

Drones in Construction

By Aaron Kusler

UAS drones are on the verge of groundbreaking advancements in the construction industry. By using a variety of tools drones are becoming the next best invention of the 21st century. For as long as we have known construction projects have a certain order of getting a project done. Find a client, design a project, and build the project. However, factors like time, scheduling, budget, and safety come into play when dealing with and working on a job site. Drones are starting to be used in these areas and helping cut down the overall time and cost of the project. We will take a deeper look into how these factors affect and influence the job site and if there are any future impacts to using UAS drones on the job site.

Before every job is started there is a pre-construction process or the Design phase. In this time frame contractors look and find different projects they would like to complete. Once they have found the right project, they work with their estimators on what they think the right price is for the job. The contractor also looks at the available workforce to be able to complete the job in the time frame the owners want it built and the conditions of the building site. If the building site isn't up to code or there are obstacles that the owner didn't specify in the plans the contractor can back out of their bid and not close on it. However, if these questions are answered and they can complete the project on time and understand all the building site conditions they will send in a bid (amount of money) to the owners. Other contractors and companies will do the same and usually, the lowest bidder gets the job. Owners of projects will give a time frame on when they would like to start work and the construction process starts. As we can see there is a lot of planning before the building is even underway and as mentioned above there is a process that the contractor must visit the site before submitting the bid. This is for their safety and that of their workers. If they don't understand potential obstacles or the layout of the job site, it will delay time and back up the project from being completed. With technology like UAS drones, the process of surveying the job site and seeing in real time what is going on throughout the lifetime of the project is made much easier. Topographic mapping is a way contractors can see the site and plan for how they intend to get certain equipment for the job on site. Topographic mapping can take anywhere from days to weeks or sometimes months. It shows all the features of the property and elevations, but due to its long process maps aren't always up to date. This process is very time-consuming and in construction time is money. UAS drones are starting to be used due to high-quality cameras and real-time footage. By taking little time in mapping out land and different elevations drones can be used for 3D imaging. This allows contractors to see obstacles and potential challenges in the design phase, saving time and money over the life of the project.

Once the design phase of the project is complete, contractors schedule sub-contractors or use their own workers to complete specified work to finish the project. During the project, workers are put in unsafe situations. OSHA or Occupational Safety and Health Administration puts in place rules and guidelines for companies and workers to follow to ensure worker and jobsite safety. According to Liam Standard, in *6 Ways Drones in Construction Are Changing the Industry*, "Falls in particular account for 34% of worker fatalities." And while we may not be able to stop accidents from happening drones are being looked at to minimize worker fatalities. For example, workers are often put in unsafe situations and are forced to take measurements, cut material, and place objects. Drones aren't at the point where they can place materials or cut them, but taking measurements is usually the most they are doing. However, drones are having the biggest impact being used on the job site by contractors and field engineers to survey and monitor unsafe situations while ensuring no equipment or unstable working structures are being used. Drones aren't to the point where they are taking over jobs but having an eye on the sky and

making sure everyone is safe is a great improvement. So, the final question left asking is what does the future look like for UAS drones in construction.

While drones in construction aren't well known, businesses and employers are starting to use them more than ever. Whether drones are being used for surveying or monitoring the job site, they are showing themselves to be a great resource in the field. According to a report by *ResearchAndMarket*, drones in the construction industry are projected to reach 48.1 billion USD by 2028, increasing almost 11.67% in little less than a decade. That's great news for investors and companies across the industry. With more cost-effective solutions for mapping, monitoring, and surveying drones will transform the market and give workers and managers faster and safer job sites. As more companies continue to use drones and other UAS technology we will see that they are a vital tool for construction and the

UAS drones are the next best thing in construction, but hardly anyone knows about them. We normally associate drones with aerial photography or hype videos in sports. However, trade industries like construction are just one of the many possibilities for UAS drones to grow. With cost-effective methods and time-saving features, drones will become part of the construction industry. Skanska, FAA, and Komatsu are just a few companies around the world that have implemented drones into their job sites and based on their profits we can expect other companies will start to do the same. With a growing demand for expansion and never-ending construction, drones will increase in usage across the world.

Resources

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