IT & Communication Solutions for Energy Services

Internet&Idee
your solving company

PROPOSAL FOR

adds value to the green energy

19/05/2023
Document number 2023-152-01

Dear Stefano Riva,

RWE Renewables Italia S.r.l.
Via Andrea Doria, 41/G
00192 – Roma

We really appreciate your interest in the **nvbird®** system.

We submit below, our offer, technical and financial proposal for the installation of **nvbird®** on the Wind Turbines requested.

Please consider all information in our offer as confidential.

If you may need any additional details or clarification, please do not hesitate to contact us.

Yours Sincerely,

Francesco Zumpano

www.internet-idee.net
PIAZZA EUROPA, 9
87100 COSENZA (CS)
TEL. (+39) 0984 414752
FAX (+39) 0984 1905626

ABOUT US

About us

Since 1998, Internet & Idee (I&I) is a consolidated high-level player in IT consultancy and in the provision of IT services.

Since its date of birth, I&I has been more and more specializing in designing and implementing end to end solutions. Nowadays, I&I stands out as a technological partner always capable of supporting companies in their digital transformation process with a complete proposal combining technology, specific skills and strategic consultancy.

Over the years, I&I has gained a solid position within the Italian ICT landscape, in particular for IT Consulting, System Integration, E-commerce Management, Quality Assurance (QA) & Test Management, Credit Management & Credit Collection, Cyber Security. The company has proven to be capable of ensuring the complete and effective management of complex projects, counting on distinctive skills and by relying on a deep knowledge of each step of all the processes which are necessary for the correct execution of all the activities related to the different business area of the different specific market sectors.

The company is experiencing a phase of growth: it can count on over one hundred and twenty professionals, three headquarters and two next one's openings in Italy.

I&I industrial short and medium term development plans forecast an increasingly widespread distribution in its reference territory, supporting customers in a faster and more flexible way in order to strengthen and provide continuity to relationships.

Our mission is Developing cutting-edge ICT solutions with quality levels exceeding customer expectations is the primary objective pursued by I&I.

The constant is to show up on the market with high professional standards, overseeing the development of projects and relationships with clients and customers, promoting their growth in terms of quality.

www.internet-idee.net
PIAZZA EUROPA, 9
87100 COSENZA (CS)
TEL. (+39) 0984 414752
FAX (+39) 0984 1905626

Our vision is Progress pushes towards a digital society connected by services capable of improving quality of life. I&I aims at contributing to this change process by becoming a technological center of excellence, enhancing the role of people and their ideas, which constitute the development towards innovation engine.

Passion and Union of a determined team with which to share objectives and vision are the two components that will give I&I the possibility to reach ambitious and important goals.

Integrity, professionalism, transparency represent the guiding principles that drive every single choice and decision made by I&I.
They are just a part of the shared values that strengthen the corporate culture, which puts ethics at the hearth of each decision so as to foster a working environment based on respect, collaboration and internal and external cooperation within the company.

A strong value system that has allowed I&I to build continuous and meaningful relationships with all the stakeholders.

I&I aims at standing out as an IT player always targeting at excellence by offering advanced digital and technological solutions that are modeled according to specific and particular clients and customers needs.

In I&I Quality Certifications together with the continous training of management and technical company personnel have a high strategic value, since they are evidences that certify how products and services and I&I know-how respect high quality standards which are recognized by third parties and authorities, that can guarantee quality assurance for clients and customers.

www.internet-idee.net
PIAZZA EUROPA, 9
87100 COSENZA (CS)
TEL. (+39) 0984 414752
FAX (+39) 0984 1905626

I. ABOUT NVISIONIST

At nvisionist 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.

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.
In nvisionist we are experts at designing applied Artificial Intelligence and Machine Learning solutions. Based on advanced Machine Learning algorithms we provide applied solutions that really work, comply with our customers requirements and goals and return the initial investment quickly.

We have a thorough knowledge of the Renewable Energy market and we work with Energy providers. We understand their needs and we design innovative solutions that help them protect the environment and at the same time increase their profits.

At nvisionist we have the goal to continuously improve the quality of our products and services and consistently meet our customers' expectations

We adhere to the ISO 9001:2015 quality management system that helps us ensure that our customers get consistent, excellent-quality products and services.
nvisionist is also implementing an effective environmental management system. ISO 14001:2015 helps us improve our environmental performance through more efficient use of resources and reduction of waste.
Both standards have been certified by Swiss Approval Technische Bewertung.

www.internet-idee.net
PIAZZA EUROPA, 9
87100 COSENZA (CS)
TEL. (+39) 0984 414752
FAX (+39) 0984 1905626

II. THE CHALLENGE

The Challenge

Wind Parks are often installed in locations, where wildlife flourishes. Thousands of birds, both domestic and migrating fly through the wind parks and some of them collide on the blades of the turbines and die. Many of them are endangered and each one of them is valuable to the ecosystem.
EU legislation has enacted environmental protection rules that all energy providers are required to adopt. Energy providers when installing wind parks in areas designated as Natura 2000, are obliged to install systems that monitor the skies around the parks for birds and deter them by emitting special sounds when they are on a collision course with the blades. If for some reason birds keep their collision course, the system must shut down the Wind Turbine Generator. Once the turbine is shut, it stops producing energy. Moreover, once it starts again, it takes time to reach full capacity. As a result, energy providers lose a substantial amount of money when the turbine is shut down.
Most of the other bird deterrent systems in the market, are based on outdated motion detection algorithms, producing a lot of "false positives" that trigger the system to stop the turbines very often. Since they cannot accurately distinguish birds from other moving objects as airplanes, clouds, blades of nearby turbines, or insects that fly close to the cameras they cause a significant decrease in the total amount of energy each turbine is producing.

