asteria aerospace

THE DRONE CHRONICLE

> In 2030, it will become a Rs 3 lakh crore industry providing employment to almost 3 to 4 lakh people in the country. That is the potential of the drone sector.
>
> **Jyotiraditya Scindia,**
> **Union Civil Aviation Minister**
> at International Conference on ASHA

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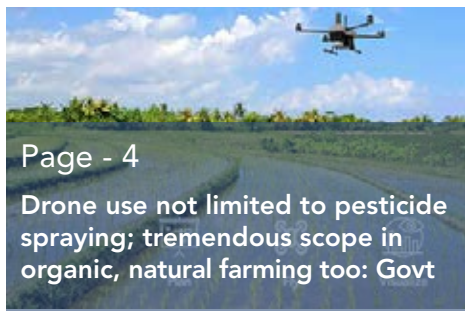
How can drone-based traffic monitoring support urban development projects?



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Drone use not limited to pesticide spraying; tremendous scope in organic, natural farming too: Govt

A200-XT RECEIVES TYPE CERTIFICATION FROM DGCA UNDER DRONE RULES 2021

Speaking on this achievement, Neel Mehta, Co-founder and Director, Asteria Aerospace Ltd. said, "This is testimony to our hard work and commitment for developing reliable, quality-focused, and performance driven drones. It is also a result of our focus on R&D to build industry-leading products. The certification is a seal of trust in our product from the DGCA for fulfilling all the quality, design, and operational requirements. We will continue our push towards excellence to develop innovative products capable of helping our customers automate their operations to realize long-term efficiency benefits."

Asteria becomes the first company with two type certified drones

Asteria Aerospace Limited, a full-stack drone technology company received type certification for its indigenously designed and manufactured A200-XT drone from the Directorate General of Civil Aviation (DGCA).

With this achievement, Asteria said it has become the first company to have two DGCA-certified drones that it can offer to its customers for a variety of applications including law enforcement, industrial security, infrastructure inspections, and agriculture & land surveys.

The A200-XT drone is a versatile drone with payloads that can be quickly swapped between a high-resolution, high-zoom day camera, and a night-time thermal camera.

With a compact and portable form factor and a flight time of 40 minutes, it can be used for defense and homeland security intelligence, surveillance, and reconnaissance (ISR) operations as well as industrial security and inspection applications.

DRONES CAN CONDUCT TELECOM TOWER INSPECTIONS 3X FASTER

According to Grand View Research's market analysis report, valuation of the global commercial drone market stood at $13.44 billion in the year 2020. From 2021 to 2028, the same report predicts the market to grow at a CAGR of 57.5%. Telecommunications is one of the industries expected to contribute significantly to this growth.

With drones, telecom companies can improve the efficiency associated with performing network planning tasks, measuring performance & coverage, and automating tower inspections amongst other things. With many companies pondering 5G network rollout sooner than later, drones can help them in accelerating the process and exploring newer use cases for 5G connectivity.

The key application of drones in the telecom sector is monitoring and inspection of towers for maintenance purposes. Even to this day, many telecom companies have technicians who perform this job by climbing up towers to manually inspect their condition, look for anomalies, and manually count the equipment installed on the top of the tower.

Mostly, manual inspections are conducted once every few months and only on a part of the tower. The biggest drawback of manual inspections is that they don't provide telecom companies with a complete and accurate record of tower and equipment condition, which can delay maintenance activities required to keep towers

and equipment in good condition. They also pose a threat to the safety of technicians.

On the other hand, drone-based tower inspections can help telecom companies to automate inspection of towers, remotely survey assets at greater speed and lower costs, and minimize risk to staff.

HOW CAN DRONE-BASED TRAFFIC MONITORING SUPPORT URBAN DEVELOPMENT PROJECTS?

Drones are becoming more and more popular for urban development projects. Drones can help assess traffic flow, measure road widths, track infrastructure and construction progress, provide aerial views of city layouts, monitor construction zones and much more.

Getting a sense of the volume and flow of vehicle traffic in an area is vital to urban development. Traffic counts are the most accurate way of getting a sense of traffic volume and flow in an area. However, they can be expensive and time-consuming to collect, which makes it difficult for developers looking for ways to know how much traffic is passing through their developments.

The solution? Drone-based traffic monitoring!

Drones use high-resolution cameras for periodic visual inspection of road conditions, including lane markings, traffic signals and signs; as well as road surface conditions such as cracks or potholes. The main advantage of using drones for traffic monitoring is their ability to capture and record high-quality video footage from a wide range of angles and distances.

