

# DIRECTION

## THE FUTURE OF WIND



GCube's analysis of claims data gathered from construction projects and operational offshore wind farms highlights several key trends that must be carefully managed in order to ensure project success. (Courtesy: Shutterstock)

# Analysis: Offshore wind must quickly respond to changing global risk

As the offshore wind sector expands globally, prices fall, and technology evolves, asset owners and investors are becoming increasingly exposed to technical and supply chain risks, alongside natural catastrophe and extreme weather. More sustainable approaches to risk management and insurance are required to ensure this changing risk profile does not affect project delivery and successful long-term operations.

This is according to GCube Insurance, the specialist provider of renewable energy insurance services, which underwrites more than 13.5 GW of offshore wind capacity in markets including Europe, the U.S., Taiwan, and Japan.

GCube's analysis of claims data gathered over the past 12 months from construction projects and operational offshore wind farms highlights several key trends that must be carefully managed in order to ensure project success. These include:

- ▶ A number of costly inter-array cable faults caused by malfunction of fiber optics designed to monitor cable performance. Cabling losses account for 55 percent of total claims handled by GCube in the past 12 months.

- ▶ A rise in the frequency and severity of claims relating to foundations — particularly monopiles installed at deep water sites. Foundation-related losses now account for 35 percent of total claims.

- ▶ Significant mechanical breakdown losses incurred at all but one of the floating wind installations currently in operation worldwide.

- ▶ Increased exposure to natural catastrophe in the Taiwanese and U.S. offshore wind markets as well as losses involving extreme weather events that cause significant project damage but do not fall under conventional definitions of natural catastrophe.

- ▶ Ongoing issues related to contractor error as the industry drives to reduce the levelized cost of energy in

established markets, putting pressure on the supply chain, and begins to work with inexperienced local teams in emerging markets. Human error is involved in 70 percent of total claims over the past 12 months.

“Many of these claims trends could be marked down as ‘growing pains’ linked to global expansion and a drive for cost parity with conventional energy,” said Jatin Sharma, president of GCube Insurance Services. “However, if they are not properly managed, they will put these goals at risk.”

“If the industry continues to squeeze the supply chain, while at the same time commercializing new technologies in new global markets, it will become increasingly vulnerable to large-scale financial losses that dent investor confidence and put projects at risk,” Sharma said. “A long-term, responsible outlook is required — both from offshore wind asset developers and owners, and from insurance providers — to ensure that lessons are learned quickly and take into account the changing risk profile of construction and operation.”

GCube will bring together leading offshore wind personnel at its invitation-only Offshore Wind Risk Seminar in London September 24.

**MORE INFO** [www.gcube-insurance.com](http://www.gcube-insurance.com)

## Greenbyte targets U.S. renewables with energy cloud offering

Greenbyte, a developer and enabler of smart data software to drive productivity in renewables, has significantly bolstered its presence in the United States with the opening of a new Chicago office. The new location will serve as a regional hub for the nationwide rollout of the Greenbyte Energy Cloud, an open, versatile and user-friendly monitoring and asset management platform for renewable energy port-

folio owners and Independent Power Producers (IPPs).