www.internet-idee.net
PIAZZA EUROPA, 9
87100 COSENZA (CS)
TEL. (+39) 0984 414752
FAX (+39) 0984 1905626

III. THE SOLUTION

The Solution

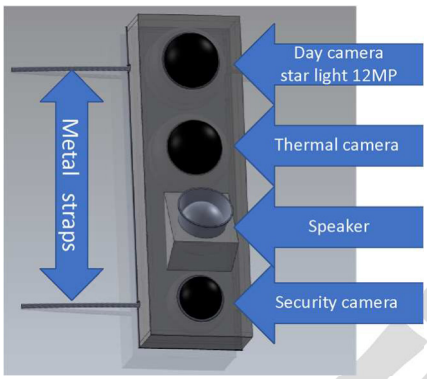
The need for an effective bird deterrent is important in many of today's industries and in the past there have been many attempts to develop a successful system with few achieving adequate results.
nvisionist has developed the innovative nvbird® for wind parks, in order to protect birds that fly dangerously close to the wind turbine blades. Using state-of-the-art security and software development technologies, we manage to deter the protected birds from the wind turbines, protecting them from death or serious injury, while at the same time maximizing the operating time of the turbines, almost eliminating their shut down time and minimizing noise pollution. The development of this innovative product, unique in functionality with state-of-the-art artificial intelligence and machine learning technologies, adds value to the global wind energy market.
As more and more wind parks are installed around the world, the global need for bird protection is rising. We are already in contact with multinational energy providers and some of our customers that build wind farms around the globe and they have expressed their intention to cooperate with nvisionist in other parts of the world.
nvisionist nvbird® consists of state-of-the-art hardware, software that uses our unique monitoring machine learning algorithm and a business intelligence platform for monitoring and reporting.

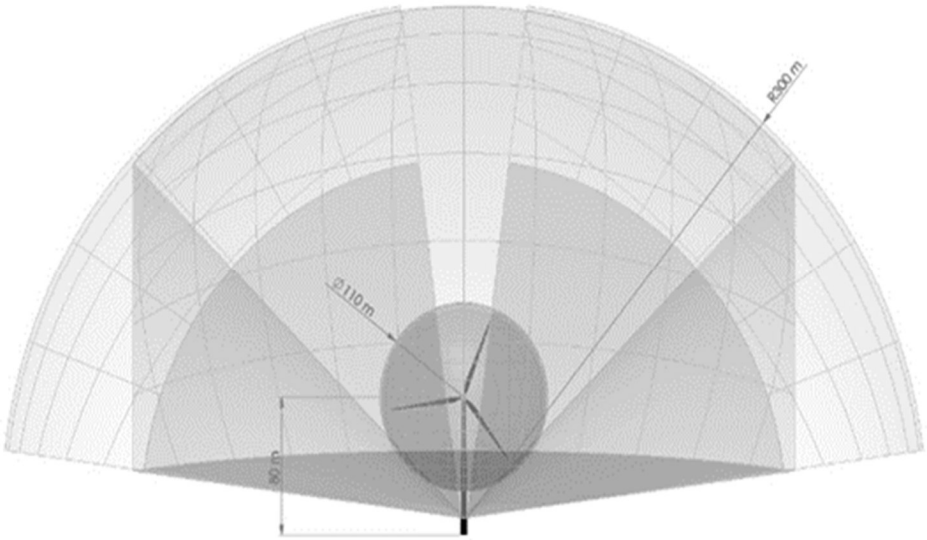
www.internet-idee.net
PIAZZA EUROPA, 9
87100 COSENZA (CS)
TEL. (+39) 0984 414752
FAX (+39) 0984 1905626

IV. THE SYSTEM

The System

The hardware of the nvbird® consists of a very powerful server, capable of processing and rendering high resolution images quickly.
Four Ultra-high definition cameras with super starlight technology enable us to capture high resolution video and images in very low light conditions.
Where needed, four Thermal cameras help our system detect birds as far as 1.000 meters in absolute darkness or through a cloudy sky.





www.internet-idee.net
PIAZZA EUROPA, 9
87100 COSENZA (CS)
TEL. (+39) 0984 414752
FAX (+39) 0984 1905626

V. THE SOFTWARE

The Software

Our software is built around a unique machine learning algorithm that we have developed, capable of detecting birds and distinguishing them from other moving objects. After detecting them it calculates their course and speed to predict whether they are on a collision course towards the turbine. At the same time, it classifies them depending on their type.

