



ANGUARD[®]

SECURITY DRONES

DRONES



SECURITY
DRONES

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1. PUBLIC & CIVIL PROTECTION



Drones through the modern and innovative systems and equipment they have (thermal cameras, loudspeakers, life jackets, weapons, etc.) can help the civil protection authorities of each country (police, military, coast guard) to attempt and suppress in real time any form of threat.



2. PORT SECURITY & POLLUTION

Our security services cover all aspects of port-related risks.

Our experience enables us to provide comprehensive, realistic and cost-effective solutions depending on client's needs.

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3. SOLAR & WIND PARKS

Due to the large scale of solar parks, UAV (Unmanned Aerial Vehicle) technology is now a key element in the design of the solar park site, the construction and installation of solar panels along with the maintenance of the solar park.

Drones can perform visual and thermal inspection of solar panels and provide accurate and reliable results, can detect more issues than ground inspections and at a reduced cost of 50% to 90%. Inspection using a drone will be able to give details of worn parts of cells and arrays, misaligned (10 degrees) panels and rows, dust accumulation, shaded panels, line wear, oxidation of joints and poles, etc. UAV (Unmanned Aerial Vehicle) technology is now a key element in the design of the wind farm site, the construction and installation of the wind turbines along with the maintenance of the wind farm.

A DRONE INSPECTION WILL BE ABLE TO PROVIDE:

Safety - Capturing high quality Ultra HD 8K images with UAVs for wind turbine inspections eliminates the need for people to climb up to the scale of the turbine for inspections. This creates a much safer inspection process.

Saving time and cost - Using UAVs to inspect wind turbines is much faster than a traditional human inspection. Images are transmitted live so engineers can immediately analyse them. This significantly reduces the downtime of the turbine for the inspection, no need to hang from ropes or erect temporary scaffolding for the inspection.

High quality inspection - Our trained pilots are able to fly safely very close to the wind turbines. UAV navigation technology ensures that the drone will not hit the wind turbine, making the inspection clean and safe. Indicatively, we mention inspection operations with drones:

Wind turbine blade inspection using drones, Wind turbine visual and thermal inspections, Site development mapping survey, Wind farm assets inspection, Inspections of substations, lines and poles.



4. PETROCHEMICAL TERMINALS @ PIPELINES



Use of drone for pipeline inspection and recording of gas and particle distribution in real time. Our team can ensure not only that your facility is safe, but in the event of a gas leak, we can identify the leak and its distribution.

Gas detection with drones can greatly assist oil and gas pipeline inspections and reduce all the disadvantages presented by traditional inspection methods, such as high workload, high labour costs, low efficiency, risk to personnel safety, time constraints of the inspection and difficulties in quality control.

The modular multi-gas detection and mapping system can also be mounted on drones and can collect concentrations of up to 9 gases and particles simultaneously.

Ambient air monitoring PM2.5, PM10, O3, NO2, CO, SO2, VOCs, Odor (OU) HAZMAT response VOCs, CH4, CO, CO2, Cl2, O2, NO2, H2S, Leak detection in oil and gas installations.



5. RAILWAYS INSPECTION



Railroad inspectors, who used to risk their lives while hanging from metal bridges or radio towers several hundred meters off the ground to inspect railroad structures, have now turned to the use of drone technology.

Live streaming from unmanned aerial vehicle (UAV) cameras is useful in emergency situations. "When managers in the field and at headquarters can see the exact same picture in real time." For example, images sent from drones during the 2016 Cedar River flooding in northern Iowa changed Union Pacific's plan to restore the rail line there.

The repair team added more materials to the rails - rocks to stabilize them - and sent supplies and equipment through another rail route that was less flooded.

« Drones allow organisations to inspect inaccessible areas and deliver supplies without exposing employees to potential risks, » said business management consultancy. Accenture in its report on the use of drones in the engineering and construction industry.





6. BORDERS CONTROL

A drastic rise in violence by terrorist groups globally has put an intense focus on border security to combat recent national security issues. A case-in-point being the Border Security Force that has been mandated by The Government of India for guarding India's international borders.

