

Task 32's "Application Areas"

Pre-construction & turbine design

Construction & Commissioning

Operations

Data, tools, and standards

State of the Art in 2018

2019

2020

2021

Goals & Outcomes

RP 18 for floating lidar systems
Released in 2018.

WS13 *identified next steps for floating wind lidar*. Bremerhaven, 11.2018

IEC Floating lidar proposed for standardization to IEC TC88 (6.2019)

EU Q1 2020: PhD students start in EU ITN FLOWER

IEC Possible update of RP18 on Floating Lidar Systems

Turbines using lidar-assisted controls need to be certified and optimized to reduce LCOE.

WS8: "Certification of lidar-assisted controls application". 1.2018

WS15: "Optimizing wind turbines using LAC using Systems Engineering methods". UMASS 17-18.10.2019

Report on benefit of lidar-assisted controls (with Task 37)

RP15 for land-based resource assessment using remote sensing was *released in 2013.*

Many use cases for wind lidar onshore make standardization challenging & reduce innovation. New focus on how lidar can contribute in new ways

Winterwind INTERNATIONAL WIND ENERGY CONFERENCE Tentative: session on wind lidar in cold climates, Feb.2020

WSXX: "Wind Lidar in Cold Climates", Gaspe, Canada, June 2020

Report on the use of wind lidar in cold climates

How can turbulence intensity data from lidar be used for site assessment and loads certification?

WS10: "Turbulence Intensity measurements with lidar", 10.2018

IEC IEC 61400-12-1 (2017) for power performance testing increases uncertainty of wind speed measurements from lidar

CFARS Summary paper on PCWG power performance testing Share-X exercises. Date TBD.

PCWG Summary paper on PCWG power performance testing Share-X exercises. Date TBD.

IEC Proposal to IEC 61400-50-3 for nacelle-mounted lidar for wind measurements

Nacelle-mounted lidar for power performance testing may help

Round-Robin: Comparison of nacelle-mounted lidar methods for PPT. Tentative start 1.2020

WS14: "Comparison of nacelle-mounted lidar methods for PPT". Tentative date 11.2020.

IEC IEC 61400-50-3 for nacelle-mounted lidar for wind measurements started development in 2017

Round Robin: Windfield reconstruction in the induction zone.

WS11: "Windfield reconstruction in the induction zone", with PCWG, Seville 15.1.2019.

Round Robin: Windfield reconstruction in the induction zone with blockage. Tentative start 9.2019.

WSXX: "Windfield reconstruction in the induction zone with blockage". Date TBD.

Can induction-zone wind field reconstruction can be used for power performance measurements?

WS9: "Experience in very short-term forecasting" with IEA Wind Task 36. DTU 6.2018

Task 32 / Task 36 report and journal paper on minute scale forecasting published 2.2019.

Report on windfield reconstruction in the induction zone

OpenLidar Task 32 supports OpenLidar concept

EU Q1 2020: PhD students start in EU ITN LIKE

IEC Q1 2021: Several IEC standards up for renewal

Very few opportunities for direct collaboration on hardware or software, few open community tools

The e-WindLidar data format is increasingly adopted by the wind energy R&D community

WSXX: "Lidar data Processing". Date TBD.

WS12: e-WindLidar. DTU, 3.10.2018

WS16: "Lidar data filtering". 10.2019.

WSXX: "Lidar process uncertainty". Date TBD.

Public Lidar data processing tools repository

Confident use of lidar in all types of terrain and offshore to provide all of the data needed to design and install a wind turbine

Community consensus on ways to use wind lidar to support power performance measurement and yaw alignment in all types of terrain and offshore

Create common understanding of the benefits and limits of lidar measurements for wind turbine / plant control. Improve lidar systems and data processing using this understanding.

Develop and deploy community tools to create, support, and build on a common framework for effectively executing all parts of a lidar project in all phases of a wind energy development