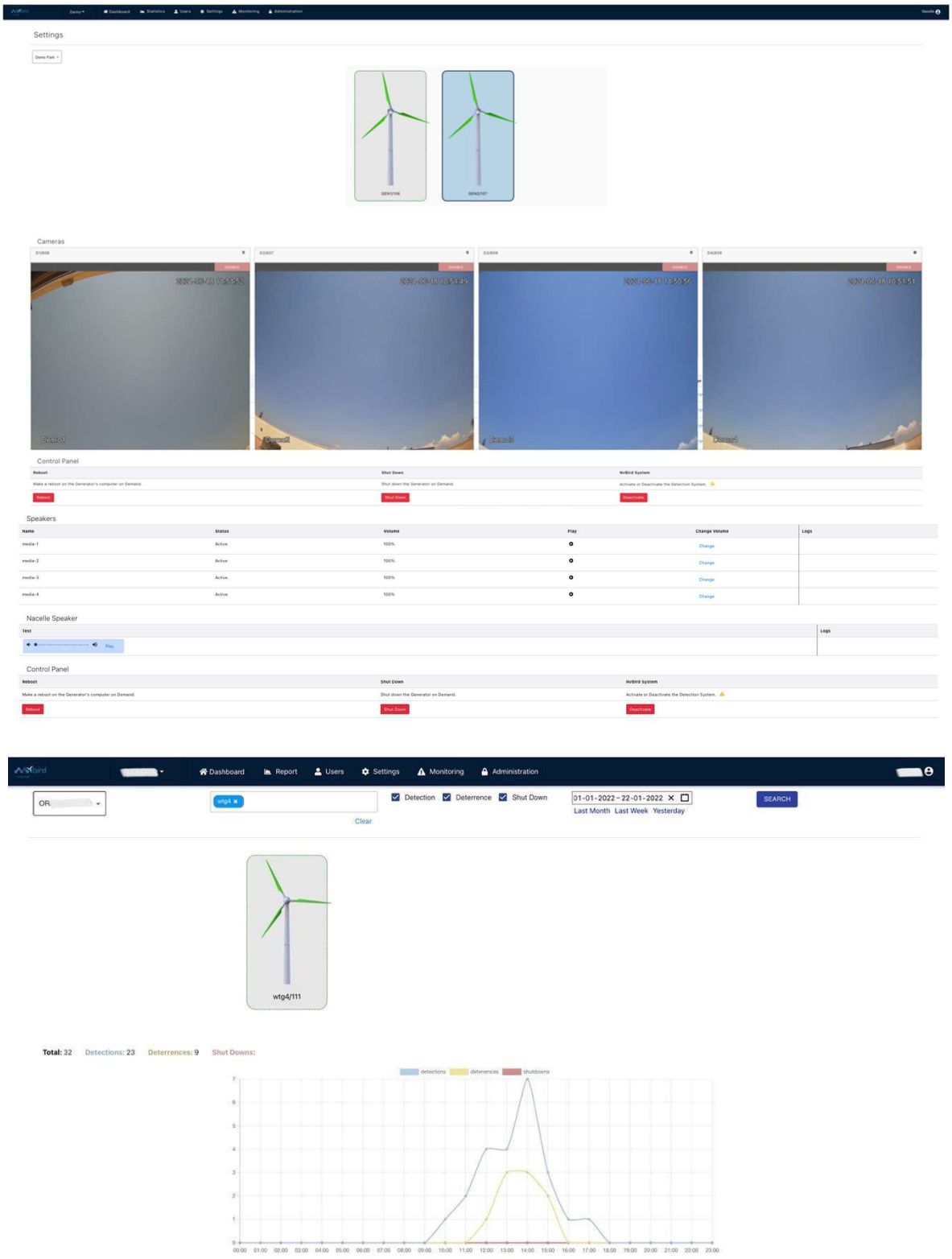
VI. THE PLATFORM

The Platform

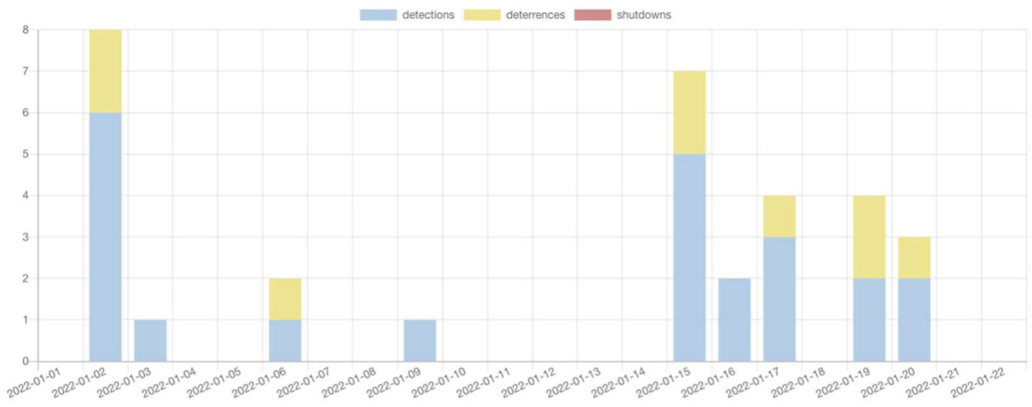
Our platform is web based and can be accessed by a simple browser. Once the user logs into the system, he can access useful information, reports and KPI's for the wind park where our system is installed.
In the main screen, the user can see a dashboard displaying all the systems that are active in the Wind Turbine Generators, daily detections, deterrences, and shutdowns. The dashboard is configurable, and the user can adjust it to his preference.
Live view of the cameras is available to the user as well as remote reboot of the control unit in case it is needed.
The platform has a strong report generator engine, which can produce customizable reports by selecting various criteria.
These reports can include the stoppages time stamps per Wind turbine, the most active birds in the area, how many are detected and how many are deterred. Useful information like wind speed, Nacelle position and rotor speed are also being recorded to the database if the manufacturer of the WTG lets our system access this info.
Finally, one of the most advanced features of the platform, is that when a bird is detected by the system and it is not recognized, it is reported as unclassified in

