



aerospace industry, the Defense Department, and public agencies interested in using drones for everything from border patrols to tracking oil slicks.

Cedar Rapids-based Rockwell Collins expects to become a partner in several of the six test and development sites the FAA will select for integration of drones over the next year, according to Bobby Sturgell, the company's vice president of Washington Operations. The company designs and builds "micro GPS" and miniaturized flight and navigation control systems for drones.

Rockwell Collins is working with NASA to develop solutions to the problem of "dropped" data links between drones and their groundbased pilots. It is also working on drone technologies with the FAA, the Defense Advanced Research Projects Agency, and the military services, including their research labs. It has even worked with the government to provide unmanned aircraft with electronic brains that allow them to recover and fly after losing large parts of a wing or tail section.

"In my view, the UAS is going to be the next big thing in civil aviation," Sturgell said. "We are obviously invested. We think it's a growth area for the company and we do think there are many many benefits the public will realize when we begin using it in emergency response situations."

Increasing civilian drone orders would come at a good time for Rockwell Collins. The Corridor's largest private employer, with more than 9,000 employees, has cut hundreds of jobs in its Government Systems division as the government pares back military spending, with even more cuts expected unless Congress' "sequestration cuts" are reversed.

C.R. drone maker

California-based AirCover Integrated Solutions plans to manufacture and ship small drones in Cedar Rapids. It is working closely with Lockheed Martin Skunkworks in California on the tiny quad rotor unmanned surveillance craft that resemble flying platforms.

Lockheed Martin unveiled the Quadrotor QR425S in April at a National Association of Broadcasters convention in Las Vegas. It could provide economical opportunities for TV stations to capture video of unfolding natural disasters and accidents without risking human life. AirCover offers its own version of the drone, targeting emergency response agencies with economical monthly leases.

But the public acceptance of drones hit a road bump in May when some right-wing commentators joined drone critics from the left.

Fox News commentator Charles Krauthammer sharply questioned the intrusive nature of drones on citizen privacy, suggesting that a citizen who shot down a drone over his or her property out of concerns for their family could become a folk hero.

The remarks drew a rebuke on May 18 by the CEO of Unmanned Vehicle Systems International, the leading trade association for the industry that makes UASs.

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A collection of Dave Rasdal's columns. Just \$34.95! "To advocate for people to shoot down any object from U.S. airspace is irresponsible, dangerous and unlawful, CEO Michael Tuscano said.

Opponents picketed AirCover's Cedar Rapids site in December during a holiday open house at the Cherry Building, even though its sub 4.4-pound quad rotor drones are primarily geared to emergency response use.

The picketing was one of the factors that swayed AirCover to choose a different location for manufacturing and inventory storage, although it maintains a presence in the building, company President Jim Hill said.

"Out of integrity, it's not fair to the other tenants that are there," Hill said. "To us, it is very disturbing."

Hill said the use of drones is greener than using manned aircraft for surveillance and reduces human safety risks. He said other countries like Japan are far ahead of the United States in accepting the use of drones.

In a time of tight federal, state and local government budgets, Hill said drones can yield major savings for agencies. AirCover can lease a drone with unlimited flying time for a month at less cost than a piloted helicopter can be leased for one hour, Hill said.

The pickets were described at the time as an action by Occupy Wall Street, but Michael Richards, a Cedar Rapids entrepreneur and peace activisit, said it was actually a combination of several different groups opposed to drones.

Unintended civilian casualties caused by drones produce more enemies for the United States than the enemies they eradicate, Richards argued. He sees the spread of UASs into civilian aerospace as a strategy by defense contractors to maintain profits as military spending contracts with the end of the Iraq and Afghanistan wars.

While domestic drones might be used only for surveillance, they can be equipped with imaging technologies tha reveal some of of the building's interior, and with systems that detect wireless networks.

"Do we want to live in a country where our government constantly flies aircraft overhead to make sure we are not doing anything it disapproves of?" Richards asked. "Already, the Environmental Protection Agency uses drone surveillance to spy on farmers and ranchers to see if they are in compliance with regulations. Local law enforcement agencies are eyeing drone use with great anticipation."

Debates just beginning

The drone debates are far from over, according Ben Stone, executive director of the Iowa chapter of the American Civil Liberties Union.

"Those things really give Americans the creeps — it's really clear," Stone said. "Having the government fly overhead with virtually no restrictions, looking down, isn't something I think people are going to accept."

In a report issued last December, the ACLU recommended drones should not be allowed in civilian air space except under specific conditions. They include time-limited emergencies in which lives are at risk, and where the are specific and explainable grounds to believe the drone will collect evidence related to a specific instance of wrongdoing. If the drone will intrude on reasonable expectations of personal privacy, the ACLU said the government should be required to obtain a warrant based on probable cause.

The ACLU also recommended requiring public notice of the policies andprocedures for the use of aerial surveillance technologies, and restrictions on retaining images taken by aerial surveillance that are not relevant to a criminal trial or investigation.

Policy and deployment decisions regarding UASs should be made democratically based on open information rather than being decided "on the fly" by police departments, the ACLU report said.

Both Hill and Sturgell believe the privacy-based concerns about drones can be overcome. Hill noted that aerial surveillance is hardly new, with the ability to capture video with camera-mounted helicopters now more than a half-century old.

The ACLU says a major difference is that manned aircraft are much more expensive to buy, maintain and operate than small unmanned, camera-equipped drones. That expense serves as a natural limit on the government's aerial surveillance capability that is eroding with drones, the report said.

The report said drones could lead to more "automated enforcement" similar to highway traffic cameras, and lead to abuses such as voyeurism by rogue police officers and discriminatory targeting of groups involved in peaceful assembly and protests.

Popular culture

References to drones have seeped into popular songs in the Middle East, and in the United States, events such as "No More Drones" are popping up on Facebook.

"Grounded," Richard Brandt's play about a Nevada woman who kills enemies with drones by day and tries to be a regular family mom by night, recently won the National New Play Network's Smith Prize. It will be staged at the Bay Area Playwrights' Festival in San Francisco next month.

Although the FAA now allows drones weighing 4.4 pounds or less in civilian air space for government public safety agencies and first responders, a long list of conditions apply. They must be flown within the line of sight of the operator, less than 400 feet above the ground, inside Class G (uncontrolled) air space and more than five miles from airports or other aviation activities.

Agencies that apply for a waiver may receive authorization for drones weighing up to 25 pounds.

Regulations allowing the conditional use of larger drones are in the works. And drones can be very large. The Amnesty International report said the Israeli-made fixed-wing Eitan, about the size of a Boeing 737 jetliner, the report said, can stay aloft for over 30 hours and fly at 40,000 feet.

The Predator B drone, which has been used in military conflicts and

also on the United States Mexico border, has a 66-foot wingspan, can stay aloft 30 hours, and reach 50,000 feet.

In addition to lobbying for more civilian use of drone technology, Sturgell said Rockwell Collins supports relaxing controls on the export of certain drone technologies to friendly nations. Sturgell said the United States risks losing its commercial advantage in the drone market if it does not allow its manufacturers to export technology that can readily be replicated by other countries.

Hill said the United State also provides less federal support for drone research and development than some other countries, specifically naming Canada. He said the State of Iowa, through its Innovation Fund, has been more supportive than most.



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