

Look, Up in the Sky. Are Drones the Next Big Thing on Construction Sites?

Just as the architectural design process has evolved, so have job sites. And with just-in-time construction, along with a need to ensure worker safety, new technologies could soon make it easier to monitor construction progress, on-site activity and even possible installation issues. For some companies, the use of small unmanned aerial vehicles (UAV)—also dubbed “drones”—offers a lot of potential for construction sites.

Javier Irizarry, Ph.D., P.E., CGP, is an associate professor and chair, Residential Construction Development Track at Georgia Institute of Technology, School of Building Construction. His team has been researching the use of UAVs on jobsites. Irizarry says there are many ways these devices could be helpful. Some of the uses his team has been researching include safety management, quality inspections, and progress monitoring, among others.

“There are tools that can be attached to UAVs that would allow construction

Drones, also called unmanned aerial vehicles, could offer benefits to contract glaziers on the jobsite when it comes to issues such as safety and quality control, among others.



personnel to create 3D models of work in progress and in that way, check against the design models of a structure,” he says. “One application that we are looking at, and that may be of par-

ticular interest to contract glaziers, is the ability to inspect work at high elevations remotely. With the UAV, the work could be inspected without having someone climbing the structure to take a close look.”

While the potential for jobsites might sound enticing, there’s still one significant hurdle: usage must first be regulated. In February the FAA proposed a framework of regulations that would allow routine use of certain small unmanned aircraft systems (UAS) in today’s aviation system, while maintaining flexibility to accommodate future technological innovations. But at this time the FAA has not approved the use of UAVs for commercial use, and that includes construction sites.

“The only way someone can use an UAS for commercial purposes is with the FAA’s authorization. We are still working on the small UAS rule,” explains Alison Duquette, FAA spokesperson. “We will propose a rule, get comments, and then

Drones Could Be Used on Construction Sites For:

Safety management



Quality inspections



Progress monitoring



Design Success



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issue a final rule. In the interim, we have authorization from Congress through 'Section 333' to allow for some operations. We've granted 13 exemptions under Section 333 [Special Rules for Certain Unmanned Aircraft Systems] ... With all that said, if someone operates a UAS indoors, our rules would not apply."

Irizarry further explains that the FAA classifies any flying device as an aircraft, including UAVs.

"Right now if you are using any UAV, even the inexpensive ones, for commercial use, you would have to follow the current requirements. This means applying for a certificate of authorization (COA). This would allow you to use the UAV for commercial purposes. Several organizations have been awarded such authorizations and [included in those] there is one construction company, CLAYCO [described on its website as a 'full-service, turnkey real estate, architecture, engineering, design-build and construction firm]."

Irizarry adds that obtaining an OCA is not as easy as it might seem.

"[What] may prevent most from being able to comply with the requirements for a COA is that a certified pilot has to be the one operating the UAV?"

He says he hopes the rule is revised as the guidelines are further developed because it eliminates most people from being able to legally use UAVs for commercial applications.

However, that's not to say some companies aren't using the devices on jobsites anyway—that is, without FAA approval. "Any other cases you have seen or heard would be doing it illegally. Some may argue that they are using for hobby purposes [allowed by the FAA], but if the use is related to the business they are in, that is commercial application."

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He continues, "The reason why most don't get into trouble is because the FAA does not have the resources to enforce the rules. That is why the FAA recently asked local law enforcement to help them in pursuing illegal UAV use."

Looking ahead, and at the glazing industry specifically, some contract glaziers point out there are a lot of future opportunities this technology could bring to jobsites. Craig Carson, regional preconstruction manager for Alliance Glazing Technologies Inc.'s Colorado location, says times are changing and there are

new ways for increasing communications happening every day.

"I see the potential of being able to use the drones to review construction progress, if fixed cameras are not an option. There might be a time where, as a problem exists, you can share a live image to have off-site or even out-of-state consultants look at an unforeseen problem quickly to help resolve an issue."

Mic Patterson, vice president, strategic development with Enclos, Advanced Tech-

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nology Studio, says this technology is definitely on his company's radar screen.

"The potential ranges from photo documentation, which can be challenging on tall buildings, to scanning and survey technology that can facilitate the process of verifying anchor locations and the ac-

curacy of installed work," he says. "Drone tech could be used to monitor setting crew activities, progress, and the status of completion." Of course he's quick to add, "We are waiting for regulatory guidelines to emerge before we get serious about adopting the technology."

Still, no matter how exciting the technology or the potential benefits, there will still be some concerns and obstacles. Irizarry points to two he thinks would have to be addressed: liability and privacy. He says while liability could be addressed through revised insurance policies that would cover accidents with UAVs, the privacy issue is a bit more sensitive.

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UAVs By the Numbers

Smallest UAV	2.8 LBS
Largest UAV	7,600 LBS
# of Systems Produced	556
# of UAV Manufacturers	195

Source: Aerospace Industries Association

"However, if history teaches us anything it's that new technologies are usually met with skepticism but as they become more understood, we tend to accept them. We have cameras in the freeways, in buildings, even ATMs. We are used to these technologies which are meant to observe us for different reasons," he says. "UAVs would serve a similar purpose but with specific applications in the case of construction. I expect these and other challenges to be overcome in a short time and the industry will enjoy the benefits of the technology very soon."

The construction industry isn't the only one looking to the future and use of UAVs. Amazon, for instance, is waiting for regulatory approval from the FAA before its Prime Air takes flight. The company's futuristic delivery system for its Prime customers will be designed to safely get packages into customers' hands in 30 minutes or less using UAVs.

—Ellen Rogers ■