

State-of-the-art inspections



Inspection flight at offshore wind turbine with the helicopter drone AERO-SensorCopter

At PES we were curious about Aero Enterprise, so we decided to call Robert Hörmann, CEO/CTO and Peter Kurt Fromme-Knoch, CEO/CFO to find out more about this fast developing, innovative company. They are very happy to be part of the BUSS Energy Group, finding much mutual benefit and profiting from the global reach. However, they are not losing their own identity and are continuing to develop their hard- and software for turbine inspection.

PES: A warm welcome to you both to PES Wind, it's good to talk with you. Would you like to begin by giving us an overview of Aero Enterprise?

Robert Hörmann: Aero Enterprise began in 2015 by both Peter and myself, we are co-founders. In the beginning the company focused on the development of special hard- and software equipment for the

digitized airborne inspection of wind turbines and other vertical objects.

Parallel to this in-house development and bringing it to market readiness, we started presenting our services to the European market, using the fully digitized and automated airborne inspection of wind turbines.

Peter Kurt Fromme-Knoch: Our team consists of 10 highly qualified technicians

covering aeronautical engineering, mechatronics and software development and of course a sales team.

The company is situated in Linz/Austria, the technological hot spot of Austria.

In July 2020 we became a partner of the German Buss Energy Group, an important international player in on- an offshore wind business.



PES: We know you are involved in various industries and would like to know how important the wind sector is for you?

PFK: The wind sector is the most important sector of course, because of its demand, scalability and future prospects.

PES: We have been hearing about your AERO-SensorCopter Offshore helicopter-drone, which you developed and we'd love to know more about it.

RH: The actual model of the AERO-SensorCopter is the fourth generation of UAVs developed by us, and it has fabulous physical properties, especially designed for the harsh offshore environment.

Due to its design the SensorCopter flies like it's hung in the air, even at high wind speeds up to 15m/sec, when operating close to the object on the lee side of the rotor-blade. It is capable of flying for more than 30 min, so

most of the offshore turbines can be inspected within only one turn. This increases the efficiency on site significantly.

PES: Is research and development an integral part of your business?

PFK: Yes, it is extremely important to listen to customer needs and re-invent ourselves constantly. Even at a very early stage of our company development, from first ideas and prototypes, we received recognition from leading participants, who exchanged with us on an equal footing. That convinced we were on the right track with our hard- and software development.

PES: How important is the role of AI in your inspections and what added value does this?

RH: We were one of the first companies to integrate AI in our software-based analysis of blade damage. We are very proud that all development has been carried out in-house,

with our own technicians.

Currently, we see AI primarily as a helping element when searching for anomalies, to find even the smallest defects, so that nothing can be overlooked. As yet we do not use it as part of an automated classification process. The final decision on the findings is done by a human.

Meanwhile the use of AI in analysis and interpretation of turbine damages is becoming a standard.

PES: What is the most unique aspect of your approach to wind inspections?

PFK: Highest quality of results, that means high resolution images, continuous profiling along the total turbine, all four sides of the blades and tower on demand.

AI-supported interpretation and fully digital reporting to the customer, transparency,

traceability and comparison of all data over the lifetime of the asset, and all of this in a very professional manner.

PES: What has been the impact of the Buss Energy Group Investment on the company?

PFK: We can sum it up in one sentence: technology meets the market. The Buss Group will be a booster for Aero Enterprise to penetrate the market much faster than we could manage by ourselves.

Another aspect is that to be part of a bigger and well know partner in the segment gives the customer security and confidence. Our two companies fit together perfectly, because of our common-sense concerning technology leadership.

Finally, the customer has primarily 'one face to the service provider', independent in each project phase. We are now able to give answers and support in the planning, installation, production and decommissioning time, in all kinds of onshore and offshore projects regarding asset quality-control, inspection, repair, harbor- and ship-logistics... and this worldwide.

PES: We were wondering about your geographical reach and if you have plans to expand into other areas?

PFK: This was another reason for us to become part of the Buss Energy Group. Our new partner Buss is already well positioned geographically and has an expansion strategy that fits exactly with Aero Enterprise's goals. Together we want to play



Robert Hörmann

an important role in Europe and in the future, overseas.

PES: Do you have any interesting projects in the pipeline that you are able to share with us?

RH: We just carried out important operational tests for two very big players in the market, one onshore and another offshore. Based on the already existing and on the upcoming results, we expect to become partners with these players.

In the field of development, we are working on our EU Horizon 2020 development project, we won in 2019. This will open up a new dimension of offshore inspection.

