

VAISALA

Smarter at every stage:

How Vaisala's wind and solar solutions advance renewable energy



A planet full of potential

The wind and sun have powered civilization for many thousands of years. They are two of our most important and ever-present energy sources, but only recently have we learned to use them to their full potential and create lasting societal change.

Today, our technological evolution is urgent. In the time it has taken us to develop powerful solar and wind technologies, we have relied on harmful fossil-fuel substitutes. Because of this, today's renewable energy leaders see great opportunity, but they also face great pressure. They need modern, fully integrated solutions that elevate wind and solar performance and make these industries more competitive, efficient, and sustainable.

We make those solutions.

Solutions across the wind and solar life cycles

Vaisala understands the potential — and the stakes — of advancing renewable energy. That's why we've built the most comprehensive set of weather and environmental technologies available and focused them on the wind and solar industries.

Anchored by proven, globally trusted sensors and data services, Vaisala's renewable energy solutions are unrivaled in their comprehensiveness, integration, and reliability. Vaisala is the only company on the planet providing this kind of end-to-end value — a value that is reinforced by the only global manufacturing and service network of its kind.

Whatever your role in renewable energy, wherever your projects are in the world, Vaisala will help you to meet the most significant energy challenges of our time.



Whatever your role in renewable energy, wherever your projects are in the world, Vaisala will help you to meet the most significant energy challenges of our time.

Wind energy

Global trust, unmatched performance

Recent evolutions in the wind industry — aided by Vaisala technologies, including WindCube® wind lidar — have given developers, operators, and manufacturers better, bankable data with increased agility and simplicity. This has reduced the risks in wind energy output and the global cost of energy for both onshore and offshore wind farms. It has also unleashed some of the most imaginative and useful innovations in the history of energy.

We're continuing to help our customers push the wind industry into new frontiers, including ambitious offshore projects. Many of today's projects would be prohibitively risky without Vaisala's modern, end-to-end solutions providing assurance and constant awareness. But now they're routine.

Key benefits:

- Reduced uncertainty, improving financing and protecting profitability, from onshore complex terrain to remote offshore
- Revolutionary data quality and suitability for tomorrow's turbines
- Increased uptime and safety for assets and personnel
- Minimized operating costs, optimized performance, and lower LCOE
- Simplification of burdensome processes, such as PPT and WRA
- Improved community acceptance and support for wind energy
- Informed, data-driven turbine selection and wind farm layout
- Integration of historical data and excellent forecasting for big-picture visibility



Wind energy solutions and applications

		Prospecting and development	Construction and commissioning	Operations and life management
		<ul style="list-style-type: none"> • Site prospection • Site suitability • Wind resource assessment • Farm extension 	<ul style="list-style-type: none"> • PPT — contractual power curve • Offshore ship operations for build-up 	<ul style="list-style-type: none"> • Permanent wind monitoring • Weather and obstruction light monitoring • PPT — performance verification • Retrofit and performance increase • Site O&M • Offshore ship operations for maintenance • Minutes/hour/day ahead forecasting • Repowering
Wind lidars	Vertical profiler (WindCube)	■	■	■
	Vertical profiler for offshore (WindCube Offshore)	■	■	■
	Long-range scanning (WindCube Scan)	■		■
	Nacelle-mounted (WindCube Nacelle)		■	■
Sensors & systems	Ultrasonic wind turbine sensor (WMT700)			■
	Pressure/humidity/temperature turbine sensor (PTU307)		■	■
	Visibility sensor (PWD20W)			■
	Offshore maritime & helideck monitoring		■	■
Digital services	WindCube fleet management and analytics (WindCube Insights)	■	■	■
	Wind data maps and time series (Historian)	■		■
	Energy forecast (Forecaster)			■
	Historical lightning maps and time series (GLD360, NLDN, Lightning Integrator)	■		
	Real-time lightning data, threats, and alerts (GLD360, NLDN)		■	■
	Lightning strike wind turbine damage potential (Strike Damage Potential)			■

Wind energy solutions and applications

		Turbine development	Research and development
		<ul style="list-style-type: none"> • New turbine prototyping • Equipment for turbine control 	<ul style="list-style-type: none"> • Blocking effect • Wake losses studies • Wind farm wake effect
Wind lidars	Vertical profiler (WindCube)	■	
	Long-range scanning (WindCube Scan)		■
	Nacelle-mounted (WindCube Nacelle)	■	
Sensors & systems	Ultrasonic wind turbine sensor (WMT700)	■	
	Pressure/humidity/temperature turbine sensor (PTU307)	■	
	Visibility sensor (PWD20W)	■	
Digital services	WindCube fleet management and analytics (WindCube Insights)	■	■



Solar energy

Comprehensive value, innovative applications

The sun has been our astronomical companion for 5 billion years, and solar energy is one of the key pathways to a healthier, greener, more innovative future. Vaisala's solar solutions are both advanced and practical, each building on the success of the one that preceded it. They combine industry-leading sensors with unmatched data services for full awareness and reliable, successful solar projects.

By unlocking new efficiencies and improving decision-making across the solar life cycle, Vaisala is making solar projects more competitive and profitable against competing energy sources.

Key benefits:

- Quantified and reduced uncertainty, protecting profitability
- Contribution to grid resilience and reliability
- Optimized performance and maintenance to prevent losses
- Minimized costs
- More informed, data-driven product choices
- Avoidance of unexpected damages and risks
- Efficient management and use of large amounts of data
- Historical perspective and big-picture visibility



Solar energy solutions and applications

		Prospecting & development	Construction & commissioning	Operations & life management
		<ul style="list-style-type: none"> • Site prospection • Solar resource assessment • PV plant design/technology selection • Repowering 	<ul style="list-style-type: none"> • Construction planning • Worker safety • Power performance testing 	<ul style="list-style-type: none"> • Power performance monitoring • Asset management and protection • Retrofit and performance increase • O&M planning and worker safety • Minutes/hour/day ahead forecasting • Asset performance analysis/seasonal outlook
Sensors & systems	All-in-one compact weather sensor (WXT536)			■
	IEC-compliant weather station for PV plant performance monitoring (AWS810 <i>Solar Edition</i>)	■	■	■
Xweather digital services	Historian	■		
	Forecaster			■
	Thunderstorm Manager		■	■
	Lightning Data	■	■	■

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 renewable energy solutions are guided by several key priorities:



Thoughtful evolution

Remain a pioneer in renewable energy, always providing sensible, trusted solutions at the leading edge of R&D.



Smarter at every stage

Provide end-to-end weather and environmental solutions and critical insights throughout the renewable energy life cycle.



Legacy of leadership

Extend our proven track record and global trust to reach more customers in more ways.

Vaisala is the only company to offer 360-degree weather and environmental monitoring 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.



VAISALA

Let's meet the
greatest energy
challenges of
our time.

Reach out to see how Vaisala's
expanded range of solar and
wind energy solutions can help.
We're here for you.

vaisala.com/renewable-energy

Ref. B212491EN-B ©Vaisala 2023

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.