



Safe landings with offshore drone inspections

Drone technology is increasingly being used to good effect in the wind industry, freeing up manpower, reducing downtime and putting personnel safety as a top priority. Alex Hall, Chief Technology Officer, Drone Inspect Services tells PES about how the nuts and bolts of the system work and the benefits of managing the entire inspection process in this way.

PES: It's great to welcome you back to PES Wind once again. We've spoken many times in the past and it's always good to get your perspective on the latest innovations in inspection technology for our market. We'd love to start by asking how Drone Inspect Services is positioned to keep up with developments in the offshore inspection market?

Alex Hall: It's good to be speaking with you again. We have spent the last 18 months strengthening our position of drone operating and product developing. The offshore market is growing exponentially, so naturally the need for inspections increases. New technology, such as drone-based lightning protection system testing (LPS), is fast becoming a game-changing process for O&Ms.

PES: There are many benefits in using aerial drones to inspect marine assets, especially in the offshore wind industry. As the industry grows and the number of blades that need to be inspected grows with it, how do you see your role within the industry developing?

AH: Drone utilization is as vast offshore as onshore. One of the key areas of focus is



mitigating personnel safety working offshore, for which drones are superbly equipped. Localised positioning on the CTV's and SOV's technology negates the challenges incurred by take-off and landing in these remote locations.

PES: How does drone technology and its advancements help with some of the more common challenges, like reducing the time and cost associated with inspections?

AH: There are many excellent autonomous drone-based inspection platforms available on the market, however, customers are always looking for minimal downtime without compromising safety. By utilising our new advancements offshore we can achieve wider weather windows for flying, hence ensuring faster deliverables to the customer whilst

reducing energy production downtime.

PES: Can this form of inspection help minimise the amount of time a turbine needs to be offline too?

AH: Most definitely, this being a key consideration alongside safety when innovating.

PES: There are clear advantages to be had from drone inspections, but there are downsides too aren't there, such as when moving crew transfer vessels while trying to take off and land?

AH: Absolutely and this has been a key focus of ours. The two issues encountered by many drone operators offshore are the vessel's movements inhibiting take off and the challenging landing environment, especially in higher sea states.



Alex Hall



By using a localised positioning system, which can be deployed both on the vessels and the turbines themselves, we remove any complications associated with GPS and magnetic interference, both being perpetrators of many issues when landing.

We further mitigate safety concerns in terms of the drone itself. Landings are often conducted by hand and catching the aircraft presents many dangers. Combining localised positioning systems, alongside pitch and roll stabilised platforms, we can alleviate the take-off dangers associated with vessel motion.

PES: You've recently partnered with HST Marine for the offshore inspection market, can you tell us a little more about that?

AH: Partnering with HST has been a huge milestone for us as a company. The HST team is dynamic, driven and a perfect match for us, sharing the same work ethos. Their recent launch of HST Ella, one of the first hybrid CTV's, allows for further reducing carbon emissions offshore. Coupled with the various drone-based inspection products, this provides the customer with a fully integrated solution, thus making the tendering process more straightforward and cost-effective.

HST have been looking to align themselves for some time to provide more than transportation services. This now allows for more productive deployment of vessels offshore and gives the customer greater scope when it comes to reducing rope access

works and inspection crew.

PES: So that's a new partnership, but what about inspection technology? Is there anything new from Drone Inspect Services to look forward to in that regard too?

AH: Above we have discussed some new and exciting technology but additionally Drone Inspect's research and design team have been developing a stabilised platform as a priority for the 2022 inspection season offshore.

What makes this product unique is its capability to use an electrohydraulic based levelling system, giving extremely high levels of stabilisation accuracy onboard a vessel. Furthermore enabling us to power these platforms via small battery modules, something none of the other take/landing stabilised platforms can offer currently due to their high-power consumption.

It's worth noting here that these platforms are not just a solution to nautical drone take-off and landing, but are also ideal for alternative equipment, like cameras and sensors, which necessitate a level horizon. We have trialled these platforms as a level operating surface for operators, hence minimising any ensuing nausea.

As well as the take-off and landing solutions, we have developed a 4G/5G Field Operations Hub, which is effectively a tactical based connectivity solution, providing power to other devices, like laptops, for data collection. Drone Inspect can perform inspections and have the data

uploaded to the cloud before we depart the wind farm, thus speeding up the process for the customer acquiring their data.

PES: Testing the Lightning Protection Systems on turbines is usually done using rope access, so presumably drones will really help to speed up what is an important process?

AH: This is a huge advancement when it comes to drones within the wind industry.

New technology now allows our team to fulfil Lightning Protection System inspections quickly and efficiently, completely mitigating the need for rope access methods. The ability to combine this data, alongside visual blade inspections, gives the customer access to a more integrated solution when it comes to deliverables.

PES: Safety is another key issue when working at heights whether on or offshore. Presumably this is something that isn't compromised at all when opting for drone inspections?

AH: As we have already briefly discussed, some of our new innovations not only reduce the frequency of working at height but also the risks associated with the drones themselves.

PES: What does the future look like for drone inspection technology in general do you think? Are hybrid drones on your radar, for instance?

AH: The drone industry is one of the fastest growing and every year there are huge



vehicles and reducing the number of crew needed to service jobs is all helping to reduce our carbon footprint.

As a company we harness the wind and sun to assist in charging batteries, allowing us to be fully green in terms of the equipment's contribution to carbon emissions.

The new advances in connectivity offshore allow us to provide live inspection data to customers, meaning engineer inspectors can view inspections and data from the shore without having to deploy on vessels, thus saving both time and money as well as reducing their carbon impact.

PES: What do you think will be the greatest opportunities for the wind industry and Drone Inspect Services in particular over the next few years?

AH: Streamlining the inspection processes are key for us as a business. However, it's important that whatever improvements are made, the technology to achieve this never compromises the data captured and the end deliverables to the customer.

It is likely we will see drone inspection solutions deployed more permanently onto the vessels, ideally in specially adapted ground stations, thus making it significantly easier for an operator to initiate inspections fully autonomously, without needing to set foot on the deck of the vessel or wind turbine!

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advancements with the technology, such as increased battery capacities, the ability to fly in more hostile environments and making the technology more straightforward for end users.

We monitor the marketplace closely, but, like anything new, we always need to ensure vigorous testing before deploying in the field.

We cannot wait to see what the future holds.

PES: How important is it to strive to become more carbon neutral and do you think there are ways to harness the power of the wind and sun to power the drones to achieve this?

AH: Being carbon neutral for us as a business is paramount. Moving over to hybrid work