The traditional approach to border monitoring includes surveillance by video cameras, ground sensors, land vehicles, and manned aircraft but these have become quite inadequate. There is a need to identify challenges which a country encounters across the varying border conditions and introduce a framework to address these challenges. To ensure seamlessness in the legitimate movement of people and goods across the borders, the adoption of new technologies for border control and surveillance is of paramount importance.

Drones are a significant asset in border security as they allow for real-time reconnaissance, target acquisition, track movement of people and illegal activities via high-quality video feed. Drones mounted with thermal detection cameras are much superior at tracking irregular activities such as illegal border crossing attempts through dense woods or mountainous terrain as compared to stationary video cameras. Drones flying at altitudes of 100 feet and far higher can cover broad swathes of land and quickly detect activities that might be missed by fixed or mobile ground sensors, particularly in remote or mountainous areas. Drone surveillance creates new accountability mechanisms that obviate some visible signs of security such as fences, while also introducing an invisible security apparatus that extends beyond state boundaries. Drones are more time-efficient and cheaper to deploy than helicopters and can access places deemed too unsafe and high-risk for persons. Drone technology can provide security forces with a safer and foolproof mechanism to secure international borders effectively.

drones play a crucial role in perimeter surveillance and border security. These drones detect people and objects and help in identifying patterns in border crossing. With high-quality real-time intelligence, drones have become an indispensable asset for security forces.

Drones are built with military design philosophies and can be equipped with a variety of payloads to meet every security needs. These drones can be fully customized to meet endurance, range and payload requirements of security forces.



7. SEA INSPECTIONS FOR SHARKS @ LIFEJACKET DROPPING



Each summer, thousands of people flock to beaches eager to catch one of the Pacific's classic waves. But they likely don't realise that they're sharing the water with growing numbers of great white sharks congregating offshore.

The phenomenon has been confirmed using drone technology, which is transforming shark research with its ability to give scientists a bird's-eye view of the animals inhabiting the world's coasts.

Drone observations often can reveal more than Earth-bound research methods about shark movements, feeding habits, social relationships, and the animals' reactions to people in their habitat.

Every year thousands of people in the world lose their lives from drowning, with the unique technology that rescue drones have, a human life can be saved with the help of a life jacket that will be dropped above the person who needs help.





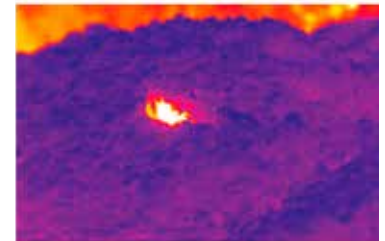
8. FOREST PROTECTION FOR FIRE

Forests and wildlife are the dominant terrestrial ecosystem of Earth and are distributed around the globe. Wildlife and forests account for 75% of the gross primary production of the Earth's biosphere and contain 80% of the Earth's plant biomass. The protection and conservation of these ecosystems are important to maintain the earth's environment and reduce the effects of climate change. The use of modern technology must be used to monitor reserved, protected territorial forests, wildlife sanctuaries, national parks, and conservation and community reserves.

Drones can revolutionize the way forest and wildlife conservation research is conducted. Drones provide a bird's-eye view of forests and wildlife and obtain information, imagery, and data that may be hard to access or expensive. Drones not only act as an alternative method for the conversationalists with added safety to observe and study subjects but also are often less costly, more efficient, and more precise than traditional approaches.

Drones can assist in tracking illegal activities, monitor animals, count their population, plan reforestation, take exotic images and more. Drones for forest and wildlife gives us a better tomorrow by assessing forest health, encroachments, tree-felling, forest fires, poaching, status of water bodies, biodiversity protection, and mangrove conservation.

Drones have a proven track record of carrying out extensive mapping and surveying missions for several customers in varying weather conditions. The drones are fully autonomous and transmit data in real-time which allows ground personnel to review footage, pinpoint problems and deal with them in a targeted way.



Drones have class-dominating endurance and range that allows them to cover large distances in a short period of time and thus, lower the cost of operations substantially. Also, these drones have lower noise levels that allows operators to conduct monitoring activities without disturbing the wildlife.