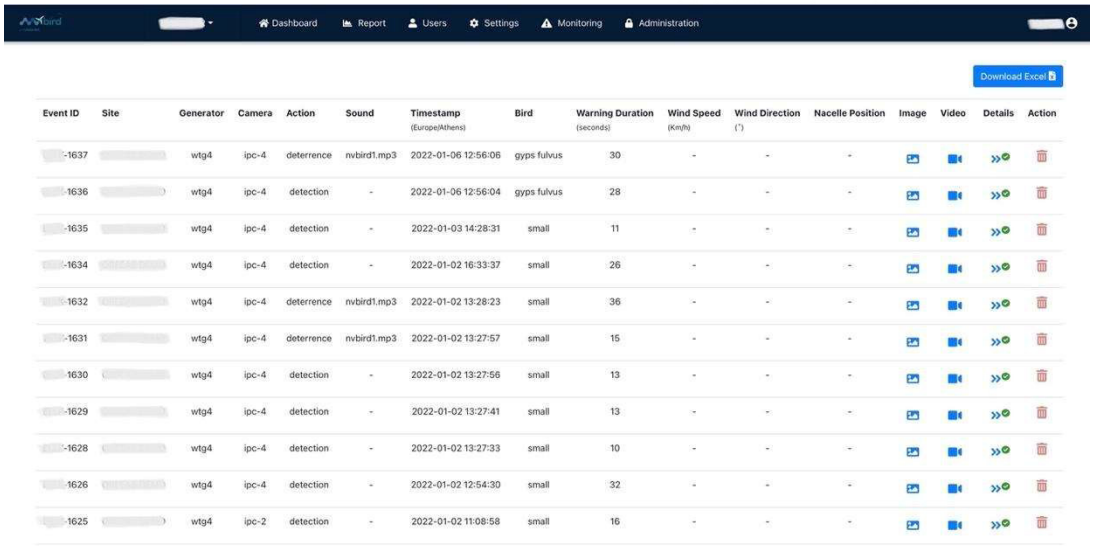
www.internet-idee.net
PIAZZA EUROPA, 9
87100 COSENZA (CS)
TEL. (+39) 0984 414752
FAX (+39) 0984 1905626

our database. After the review of our ornithologists team the bird is classified and the system is starting to recognize it, using our unique deep learning technology. This flow ends by delivering the updated algorithm capabilities throughout all the in stalled systems around the world!



www.internet-idee.net
PIAZZA EUROPA, 9
87100 COSENZA (CS)
TEL. (+39) 0984 414752
FAX (+39) 0984 1905626



