

Achieving project bankability with WindCube lidar

Case Study



The client:

Ecofys

Vaisala solution:

WindCube lidar

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 APPROACH:

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

"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*

uncertainties. It was installed on the top of an industrial building next to the future turbine location. After five months, enough highquality data was acquired to ensure that a good compromise could be reached between the project cost and the potential of reducing data uncertainty.



THE RESULTS:

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.

Why Vaisala?

We are innovators, scientists, and discoverers who are helping fundamentally change how the world is powered. Vaisala elevates wind and solar customers around the globe so they can meet the greatest energy challenges of our time. Our pioneering approach reflects our priorities of thoughtful evolution in a time of change and extending our legacy of leadership.

Vaisala is the only company to offer 360° of weather intelligence for smarter renewable energy, nearly anywhere on the planet. Every solution benefits from our 85+ years of experience, deployments in 170+ countries, and unrivaled thought leadership.

Our innovation story, like the renewable energy story, continues.

