



WindTAK Products

WindTAK
Sp. z o.o.
Win-Wind Situation



Our Team & Partners



Maciej Karczewski, Ph.D

CEO/ Co-Founder

Managing Director, Aeromechanics. Majority shareholder Previous PL/USA startup experience. Previous sales experience.



Piotr Wiklak

CTO, Technical Lead

Energy engineering, 3D printing Minority shareholder. Co-founder of Fablab Lodz.



Jakub Felcenloben

Electronics Team Manager

Electronic engineering, IoT + harvesting Minority shareholder. Constructor of solar-powered vehicles.



Letter from the CEO

Dear Sirs!

Wind energy already constitutes an important element of the global electricity generation mix, while there are many indications that its role will increase in the future decades. Taking full advantage of the potential of on-shore and off-shore wind will enable the transformation of the energy system towards a low-emission economy and help ensure national energy security.

In the years to come, this industry and its supply chains, energy storage and transmission systems, including the increasingly bold hydrogen economy, will continue to have a unique opportunity to fundamentally change the world around us.

Over the years by actively observing the energy market, we learned the importance and the necessity of the energy transition towards renewables, tamed and optimized by Big Data analysis. Moreover - we became a part of it!

Around our ground-breaking ideas and technological assumptions, we have built a team of professionals from academia, engineering and finance sectors experienced in business development based on novel technologies. This team materialized the ideas, turned assumptions into solutions and combined business models with

the revolutionary concepts of Industry 4.0 and the efficiency of 5G network standards. This is how the 5GVG by WindTAK technology was created - a system of sensors housed in an aerodynamically optimized shape - designed to protect the assets producing green energy while caring for the revenues of wind farm operators. An average wind farm income can rise by up to \$1 million per year.

We have been trusted by many partners. The stepping stones bringing the 5GVG system into fruition were laid thanks to our engagement in national and international clean-tech acceleration programs. Today, we are ready to launch a series of pilot installations deploying our advanced system of IoT devices integrated with vortex generators on wind turbines of our clients.

Letter from the CEO

This will make it possible not only to significantly enhance the efficiency of the green energy production process, but also to minimize turbine downtime and failures thanks to our digital monitoring and predictive maintenance algorithms for on-shore and off-shore wind farms. Owners and operators of wind turbines, equipped with data collected by our system will gain profit, greater control and operational safety over assets. Let's work together!



Maciej Karczewski, Ph.D
CEO/ Co-Founder

Yours faithfully,
Maciej Karczewski

A handwritten signature in blue ink, appearing to read 'MK', is positioned below the typed name.

CEO and founder
of WindTAK Sp. z o.o.

“We took significant steps to ensure WindTAK will emerge stronger than ever during these unprecedented times.”

For wind farm (WF) we would like to offer our 5G VG by WindTAK technology deployed in two steps.

Step 1: 3d printed vortex generators to improve Annual Energy Production

We offer a well-known industry device, the vortex generators (VG). As the only company we 3D print them which allows for tailor-made design, improved efficiency and an environmentally friendly product!