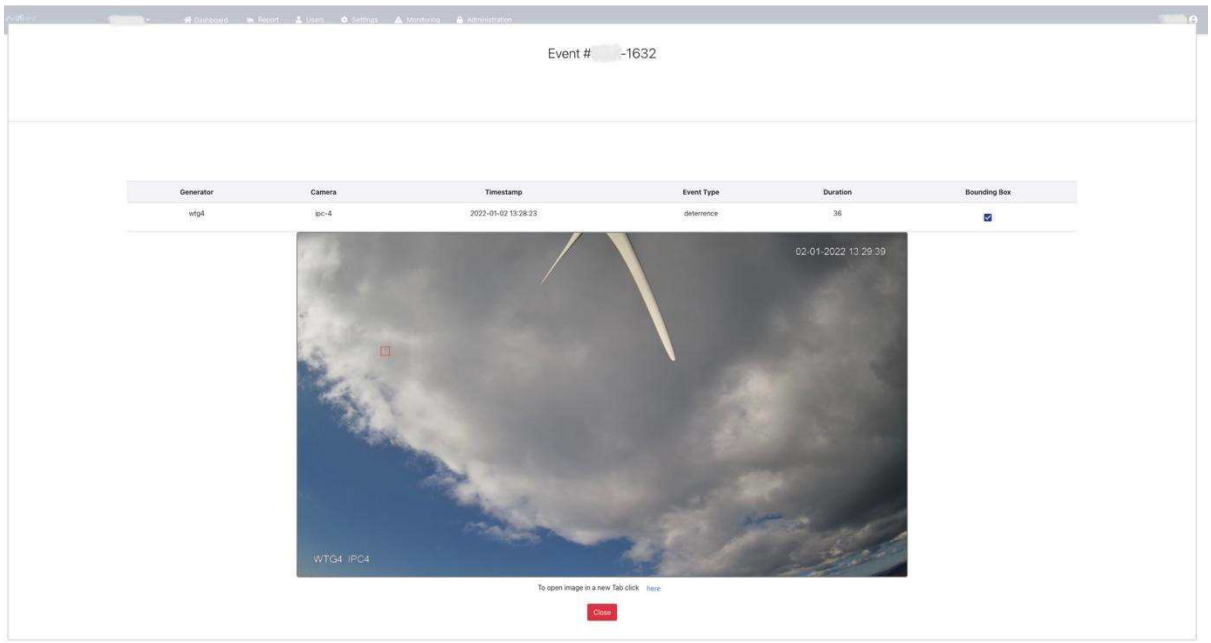


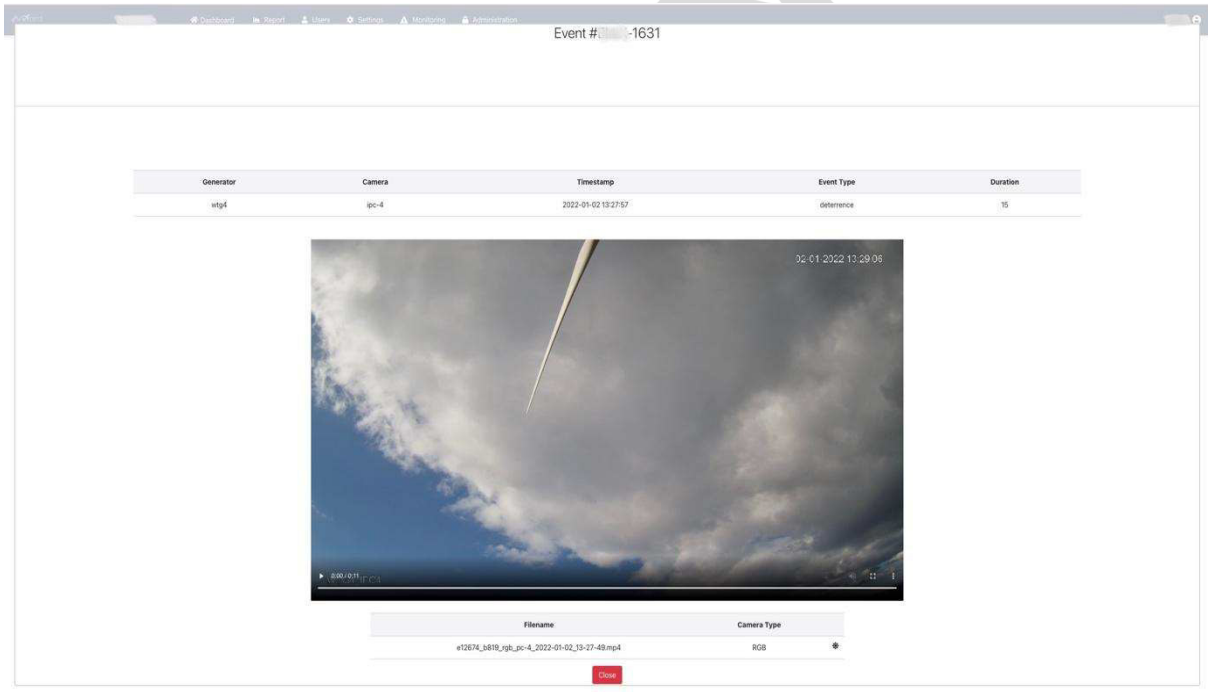
Event ID	Site	Generator	Camera	Action	Sound	Timestamp (Europe/Athens)	Bird	Warning Duration (seconds)	Wind Speed (Km/h)	Wind Direction (°)	Nacelle Position	Image	Video	Details	Action
-1637		wtg4	ipc-4	deterrence	nvbird1.mp3	2022-01-06 12:56:06	gyps fulvus	30	-	-	-				
-1636		wtg4	ipc-4	detection	-	2022-01-06 12:56:04	gyps fulvus	28	-	-	-				
-1635		wtg4	ipc-4	detection	-	2022-01-03 14:28:31	small	11	-	-	-				
-1634		wtg4	ipc-4	detection	-	2022-01-02 16:33:37	small	26	-	-	-				
-1632		wtg4	ipc-4	deterrence	nvbird1.mp3	2022-01-02 13:28:23	small	36	-	-	-				
-1631		wtg4	ipc-4	deterrence	nvbird1.mp3	2022-01-02 13:27:57	small	15	-	-	-				
-1630		wtg4	ipc-4	detection	-	2022-01-02 13:27:56	small	13	-	-	-				
-1629		wtg4	ipc-4	detection	-	2022-01-02 13:27:41	small	13	-	-	-				
-1628		wtg4	ipc-4	detection	-	2022-01-02 13:27:33	small	10	-	-	-				
-1626		wtg4	ipc-4	detection	-	2022-01-02 12:54:30	small	32	-	-	-				
-1625		wtg4	ipc-2	detection	-	2022-01-02 11:08:58	small	16	-	-	-				

« ‹ 2 › »

Event ID	Site	Generator	Camera	Action	Sound	Timestamp (Europe/Athens)	Bird	Warning Duration (seconds)	Wind Speed (Km/h)	Wind Direction (°)	Nacelle Position	Image	Video	Details	Action
- 1670		wtg4	ipc-4	deterrence	nvbird1.mp3	2022-01-20 14:21:36	small	34	-	-	-				
- 1662		wtg4	ipc-4	deterrence	nvbird1.mp3	2022-01-17 14:13:53	aegypius monachus	37	-	-	-				
- 1652		wtg4	ipc-4	deterrence	nvbird1.mp3	2022-01-15 15:06:35	medium	21	-	-	-				
- 1651		wtg4	ipc-2	deterrence	nvbird1.mp3	2022-01-15 14:20:35	medium	55	-	-	-				
- 1637		wtg4	ipc-4	deterrence	nvbird1.mp3	2022-01-06 12:56:06	gyps fulvus	30	-	-	-				
- 1632		wtg4	ipc-4	deterrence	nvbird1.mp3	2022-01-02 13:28:23	small	36	-	-	-				
- 1631		wtg4	ipc-4	deterrence	nvbird1.mp3	2022-01-02 13:27:57	small	15	-	-	-				

www.internet-idee.net
PIAZZA EUROPA, 9
87100 COSENZA (CS)
TEL. (+39) 0984 414752
FAX (+39) 0984 1905626

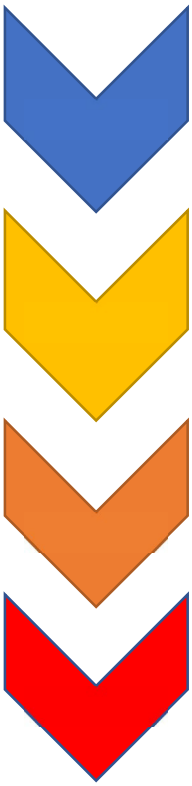




www.internet-idee.net
PIAZZA EUROPA, 9
87100 COSENZA (CS)
TEL. (+39) 0984 414752
FAX (+39) 0984 1905626

VII. OPERATION PRINCIPLE

Operation Principle



1. DETECTION PHASE
The system is installed on each Wind Turbine Generator and covers its surrounding area for distances up to 1km. In case of a bird approaching, the flight trajectory is recorded by HD cameras.

2. IDENTIFICATION PHASE
Artificial Intelligence and Machine Learning algorithms are applied to identify the bird and categorize it according to the environmental impact assessment of the wind park.

3. COLLISION AVOIDANCE - DETERRENCE PHASE
If the identified bird belongs to the critical species and enters the critical zone, an ASR sound is enabled to the direction of the flight to deter the bird.

4. SHUTDOWN PHASE
In case the bird remains in the critical zone and further approaches the RSA (Rotor Swept Area) the system sends a signal to the SCADA to stop the wind turbine generator.

