

unique &
innovative



We are nventive

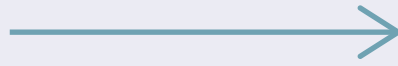


with our innovative bird detection & monitoring system that prevents collision of protected birds on wind turbine blades



We are nvisioners

We design, create and offer innovative solutions and services that contribute to the quality of life and conservation of resources.



The shareholders and key personnel of nvisionist carry a long track record of successfully completed special projects in various areas and markets mainly in the ICT and renewables industry in Greece and abroad. Our know-how covers the areas of developing, permitting, engineering, project managing, implementing, operating and maintaining of ICT, Bird Detection & Monitoring and sustainable energy projects.

nvisionist's aim is to provide high quality solutions and services through continuous improvement, driven by the integrity, teamwork, technical expertise and innovation skills of our personnel. We recognize and seize opportunities for growth that build upon our strengths and competencies.

Our vision is to become a reference name in doing business and creating innovative solutions for sustainable production that benefits organizations, communities and the environment.

At nvisionist we are focused on innovative solutions that comply with our customers requirements and goals.

We are inventive



We designed and developed nvbird – an innovative bird detection & monitoring system that prevents protected birds from wind turbines. Our system has been internationally awarded and distinguished for its first class use of ICT.



WITSA 2021 Global ICT Excellence Awards
Winner for Emerging Digital Solutions



WIND EUROPE
One of the most valuable innovative technological solution at Technology Workshop 2021



ATHENS CHAMBER OF TRADESMEN
Award winner Innovation & New Products



IMPACT BITE AWARDS 2021 (ICT)
• 1st Platinum Award over all
• Gold Award in the «Energy» category
• Gold Award in the «Artificial Intelligence (AI)» category



HI
Award for Business Model



nvbird WTG

We have developed nvbird, an innovative bird detection & monitoring system which prevents collisions of birds on wind turbine blades.

nvbird has been developed with state of the art technologies. It is based on a powerful machine learning algorithm which in collaboration with the latest cameras and powerful computers can:

- Recognize the protected birds
- Analyze their flight path
- Deter them with special sounds in order to make them change their flight direction
- And if this does not happen, to stop the wind generator until the birds fly away.

So the nvbird

- Almost eliminates the probability of rare/protected birds to collide on the wind generators
- Keeps noise pollution and environmental impact to a minimum
- Does not strain the generators with unnecessary shutdowns that cause extreme loads

And, of course, increases the wind park productivity to the maximum.

Development of this innovative product, consists of the most advanced technological form of artificial intelligence and machine learning. It is offered with a friendly interface and provides statistical tools and reports to the user.

