



ENERGY

LIDAR-MEASURED TURBULENCE INTENSITY

Joint Industry Project - Call for Participants

Background

Project developers are often confronted with high costs for both wind speed and turbulence intensity (TI) measurements. These are caused by high installation costs for met masts and waiting periods for building permissions which can be time intensive. At the same time energy yield assessments using cup anemometers for required TI input incorporate some uncertainty because the TI measurement does not represent the wind field of the whole rotor of a wind turbine.

Compared to this, TI measurement using Light Detection and Ranging (LIDAR) proved to have a couple of benefits:

- More precise energy yield assessment
- Significant cost reduction of measurement campaigns for site assessment

- Measurements feasible in new areas, such as sites with deep water depths
- Shorter load measurement campaigns for Type Certification

Although methods to derive turbulence intensity from LIDAR measurements have already been proposed in research context, they have not found their way into standards yet - still all standards in modern wind industry refer to TI measurements by cup or sonic anemometers.

DNV GL Joint Industry Project

Now, DNV GL is calling stakeholders to join forces to increase the acceptance of LIDAR-measured TI. Aim is to use available technologies in a more efficient way and to support various stakeholders in the industry such as:



Who should take part?

OEMs (WTG & LIDAR)
Project Developers and
Research Institutes

- **Project Developers** to establish a process defining how the LIDAR technology can be used for wind resource and energy yield assessment.
- **Turbine Manufactures** to integrate LIDAR TI data into power curve and load measurements. All this to reduce costs of the type certification process.

What is the desired objective of the planned JIP? Main goal is to issue a Recommended Practice (RP) giving guidance to industry stakeholders. This will include a two-step approach.

Track A: Issue a RP in which general acceptance criteria for the correction methods are defined to assess the uncertainty of LIDAR-measured TI data in comparison to those of a cup anemometer. The acceptance criteria may differ based on the applied use case, e.g. power curve, load validation or site assessment.

Track B: This track aims to step away from cup anemometer measurements to explore advantages of the LIDAR technology which often delivers more precise results, e.g. a rotor equivalent TI could be defined. Issue a RP in which advantages of LIDAR-measured TI methods compared to cup anemometer are described and the implementation of this new technology to the whole wind industry is supported.

Next Steps:



CONTACT US FOR QUESTIONS AND IF YOU LIKE TO BE PART

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