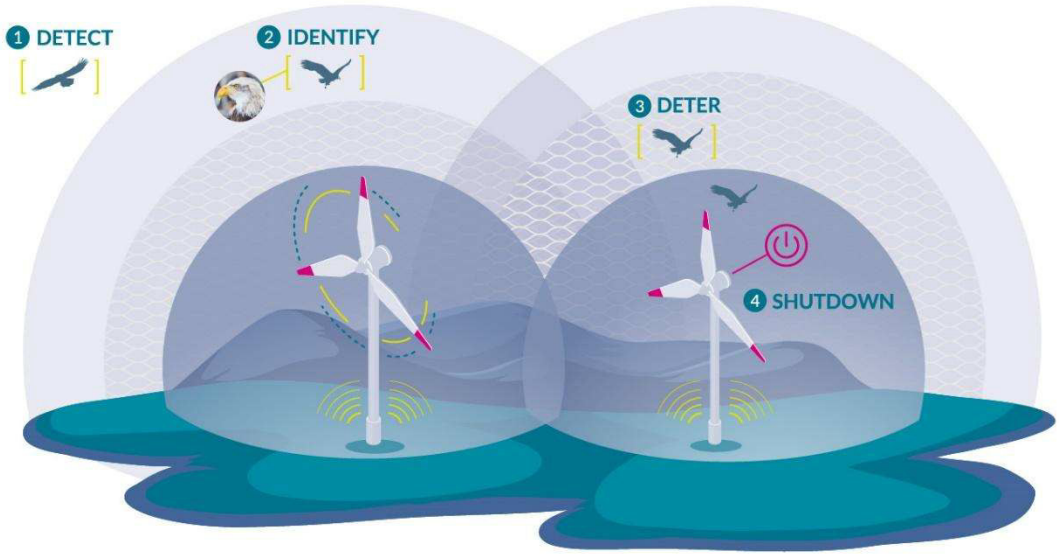
How it works

We use state of the art Artificial Intelligence algorithms to detect birds in risk zones. Our system can continuously improve its detection capabilities using Machine Learning technology.
With our Ultra High Definition cameras of 12 megapixel in combination (when needed) with Thermal vision technology to achieve 24 hours, all weather detection and operation, our system can detect flying objects from up to 1Km distances.

The classification of the birds depends on the quality of the dataset the system has been fed. The more data we have on a specific bird of interest, the better. Following the installation, the system collects photos and videos of every incident (bird detections, bird deterrences, shudowns). All the info gets uploaded in the cloud and our ornithologists classify the birds that have not

www.internet-idee.net
PIAZZA EUROPA, 9
87100 COSENZA (CS)
TEL. (+39) 0984 414752
FAX (+39) 0984 1905626

been classified automatically. Then, the system algorithms get "retrained" and the quality of detections and recognitions improves.
nvbird® is modular and scalable. Depending on the reason one wants to monitor and whether it should monitor at night as well, the system can be built to order with one to four optical cameras as well as thermal cameras respectively. Furthermore, it can be built with or without the option of stopping the turbine when birds are not deterred.
Based on the process of detection and classification, we use state of the art acoustic driver modules with adjustable volume to deter birds entering the turbine risk zone. Our system uses directional sound emission, minimizing sound pollution. The special sound emitted, is evoking the Acoustic Startle Response of the birds, making them change course. The sound does not harass the birds and they do not get used to it.
In the extreme scenario that a bird enters the critical zone, the turbine can receive signals in various formats, in order to stop its operation and prevent the collision.



Notes:

1. The option of shutting down the turbines before a bird's collision is available and included in our offer.
2. Sound volume can be adjusted for the minimum possible nuisance of the nearby villages keeping in parallel the systems efficiency and effectiveness.

www.internet-idee.net
PIAZZA EUROPA, 9
87100 COSENZA (CS)
TEL. (+39) 0984 414752
FAX (+39) 0984 1905626

VIII. HOW WE DIFFER

How we differ

- Advanced Deep Learning Algorithm – can identify birds types, sizes, direction, speed
- Significantly less false positives, more running time for the turbines, less noise pollution, less strain to the generators caused by unnecessary shutdowns that cause extreme loads
- **Tailor-made design for each Park** – our team of engineers and ornithologists surveys the Park and designs the solution considering legal environmental requirements, the landscape, height, winds direction etc
- Ideal Hardware setup – we use state of the art cameras, powerful servers, targeted sound deterrence
- External systems designed to withstand tough weather conditions
- **For WTGs over 70m height, there is no need for 2nd, 3rd row of speakers as we install a special 120db omnidirectional 360° speaker on the top of the nacelle.**

- Online cloud reporting – you can access our cloud platform anytime and see the reports. You can have a report sent on a daily, weekly monthly basis
- 24/7/365 service desk – We are always online
- **flexible Service Level Agreement (or spare parts)**

www.internet-idee.net
PIAZZA EUROPA, 9
87100 COSENZA (CS)
TEL. (+39) 0984 414752
FAX (+39) 0984 1905626

IX. INFRASTRUCTURE REQUIREMENTS

Infrastructure requirements

Before installation the customer and the WTG manufacturer must complete the relevant form - nvbird® / **Infrastructure Requirements**

Power Requirements

Every system needs a power supply by the Wind Turbine where it will be installed.

- Supply current: - 6A/230V AC
- Frequency: 47 -63 HZ
- Appropriate grounding

Network connection

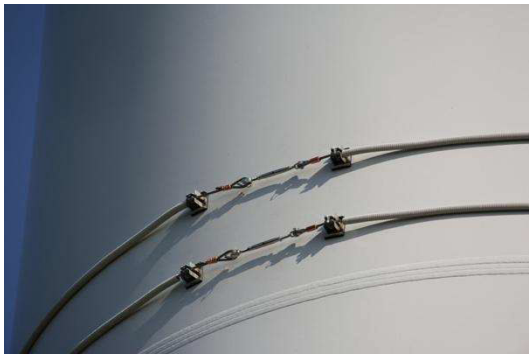
An Ethernet network connection must be available in each Wind Turbine (provided by the customer).

