https://www.securitysales.com/emerging-tech/drone-tech/drone-technology-protection-from-above/

Drone Technology: Protection From Above

Drone technology has become more viable for private industry surveillance and security. But as unmanned aerial vehicle usage increases, so does the need for counter measures.

In the near future, companies will adapt to drone and robotic technology, and likely incorporate it into their physical security systems as a matter of practice. Image: kletr/stock.adobe.com.

April 25, 2023 **Sandra Hosking** **Jump to Comments**

As new drones are introduced to the market and their surveillance capabilities advance, there are more opportunities to use these unmanned aerial vehicles (UAVs) as a force multiplier for physical security.

The global commercial drone market is expected to grow 38.5% each year, reaching $583.5 billion by 2030, according to Reportlinker. It attributes the growth to increased applications across business sectors, from agricultural to construction to entertainment.

UAVs and robotics use cases include law-enforcement search assistance, disaster relief, sports venue crowd control, education or corporate campuses, real estate, inspections of industrial facilities and more.

“Our goal is to rapidly increase the adoption of robotics for security and other purposes globally,” says Jake Shild, CEO of LandSkyAI. “We truly believe that the solutions we provide can immensely improve safety when deployed. At the same time, an end user can anticipate increased efficiency and a clear return on investment.”

Associated technologies like analytics software, sensors and radar transform UAVs into more than just a camera in the sky.

In the wrong hands, however, they can present a threat when bad actors use them to spy on government and business sites or interfere with operations like airports, creating dangerous situations.

“If you’re an integrator or a guard company, and a quad copter flies over the line of sight of cameras and the heads of the guards, you’ve got a new threat on your hands, and your customers are going to look to you for experience on how to mitigate it,” says Daniel Dunkel, managing director of channel sales for Dedrone.

Robotics as Force Multiplier

Drones and other robots can add another layer of physical security by increasing a staff’s reach and even monitoring areas unsafe for a person.

“A drone is a flying sensor that collects data and has proven to be a useful tool in the security industry, whether it’s helping to monitor critical infrastructure sites or an event in a stadium,” says Yaron Zussman, general manager of Magos Americas, a unit of Magos Systems. “They have become a useful security solution, providing security professionals with technology to actively check on a remote area multiple times a day to detect security breaches or other issues.”

Magos Systems provides ground-based radar systems that detect perimeter breaches. By combining Magos MASS software and artificial intelligence, its radars are able to accurately classify objects and filter out animals, trees and other items that can cause nuisance alarms.

The company primarily serves utilities, airports, solar farms, data centers, parking lots, correctional facilities, stadiums and other facilities with a large perimeter.

“Magos radars are always part of a larger security system that are directly connected with the video surveillance system. As part of the security ecosystem, we can track and classify targets and communicate that information for enhanced alarm management capabilities,” Zussman says.

Magos Systems recently partnered with Nightingale Security to provide a fully autonomous radar-activated drone solution.

Nightingale’s Blackbird drone is capable of flying in sustained winds up to 45 mph. It collects video with both a visual and thermal sensor, which it can stream to multiple users simultaneously. The Nightingale solution integrates with a facility’s existing VMS, alarm sensor and alert systems, the company says.

New Jersey-based LandSkyAI provides automated land and sky robotics, and it strives to make user implementation simple. It primarily serves healthcare and public safety sectors, as well as events and college and corporate campuses.

Its Land Guard & Sky Guard: Virtual Guarding package offers customers a patrol and emergency response solution that is fully automated via aerial or ground robotics. “One can expect a system to do preplanned patrols, respond to third-party alarms onsite, or have one of our operators take control,” Shild says.

The company’s Crowd Intelligence option is a portable solution that features tethered drones that provide an “eye in the sky” at events. Its Vision AI software can process thousands of images in real-time and identifies familiar patterns.

Integrators can use robotics to offer additional value to their customers in several areas: labor shortages, situational awareness and liability, Shild says.