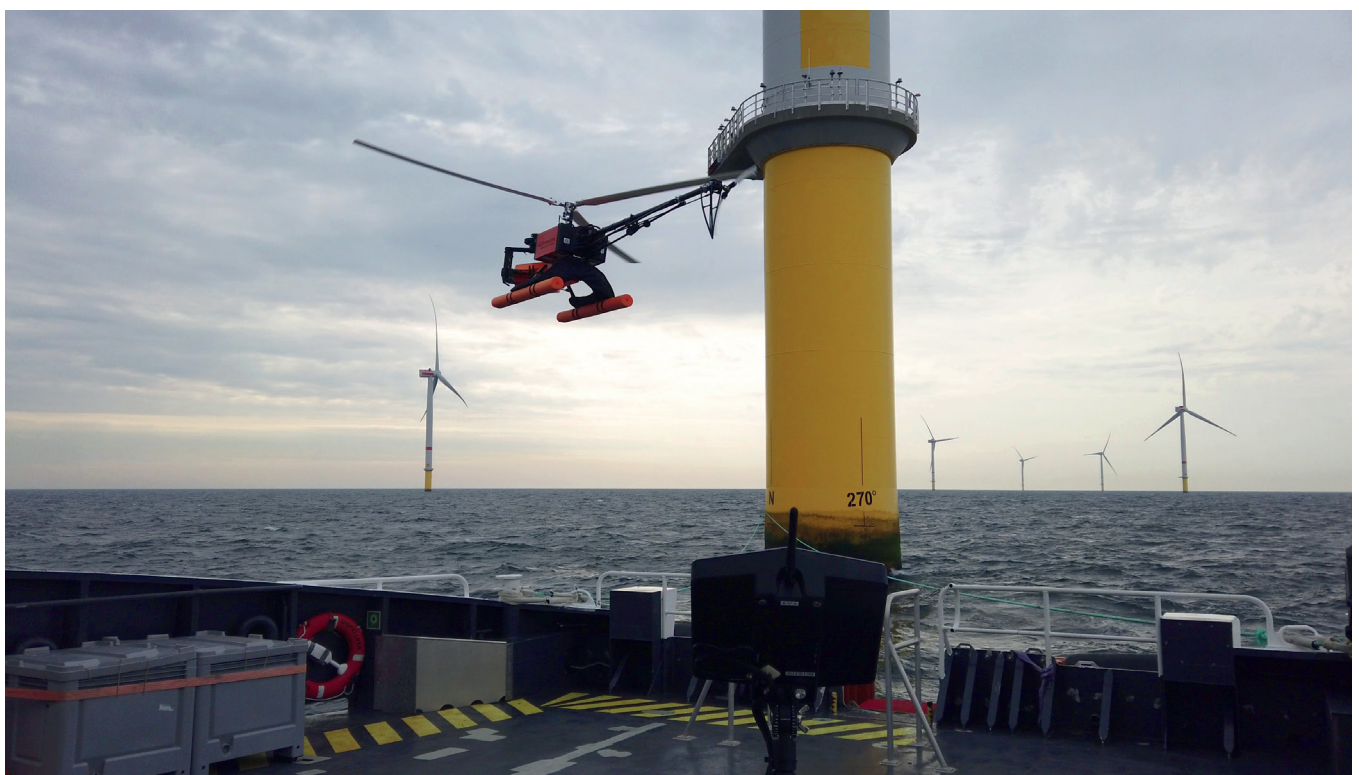


Peter Kurt Fromme-Knoch

PES: What makes your solutions stand out from the competition, what are the benefits to the end user?

RH: The biggest benefit for the customer is to get reliable, objective and high-quality data as the basis of an internal quality management system. Also, the fact that we have a great manufacturing knowledge in both, hardware and software. I think ongoing maintenance is the key to long service life and the best energy output. Put one euro in inspection or ten euros in maintenance or 100 Euro in repair, the wise man prevails.

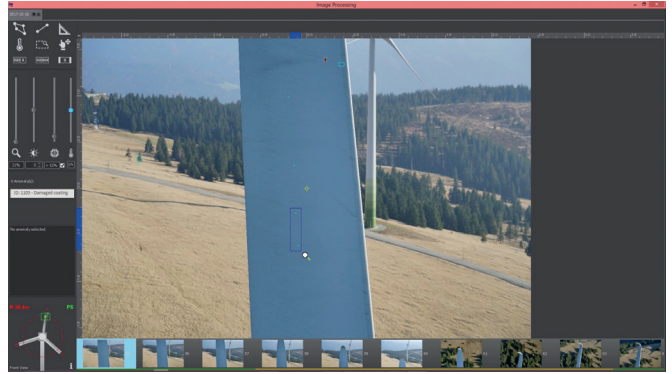
PES: How has the current coronavirus



The actual model of the AERO-SensorCopter is especially designed for the harsh offshore environment



The helicopter drone takes high resolution images even at wind speeds up to 14 m/sec



Aero Enterprise processes, standardizes and classifies the gathered image data within the AERO-Software Package supported by AI



Take off of the AERO-SensorCopter for an inspection flight

situation impacted on your business and how you run it? What changes have you had to make? How do you see this developing over the next 6-12 months?

PFK: Of course, we lost some international surveys due to travel limitations in this Corona crises. Orders were placed with local companies, with lower quality at higher prices. That hurts of course, but it won't kill us. We tried to focus on in-house development and virtual customer contacts.

The biggest negative impact is the postponed or canceled fairs all over Europe. We presume a relaxation will be at the earliest in the second quarter of 2021.

PES: What do you think will be the greatest opportunities and the greatest challenges, for the wind industry in general and Aero Enterprise in particular, over the next few years, and where do you see yourselves in 5 years' time?

PFK: The European Green Deal of course can be a big boost for the whole European wind branch if the financial resources will actually become available. The forecasts, especially for the offshore market, sound very promising with an expansion of capacities fourfold by 2030.

The grid expansion must also be driven forward in tandem so that the energy produced also ends up with the consumer. This is currently not guaranteed.

RH: In this environment the maintenance of wind turbines will become even more efficient, digital and automated. We, as Aero Enterprise, will be providing a necessary service.

In five years' time, we definitely want to see our current technical leadership role on the customers' side.

www.aero-enterprise.com