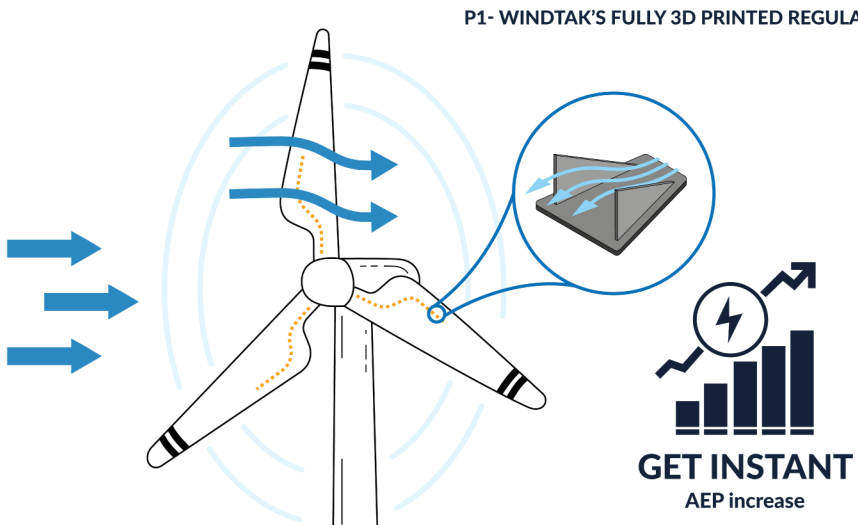


Figure 1. 3D printed vortex generators by WindTAK

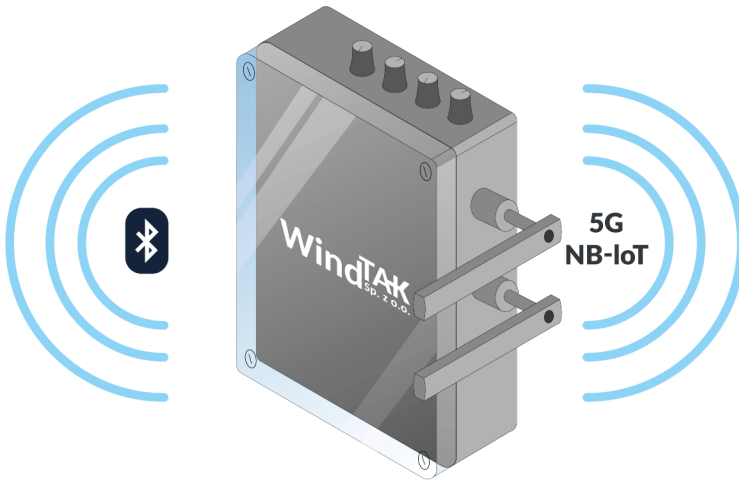
Our 3D printed vortex generators:

- Are manufactured using the newest technology of additive manufacturing,
- Are tailor-made and may improve AEP by more than 3%,
- Are eco-friendly and ready for Life Cycle Analysis,
- Can provide ROI in less than 1 year,
- Are 100% recyclable!

Our Products

Step 2: Complete 5G VG by WindTAK

The company's flagship product is the 5G VG by WindTAK technology consisting of smart vortex generators (VGs) with an IoT sensor inside transmitting measurements wirelessly to the WindTAK Fusion software in the cloud. This allows wind farm owners to run diagnostic monitoring and perform maintenance routines of all turbine blades separately.



WINDTAK'S GATEWAY WITH AN ULTRASONIC ANEMOMETER AND A MET-STATION

Fig. 2. WindTAK's gateway mounted on a nacelle

Our 5G VGs by WindTAK technology provides all of the above plus:

- A secondary SCADA (gateway) mountable on the nacelle,
- Gateway contains IoT sensors inside measuring pressure, temperature, humidity of the air, wind speed and direction,
- Our gateway additionally provides data measurement of atmospheric downfall sense lightning strikes,
- As the only industrial solution it measures tower vibrations and solar illuminance,
- Send data to our cloud for analysis
- Can help to gain an additional 4% AEP for a total potential of up to 7% AEP increase,

The smart vortex generator with a vibration sensor inside is placed on the blades of the wind turbine. Vibrations are measured separately on each blade, and the signal is sent wirelessly from the blade to the gateway mounted on the turbine's nacelle.

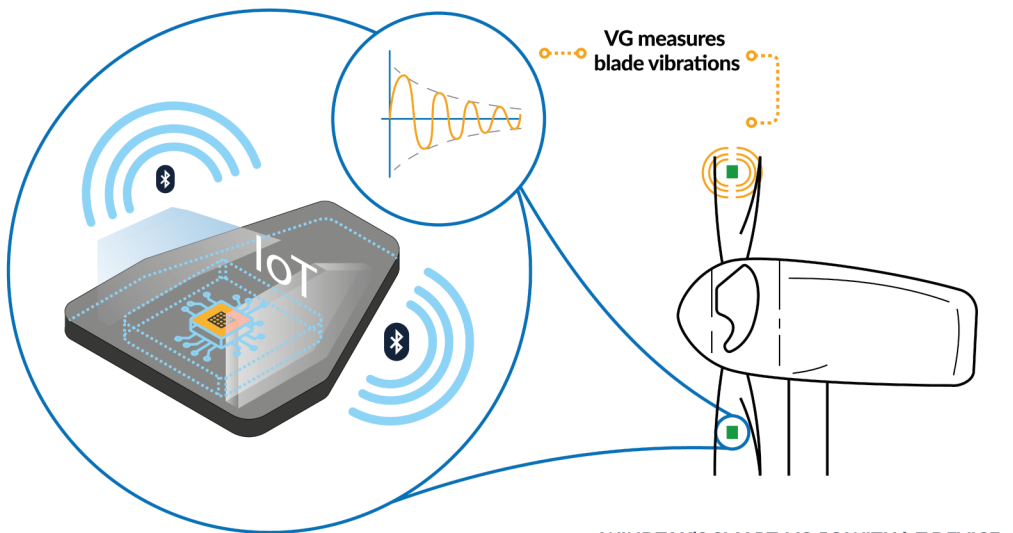


Figure 3. WindTAK's smart VG with an IoT sensor inside

The data transfer is based on high-speed LTE/5G/NB-IoT networks. Together with our regular 3D printed VGs, the complete system will constitute a comprehensive monitoring platform further increasing the WF's AEP.