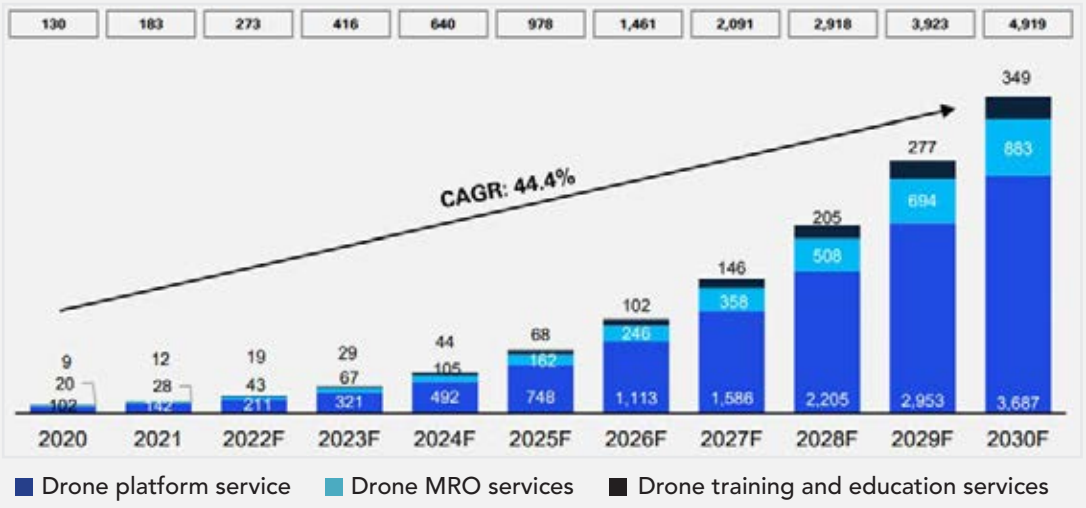
Drones can feed live data directly into software for analysis, reporting and visualization for human users or API integration for other technologies such as smart cities systems. The real-time software allows visualization of the traffic on streets or roads in near real time. It also allows to do some basic analytics on this live data, which can be used by government agencies as well as private companies that need this information in order to make decisions about how they should regulate their service offerings in different areas.

AN EVOLVING CONCEPT: DRONE-AS-A-SERVICE (DAAS)

Source: KPMG report

The advent of Drone-as-a-Service is helping enterprises manage expenses. Drone-as-a-Service is offering enterprises an option to avail the benefits of drones without the cost of investing in drone hardware, software, and analytics. The drone service market in India was valued at USD130.4 million in 2020 and is expected to reach USD 4,918.9 million by 2030, at a CAGR of 44%.

Indian drone service market (In USD million)[8]



Source: Drone Service Market, Allied Market Research

DRONE-BASED MINING SURVEILLANCE – IMPROVE WORKER SAFETY AND SITE PRODUCTIVITY

The health and safety of workers have been matters of concern for the Indian mining industry for several years. Data released by the Ministry of Labour and Employment in 2018 revealed that between 2015 and 2017, there were as many 377 deaths in coal, oil, and mineral mines across the country. The lack of surveillance of illegal mines has also put the lives of workers at greater risk.

Coal India, the largest government-owned coal producer in the world, recently appointed Accenture to digitize its mines across the country for improving worker safety, increasing yield, and reducing costs.

Digitizing mines with drones can provide 360° view of a mining site, leaving nothing that goes unnoticed and can later cause safety or efficiency concerns. The applications of drones in the mining sector include mine site planning, mapping & surveying, site monitoring & maintenance, progress tracking, inventory tracking, land use monitoring, and more.

Some of the benefits of using drones in the mining sector include access to valuable data points for building assessments & models, ability to perform on-demand and repeatable surveys, conducting regular inspections to identify potential issues before they disrupt production, performing stockpile measurements with reduced margin of error, conducting surveys much faster than traditional methods, and capturing multiple sets of data points to gain a unique perspective on mining operations.

ASTERIA RECEIVES FICCI AWARD FOR GEOSPATIAL EXCELLENCE IN BUSINESS APPLICATION

Asteria Aerospace Limited has been awarded by Federation of Indian Chambers of Commerce & Industry (FICCI) for innovation and excellence in the area of geospatial data gathering and analysis. Asteria collaborated with Reliance BP Mobility Limited to enable the Indian fuel and mobility giant expand its fuel network in the country.

The full-stack drone technology company helped Reliance BP Mobility Limited that operates under the brand Jio-bp to check the viability and ROI of setting up fuel stations at different locations by monitoring traffic at various points of interest near the proposed location. With this partnership Reliance BP Mobility Limited was able to access digitized, transparent, and auditable records of traffic data; gain complete understanding of vehicular traffic at complex locations; and make data-driven decisions to improve business profitability.