“Customers have the potential for liability issues when they are sending out humans to respond to an alarm as the first contact who can, in turn, be

injured when responding. Additionally, customers can be held liable if they do not properly secure their site to keep employees, tenants or visitors safe," he says.

Robotic technology is most effective when integrated with a video surveillance system, as aerial or ground robots are essentially moving cameras.

Dedrone's RF-360 sensor offers enhanced situational awareness of airspace activity for security providers protecting critical infrastructure against drone threats.

"A camera on a robotic system is able to easily integrate into video management systems to allow security teams to have the feeds streaming directly to their main screens, as well as storing video on the recording servers," Shild says. "Instead of relying on cameras with limited viewing angles or responding to an alarm without context, security will have a clear picture of what's going on thanks to our force multipliers."

In addition, integrated software can enable intelligent alerts, which can be fed to the VMS.

"Beyond video, our systems can be integrated into other third-party alarm sensors, such as in the access control system, to have the robots intelligently respond to alerts," Shild says.

Easy Aerial is a U.S. manufacturer and provider of drones for commercial, government and military applications.

Its “drone-in-a-box” system can be deployed anywhere for applications such as perimeter and border security, event monitoring, emergency incidents and industrial inspection, without a human operator.

“Our system is fully autonomous,” says Tuvi Cohen, the company’s vice president of programs. “Once you set it up, it flies itself, charges itself, and triggers itself.”

Once the drone’s mission is complete, it returns to its ground control station.

Easy Aerial’s Raptor UAV is tethered to a continuous power source but can drop the cable and fly free to track its target. It can be deployed from a stationary position, such as on a rooftop, or from a moving vehicle. Its top speed is 60 mph.

In addition, Easy Aerial products integrate with a number of third-party technologies like a loudspeaker and projector or a thermal camera.

“Huge facilities understand that when you have an intruder or need to secure a perimeter, a security team cannot move fast enough but a drone can deploy in 30 seconds,” Cohen says.

Drones ensure that first responders do not enter a scene blindly. They are tools that enhance people because CCTV and cameras are not always enough.

“You want to have the best tool to mitigate the risk before it becomes a risk,” he says.

Indoor Applications

ADT Commercial recently announced it had completed its first pilot sale of Tando indoor drones to Movado, which is field testing the solution at its distribution center. The drones are part of ADT Commercial’s EvoGuard solution, which also includes humanoid robots by Halodi Robotics that can conduct autonomous patrols inside buildings.

Indoor drones can potentially help mitigate several operational or security issues, such as the labor shortage and turnover.

“Indoor drones have the potential to respond to this by supplementing or replacing security guard posts with a security presence and awareness that is virtually always on and mobile when necessary,” says William Plante, the company’s director of emerging technologies strategic development. “When equipped with robust artificial intelligence and machine learning capabilities, once one drone ‘learns’ an environment, that information may become transferable to any drone used in a security operation.”

They also are a mobile video surveillance system that can record their observations and stream it to a management system, without human bias.

Adds Plante, “Once an AI-enabled indoor drone is optimized for its environment, it one day may provide an independent and proactive patrol function that can recognize risks such as insecure doors or exit blockages.”

As with other emerging technologies, Plante expects the indoor security drone market to grow as organizations seek to maintain security more efficiently: “As technologies develop and adoption expands, it’s reasonable to expect richer integrations and an expansion into a wider array of operating environments.”

Countering Threats

Whether intentional or not, drone incursions have become an increasing issue.

A drone landed on the White House lawn at 3 a.m. in 2015, raising questions about the site’s security. More recently, a man was arrested in Louisiana for flying a drone over chemical plants, citing that he was a filmmaker trying to capture the Mississippi River.

In December 2022, a Cessna over Tucson, Arizona, reported seeing a superhero-edition drone at 8,500 feet. This is just one of about 100 such reports the FAA receives each month.

One sector of the U.S. border in Texas saw more than 10,000 drone incursions from Mexico last year, Chief Patrol Agent Gloria Chavez told Congress. The cartels use the drones to monitor the Border Patrol, she said.

