

Do Drones Have a Future in Construction?



MASOUD GHEISARI (ABOVE), A PHD CANDIDATE AT THE GEORGIA TECH SCHOOL OF BUILDING CONSTRUCTION, CONTROLS A DRONE IN ITS FLIGHT OVER A CONSTRUCTION SITE. AT RIGHT, GHEISARI BEGINS A FLIGHT WHILE FELLOW PHD CANDIDATE EBRAHIM KARAN STANDS READY TO TAKE PHOTOS.

While debate over the use of unmanned aerial vehicles or drones in the U.S. airspace continues, researchers and universities are not waiting to explore the possible applications for the technology in the construction industry or to teach students about them.

"Our philosophy is we're not going to teach history, we want to teach the future," says William Strenth, assistant professor at the Pittsburg State University School of Construction in Pittsburg, Kansas. For that reason, he explains, the PSU School of Construction faculty is always looking for new technologies and ideas that can be adapted for the construction industry.

Despite the ongoing debate, pioneering researchers and educators have an easy means to explore the possible applications for UAV technology in the construction industry. Somewhat surprisingly, they need not go through a months-long certification process or move to one of the six drone test sites being established by the Federal Aviation Administration. Rather, they need only maintain an altitude below 400 feet above ground level.

FAA guidelines place no restrictions on the size or capabilities of model aircraft but require only that they are kept below 400 feet, flown a sufficient distance from populated areas and actual air traffic, and are not used for business purposes. Both the PSU School of Construction and Javier Irizarry, P.E., at the Georgia Tech School of Building Construction, are taking advantage of this.

The PSU School of Construction wants to ensure its students are prepared for the future, while Irizarry is shaping that future by researching the potential uses of drones for the Georgia Department of Transportation. The assistant professor and his colleague Eric Johnson, associate professor at the Georgia Tech School of Aerospace Engineering, were awarded a \$74,984 grant from GDOT and the Federal Highway Administration earlier this year to conduct the research.

Irizarry is looking at four areas: intermodal, construction, traffic management operations, and design policy. After conducting detailed interviews with GDOT employees, researchers will develop scenarios in which UAV technology could be used to perform tasks safer and more efficiently than current methods. From there they will compare the costs of current methods with the costs of using a drone.

One area Georgia Tech researchers are investigating is the use of drones, rather than people on the ground, to take measurements. Also of interest is the use of drones for inspections, a commonly proposed construction application of UAV technology. "There's I-don't-know-how-many thousands of bridges in the country, and it takes time to inspect them all," Irizarry says. "If the right type of sensor is attached to it, [a drone] could perform inspections more frequently and in areas where we could not reach or could not reach safely."



Drones may have a huge impact on project design as well, not just because they may one day provide more accurate survey information in a fraction of the time, but because they will give engineers a close look at their designs being built. "That way maybe designers could improve constructability of designs," Irizarry says.

There has also been discussion, Strenth says, about using a drone to take photos of a construction project currently taking place on the Pittsburg State University campus. The photos would then be delivered to a Kansas City-based architect.

All of UAV technology's potential in the construction industry has little meaning though if the national debate on drone use ends in restrictive policy. Irizarry is optimistic however. "With time, we use new technology and we become so accustomed to it we don't even think about," he says, using GPS as an example of a now-frequently used military technology that poses privacy risks. "If you think about it, anyone can back-locate you and use your GPS to find out where you are."