

DRONES IN SURVEYING

A look at best practices



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Many of us have had the pleasure of participating in golf tournaments where a drone demonstration takes place. Typically, the drone takes flight carrying your team's golf balls and attempts to score a hole in one.

It's rare the drone scores an ace; you're usually left with a tap in for eagle. This is a good example of the misconceptions of the capabilities of drones, which are examined in this article through the historical context of the use of drones in surveying, while highlighting the most effective uses of the technology.



Forms of Drone Survey

Drones and their predecessors have used photogrammetry as a form of survey since at least 1937 when Talbert “Ted” Abrams founded the Abrams School of Aerial Surveying and Photo Interpretation. Photogrammetry is the science of making reliable measurements using photographs,

especially aerial photographs (as in surveying). The foremost advantage of using photogrammetry via drone is the ability to capture the topographic features and conditions of an area. However, photogrammetry does not provide accurate measurements as any visibility constraints will hinder the line of sight of the camera. Thick tree canopy, heavy vegetation, rainfall or snowfall can render your photogrammetric survey useless.

Another popular type of survey conducted via drone involves the use of Lidar. Developed in the 1960s, light detection and ranging (Lidar) measures distances via laser pulses to a target object and analyzes the reflection. Lidar technology is clearly superior to photogrammetry in challenging conditions and continues to rapidly develop. However, Lidar is not x-ray vision that can “see” through dense foliage and is thus not a panacea.

Some of our clients’ most successful use of drones centers around accurately documenting the condition of their assets. A prudent pipeline operator will use a drone to record the condition of property in its native, pre-construction state, and then repeat the process post-construction. This can reduce and potentially eliminate frivolous liability claims. Additionally, required above-ground storage tank inspections as well as powerline inspections can be more efficiently conducted with drone technology, making this work safer and less time consuming. Finally, topographic surveying is similarly well-suited to drone technology.

Exceptions

It is our opinion that drones should not be used in land title surveys, which are more detailed than traditional surveys and are generally used for title insurance purposes. Land title surveys require all of the talent and experience a Registered Professional Land Surveyor has gained throughout their career to interpret the deed record and the prior surveyors’ markings as such

survey establishes the physical, on-the-ground perimeters of a property. This includes the location and boundaries of easements, and evidence of any possibility of prescription or limitation title rights, as well as all improvements contained within the property. Accordingly, due to the above-listed issues with accuracy, a drone is arguably insufficient for land title survey purposes.

Final Thoughts

The next time you’re putting for eagle, you can blame photogrammetry and lidar. They are quite useful in their own right, but are not an accurate replacement for an on the ground survey. However, due to Moore’s law, drones with sufficient accuracy to conduct a land title survey for insurance industry purposes may be closer than we think. 🐯



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