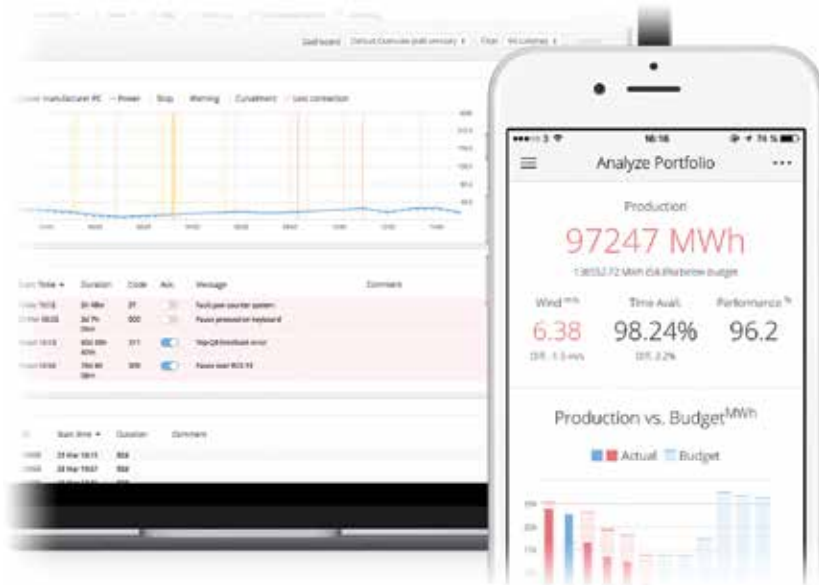
The Chicago office will establish a new center for sales, support, and customer success, ensuring that Greenbyte's expanding pool of North American customers is served to the highest level by a U.S.-based team. This growing team has a wealth of renewables experience and will work with U.S. businesses to implement Greenbyte's monitoring and asset management platform, which delivers proven productivity gains across multi-technology portfolios.

While digitalization has rapidly become a buzzword in the U.S. renewable energy industry, for many it remains an unrealized opportunity. Many digital data management platforms in use have been developed as bespoke solutions for individual projects or portfolios, are focused on a single technology, or have been designed to direct users toward particular hardware choices or specific engineering and consultancy services.

Ultimately, this narrows the opportunities available to asset and portfolio owners, rather than creating the flexibility they need to analyze, understand, and act on their performance data.

“North American portfolio owners too often find themselves using numerous different monitoring and asset management tools, across a wide range of generation types and technologies,” said Eric Bergman, senior account executive in Greenbyte's U.S. team. “Not having a consolidated asset management platform for these diverse portfolios is both costly and inefficient to system owners and stakeholders and leads to a lack of transparency on fleet performance, which typically takes its toll as lost energy and revenue.”

“Strengthening Greenbyte's U.S. presence supports our objective of bringing renewables stakeholders a single source of truth that broadens,



Greenbyte's monitoring and asset management platform delivers proven productivity gains across multi-technology portfolios. (Courtesy: Greenbyte)

rather than limits, their future choices," he said.

Greenbyte Energy Cloud has been designed to provide asset managers and portfolio operators with a single, user-friendly point of access to data from a multitude of sources, from on-site resource measurements and SCADA to third-party data analytics services. It will enable U.S.-based customers to monitor all renewable energy types, including storage assets.

Greenbyte's system is already in use by a number of leading U.S. renewable energy businesses. These include Longroad Energy, a developer and operator managing a portfolio of 1.5 GW of operational wind and solar projects across the country, including more than 800 MW for third-party owners.

Longroad is using Energy Cloud as a versatile hub for all critical performance data, supporting asset management, operations and maintenance (O&M), and remote monitoring of this diverse asset base. In turn, Longroad uses these data to inform decisions that reduce costs, increase portfolio efficiency, and drive revenue.

"While many systems on the market prescribe certain portfolio-wide asset

management approaches and decisions, Greenbyte Energy Cloud creates the flexibility and scalability we need to effectively manage our expanding wind and solar asset base," said Jeremy Law, vice president of Asset Management at Longroad Energy.

**MORE INFO** [www.greenbyte.com](http://www.greenbyte.com)

## Study: Wind resource assessments reach 100% mean accuracy

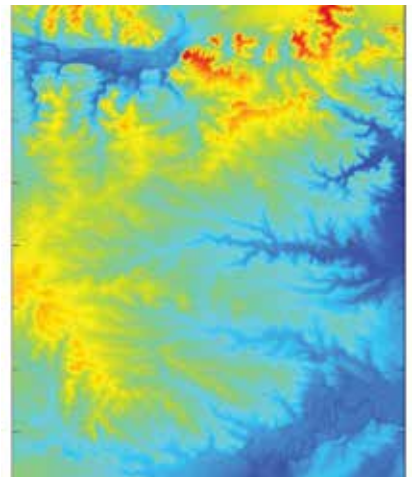
ArcVera Renewables, a leading provider of consulting and technical services for wind and solar projects with more than 30 years of experience, recently developed and published an ambitious benchmark report aimed to deliver a thorough analysis of the performance of its wind-energy resource assessment (WERA) practice across a broad range of operating wind projects.

