

# Case Study

## Customer:

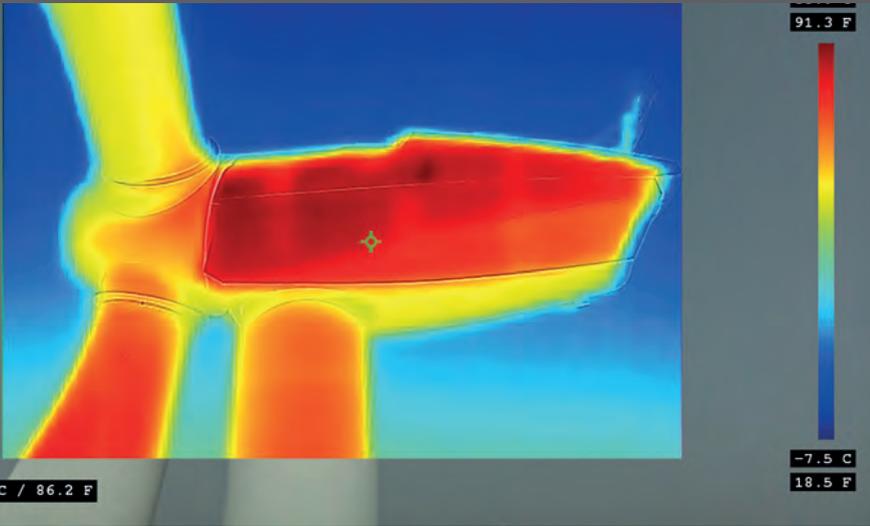
Scottish Drone Surveys

## Project:

Wind farm site / access road surveys and turbine inspections

## Solution:

SenseFly Albris and eBee RTK Plus



albris rotary drone followed 18 months later by a senseFly fixed wing eBee Plus which he upgraded in January to an eBee Plus RTK using the built-in upgrade option.

His approach to these investments has been a text book example of the successful adoption of UAV technology by

“I can be flexible in my approach depending on the site and can now turn around work in a day when previously it would take a week.”

someone with no previous experience in the area but a clear understanding of how aerial surveys and inspections could be used in his industry to enhance his business offering.

### Using the albris - track surveys and access roads

**Rob Brocklehurst, Scottish Drone Surveys**

Rob initially contacted KOREC because he saw an opening for carrying out blade

and turbine inspections using a drone rather than rope access methods. A drone would be a safer alternative and save time on site whilst still producing the high-quality results his client required.

Looking for a rotary drone with a choice of flight modes, including free flying for work in areas with lots of obstructions, he was impressed by the albris's five dual-sensor modules which would provide the high level of situational awareness he required for working close to the turbine tower and blades to achieve sub-millimetre image resolutions. He was also impressed by the shock-absorbent carbon fibre shrouding the drone rotors which would protect his investment in the event of low-level impact.



▲ Turbine inspection with the albris

## Scottish Drone Surveys - a progressive approach to UAV technology

There seems to be no end to the potential applications of UAVs. From the creation of high resolution aerial imagery and photography, 3D point clouds, DSM's and contour lines to projects such as infrastructure inspections and earth movement monitoring, UAVs are bringing a useful and practical alternative to traditional survey methods or the expense of contracting a piloted plane.

With the list of applications seemingly endless, it is no surprise that we saw high growth in the sector again during 2017 as well as signs of the market becoming ever more professional with the launch of industry specific end-to-end systems such as senseFly's '360' solutions tailored for the surveying, mining & quarries, inspection and agricultural sectors.

With no evidence of the market slowing, manufacturers have further encouraged take up of their products with a period of rapid technological advancement resulting in the simplification of flight and processing software and more affordable hardware becoming available with a choice of sensors. Market reports\* predict a significant increase in the demand for UAV generated data in 2018 and consequently

there exists huge potential even for those who may have no previous knowledge of UAV technology but are prepared to invest in the right system, time and training required to offer a quality service that will see clients return.

