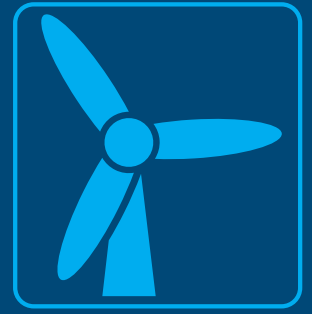


REMOTE INSPECTION GUIDES



Wind Turbines



THE SMARTER WAY TO SURVEY



Sky Revolutions' Inspection Guides are intended to give an overview of the key aspects of conducting a variety of remote inspections. Each guide in the series outlines the basic steps in the inspection process and reflects our leading expertise in remote inspections using Unmanned Aircraft Systems (UAS).

Wind turbines are complex systems that undergo considerable stress during their productive lives. They need to meet the challenges of lightning-related degradation, damage, fault, and wear and tear.

UAS are becoming established as a valuable tool in Wind Turbine inspections for a variety of reasons:

SAFETY

UAS inspections eliminate exposure to manual 'at-height' working – greatly reducing risk.

COST-EFFECTIVENESS

UAS turbine inspections are a more cost-effective solution than traditional surveying methods.

SPEED

Drones can be deployed rapidly with significantly reduced operational shut-down periods.

DATA QUALITY

Defects are interrogated with close-up visual inspection using ultra high-definition footage, stills and thermal imaging where required.

DATA VOLUME

UAS often provide fresh data on previously difficult-to-see or difficult-to-access areas, boosting output and supporting better decision-making.





PRE-BOOKING

Before employing an aerial surveying service, ask for:

- Type of UAS drone proposed.
- Proof of piloting company's knowledge of safety critical issues in the wind turbine sector.
- CAA Permission number.
- Approach to pre-flight briefings, risk-assessment and site assessment.
- Examples of previously completed Wind Turbine inspections.
- Details of any previous safety incidents.
- Proposed flight-crew composition.

PRE-FLIGHT

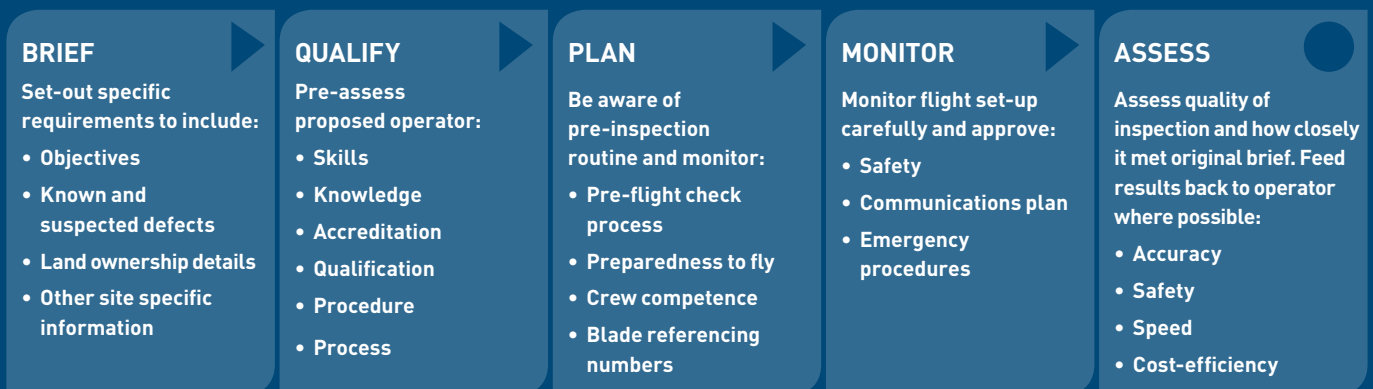
Wind turbine inspections using UAS require a high degree of technical expertise and relevant operating permissions. On-site assessment must include satellite coverage checks and a range of other pre-flight checks and preparations, including:

- Assessment of potential signal distortion from surrounding buildings or structures.
- Audio visual link assessment.
- Timing and image sequencing plan to ensure efficient use of asset downtime. Inspections should not be undertaken while the turbine is active.
- Assessment of turbine blade type – in cases where the turbine has Variable Pitch blades, these will need to be feathered during the shutdown phase.

INSPECTION-SPECIFIC

A range of additional safety measures and processes are required pre-flight:

- **Wind Assessment:** Wind farms are often located in remote, unsurprisingly windy locations. Wind is therefore a significant factor in turbine inspections and needs careful consideration on the day.
- **Communication:** Two-way communication with the Asset Manager is advised as the angle of the turbine nacelle may have to be controlled from inside the tower.
- **Image Capturing:** Consideration must be given to image capture and overlap to produce a valid inspection photograph.
- **No Fly Zone:** No Fly Zones are applied subject to individual circumstances on the day. Pilots must consider that active turbines in other areas of the farm generate turbulence as they move.
- **Emergency Procedures:** Best practice dictates sharing of basic emergency procedures with all those present on site.
- **Flight Battery Checks:** All battery packs should be charged and checked as part of the embarkation checklist.



KNOWLEDGE (+) COMPETENCY (+) PROCEDURE (+) ACCREDITATION = ASSURED INSPECTION

“Sky Revolutions’ knowledge and expertise in renewables surveying sets them apart from other aerial providers.”

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CAA Permission for Aerial Work, No.928