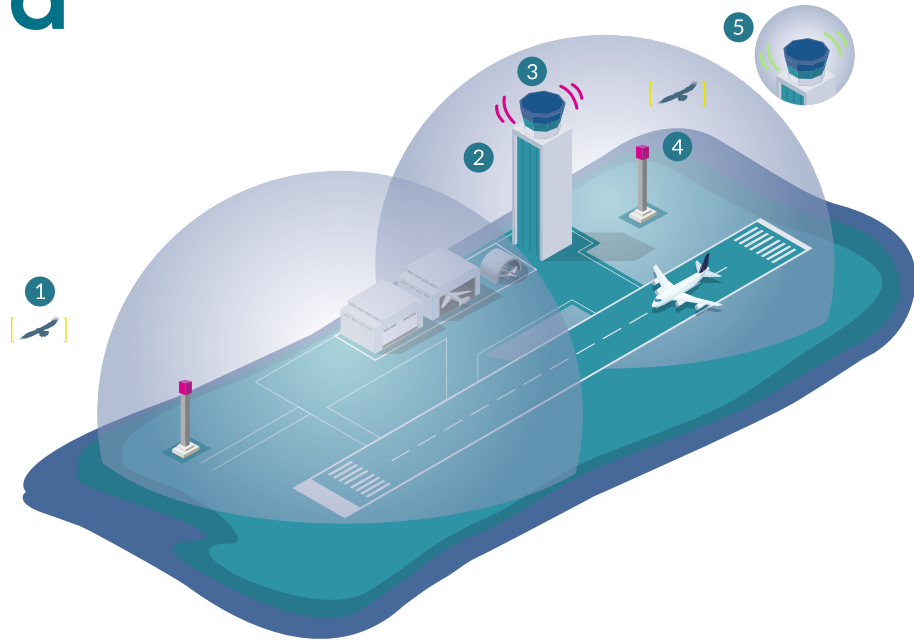
Our system advantages

- ✓ Maximize WTG availability and production
- ✓ Minimize False Positive detections
- ✓ Bat detection
- ✓ Geofencing
- ✓ Noise pollution at a minimum
- ✓ 360° nacelle speaker, no need for 2nd, 3rd row of speakers
- ✓ No masking
- ✓ All-weather operation is available 24 hours a day, seven days a week
- ✓ Extreme weather, durable and time proof base
- ✓ Strobe lights
- ✓ CCTV
- ✓ Advanced reporting
- ✓ System – health monitoring
- ✓ Flexible Service Level Agreement (SLA)

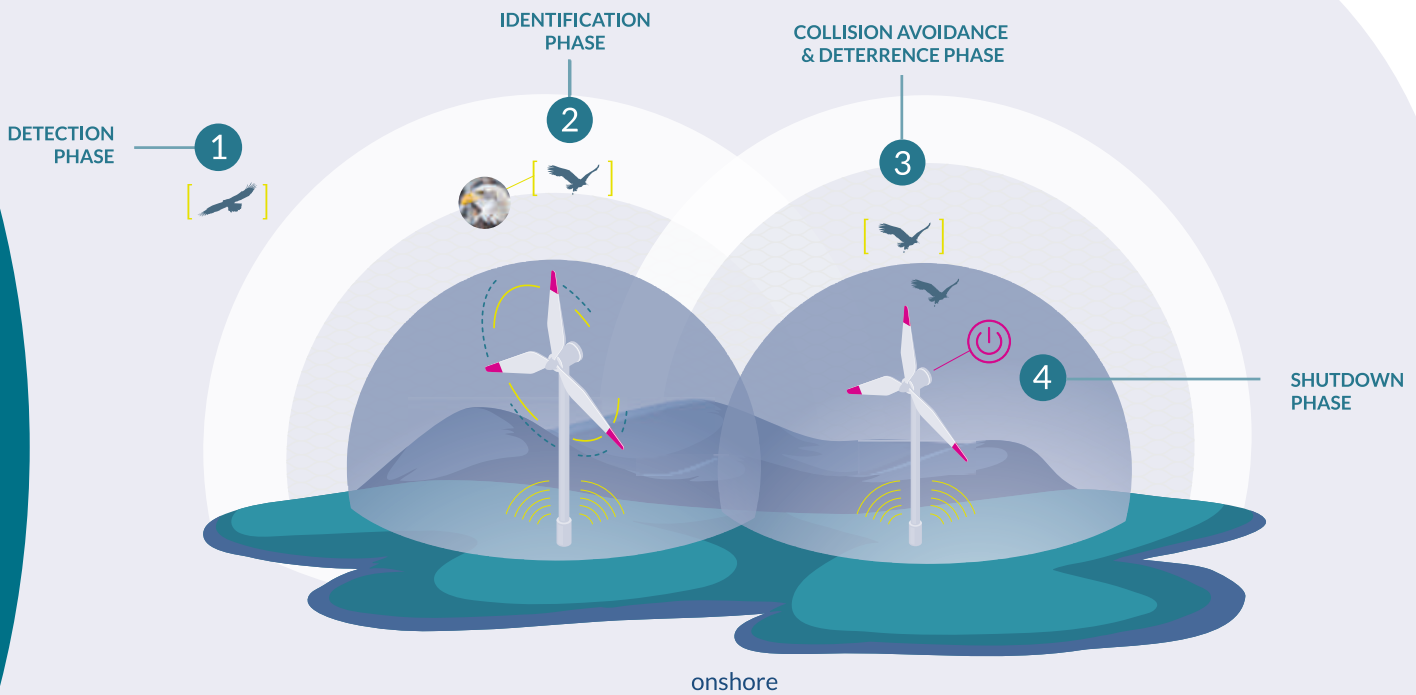


See how it works

- 1 | Radar and cameras detect bird
- 2 | Alarm signal sends to control tower
- 3 | The air traffic controller informs the pilot about bird's presence and further procedures
- 4 | Cameras are enabled to deter the bird if it is inside the deterrence range
- 5 | When the area is clean from birds the system gives green light and the landing or take off procedure is resumed



See how it works



1 | Detection phase

The system is installed on each Wind Turbine Generator and covers its surrounding area for distances up to 1km day and night. The system uses cutting edge technology cameras to constantly scan the area without masking any parts in the field of view.

