Offshore Floating Lidar Wind Measurements for Finance Grade Wind Resource Assessments

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Abstract

With an increasingly competitive offshore wind market, it is crucial to offshore wind farm developers that the on-site wind resource is understood as accurately and cost effectively as possible. Conventional meteorological masts present a significant upfront development cost in connection with long lead times to an offshore wind project. Therefore, Floating LiDAR (FL) technology has been identified as a potential alternative.

While this Floating LiDAR (FL) technology and its use in offshore wind assessments has significantly matured during the past years, the offshore wind industry is experiencing a steeply growing need in the deployment of flexibles wind sensing techniques. A Floating LiDAR buoy (FLS) offers both: a significant cost reduction over a classical meteorological mast, and the flexibility of being deployed at different locations and in deeper waters. With its already demonstrated capability to produce high quality wind measurements it provides the needed input to project investment relevant energy yield predictions for offshore wind farm developments.

The need for an alternative to meteorological-mast-based wind measurements is mainly caused by vanishing financial and technical feasibility and long lead times to install complex structures offshore. This is the case for European and North American waters, and it is particularly true for the prosperous offshore wind markets in Korea and other parts of Asia.

In addition to the significant cost and lead time reduction potential, Floating Lidar provides flexibility for higher wind measurement covering the best part of modern offshore wind turbines at multiple levels, being deployable at different locations for larger wind farm sizes and in deeper waters.

The presentation will (a) introduce the FL technology for use in offshore wind resource assessments, (b) deliver context with regards to the maturity of market available FL products and their latest technological developments, (c) give an overview of FL track records in terms of completed buoy deployments for commercial projects, and (d) elaborate on applied best practices, risks and advantages together with expected data uncertainty when using FL as the main wind data source for finance grade offshore energy yield predictions.

Keywords: *floating lidar, floating lidar technology, offshore wind, wind resource assessement, energy yield prediction*

References

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Biography

Detlef's background is Ocean Physics, working for Multiversum GmbH as a Senior Consultant and Lidar Expert since 2017, focusing on offshore wind resource and Lidar wind remote sensing. From 2002-2017 he worked with DNV GL in wind turbine and resource measurements and coordinated FINO offshore wind research platforms. Since 2005 he has managed LiDAR wind measurement campaigns on- and offshore and became an expert for fixed and Floating LiDAR (FL). He co-authored the IEA FL recommended practice.