

Improving certainty around the world

VAISALA

Case Study



The client:

Mainstream Renewable Power

Vaisala solution:

WindCube lidar

THE CHALLENGE:

Demonstrate bankability, augment met mast data

Mainstream Renewable Power (Mainstream), the global wind and solar developer, has embarked on wind projects all over the world since 2008. It has a track record of contributing more than 10GW of assets and has raised \$2.1 billion in project financing, much of this in regions with little or no previous wind energy development.

Like many developers, one of Mainstream's key technical challenges is to obtain high-quality data beyond that which is offered by traditional met masts in order to demonstrate to equity investors and lenders that a given site will generate predictable and dependable revenue.

One additional challenge is that Mainstream develops sites in less familiar, often remote territories, including Chile, the Philippines, Vietnam, and South Africa. This can result in wind resource risks related to factors such as dramatic changes in wind climate across a site or unusual vertical wind speed patterns. Such uncertainty makes gathering reliable wind data particularly important.

THE APPROACH:

Better data, better certainty

Mainstream has deployed WindCube® lidars across multiple sites in addition to existing met masts, allowing data collection at greater heights. The resulting datasets removed the need to rely on vertical extrapolation of data from met masts, enabling improvements in energy yield estimation

"The main reason why we use LiDAR, especially at the financial stage, is to decrease the uncertainty of the project."

*Romain Molins
Energy Analysis Manager (Chile), Mainstream
Renewable Power*

accuracy. Mainstream chose lidar as its preferred remote sensing technology because of its higher data availability and its ability to record data suitable for assessment of modern wind turbine technology where blade tips heights may exceed the reach of met masts.

Mainstream deploys WindCube units across several greenfield sites, usually on simple or moderately complex terrain. In several cases, it relocated the units after its initial measurement campaign was completed, extending the value of the units over long life cycles.

THE RESULTS:

Finance-grade, successful wind projects

Mainstream's WindCube units have eased the uncertainty introduced by vertical extrapolation. Mainstream's energy analysts require the lidar data to pass a set of strict criteria relating to comparison against co-located met mast readings. If measurements are deployed and maintained correctly, independent consultants, including the lenders' technical advisors, will typically treat the data similarly to met mast data.

Mainstream also appreciates that WindCube v2.1 units can be serviced on-site, which can create significant cost and time savings. More critically, gaps in measurement campaigns can have direct impacts on achieving key project milestones and introduce development risks.

Finally, Mainstream is keen to make use of the distinct health and safety benefits of lidars over met masts, with a simpler and faster installation process, including maintenance and redeployment. With WindCube lidars as part of its measurement arsenal, Mainstream is accelerating its development projects, gaining better financial outcomes, and innovating in some of the more remote – and promising – regions around the globe.

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.