Based on a dataset composed of 31 projects it worked on in the United States, combining 3.5 GW of installed capacity and 212 years of operation, the report provides a detailed comparison between the pre-construction assessments using ArcVera's

advanced WERA practices and the actual post-construction energy production data.

The results of the study show that ArcVera's wind-assessment techniques are accurate to within about 1 percent on average of reported project P50 energy production, which becomes near zero mean bias after accounting for grid curtailment. In addition, the benchmark study indicated that ArcVera's wind assessments have lower individual project performance variation than in the past. With an average project performance bias close to zero, ArcVera's advanced methodology yields an average project performance of 98.8 percent for the 31 projects. Given that estimates of grid curtailment losses, typically at 1 to 1.5 percent, are not corrected for in most benchmark assessments, ArcVera's overall project performance is effectively 100 percent in terms of accuracy.

What's more impressive, the results show the risk of building a wind farm that significantly over- or under-performs is limited by applying ArcVera's techniques, with an industry-leading 4.7 percent standard deviation of project



To improve the accuracy of its energy-yield estimates, ArcVera Renewables has used high resolution mesoscale wind flow modeling in its Wind Energy Resource Assessment (WERA) methodology since 2012. Pictured is a hub-height wind speed map created using a full physics, 200-meter resolution mesoscale model run, down-scaled to 30-meter resolution terrain. The range of wind speeds shown in the image is 4-8 m/s. (Courtesy: ArcVera Renewables)



ect performance. No firm is currently assessing wind farms with the accuracy achieved by ArcVera.

“For over 30 years, ArcVera Renewables has provided finance-grade consulting and technical services for wind- and solar-energy clients worldwide, including the very first bankable WERA delivered in 1989 in California,” said John Bosche, president and principal engineer at ArcVera Renewables. “Our track record is second to none, and we wanted to make public the data that supports that claim. We have consistently delivered accurate and bankable insights backed by advanced technical expertise and decades of global experience. That kind of highly specialized services is what you need to make sure that confident project development decisions are taken, maximum technically-driven advantage is secured, and performance risk is minimized.”

**MORE INFO** [www.arcvera.com](http://www.arcvera.com)

## First vertical axis wind turbine awarded certification

Hi-VAWT’s DS3000 small wind turbine is the latest model to achieve certification under the ICC-ES Small Wind Certification Council (ICC-SWCC) Small Wind Turbine (SWT) Program. It is also the first vertical-axis wind turbine (VAWT) to complete the rigorous ICC-SWCC certification process.

Vertical-axis turbines use a unique geometry and feature distinctive vertical blades that are arranged perpendicularly through the wind stream. The Hi-VAWT DS3000 turbine has been granted certification SWCC-18-02, which demonstrates compliance with the AWEA 9.1 standard that serves as the basis of the ICC-SWCC SWT program. Hi-VAWT is based in Taiwan and is represented in the U.S. by Colite Technologies, who submitted the turbine for certification.

The DS3000 turbine’s product information, test reports, and calculations were thoroughly reviewed to confirm

that all requirements of the ICC-SWCC SWT program were satisfied. The DS3000 is a three-blade, vertical-axis wind turbine with a combination Darrieus-Savonius rotor with a 3.7-meter diameter. ICC-SWCC rated its annual energy production at 2,460 kWh per year\* and 1.4 kW rated power at 11 m/s wind, and a rated sound level of 42.3 dB(A)\*\*.

\* Annual energy production rating as-

sumes average annual wind speed of 5 m/s with a Rayleigh wind-speed distribution, sea level air density and 100 percent availability. Actual production will vary depending on site conditions.

\*\* Assumes the sound level will not be exceeded 95 percent of the time assuming the wind conditions above and observed 60 m from rotor center. ↘

**MORE INFO** [smallwindcertification.org](http://smallwindcertification.org)