Intallation of Modular nvbird® systems

The nvbird® system has been designed and manufactured using high quality materials (eg external system made of inox 316L) taking into account a wind farm project's 20 year life time.
nvbird® external backplate system can be installed in all types of WTGs either during their erection or after. Two (2) metal wire ropes are responsible to hold the back plate of each base on the outer perimeter of the WTG tower. Each wire creates a vertical force (towards the surface of the tower) and is tensioned at approximately 500kN. A special protective rubber mat is placed between the tower and the back plate both to prevent the two metal surfaces to be in contact but also to increase the friction coefficient to prevent sliding in a case of impact (i.e. ice fall from nacelle, ice sliding on tower's surface). All external metal parts

www.internet-idee.net
PIAZZA EUROPA, 9
87100 COSENZA (CS)
TEL. (+39) 0984 414752
FAX (+39) 0984 1905626

are made of stainless steel 316L and they do not need maintenance or retensioning (systems that are installed with magnets and polyester straps need periodic checks). They are offered with **a lifetime warranty**.



External fixed backplate, wire ropes and mounted system

After the back plate is attached to the tower the stainless steel cover that holds the camera, speaker and electrical/network wiring is attached to the back plate. Installation and deinstallation is very easy and does not require deinstallation of the whole external system and steel wire ropes.

www.internet-idee.net
PIAZZA EUROPA, 9
87100 COSENZA (CS)
TEL. (+39) 0984 414752
FAX (+39) 0984 1905626

Stainless steel cover with cameras and speaker installed

In each Wind Turbine, the following equipment must be installed:

- 1 control unit that is installed inside the base tower.

Control unit

- Four stainless steel modular bases that are attached on the outer perimeter of the WTG tower at a height between 8-12m from the ground. Each base carries at least one camera and the speaker.

System installed

www.internet-idee.net
PIAZZA EUROPA, 9
87100 COSENZA (CS)
TEL. (+39) 0984 414752
FAX (+39) 0984 1905626

Perimeter Security (optional)

Although wind farms offer a green solution to energy issues, some people object to them due to a perceived impact on the historic and scenic value of the wind plants locations, or due to their expected noise and impact on birds. Because of this unwillingness to accept wind-power plants, they are sometimes sabotaged, endangering the system's operations and efficiency. Integrating surveillance and security systems thus becomes of primary concern to protect these investments.
nvisionist has integrated into nvbird®, a dedicated security surveillance system which consists of four starlight (0.005 Lux@F1.6) cameras per WTG, network video recorder offers a excellent performance and high recording quality for IP video surveillance applications. For applications where details are critical for identification, this professional Nvisionist Video Recorder provides a powerful processor with up to 4K resolution. Additionally, the **Nvisionist Video Recorder** features a mouse shortcut operation menu, remote management and control, storage for 10 days.

Perimeter Security Functions (optional)

Fisheye Dewarping The nvisionist Video Recorder features multiple fisheye dewarping modes to make viewing video easy whether its live or during playback.
4K Resolution The NVR supports 4K ultra HD resolution (3840 x 2160) for recording, live viewing and playback.
Easy4ip You can monitor at anytime and anywhere with Easy4ip. There are 2 modes Easy4ip web client and mobile app. With this function, you can manage your devices more conviently Intelligent Video System (IVS) With built-in intelligent video analytics, the NVR has the ability to detect and analyze moving objects for improved video surveillance. The NVR provides optional standard intelligence at the edge allowing detection of multiple object behaviours such as abandoned or missing objects. IVS also supports Tripwire analytics, allowing the camera to detect when a pre-determined line has been crossed, People Counting, ideal for business intelligence, and Face Detection, for searching or identification of individuals.
Heat Map The NVR's Heat Map option highlights the areas with the highest concentration of people. This information can then be exported into a customized report to assist in business or forensic analysis.
ANPR Automatic Number Plate Recognition available for convenient entrance/ exit management. Support plate recognition, black/whitelist import/ export, add/delete B/W list number, search result from recorded video.
ANR (Automatic Network Replenishment Technology) Video record in SD card in IP cameras when the network breaks down, and after the network recovered, the video will be transferred to NVR and then recorded in it.
The whole security solution runs in a separate software platform in order to be distinguished from nvbird platform.

www.internet-idee.net
PIAZZA EUROPA, 9
87100 COSENZA (CS)
TEL. (+39) 0984 414752
FAX (+39) 0984 1905626

X. MANAGEMENT APPLICATION

With the annual '**Management Application Service'**, your company will have access to the birds activities reports.
Our Platform will provide you reports regarding nvbird® systems profile, bird flights, all birds detection and deterrence incidents as well as WTG shutdowns. For every detection and deterrence incident the system records photos and videos. You are also able to monitor the nvbird® systems proper operation and relative operation statistics.
nvbird® actions and registered data are uploaded daily to our online Internet Platform (Actions & Data Analysis Platform). Internet access is mandatory and bandwidth requirements will be calculated depending on video resolution.

Furthermore, through the **Network Monitoring Platform**, the offered system will be operationally (24x7) monitored. Periodically, we will send you reports about systems functionality (i.e. failures, down time, any repair needed, other malfunctions)
For example, whenever we realize any malfunction (from nvbird® IP address) we will send you the problem's category and the possible – suggested solution.
Note: Network Monitoring Platform, S/W updates, new versions, bug fixing, new patches will be monitored from our company and are included in the annual price of 'Management Application Annual Service'.

www.internet-idee.net
PIAZZA EUROPA, 9
87100 COSENZA (CS)
TEL. (+39) 0984 414752
FAX (+39) 0984 1905626

More specifically, for the first (1) year, we offer you twenty (20) hours of telephone support, regarding your questions (open *service tickets*).
Support can be offered by email requests as well. Our multichannel support operates in working days and hours.
Furthermore, we will also give you access to the specific system **Service Desk.**
Therefore, you will have all *service tickets* required information. (from the opening of the tickets, till resolution – closure).
In addition, for the cases - tickets, that your technicians *(in case you don't have the Service Level Agreements offered below) can't* provide a solution despite our remote support through telephone and emails, we offer you two (2) on site visits (travel expenses and accommodation will be covered by your company) of our company's specialized field engineers, in order to investigate further the problems.
Telephone support for your tickets is included as you renew the annual **Management Application, Service.**

Note: **Management Application, Service,** S/W updates, new versions, bug fixing, new patches will be monitored from our company and are included in the annual price of **Management Application Service.**

Clarification: The two above mentioned supporting systems:

1. **Management Application, *Service***
2. ***Network Monitoring Platform, Service***

are included in our offer.

