

# Proving bankability with accuracy and confidence

## Case Study



### The client:

Pavana GmbH

### Vaisala solution:

WindCube vertical profiler

### THE CHALLENGE:

#### Verifying lidar with growing hub heights

Growing turbine hub heights and the race to increase renewable energy capacity place big demands on Wind Resource Assessment (WRA) projects and lidar verifications at higher heights.

While today's hub heights are as tall as 200 m, new models are approaching 300 m. These challenges make the use of met masts for wind measurements very expensive and time-consuming with construction and permit processes. Wind lidar is rapidly replacing met masts for measuring wind conditions, and the biggest names in the wind energy industry are choosing WindCube® wind lidar for their WRA projects.

### THE APPROACH:

#### One accurate wind lidar for all measurement heights

Pavana GmbH, a major player in wind farm development, addresses wind measurement challenges with skillful expertise as they advance projects across Europe and South Africa. The WindCube vertical profiler has proven to be an accurate and reliable wind measurement device.

Lars Levermann, Managing Director at Pavana, said "We are using several measurement technologies to fulfill the scope of measuring wind conditions. And since the beginning of Pavana in 2017, we are using Vaisala WindCube lidar equipment for our measurements."

*"I think it's very important that we collect more and more use cases which show that we can deliver reliable reports using the lidar as the preferred measurement Technology for WRA."*

*Lars Levermann  
Managing Director, Pavana*

With WindCube, Pavana can collect wind measurements at 20 configurable heights simultaneously which is essential for accurate data gathering and insights. "We have a huge number of measurement heights which we can use, so we have a good idea in the end of what will be the wind conditions over the rotor sweep area of a wind turbine. That is a very good input for our assessment and it helps us to run the wind flow modeling as well," added Lars.

Lars emphasizes lidar's advantages in speeding up wind farm development time, saying "Turbine hub heights are reaching up to 300 meters and lidar helps us to cover all the area in which the turbines will be: in all distances, at all heights. Renewable energy can be a reality faster using lidar, because we can shorten the period of developing the project and ensure the projects are bankable in the end."

#### **THE RESULTS:**

##### **Verification against a 200-meter met mast**

Pavana is well-known for their IEC-compliant lidar verification services. In 2021, the organization built a 200-meter met mast to verify WindCube lidar measurements. What they have found only confirms their confidence in lidar as the modern WRA wind measurement tool of choice.

Lars said, "If we compare the WindCube lidar with other strategies of wind measurement, we can see that on one end, lidar is fast, quick and cost efficient. Plus, we can measure at many different heights and change the heights over the project period if we want."

"We can win several percentages in uncertainty by using lidar instead of a met mast... And so if we can reduce that uncertainty, all the investment and the bank results will become better for the project," added Lars.

In partnership with Vaisala, users now have the ability to verify lidar against Pavana's IEC-compliant 200-meter met mast.

Pavana recognizes WindCube lidar as a valuable tool for shortening WRA project development times and proving bankability with accuracy and confidence thanks to WindCube's hybrid reconstruction algorithm that shows very good results over all heights up to 200 m with temporal consistency.

## 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.

