

PROFILE

Name: Orange County Fire Department
Location: Orlando, FL
Established: March 1, 1995
Website: ocfa.org

CHALLENGE

Improve response speed, accuracy and safety in emergency situations and protect the lives of first responders through the use of unmanned aerial vehicles.

SOLUTION

Improve AVR piloting capacity with the integration of Moverio Augmented Reality (AR) smart glasses, giving operators simultaneous ability to maintain line of sight with the drone, while viewing the output from the aircraft.

Augmented Response

Orange County Fire Rescue Department Adds UAVs and Epson Moverio to its Emergency Response Capability

How valuable would it be for first responders to have a bird's eye view of a fire, search and rescue, or other emergency?

Very valuable, says Jason Perrigo, Battalion Chief of Training for the Orange County Fire Rescue Department in Orlando, Florida. "Being able to see an emergency from above can give you the ability to save somebody's life or help somebody out who is in need," he explains.

The possibility of quickly seeing and understanding what's going on at almost any kind of emergency drove the department in 2016 to begin exploring the use of unmanned aerial vehicles—UAVs or drones—to help firefighters in the field. In 2017 Orange County Fire Rescue bought its first two DJI drones from FlyMotion Unmanned Systems of Tampa, which also provided thermal cameras, control equipment and staff training. In 2018 FlyMotion supplied ten more drones plus 12 sets of Epson Moverio BT-300FPV Drone Edition smart glasses to help control them.

"Keeping our team out of harm's way is the main benefit of the Moverio glasses," Perrigo says. "Most of that is in keeping a line of sight with the aircraft, making sure they aren't encountering dangerous items such as power lines or other factors that may cause an aircraft to crash and cause harm to it, the public, our crews, or our first responders."



One of the Nation's First

Orange County Fire Rescue was one of the nation's first fire departments to employ UAVs, supporting their 42 stations and 1,246 staff members. They felt the aircraft could be a big help in protecting a population of 754,000 residents spread out over 780 square miles.

Perrigo says that, prior to investing in the drones, they had experience with aircraft observation, hiring a helicopter service from time to time to help them track unusually large fires or rescues. But helicopters are very expensive and there's a certain delay inherent in bringing in an outside contractor. Today the department can send their drones to any kind of emergency and expect them to arrive soon after the first responders.

For example, after Hurricane Irma in September 2017, the department used their drones to help create maps of flooded streets, making it considerably easier for rescue crews to find routes in and out of affected neighborhoods. In doing so, they noticed a woman stranded with her son. "The entire apartment complex had already been evacuated, but she was unaware that

"Keeping our team out of harm's way is the main benefit of the Moverio glasses."

—JASON PERRIGO, BATTALION CHIEF OF TRAINING

there was an evacuation in progress,” Perrigo recalls. “During some flight operations one of our operators saw some movement inside the apartment and sent a crew to investigate.”

Because the department’s drone-based cameras are equipped with thermal sensors, they are able to provide color heat signatures of buildings on fire, making it easier to decide where to set up hoses and whether or not to enter the building. That, too, is a potential lifesaver, since fire departments have traditionally put personnel either inside or on the roofs of burning buildings to help evaluate the size and extent of a fire.

The drones have also been used to help find victims inside of burning buildings, at accident sites, in water rescues and other emergencies. Last year the department sent a drone to a site where a man had fallen off a platform while working on a billboard. In doing so, they were able to quickly determine that he was suspended in a safety harness and tailor their response to that fact.

During an emergency response, the drones give managers the ability to see the progress of their crews in real time, and afterward recorded video helps with analysis and reporting. Because their information is better, the first responders can make better, safer, more effective decisions. “We definitely expect to save lives with this program,” Perrigo says.

The Moverio Augmented Reality (AR) smart glasses make it considerably easier to pilot a drone safely.

Using the Moverio Glasses

One of the problems of piloting a UAV is the possibility of flying into something, whether a building, utility pole, another aircraft, or someone on the ground. The vast majority of lightweight drones in use today have only one camera, which is nearly always aimed at something on the ground. That makes it impossible to see what the drone is doing without maintaining a line of sight.

Still, the pilot must look down at his or her tablet, computer or phone to see what the drone is seeing, and it’s hard to keep looking back and forth to keep track of the drone in its airspace. Although accidents most often are minor, they are common.



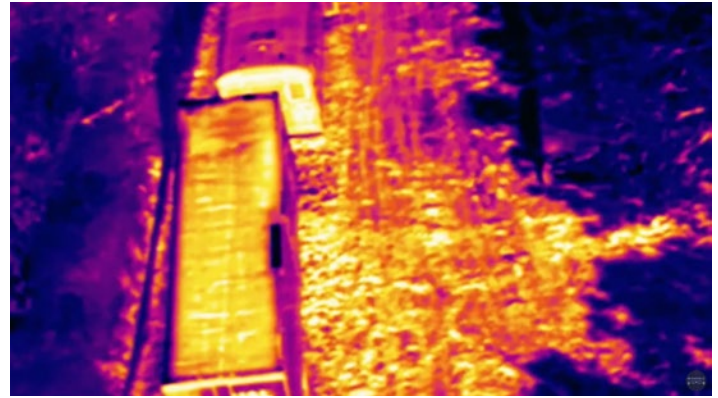
The Moverio Augmented Reality (AR) smart glasses make it considerably easier to pilot a drone safely. Moverio consists of a lightweight pair of glasses that act as a computer display plus a handheld Android-based controller that clips into the drone controller. The two pieces work naturally together, giving the pilot intuitive control over the aircraft, the smart glasses display, the camera in the aircraft and a camera built into the smart glasses. With additional equipment supplied by FlyMotion, others on the response team can view the output from the aircraft and the Moverio camera, using them to plan and monitor the response.

“One of the biggest challenges that Moverio glasses helped us overcome was maintaining that visual line of sight of the aircraft along with keeping the information in front of us,” Perrigo explains.

Now the pilot sees the image from the UAV’s camera in the smart glasses, which appears to be projected a few feet in front of him or her, filling most of the field of vision. To look at the drone, the pilot can briefly flip off the projected image, but most often dims the smart glasses so the camera’s image becomes transparent. It takes a little practice, but pilots quickly learn to keep track of the drone and potential hazards nearby while they aim the camera at the emergency unfolding on the ground.



With more than a year of experience with unmanned aircraft, Orange County Fire Rescue is calling the program an unqualified success. It helps that the budget for the 12 drones plus ancillary equipment, training and Moverio glasses was less than one third of the price of a single, two-seat helicopter.



“We chose Moverio because it gave us better technology than other options, providing a quick way to see what the aircraft was seeing, while maintaining that line of sight,” Perrigo says. “We incorporated Moverio together with training for ground crews on what to look for and what to expect, what the capabilities of the UAVs can provide them, how they can use them to observe an emergency and more quickly and easily locate victims.”

With more than a year of experience with unmanned aircraft, Orange County Fire Rescue is calling the program an unqualified success.

The views and opinions expressed in this article are those of the individual. Individuals were not compensated for this article.