### Scottish Drone Surveys - A Progressive Approach

Rob Brocklehurst, a self-employed site engineer for over 25 years has spent the last 10 of these specialising in the renewable wind energy sector. This has involved working closely with wind farm contractors and developers mainly undertaking surveys and inspections on their behalf using his Trimble GPS and total stations. In the past two years he has further supplemented his business with the addition of a KOREC supplied senseFly



▲ Turbine inspection with the albris

Having worked within the industry for 10 years, Rob has seen the energy sector progress and consequently knew that the sites with the easiest access had already been built on and that as the industry developed, turbines were getting larger with taller tip heights. This meant that other turbine components, such as blades, were also growing in length so transporting them to site was becoming increasingly more problematic. Additionally, the access tracks from main roads were becoming longer with distances of 9 or 10 km not uncommon and many of these tracks were not fit for the transportation of abnormal loads weighing 100T. Even access roads built for existing turbines needed to be extended to cater for newer, larger components. Consequently, track preparation could turn into large earthworks projects requiring bends to be straightened and embankments removed or lowered.

For many of these access track surveys Rob felt that the albris, rather than the eBee or even an alternative traditional survey method, would be the best option owing to obstructions such as pylons, tree cover and buildings along the routes, or as in one case, the access track running up a hill in front of a cliff. On this occasion, the manoeuvrability of the albris meant that he could fly closer to the cliff face and pick up the track detail by being able to stop and hover. Additionally, the ability to tilt the camera in the albris to different angles meant that even when the tracks were half covered by trees, Rob was still able to produce the 3D models required.

### Using the eBee Plus – main site surveys

As the survey work with the albris increased, Rob saw an opportunity to carry out the original ground level surveys for the full wind farm site using UAV technology. Having previously undertaken this work on foot with a GPS, he was aware of the speed and safety advantages that an aerial survey would bring.

To get coverage of these large and often open areas in a single flight, Rob purchased an eBee Plus fixed wing UAV with an option to upgrade to high-precision on demand. He activated this built-in RTK/PPK functionality earlier in the year and now selects either Trimble VRS (Trimble's service for real-time RTK corrections) or standalone mode for post processing when surveying. If he cannot get a phone signal on remote sites, he will use ground control markers positioned along the perimeter of the working area as a final QA check. To tie these in with the OS National Grid he uses his Trimble R6 GPS with VRS repeater for the mobile phone signal blind spots. Rob reports that without the help of ground control points for the final fix he typically achieves accuracies down to 40mm in standalone mode but when able to use VRS can achieve 20mm. When ground control markers are applied the standalone mode becomes comparable to the VRS.

Captured data from both the albris and the eBee Plus is processed in Pix4D

software and the point clouds exported as .las files or broken down as .csv files. The wind farm development teams use the point clouds for designing the site layouts whilst Rob uses it in his survey software to design and quantify the civils work required.

For Rob the progression from albris to eBee Plus to eBee Plus RTK has been a logical one driven by his specialist knowledge of the wind farm industry. "In the albris and the eBee Plus I have exactly the equipment I need to broaden my client base and take on bigger jobs. They have the same flight planning software and same processing software which keeps things straightforward and both are incredibly easy to fly. The albris is highly manoeuvrable making it ideal for areas with obstructions or for flying within tight restrictions. The eBee requires no launch equipment and I know that it will behave reliably even in windy conditions. The benefit for my clients is that I can be flexible in my approach depending on the site and can now turn around work in a day when previously it would take a week."

*Rob Brocklehurst is a fully CAA approved and insured small unmanned aircraft operator and offers aerial mapping and inspection surveys through his website [www.ScottishDroneSurveys.co.uk](http://www.ScottishDroneSurveys.co.uk)*

\*Drones Report Market Forecast - Business Insider

The eBee Plus survey drone is a large-coverage photogrammetric mapping system featuring RTK/PPK upgradeability, for survey-grade accuracy on demand.



The senseFly albris is the sensor-rich drone for professionals, offering TripleView imaging and advanced situational awareness.



## Contact us:

Please do get in touch for further information on any of the products or services mentioned in this case study, a demonstration, support or just a chat about your requirements.

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