2 | Identification phase

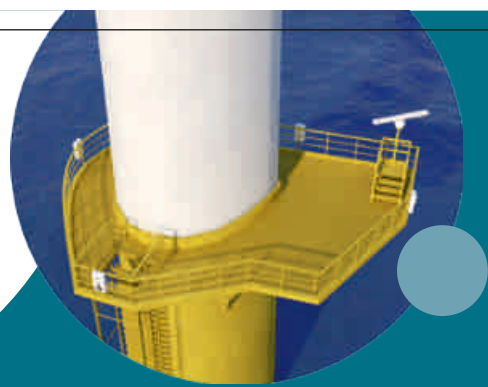
Artificial Intelligence and Machine Learning algorithms are applied in order to identify all moving objects. The system can distinguish birds from anything else and categorize them in critical or not critical species according to the environmental impact assessment of the wind park.

3 | Collision avoidance & deterrence phase

When the identified bird belongs to the critical species and enters the critical zone, an ASR sound is enabled to the direction of the flight in order to deter the bird.

4 | Shutdown phase

In case the bird remains in the critical zone or further approaches the Rotor Swept Area, the system automatically sends a direct signal to the SCADA to shutdown the wind turbine generator, in order to protect the bird.



1 | 3D Radar Detection phase ≈10km

3D Radars are installed on the perimeter of the wind park covering the surrounding area for distances up to 10km. In case of a flock of birds approaching, the flight trajectory is recorded by the 3D Radar.

2 | Slow Down phase ≈2km

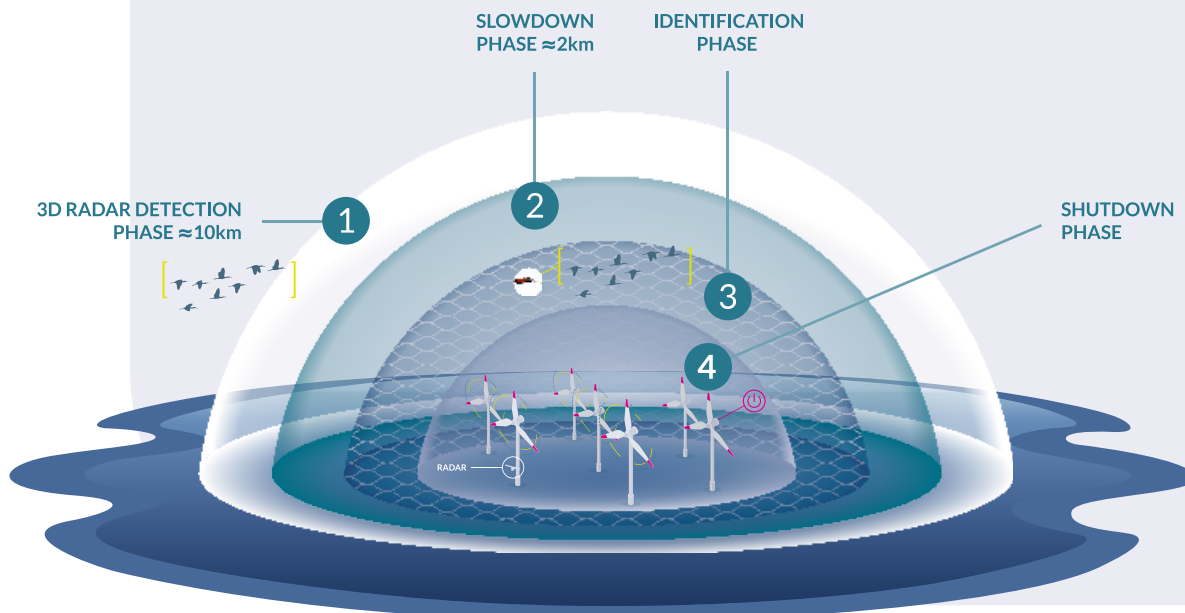
In case the flock is in collision route (direction and height data) with the wind turbines the system sends an automatic command via the controller of the wind farm to slowdown the rotor speed of those wind turbines in the route of the flock.

3 | Identification phase

The cameras record the birds as they approach further and artificial Intelligence and machine learning algorithms are applied in order to categorize them in critical or not critical species according to the environmental impact assessment of the wind park. When the identified birds belong to the critical species and enter the critical zone, a sound is enabled in the direction of the birds in order to deter them.

