ALERION
TAKEOFF
TO EFFICIENCY

# ON-DEMAND RESIDENT DRONE FOR OFFSHORE WIND TURBINE DIGITALIZATION

## FOUNDING
Space navigation tech transfer for intelligent drones

–

**2014**

## MVP
Prototype for wind turbine inspections

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**2016**

## SME INSTRUMENT / EU FUNDING
Wind turbine inspection drone development

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**2017**

## SEED FUNDING

–

**2019**

## WIND TURBINE DIGITAL TWIN
Contact based drone for NDT

–

## RECOGNITION
by NVIDIA

–

**2020**

## SERIES A
Industrial offshore platform

Contact inspections (NDT)

Industrial applications

**DIGITAL TWIN SOLUTION**

–

**2021**

**Energy production loss due to unreliable information**

Up to 10% annual energy production loss

€10K to €100K+ loss per year / per turbine

€30K+ for repairs per turbine

**Enormous amount of data difficult to interpret and build models**

Lack of reliable statistical engineering models outside of manufacturers
(Siemens, Vestas, GE...)

Difficult to quantify energy losses and why
erosion, dirt, alignment, bearings, oil, etc.

# DRAMATIC LOSSES IN ENERGY PRODUCTION.

## ITS REASONS ARE DIFFICULT TO PINPOINT.

# DISRUPTIVE TECHNOLOGY.

AUTONOMOUS INSPECTIONS, CLOUD-BASED AI ENGINE AND HIGH END BLADE ENGINEERING.

## FULLY AUTONOMOUS INSPECTIONS

High quality, fast and efficient inspections with a patented autonomous drone in less than 10 minutes.

## ACCURATE AI ENGINE ANALYTICS

Fast analytics with an industry leading accuracy of 98% damage identification.

## AEROELASTIC ENGINEERING MODELS

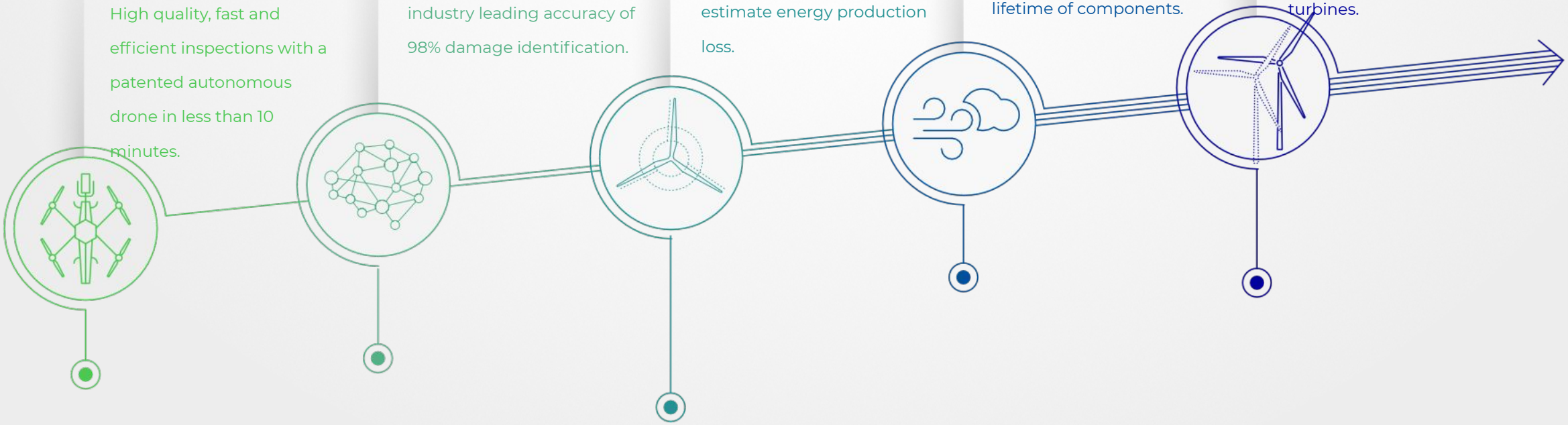
More than 500,000 hrs of blade engineering to estimate energy production loss.

## WEATHER AND WIND FORECASTS

In combination with engineering models to predict remaining useful lifetime of components.

## DISRUPTIVE CONCEPT: DIGITAL TWIN

Combining inspections, AI and engineering models to a whole new way to administrate your wind turbines.



## FAST & EFFICIENT.

Full inspection in < 10 minutes.

Usual inspection needs at least 5 hrs.

Secure and reliable.

## HEAVY DUTY.

Able to inspect even under adverse conditions.

## HIGHEST STANDARDS.

3D scan of blades for modelling.

Use the complete spectrum of the latest technology.

## AUTONOMOUS.

Patented laser based navigation system.

Best aid a pilot could wish for.

# AUTONOMOUS, FAST AND EFFICIENT.

INSPECTIONS AT THE PUSH OF A BUTTON.

