

## **Setting the Standard in Lightweight Optic Systems**

Airborne law enforcement plays an important role in the fight against crime, as well as providing community support and supplementary assistance to other public safety agencies. A key element of effective airborne operations is the capability to gather information through the utilization of gimbale camera systems. These systems allow law enforcement and public safety agencies to perform a wide variety of missions, such as traffic surveillance, incident monitoring, crime prevention, missing persons searches and daily patrols over areas that are hard to reach by other means.

Many technologies support airborne observation missions, ranging from large expensive cameras to smaller, relatively inexpensive systems. Some companies that provide this equipment have been around for a long time, while new players have entered the market as the industry has grown and matured. The variety of systems available gives law enforcement agencies the opportunity to find the right products for their operation.

Ascent Vision, headquartered in Bozeman, MT, specializes in the design, manufacture and distribution of precision-imaging gimbale technologies. The company's capabilities also include the design and manufacture of unique platform integration mounts and proprietary software programs for its full line of gimbals. Its systems are in use on both manned and unmanned aerial vehicles, as well as ground-based vehicles, maritime vessels and other platforms benefiting from gyro-stabilized camera systems.

"Our primary niche in the marketplace is providing cost-effective tailored solutions for a wide variety of applications," said Tim Sheehy, Ascent Vision founder and CEO. "The strengths of Ascent Vision are the ability to provide value, innovation and performance while building a gimbale solution to suit the specific requirements of the customer."

Ascent Vision's gimbals range from the small, lightweight CM100 to the larger CM202 advanced multi-sensor gimbal. The CM100 is mostly used on unmanned plat-forms but performs well with smaller manned aircraft. The company recently announced the development of the CM123, an enhanced, more capable version of the CM100. It is currently in the final testing phase, and production will begin in the fall.

The CM123 is a three-axis gyro-stabilized gimbal that includes pan, tilt and roll functionality. It can carry three different payloads: HD electro optics sensors, infrared systems and laser pointers. It features direct drive motors, an enhanced gimbal user interface, physical stabilization and software stabilization. The IP66 weather rating enables operations in adverse weather conditions, maintaining its effectiveness in a variety of environments.

While airborne law enforcement units have typically relied on traditional helicopters and fixed-wing aircraft for their operations, many public safety agencies are looking to add unmanned vehicles to their capability portfolio. Ascent Vision recently provided CM100 gimbals for two CyPhy Works PARC tethered UAS conducting persistent-state security operations at the 2017 Boston Marathon. The use of the Ascent Vision CM100 and CyPhy Works PARC was a success.

The system pushes the envelope of thinking on how to utilize small, lightweight sensor systems and UAS technology to supplement traditional security and emergency management operations.

“As this end of the market expands, we see an opportunity for growth,” Sheehy said. “Unmanned aerial vehicles can perform many missions that law enforcement needs. As UAVs become more sophisticated, advanced and capable, gimbals are increasingly necessary. Our CM123 and CM100 are excellent examples of the type of hardware that can help law enforcement accomplish their mission.”

All of Ascent Vision’s gimbals are rugged and designed to withstand the elements. They are lightweight, use little power and can be customized as required. Features include optical and digital zoom, infrared imaging and real-time video stabilization. Depending on gimbal model, additional features can be integrated.

Ascent Vision was founded by Sheehy in 2015 with the goal of providing best-in-class optic solutions. Ascent’s first gimbal, which is still produced and popular with a variety of operators, was the CM160. The multi-use CM160 is extremely versatile, allowing users to choose from a range of EO and IR sensors to suit their mission. Its exceptional weight-to-size ratio allows the reliable CM160 to be integrated into almost any platform.

“Our gimbals have proven reliability over hundreds of hours of operations,” Sheehy said. “Whether a user is operating a manned aircraft such as a helicopter for a short range surveillance mission that requires a long loiter time or a fixed-wing aircraft for a rapid response mission, Ascent Vision's sensors and gimbals are up to the task.”

The largest gimbal Ascent Vision produces is the CM202, a direct-drive multi-sensor stabilized gimbal designed to be customized for any mission. A wide array of sensor configurations lets CM202 users meet their exact payload requirements without sacrificing quality. The gimbal offers the performance and capabilities needed to accomplish just about any mission without the price tag often associated with gimbals

sensor systems.

The CM202 was specifically designed to be a customizable imaging solution for a range of aerial missions and is now being used in a variety of ground-based applications, including autonomous vehicles. Ascent Vision has recently developed two derivatives of the CM202 gimbal for specific applications. One is the CM202U, a counter UAS system Ascent Vision developed with the support of the Department of Defense’s Combating Terrorism Technical Support Office rapid procurement program. The program is specifically tasked to work with companies to facilitate implementation of innovative technologies that show a clear transition path to existing defense acquisition programs.

The other variant is the CM202G, designed explicitly for aerial gas leak detection and infrastructure integrity patrols. Known as the Gas Hound, the CM202G is a low cost and field-proven system that provides users with valuable resource protection information.

Ascent Vision continues to look to the future of precision imaging technologies for manned and unmanned aerial vehicles, as well as sea, land and maritime platforms. The company is small enough to be nimble and respond quickly, yet large enough to deliver the expertise and solutions that accomplish the mission.