Starting date for each system offering services is considered the first day of nvbird® operation.

www.internet-idee.net
PIAZZA EUROPA, 9
87100 COSENZA (CS)
TEL. (+39) 0984 414752
FAX (+39) 0984 1905626

XI. SLA WITHIN WARRANTY AND AFTER THE 2 YEARS WARRANTY

Additionally, we can offer to you our SLA maintenance services.
Starting date is the first day of nvbird® operation.
The SLA that you will enjoy during the two (2) years maintenance in parallel to the two (2) years nvbird® Warranty period but also after the Warranty period, will be according to the below Service Level Agreement:

- ✓ *Response time:* within 2 working hours.
- ✓ *Fix time: 2 working days (if weather conditions permit so).*
  Including all spare parts. (Malicious actions and ice falls damages are not included)

For maintenance needs – repairs, on site visits which require more than 200 km travel from Cosenza, 0,7€/km, travel expenses, food, beverages and accommodation will be covered by the customer.

Notes:

- In case you don't want us to provide you the specific maintenance service (SLAs), you will be responsible to remove-uninstall any faulty spare part and send it to our company.
  Our company will try to fix the problem or replace the spare part. **(Warranty Coverage in on a best effort basis)**
  Then, you will pick up the spare part from our company and install it back for operation, in the nvbird® System.

- Telescopic crane/lift service is not included in our offer. Weather conditions may influence relevant Response / Fix Time.

We can also offer onsite spare parts if you need faster repair times or if your team can execute the repairs.

www.internet-idee.net
PIAZZA EUROPA, 9
87100 COSENZA (CS)
TEL. (+39) 0984 414752
FAX (+39) 0984 1905626

XII. WARRANTY TERMS

Warranty Terms:

- **nvbird® guarantees** the products purchased by you to be free from defects resulting from the use of faulty parts or poor workmanship during its manufacture.
- Any claim will have to be made within the warranty period
- nvisionist will repair or replace any defective part in a best effort basis.
- Warranty does not cover:
  - Cracked or broken products
  - Plastic parts
  - Defects or damage caused due to virus attack
  - Products or product parts which have been (a) repaired or altered by any party other than manufacturer unless such repair has been specifically approved in writing by manufacturer, (b) subjected to misuse, negligence or accident, or (c) used in a manner or in an application other than that recommended by the manufacturer
  - Damage or loss of any programs, data or removable storage media including any consequential loss or damage
  - Damages caused due to acts of God & force majeure.

Customer must send defective spare parts to Internet & Idee offices and then he will receive them respectively from our offices.

www.internet-idee.net
PIAZZA EUROPA, 9
87100 COSENZA (CS)
TEL. (+39) 0984 414752
FAX (+39) 0984 1905626

XIII. ENVIROMENTAL SERVICES (OPTIONAL)

Bird monitoring & Carcass search project

a) Bird monitoring

Systematic monitoring of the bird presence and activity in the vicinity of the wind turbines through Vantage Point surveys. Vantage point surveys are essential for the recording of the Bird movements around the wind turbines and the estimation of collision risk of protected species during the wind farm operation. Experienced ornithologists will record bird flight activity in the vicinity of the wind farms. The data on bird presence, flight routes and flight characteristics are recorded on tablet computers and managed spatially and statistically in a specially designed database in order to monitor birds activities, in association with the data recorded by the nvbird® Systems. For recording nocturnal species such as the Eagle Owl, thermal cameras and bio-acoustic devices are used. Collision risk estimation is produced using the Band model.
A special mobile interface has been developed to achieve that goal using the QField app. The app includes all spatial information needed for the adequate record of bird presence and flights. Field ornithologists can track bird activity through visual observation using binoculars and telescopes and then record all information in the app in real-time. All fieldwork data is then stored to a geodatabase and used for cross referencing with the detections of the nvbird® systems.

b) Carcass search survey

Carcass search surveys are necessary for detecting any possible collision victims related to the operation of the wind turbines. Birds fly through the site of an installed wind farm and are likely to collide with the rotating blades of a wind turbine or other parts such as the nacelle or the tower. Carcass search surveys should be implemented every 10-15 days at the WT site and around the area of the installed wind turbines in 0-120 meters distance from the WTG. The surveys are carried out by experienced ornithologists who scan the area based on best practices and commonly used methodology.

The nvisionist Environmental Consulting team has exceptional experience in this kind of projects.

www.internet-idee.net
PIAZZA EUROPA, 9
87100 COSENZA (CS)
TEL. (+39) 0984 414752
FAX (+39) 0984 1905626

Internet&Idee
your solving company

EXCLUSIVE AGENT

L&T wind

nvisionist

www.internet-idee.net
www.letsrl.eu

francesco.zumpano@internet-idee.net
c.dellacoletta@letsrl.eu

Adobe Solution Partner BRONZE

ISTQB International Software Testing Qualifications Board SilverPartner

RINA CERTIFIED MANAGEMENT SYSTEM ISO 9001

RINA CERTIFIED MANAGEMENT SYSTEM ISO/IEC 27001