

Using Drones in Construction for Aerial Inspection, Photogrammetry or Lidar



Drones are creating new workflows, processes and applications in construction design, surveying and mapping, and many see them as the future of the construction industry.

Rick Rayhel, Microdrones' sales manager for United States' Western Region, is one of those people; he's seen first hand how drones can enhance the construction business.

In the U.S., drones have only been used to aid construction in the last couple of years. On the precipice of drone potential, Rayhel said, "There's never a lack of ideas or interest on what can be done with drones."

Perhaps the biggest advantage of drones in construction, though, is their cost-effectiveness. On this episode of Propelling, a Microdrones podcast, Rayhel emphasizes that UAVs can be much more cost efficient for companies. Instead of filing costly insurance claims after a safety incident, these vulnerabilities can be found before they lead to damage. Instead of putting people in harm's way with laborious and often treacherous ground scanning, a UAV can collect data quickly and efficiently.

Rayhel dives into detail about what to look for in a drone for construction work, and he divulges what crucial questions to ask before bringing UAVs into a business model.

[\(Listen the podcast here\)](#)

Drone Implementation and Advancement in Construction

Only recently in the construction industry, have drones been gaining traction and popularity. Early adopters have seen significant efficiencies and benefits by adding drones into their workflow. Since their introduction is still relatively new, it's easy to see the impact they've created for the companies that have put them to work. "So, what we're seeing with drones in the construction industry," says Rayhel, "is that there's never a lack of interest or ideas of what can be done with drones. Specific to the construction industry, we're going to start to see more drones being on sites in the future."

Some of the traditional methods that drones are being utilized for include volume metrics, progress tracking, and creating survey maps. The drones and integrated systems attached to them capture data more accurately and efficiently. Aerial photos can give a much bigger perspective when it comes to tracking progress, inspecting equipment and measuring structures. Rayhel refers to a recent use-case. "Microdrones recently hosted a webinar with one of our clients, Crafton Tull. During the presentation, they explained how using the [mdLiDAR1000](#) to perform a large corridor mapping project, they estimated a savings of over 60% in costs. That's a significant amount."

Safety First

Drones are also helping make a big impact on job safety at construction sites. With the help of advanced [integrated systems](#), construction organizations can potentially identify risks sooner than they normally would to help prevent accidents and address potential hazards on the job. "With volume metrics," Rayhel explains, "using the traditional methods, you'd have a surveyor or a member of the crew going out and climbing a big pile of earth to get his GPS to the top and start calculating measurements. Using a drone ensures that somebody doesn't need to put themselves in harm's way. Instead, you fly a drone over the pile, and create no risk of a fall or slide."



Microdrones' mdLiDAR1000 is a fully integrated system for producing 3D point clouds optimized for land surveying, construction, oil & gas, and mining applications.

Efficiency Matters

Employing the drone at the Construction site improves the efficiency throughout the entirety of a project. Ultimately, the drone is able to collect and process the data faster than traditional methods. In addition, the drone can provide live video feeds, aerial photos, photogrammetry or [Lidar](#) data. “In the past,” says Rayhel, “manned aircraft were used to collect all this data, at considerable costs for labor, fuel and flight time. Drones offer a substantial savings for collecting aerial data. One of the main advantages for construction companies is that they don’t have to hire a third party to perform flights. The drone becomes another tool in their tool bag that can perform the job much faster, and they’re able to repeat it over and over without incurring that cost again and again.”

Don’t be Motivated by Technology Alone

Often times, where there’s an emerging technology, some customers initial reaction is to remain cutting edge by acquiring that new technology, without any implementation plan to effectively use it. Microdrones helps customers identify challenges and select the right resources to help evaluate and create unique solutions.

Rick says, “One of our biggest challenges is getting clients to recognize exactly what they’re trying to accomplish and understand the requirements to achieve the proper solution. What you’re seeing is that a lot of times, people see a new technology, and immediately want to have it. Purchasing the drone and flying the drone are the easiest parts of the equation. Our most successful customers partner with Microdrones and exchange their challenges, manage expectations, and support one another throughout the process.”

Garbage In, Garbage Out

Another challenge, when it comes to implementing drones into the construction industry, is the volume and accuracy of data that can be collected. It’s not that difficult to select a payload, attach it to a drone and start collecting data. However, you still need to make sure you’ve captured, measured and analyzed the data properly. “So, there’s a phrase that you’ll hear throughout the UAV industry,” says Rayhel. “Especially in data processing. Garbage in, garbage out. What that means, is that if you’re not setup correctly to gather accurate data, you’re not going to have an accurate final deliverable. That garbage going in, is only going to produce garbage coming out. And that’s where Microdrones has a lot of expertise in being able to train and support our clients. We make sure the entire workflow, from start to finish, achieves the required deliverable in the most efficient manner possible.”

Identifying the Proper UAV Solution

As more options become available for drone use in the construction industry, it’s important to identify the UAV solution that is going to deliver the best fit for the job. “So, when I talk to people about UAV solutions,” explains Rick, “I always make a few recommendations. When you’re looking at a drone, first you want to consider [how robust is my airframe](#)? Is it going to be able to handle higher winds? Can it handle inclement weather? Can it handle a broad temperature range? Then, you want to look at the sensor attached to the drone. How good is it? Do I have the ability to upgrade and grow with the solution? Can I attach different payloads?”

Answering these questions upfront can help prevent costly mistakes down the line. One of the benefits of Microdrones is the ability to have one airframe with the flexibility to host multiple payloads. Those payloads can range from methane detection applications to sophisticated Lidar solutions. In order to accurately interpret the data collected from the UAV Solution, construction companies need to ensure they have the properly trained experts on staff with the correct set of resources to analyze the data.

“As I’ve said before. Flying the drone is the easy part. Most of our software allows for autonomous flights. However, you’ll need an expert in the field who understands what other resources, such as a base station or ground control targets, are required to complete the job.”

Drones and Construction

Drones will continue to penetrate the Construction industry and operate at all different parts of the job site organization throughout different key points of development. Rick is excited for the future. “Right now, we’re kind of at a tipping point where there’s been a lot of organizations who have shown interest in drone use and are ready to add them to their tool bag. They’ve done some research, maybe performed a cost analysis, and have a challenge worthy of implementing a drone. Now there’s enough case studies and other users making the case for us saying, ‘This is how we’ve been doing it. We’ve been successful. We’ve been repeatable in our efficiencies and accuracies over time.’ And a lot of those organizations are stepping up to see how Microdrones can help provide the best solution. We’ve done it well and we’ve done it effectively.”

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