

WindCube Nacelle

Feedforward turbine control for reducing costs and improving efficiency



Key Benefits

Trustworthy, superior metrology

Proactive control for improved efficiency and lower LCOE —
WindCube Nacelle accurately anticipates (several seconds in advance) the wind data hundreds of meters in front of the rotor plane, allowing developers and operators to quickly respond — thereby reducing turbine loads, reducing costs, and improving energy production.

Innovation in an increasingly challenging turbine market —

Reduced fatigue and extreme loads allow the use of longer blades and/or higher towers for a given class, or upgrading the wind class of a given turbine platform. This enables significant energy production increases while maintaining a streamlined portfolio of turbine products.

Innovative lidars from a one-stop shop

Seamless integration using proven designs and practices —

Turbine control is an extension of existing WindCube Nacelle lidar technology, and it has been shown to integrate seamlessly with turbine manufacturers' projects. This simplicity of integration extends to wind developers and operators as well, further enhancing the manufacturer's value proposition.

Easy, reliable global solution

The simplicity and reliability of the industry leader — WindCube Nacelle is already the industry standard for LAC, operating in large fleets in China and increasing locations around the globe.

WindCube® Nacelle makes Lidar-Assisted Control (LAC) a reality, reducing Levelized Cost of Energy (LCOE) and creating numerous other benefits for wind energy.

By fully characterizing the incoming wind field, the system enables anticipatory control optimizations for changing conditions. This can result in significantly extended wind turbine design limits, reduced loads and costs, improved safety and resilience to extreme events, and increased energy capture.

WindCube Nacelle at a glance

Applications

- Fatigue and extreme load reduction
- Production increase
- Reliability and turbine availability increase
- Continuous wind monitoring and turbine performance testing
- Building a base of historic data for failures diagnosis or performance improvements

Key features

Comprehensive measurement of all essential incoming wind conditions, including rotor average wind speed, wind direction, shear, and turbulence at multiple distances before it reaches the turbine rotor

Sophisticated, high-frequency information processing allowing for quick, confident turbine control decisions

Constant accuracy from 50 to 200m with 10 configurable measurement distances

Straightforward adoption with lightweight, efficiently designed system components and proven engineering

Why Vaisala for renewable energy?

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 weather and environmental monitoring solutions for renewable energy are guided by several key priorities:

- Thoughtful evolution in a time of change
- Making renewable energy smarter at every stage
- Extending our legacy of leadership

Vaisala is the only company to offer 360-degree renewable energy solutions — from sensors and systems to digital services and actionable intelligence — nearly anywhere on the planet (and even on Mars). Every Vaisala solution benefits from our 85+ years of experience, pioneering deployments in 170+ countries, and unrivaled thought leadership.

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

Testimonials



Goldwind, one of the world's leading turbine technology providers, chose WindCube Nacelle for its turbine control initiative, validating the suitability and reliability of Vaisala technology to this promising application.

Since 2015, Vaisala has delivered more than 180 systems to Goldwind for this purpose.

“Since deployment, we have been successfully operating our Vaisala technology with great benefit to our project. Vaisala has enabled us to innovate, create new value for our customers, and help push the wind industry forward.”

VAISALA

vaisala.com/wind-energy



Scan the code for more information

Ref. B212143EN-D ©Vaisala 2022

This material is subject to copyright protection, with all copyrights retained by Vaisala and its individual partners. All rights reserved. Any logos and/or product names are trademarks of Vaisala or its individual partners. The reproduction, transfer, distribution or storage of information contained in this brochure in any form without the prior written consent of Vaisala is strictly prohibited. All specifications — technical included — are subject to change without notice.