Our Products

P1+P2+P3 COMPLETE VG 5G BY WINDTAK TECHNOLOGY

The cycle of business model and cooperation between WindTAK and the wind farm asset manager

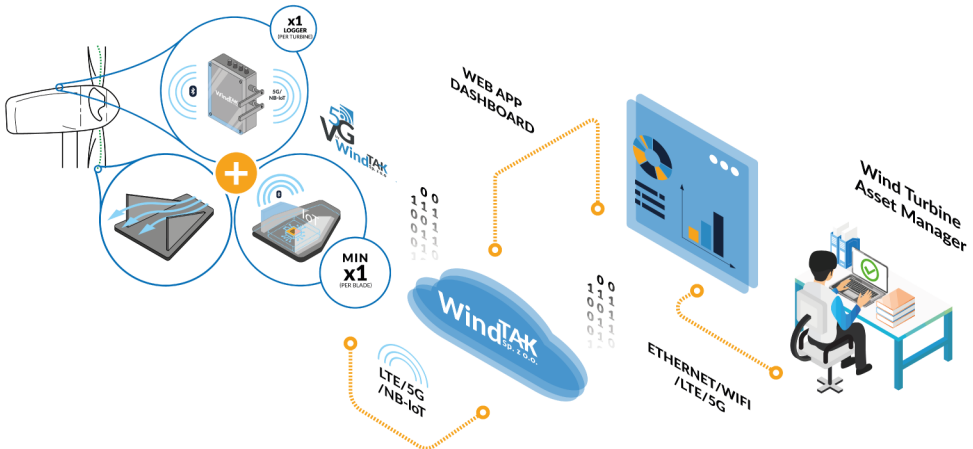


Figure 4. Complete 5G VG by WindTAK creates a system of tools to improve AEP and monitor the WF

The measurements go to the WindTAK cloud thanks to the LTE/5G/NB-IoT network. Using our web application, the customer can view, compile and analyze customized data from turbines or entire wind farms.

Independently from these actions, the WindTAK team monitors and informs the client about potential problems or predicts the risk of failure through predictive maintenance. In this way, the operator can take countermeasures to avoid downtime of the turbine (production drop) or prepare spare parts in advance for efficient replacement (limited losses). O&M costs are further reduced as service is sent for blade and rotor inspections only when actually needed.

The operator, by using our regular reports has a chance to reduce insurance costs. The turbine park will also be ready for Lifetime Extension thanks to densely populated data measurements that authorities can use to re-certify the machine in due time. Finally is also the avoided risk of personnel injury. Less time on-site means a lower probability of injury.

The technical prognosis

The technical prognosis for a WF after installation of the complete 5G VG by WindTAK

An installation of a complete 5G VG by WindTAK system can translate up to an additional 4% of AEP extra given the advanced condition monitoring and analysis thanks to IoT devices of our design. The system can measure:

- wind turbine blade and rotor vibrations,
- wind tower vibrations,
- the azimuth of the rotor axis of rotation,
- all atmospheric parameters and more.

Data analysis is performed on the WindTAK's cloud called Fusion. This allows one to cancel the negative effects of the machine's operation such as:

- yaw misalignment,
- pitch misalignment,
- rotor imbalance,
- aerodynamic imbalance and many more.

Leading potentially to increases of up to +7% AEP. These financial incentives come from:

- aerodynamic improvement of flow,
- savings on wind turbine O&M costs and
- avoiding asset downtime.

To meet customer expectations we constantly expand our horizons and invite you to cooperate.

In order to obtain more detailed information we encourage you to contact us directly by phone: + 48 660 253 995 or by e-mail: contact@windtak.pl.

Don't forget to check our web-page for updated information: windtak.pl/en or LinkedIn profile: linkedin.com/company/windtak/.



**Republic
of Poland**



European Union
European Regional
Development Fund

The project is co-financed by the European Union under the European Regional Development Fund as part of Measure 1.3.1 Support for research and development projects at the pre-seed stage by proof-of-concept funds-BRidge Alpha titled "Epic alpha for advanced technologies at the PoP and PoC stages", implemented by ERC sp. z o.o.

CONTACT US

Wroblewskiego 38A
93-578 Lodz, Poland

P: + 48 660 253 995
E: contact@windtak.pl

KRS: 0000758695
NIP: 7292728449
REGON: 381864780

SCAN ME



FIND US ON