MONITORING & MAINTAINING OIL & GAS PIPELINE WITH DRONES

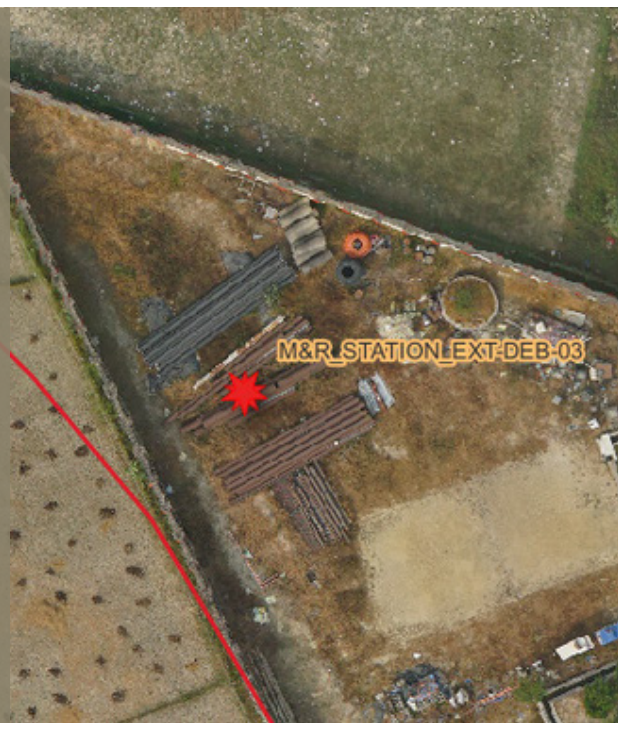
Need for Innovation in Pipeline Monitoring

Client- A Fortune 500 company in the oil & gas sector

Underground pipelines have proven to be one of the easiest and safest ways to transport hydrocarbons. But the probability of the loss of integrity and risk of damage to the pipeline exists due to interference from third parties, corrosion, accidents, human error, etc., during normal operation cannot be overlooked. Therefore, the timely surveillance of pipelines becomes important to monitor the above-mentioned issues. Due to the geographic placement of these pipelines that run hundreds of miles, enterprises in the oil & gas industry face logistical challenges, as staff cannot perform temporal monitoring by foot or vehicular modes. In such a situation, pipeline surveillance using drone plays a vital role in the timely monitoring of pipelines spread over a longer stretch.

Highlights

- Accurate records of asset condition.
- Digitization of pipeline inspections.
- Periodic surveillance.
- Regular monitoring of pipeline spread across 300+ km.
- Detection of anomalies, encroachments & illegal activities with aerial intelligence.
- Hundreds of kilometres of pipeline secured with drone-based monitoring.



Pipeline Monitoring Needs	Challenges in Manual Data Collection
Regular patrolling to maintain pipeline integrity.	On-foot or vehicular patrolling is time-consuming, expensive, and exposed to errors.
Inspecting pipeline passing through hard-to-reach areas to identify and report damage.	Monitoring pipeline in hard-to-reach areas is very difficult and poses a threat to the safety of workers.
Inspecting pipeline in extreme temperatures.	Manual inspection in extreme temperatures is not feasible and likely to compromise with worker safety and affect the outcomes.
Identifying constructional and structural aspects of control stations.	Regular manual inspection takes time. Delayed inspection could put control station's construction and assets at risk.
Checking for damage to pipeline markers, test stations, above ground installations, and more.	Allocating workers to perform this job is cumbersome, cost-intensive, and inaccurate.
Identifying anomalies along the pipeline network.	Manually identifying anomalies around such a long pipeline network can take weeks.

Asteria's Role

Asteria Aerospace is a leader in drone technology in India and offers drone-based solutions specifically designed to help enterprises in the oil & gas sector meet their diverse needs and overcome challenges.

Asteria partnered with one of the largest Fortune 500 companies in oil & gas sector to monitor their cross-country pipeline in central India that covers a total distance of 300+ km to transport natural gas. The vast network of pipeline required periodic monitoring for maintenance and hazard inspection, to avoid pipeline damage, equipment failure, and potential accidents. As opposed to other inspection methods, drone systems offer flexibility and stability. A drone-based orthomosaic survey of the entire length of the pipeline was conducted in November 2022 & video surveys of the whole pipeline were conducted on a quarterly basis.

The total pipeline length is 300+ km with pumping, pigging, metering and regulating stations. The objective of drone-based video/orthomosaic surveys on a monthly basis is to detect encroachments, illegal activities, etc., that take place in the pipeline corridor. Pipeline monitoring through drones helped the oil & gas company to have access to periodic data for planning their response better.

Asteria's drones operated in areas with the harshest geographical features, including hilly terrains in central India. These drones have the ability to adapt to the type of terrain they are flying in and detect and avoid contact and return safely to the base on the completion of the mission. They are capable of monitoring such a vast pipeline network because of their high endurance and long range.

