the clean energy transition should involve and benefit consumers. Renewable energy sources will have an essential role: "Increasing offshore wind production will be essential, building on regional cooperation between Member States"

On the other hand, the 5th ETIP pillar created to consolidate the scientific base for wind research, enabling pioneer research. Aerodynamics, its integrated multi-physics loads system, and its control are the most characteristics and differentiating technologies of wind energy science. In addition, in the incoming Horizon Europe Programme, several calls will be included to deal with the new challenges in wind energy, and EERA will for sure play an important role in this initiative.

All these objectives could only be achieved by making a joint effort in the research strategy during the following years. This research strategy will be discussed in the FALCON 30-50 Workshop. It will be structured in three technical sessions and two informative sessions:

Technical session 1: Aerodynamics (9:00h)

- New generation of wind turbine blades (Mario Jiménez-Siemens-Gamesa) 9:00h
- Eroded Blades energy production (Beatriz Méndez-CENER) 9:15h
- Wakes modeling for wind farm interactions & Block Effect 9:30h
- Trailing edge serrations effect on the aerodynamic performance of wind turbines (Elena Llorente-Nordex) 9:45h

Technical session 2: Loads (10:00h)

- Reliable Load computation for floating wind turbines (José Azcona-CENER) 10:00h
- Aeroelastic Tools with high-fidelity aerodynamic models for complex load cases(Alvaro González-CENER) 10:15 h
- Aeroelastic Tools for multi-rotor concepts (Raquel Martín-CENER) 10:30h
- Mixed wind turbine configurations. XROTOR. (William Leithead-Univ.Strathclyde) 10:45 h
- Downwind wind turbines for offshore applications (Roberto Echeverria-2-BEnergy) 11:00h

11.15h-11.30h Break

Technical session 3: Control (11:30h)

- Data-driven wind turbine control. (Jan-Willem van Wingerden-TU Delft) 11.30h
- Wind farm flow control achievements (Carlo Bottasso-TUM) 11:45h
- Challenges in control of floating offshore wind turbines (Iñaki Sandua-CENER) 12:00h
- Black start (Ricardo Da Silva- Scottish Power Renewables) 12:15h
- Ancillary services (Kaushik Das-DTU) 12:30h

13:00h-14h Break

Informative session 1: Horizon Europe Programme (14:00h). (Carlos Eduardo Lima Da Cunha- Policy Officer at the European Commission)

- Horizon Europe Description
- Specific wind energy calls description

Informative session 2: IEA Tasks (15:00h)

- Task 37 Systems engineering (Pietro Bortolotti-NREL) 15:00h
- Task 46 Erosion of Wind Turbine Blades (Raul Prieto-VTT) 15:20h
- Task 44 Wind Farm Flow Control (Paul Fleming-NREL) 15:40h
- Task 30 OC6: Offshore code comparison (Amy Robertson-NREL) 16:00h