9. CONSTRUCTION INSPECTION BUILDING SITE



Unlike traditional surveying methods, drones have contributed to several improvements in the construction sector, such as improving safety conditions and reducing costs, while being able to quickly cover large areas and easily create detailed 3D images of the construction site and the surrounding area. Some of the key advantages of drones in the manufacturing industry are the following:

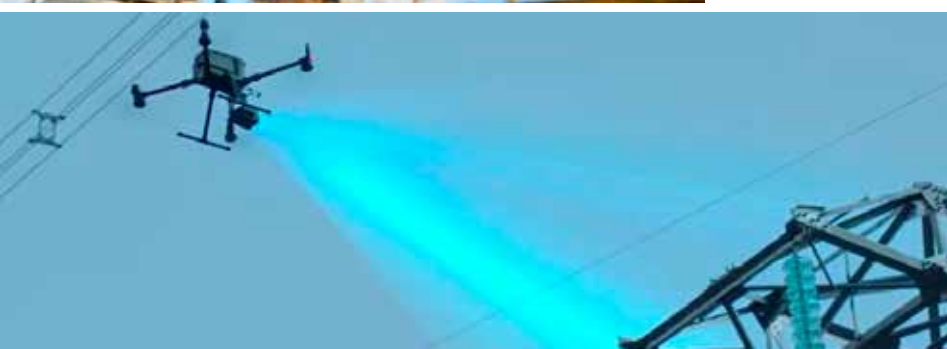
- Safety - No human resources are required for high resolution inspection of the site of any height or area.
- Time saving - Reduced supervision times combined with high-resolution images and data.
- High quality inspection - our trained pilots are able to fly very close to the inspected areas and objects.
- Detailed inspection - Thanks to advanced technologies such as high-resolution RGB/thermal/LiDAR payloads, the drones are able to capture micro-level details of construction quality, site progress, quantity of stock, resources and assets, etc.

BUILDING INSPECTIONS

Safety - Remote-controlled drones eliminate all risks for inspectors. **Manoeuvrability** - Drones can hover over a specific area to check for potential problems and can move in places that human eyes could never see without assistance. Complex building exteriors that protrude at odd angles can be easily inspected with drones. **Visual clarity** - Cameras with up to 8K resolution can reveal defects and/or damage that the human eye may not notice. Thermal cameras on drones can detect heat differences that reveal leaks.

Shareability - Digital videos and images are easy to share among many stakeholders, so that when time is precious everyone who needs to know about an external problem can view them in high resolution and high quality. Indicative work on building inspections with drones:

Inspection services for buildings, structures and facades, Inspection of deterioration in the age of the asset, Roofing inspection, HVAC Inspection (heating, ventilation, and air conditioning) Heating, ventilation, and air conditioning (HVAC, Building Safety Inspection, Thermal integration research.



10. AGRICULTURE

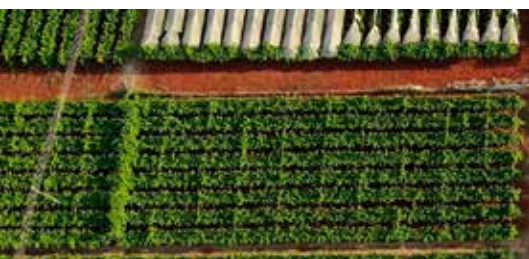


Drones are playing an increasingly important role in precision agriculture, helping agricultural professionals to pioneer sustainable farming practices while protecting and increasing profitability.

The data collected from drone flights over fields helps farmers plan planting and interventions to achieve the best possible yields.

Indicative examples are:

- Soil survey and crop planning.
- Seed planting and fertiliser management.
- Monitoring the health of crops.
- Pesticide spraying.
- Irrigation management Mapping of farm boundaries and sections.
- Loss/gain/yield volume measurement.



