

Achieving project bankability with WindCube lidar assessment



ECOFYS

The challenge: Lack of high-quality wind data, uncertain project future

A Dutch wind farm developer and operator planned to create a single 3.3 MW wind turbine project in an industrial site in the Netherlands. However, due to a lack of available on-site measurements and nearby production data, the consultants chosen for the project had to rely solely on models and long-term meteorological data.

Given this data deficiency and the complex flow nature of the area, the resulting energy yield reports showed high uncertainties up to 30% and significant

discrepancies in the P50 and P90 Annual Energy Production (AEP) estimates.

The developer was therefore not able to secure adequate financing for the project without enhancing the integrity of the data. In order to improve the bankability of the project, Ecofys WTTS proposed performing additional on-site measurements to reduce data uncertainty.

The solution: Develop accurate wind measurement process, obtain financing for project

Due to the proximity of the surrounding buildings, the possibility of installing a tall met mast (i.e., hub-height above 100m) was quickly dismissed for logistical and safety reasons. WindCube® ground-based lidar was instead chosen because it could provide a flexible, safe, and accurate

solution, as well as capture additional measurement heights over the rotor, further reducing data uncertainties.

The system was previously calibrated against a mast at the Ecofys WTTS test site to calculate uncertainties. It was installed on the top of an industrial building next to the future turbine location. After five months, enough high-quality data was acquired to ensure that a good compromise could be reached between the project cost and the potential of reducing data uncertainty.





The benefits: Less data uncertainty, better lending conditions

The additional lidar data enabled significantly reduced uncertainties and improved AEP estimates — compared to the average results of the first reports, uncertainties were reduced from 30% to 12%, and P90 was improved by almost 40%.

This new assessment allowed for more favorable lending conditions with a higher debt ratio and lower interest rates, and the developer was able to find the right financing partner.

“The experience Ecofys WTTS has built up with WindCube over the years helped us to successfully design and implement a rooftop-mounted five-month measurement campaign with 99.8% data availability. This in turn successfully helped the customer realize a project which otherwise might have been impossible.”

Erik Holtslag

Chief operations, Ecofys WTTS



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