4 | Shutdown phase

In case the birds remain in the critical zone or further approaching the RSA (Rotor Swept Area) the system sends a direct signal to stop those Wind Turbines in the direction of the flight.



Protect rare birds
and migratory
species

Maximize power
production

nvbird® - offshore, unique & innovative

We are **evolutionary**

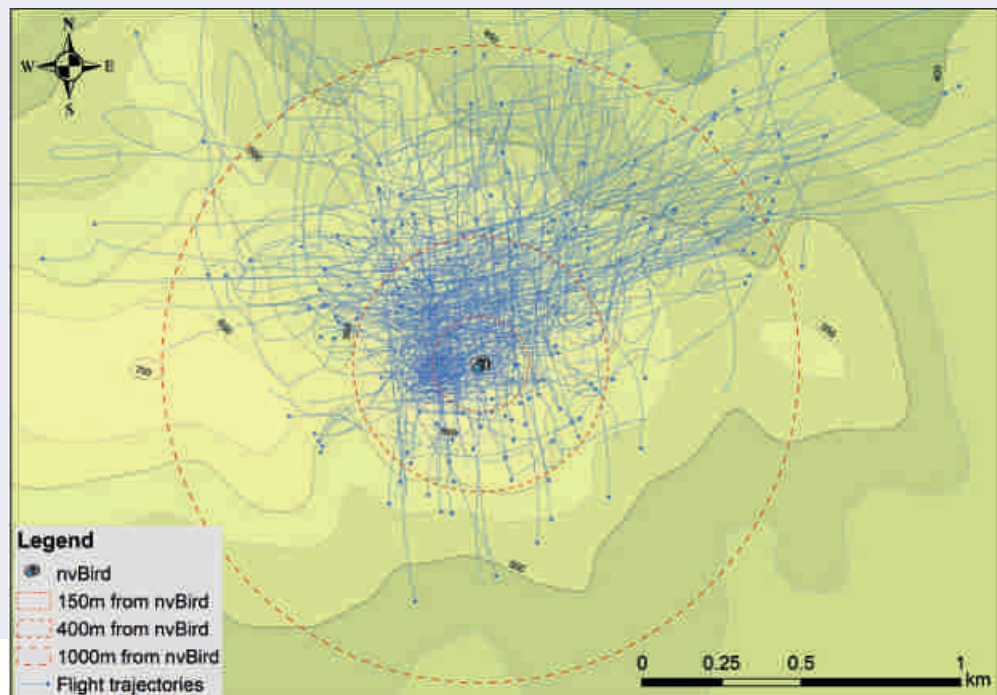
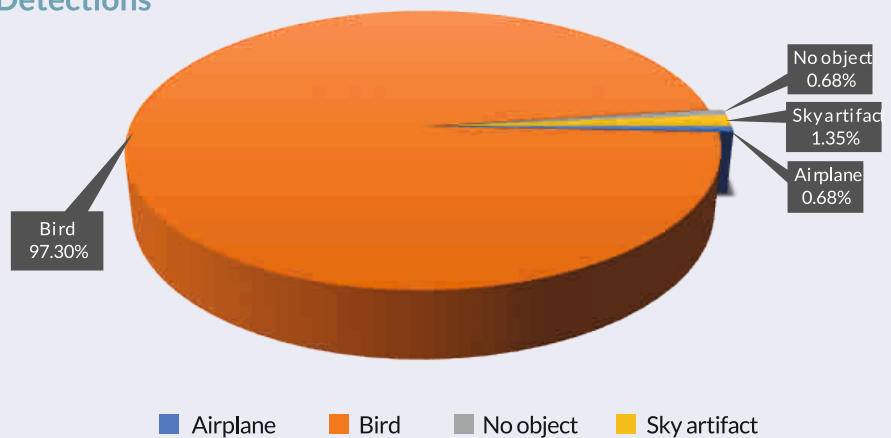


nvbird solutions can be implemented in airports, PV parks, industrial buildings, ports and agricultural crops

nvbird detection type analysis

- Over 97,3 % detection rate of birds in the object classification analysis
- Less than 3% false positive detections through the use of AI algorithms
- Very low nvbird false positive detection rate provides vital advantage for highly effective detection and collision deterrence of birds in the vicinity of wind turbines reducing excessive acoustic deterrence, bird habituation and wind turbine stops
- nvbird is being continuously upgraded, evaluated and optimized to operate under local conditions at each site

nvbird Detections



For more information
on our nvbird or if you want to
discuss your next project
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#AddsValueToTheGreenEnergy