11. MINING FACILITIES



Mining processes are highly labour intensive and require huge investments to ensure the safety of workers and prevent pilferage from stockpiles. Mining companies are continuously exploring new technologies to reduce costs and improve productivity, margins and worker safety. This can be achieved if mining operations are planned thoroughly, the assets are inspected regularly and the mining site is kept under surveillance. However, conventional methods are not efficient enough to keep up increasingly stringent environmental and labour regulations.

In mining, drones have several applications like mine surveying, inventory management, stockpile estimation and hot spot detection etc. Mine surveying can be done using drones to provide detailed information about the sites before starting with mining projects and document their progress to visualize changes in site overtime.

Drones can access highly-toxic hard-to-reach areas for providing better insights for mine planning. In coal mines, drones can be used to detect hot spots in coal stockpiles to assess potential spontaneous combustion areas and enable personnel take preemptive measures. Drones can further aid in watershed management, blast planning, haul-route surface optimization and emergency response.

industrial-grade drones are used for terrain mapping, surveying, stockpile estimation, asset inspection and security and surveillance of mining sites. They provide mining companies with an aerial perspective at a fraction of a cost and improve operational efficiency.

Drones have class-leading endurance and range that helps in gathering more data in a fewer flights, thus reducing the cost of operations. These drones are fully autonomous and relay high quality footage in real-time which enables experts and operators take quick and effective decisions. These drones can easily access hazardous and hard-to-reach areas and eliminate manned operations to improve worker safety.



12. TRAFFIC MONITORING



Increasing vehicular traffic is a very serious problem in cities and the need for better traffic management is a pressing matter. Traffic monitoring with fixed cameras is getting increasingly inefficient as they cannot identify issues beyond their immediate location. It is important for urban planners to analyze traffic density, road capacity and traffic flow to draw strategies to reduce urban congestion. This will improve traffic times and reduce fuel consumption and may solve the environmental problems affecting urban areas.

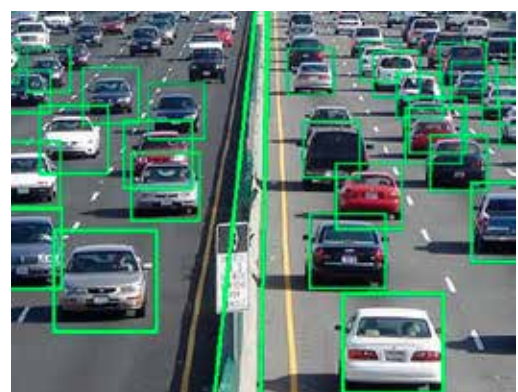
Traffic monitoring via drones can overcome the limitations of traditional methods of monitoring due to its simplicity, mobility and ability to cover large areas. High resolution real-time videos from drones can be relayed to the command and control centre to assist on-ground personnel in road monitoring, traffic guidance, traffic activity analysis, identify and track individual vehicles, read license plates and more. Drones can be equipped with different type of payloads like HD camera and thermal camera for day and night surveillance. Drones can provide on-ground situational awareness in case of emergencies like road accidents, oil leaks etc. and also collect evidence for the same. The data collected by drones can be analyzed to improve traffic flow and road safety.

compact and lightweight drones are the perfect eye in the sky for traffic monitoring due to their ability to transmit HD quality data over large distances in real-time. The superior endurance and range of these drones reduce the cost of traffic monitoring and allow experts to analyze traffic variability over longer duration. Highly reliable drones are used by various law enforcement forces for surveillance along with crowd monitoring and traffic management during mass gatherings.

13. DRONE TYPES AND EQUIPMENT

In order to cover the above services, our company has taken care to equip itself with different types of drones, each with special features and equipment, such as cameras with optical zoom, DROPPING EQUIPMENT LIFEJACKET CROP PLANNING, LOUDSPEAKERS , WEAPONS, SENSORS that lean detection in oil and gas installation and pollution monitoring

Ambient air monitoring PM2.5, PM10, O3, NO2, CO, SO2, VOCs, Odor (OU) HAZMAT response VOCs, CH4, CO, CO2, Cl2, O2, NO2, H2S, Leak detection in oil and gas installations. VOCs, CH4, H2S, SO2





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