Trained by
**blade engineers**.
An algorithm combining the knowledge of
60 years of blade engineering experience.

**Industry leading**
accuracy.
Get the most accurate results,
with 98% damage identification.

**Real time**
identification.
Don't lose any more time waiting for results, get
real time identification of Level 4 and 5 damages.

ON-BOARD ANALYTICS.

# DAMAGE IDENTIFICATION IN REAL TIME.

# COMPREHENSIVE REPORTS.

## EASILY ACCESSIBLE VIA CLOUD-PLATFORM.

**Easy to include**
in your data structures.

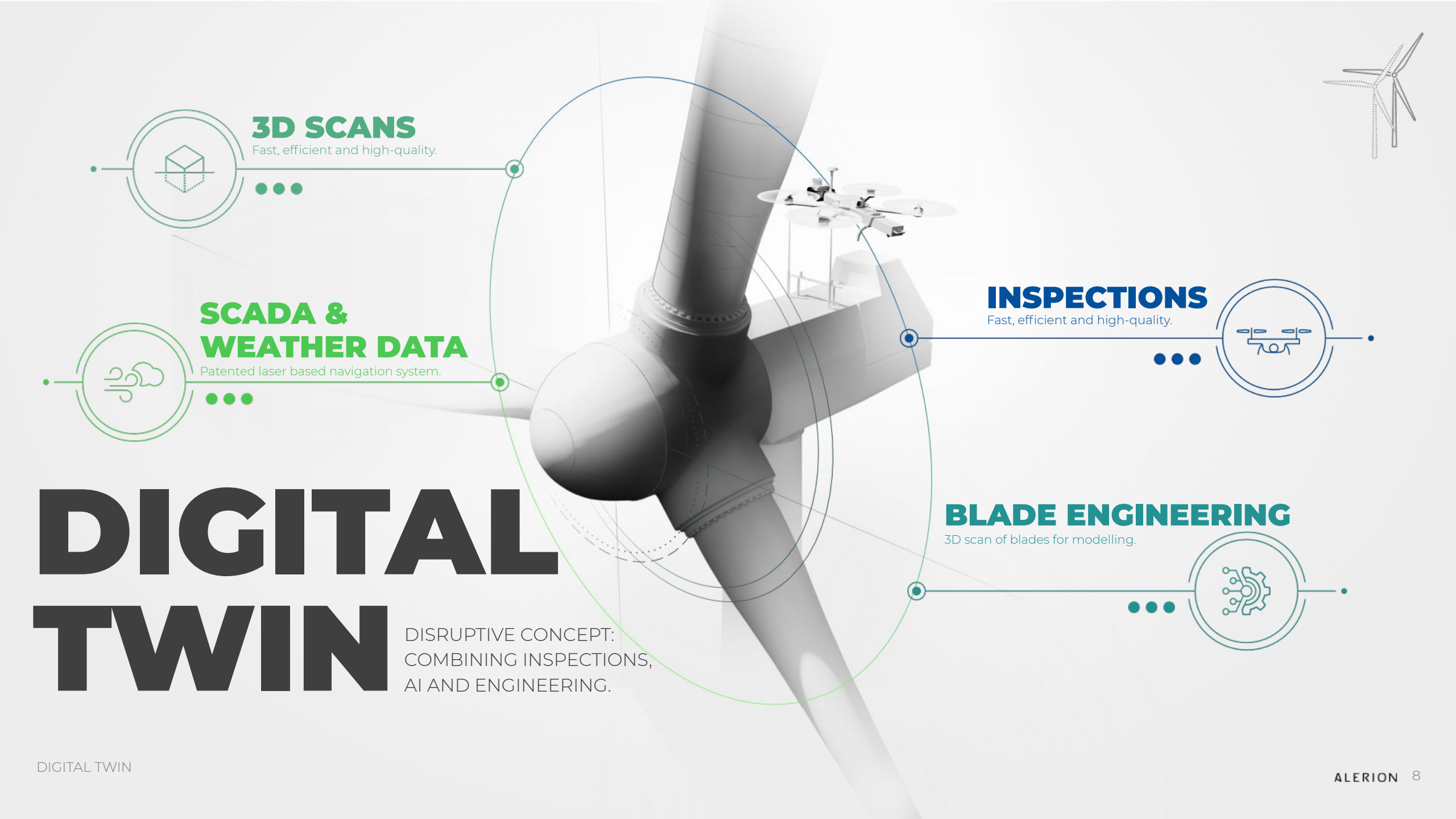
Reports can be accessed and exported in several formats.

Fast and accurate –
**results you can trust.**

Automatically generated damage reports, individually reviewed and validated by experts.

**Whenever** you need it,
**wherever** you need it.

Easy access via online platform to damage reports, maintenance plans and lifetime estimations.