Technology at Work

Asteria's new-age, reliable, and performance-driven drones with high endurance and range were used in conjunction with its cloud-based drone operations and analytics platform – SkyDeck – to monitor the pipeline on a monthly basis. This helped in maintaining pipeline's integrity, and identifying encroachments, damages & anomalies over RoU, if any.

Outcomes

- Captured high-resolution data (5 cm GSD or better) of 300+ km pipeline on a monthly basis.
- Provided orthorectified imagery of the pipeline in soft graphics as well as printable format.
- Marked the exact location of features, such as a building, fence, or any other object present along the length of the pipeline.
- Analysis of orthorectified imagery resulted in the

Detection of 96 encroachments at various sections of the pipeline.	Identification of 182 cases of formation of water bodies and 4 cases of debris formation over RoU.	Detection of 120 instances of illegal soil digging at different locations along the pipeline.

- Generated geo-referenced videos with time stamps to identify the exact location of anomalies as well the time they were captured.

The Impact

One of the largest companies in the oil & gas sector in India leveraged the drone expertise of Asteria Aerospace to survey the pipeline spread across 300+ km and generate detailed reports for analysis in 35-40 days. The company was able to acquire multiple data points to gain optimum situational awareness, enabling it to respond immediately to issues related to the condition of the pipeline network at any given time. Asteria was able to capture videos and provide periodic intelligence on the pipeline RoU to the oil & gas company.

HOW CAN CONSTRUCTION COMPANIES BENEFIT FROM DRONES?

According to Allied Market Research, the global market for construction drones was valued at $4,800 million in the year 2019 and is expected to grow at a CAGR of 15.4% and reach $11,968 million by 2027. In line with these trends, the adoption of drones in the construction sector has seen tremendous rise in the last couple of years.

Drones have the power to revolutionize the entire project lifecycle – from planning to inception to completion and everything in between. Imagery captured by drones can be used to define the scope of different projects, monitor progress, and access project updates in real-time.

Construction companies can deploy drones on-site to collect data about different projects across locations and get a clear view on what's happening across sites. With the help of aerial insights, progress tracking becomes easier and more efficient. Builders can detect issues early, which allows them to attend to those before they extend the project timeline or become costly.

Some of the benefits of drones for the construction sector include on-demand acquisition of accurate data, time & cost savings, faster reconciliation and detailed documentation, remote access to real-time site status, and increased safety of personnel.

As the construction sector continues to grow, complexities associated with operations are expected to increase. That is why the use of new technology like drones will also continue to increase in the time to come.

ASTERIA'S A200 – THE IDEAL SURVEYING AND MAPPING DRONE

Drones are a great way to survey sites and projects for different purposes. They can be used in surveying and mapping applications in GIS, agriculture, construction, mining, and other industries. However, deploying the right drone for surveying and mapping applications is important to achieve the desired outcomes.

Asteria's A200, a DGCA type certified micro drone, comes in a single rugged IP67 certified hard case, which is waterproof and dustproof and makes it secure and portable. It is easy to fly and can be operated by a single person, with little or no prior experience of operating drones. It comes with a 24.1 MP imaging camera with an APS-C sensor for capturing sharp and high-resolution images.

The A200 has a survey grade GPS and a high-resolution imaging camera, which can be used to accurately map land

parcels, making it ideal for projects like the SVAMITVA scheme, in which the government is using drones to digitize and establish clear ownership of property in rural parts of the country.

The A200 drone is a rugged, reliable, and performance-driven multirotor drone that weighs less than 2 kg and has advanced features including automated take-off and landing, 'return to safety' capability in the event of a breakdown or malfunction, tool-less assembly and disassembly, and a flight time of 35 minutes.

DRONE USE NOT LIMITED TO PESTICIDE SPRAYING; TREMENDOUS SCOPE IN ORGANIC, NATURAL FARMING TOO: GOVT

Courtesy: Economic Times

Union minister of civil aviation recently said the applicability of drones in the agriculture sector is beyond pesticide spraying and has tremendous scope in organic and natural farming as well. Drone industry in India has grown 6-8 times in the last one-and-a-half years. The drone infrastructure set up in the country is "extremely robust" and an Indian case study of drones as pioneer in agriculture will be exhibited in the ongoing meeting of G20 agriculture working group.

India's aim is to become a global hub for drones by 2030, for which an industry friendly policy including the Production Linked Incentive Scheme (PLI) is in place, he added.

The use of drones in agriculture should not be limited to pesticide spraying. It can be used in cadastral mapping and survey of agriculture land, he said.

"The area of drone application for jaivik kheti (organic farming)

is also tremendous. Even in natural farming, there is tremendous scope for application of drones," Scindia noted.

The government is promoting organic and natural farming in a big way to reduce use of chemical fertilizers and save mother earth. Madhya Pradesh is currently a leader in organic farming. Asserting that many more applications will continue to emerge in future, the Union Minister said there are multiple uses of drones.