

CASE STUDY

Bringing Speed to the Field

ABOUT US

Perceptual Robotics is a UK based technology company, focused on drone automation and AI services in the field of Wind Turbine Blade Management. Our services cover from field inspection to data processing and repair management. We and our Clients, have inspected and processed thousands of turbines and our systems are present worldwide.

OVERVIEW

Back in July 2023 a client in Spain needed inspections done for 40 WTG in a place with difficult wind conditions (too calm or too windy), facing a shortage of technicians and as soon as possible to be able to repair before the season ended.

Our Ops team achieved the task successfully.

FIGURES

- 40 WTGs
- 2 Drones
- 2 Days in the field
- Less than 20 min per WTG
- Results within 4 days
- Repairs carried out in time
- Additional Aero Brake Status Report

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THE CHALLENGE

A wind farm in Spain encountered **substantial delays in turbine inspections using traditional methods**. Waiting periods when it was too calm to reposition blades or Rope-access inspections frequently hindered by high winds, made scheduling unpredictable and inefficient.

Additionally, there was a **shortage of available Technicians** to stop the turbines and manual reporting processes meant that inspection results took weeks to be processed and delivered, causing delays in repairs or even causing them to be postponed to next season.

Context



High winds or calm (no repositioning possible) lead to long inspection time and delays in Repairs.

Development



We adjusted our deployment to reduce inspection time and produce the results in a week



HOW

Sending 2 Dhalion Dot systems from UK to Spain allowed the local team to execute 40 inspections in just 2 days.

With two local technicians our pilots managed to inspect all turbines by the second day at 16:00.

RESULTS

of WTG

40

Inspection in

2 days

Time per WTG

<20 min

All Results in

4 days



Field Solution

1 Flight per Turbine
3 blades, 4 sides
Less downtime
Increased Weather
Windows for Repair



Data Solution

Results in 48h
AI Detection
AI Classification
Blade Expert
Repair Prioritisation

DEVELOPMENT

The technicians were only required on site for two days, instead of several weeks as in the past. Once the team completed the field work, the data was processed through our AI-powered platform, allowing all results to be delivered within just a few days rather than weeks.

Additionally, special reports focusing on aero brakes were generated.

01

Initial Need

Speed due to dates and lack of technicians

02

Planning

Decision to send two drones to reduce time

03

Execution

2 days of inspections and results in 4 days

04

Additional

Aero brake Report and Damage Prioritisation

OUTCOME

As a result, the available **weather window for repairs significantly expanded**, helping prevent maintenance delays that could have pushed work back by several months.

Extra information on the Aero Brakes status was provided.