## 3D SCANS
Fast, efficient and high-quality.

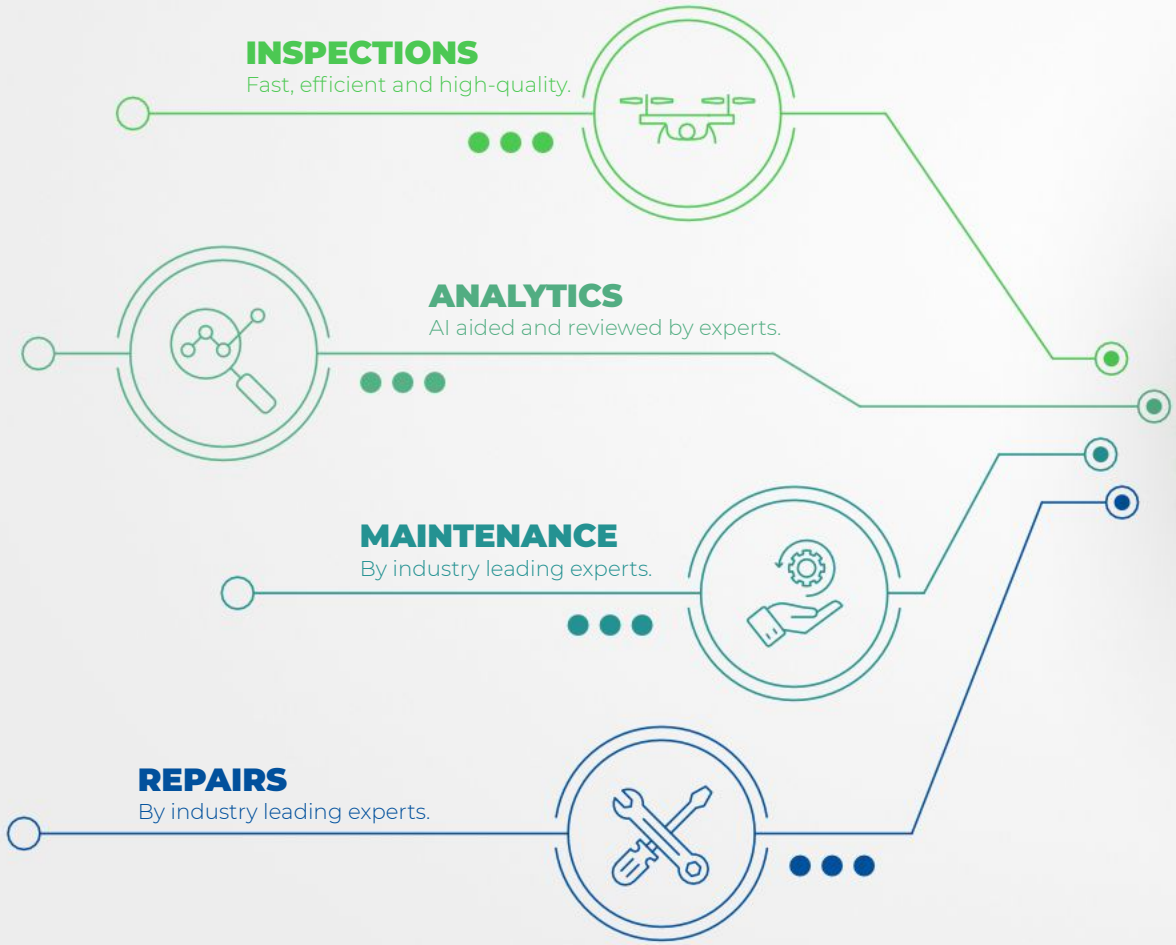
## SCADA & WEATHER DATA
Patented laser based navigation system.

## INSPECTIONS
Fast, efficient and high-quality.

## BLADE ENGINEERING
3D scan of blades for modelling.

# DIGITAL TWIN

DISRUPTIVE CONCEPT:
COMBINING INSPECTIONS,
AI AND ENGINEERING.




- Damage reports and analytics.
- Power curve calculations and energy production estimates.
- Custom maintenance and engineering plans.
- Remaining useful lifetime of components.
- Maintenance and repairs through 3rd party partners.

# ALMA

## AEROBLADE LIFETIME MANAGEMENT OF RENEWABLE ASSETS

Get access to all relevant information to optimize and maintain your wind park bringing your renewable asset management to a whole new level.

# OFFDRONE

## “RESIDENT” ON-DEMAND AUTONOMOUS DRONE FOR OFFSHORE WIND TURBINE INSPECTIONS.

Patented navigation that can perform inspections in 15 minutes, carrying out at least 12 inspections a day. Track floating structures for autonomous inspections, increasing data quality and reliability.

### ADVANCED RELATIVE NAVIGATION

Drone that can withstand the marine environment, living on a SOV vessel or the wind farm itself, available on demand, reducing logistics and turbine downtime.

### MARINIZED RESIDENT DRONE

### AUTONOMOUS TAKEOFF & LANDING

Autonomous take off and landing from vessel, eliminating human error during a critical part of the operation.

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**CASE STUDY**

ALERION WIND TURBINE INSPECTION DRONE

connecttech.com/

case-study-ai-driven-inspection-drone-wind-farms-alerion/