Easy Aerial's "drone-in-a box" system can be deployed anywhere for applications such as perimeter and border security, event monitoring, emergency incidents and industrial inspection, without a human operator.

The danger to public and commercial sites is real. In 2018, Congress passed the Preventing Emerging Threats Act, which gave limited authority to law enforcement officers to disable and seize UAVs that are posing a threat.

"In the right hands, they can be hugely beneficial tools for society. In the wrong hands, though, they can cause chaos," says Mary-Lou Smulders, CMO of Dedrone. "Incidents like the Gatwick Airport 2018 flight stoppage and the Seattle Seahawks and University of Washington both having football games paused in one weekend make it clear that nefarious actors also understand the potential for drones to cause havoc. According to testimony from FBI Director Christopher Wray, the FBI is investigating multiple incidents where drones were used to carry homemade explosives, signaling a further escalation. These incidents make it clear that counter-drone security is essential going forward."

Dedrone provides counter-drone solutions, including detection, identification and tracking (DTI), where regulations permit. It offers protection for airports, critical infrastructure, prisons, entertainment venues, public safety and more, as well as the military. Its services are in use in 40 countries worldwide.

Dedrone is available in several forms:

- FixedSite: Traditional sensors placed in strategic points across an area to monitor a specific location.
- Citywide: A Cloud-based application that enables security and public safety professionals with the information they need to protect an area from drone incursions.
- Mobile: DedroneRapidResponse and DedronePortable, both of which launched in 2022.
    - DedronePortable, designed for government and military use, is a kit that includes a ruggedized laptop, and it can be set up in less than 20 minutes.
    - DedroneRapidResponse, used by law enforcement, uses AI-powered technology in a mobile platform attached to a tower.

“There is no one-size-fits-all approach to counter-drone security, and Dedrone works closely with clients to design a security apparatus that not only meets current needs, but is built for future integrations of other hardware or software as situations change,” says Smulders.

The heart of Dedrone’s product suite is DedroneTracker, Dedrone’s command-and-control (C2) platform. The software stack can identify over 200 drone models from 65 different manufacturers and DIY drones, trigger alarms or more aggressive countermeasures, and automatically analyze data from incidents to create after action reports (ARRs).

“It’s important to have a system like ours that has sensor technology,” Dunkel says. “When that quad copter drone starts up and emits an electrical pulse, we can start to triangulate where the user or console is located. We can send first responders or security or police to that location. We can also track the drone through its ID number, and we can understand make and model and capability of the drone. Through our cameras, we can see if it’s carrying a payload.”

For customers who aren't certain whether they need protection or what solutions they should deploy, Dedrone offers a two-week airspace risk assessment.

Future of Security Robotics

Drones and robotic technology are expected to grow and advance.

"The components on the technology are getting smaller and more efficient and less expensive," says Dunkel. "Drones are getting faster, and their ability to carry a heavier payload is increasing. They're also more maneuverable and have obstacle avoidance. Cameras and listening devices are improving all the time."

Companies will adapt to this technology, and incorporating it into their physical security systems will be a matter of practice.

Related: [ADT Commercial's Autonomous Indoor Drones Get First Pilot Sale]

"In the future, I envision us having robots respond as the first contact to an alarm or performing patrols," says Shild. "Why would we continue to put

humans in harm's way first? Why would we not try to give a human complete situational awareness before they respond to an alert?"

The labor shortage and costs will likely continue.

Says Magos' Zussman, "In the coming years, we will see security professionals continue to embrace drone technology and the value it brings to security operations. Magos currently integrates with a number of autonomous drone solutions. The integration allows the drone to launch based on radar detection and follow the target as it moves in the area of interest. This approach makes drone technology very attractive for security operations teams."

The use of unmanned systems will mature beyond the education stage and become part of the normal security infrastructure.

"Companies will be providing it as service," says Cohen. "You will have a drone service just as you would security."

Sandra Hosking, Communications Manager at Elavon, has more than 10 years' experience covering high-tech industries.