Roy Emmerson discusses the benefit of using drones for inspection

Bird's eye view

During their careers, a question frequently facing surveyors and builders is: "How do we get to inspect that?" It was also a problem encountered by building contractor Mike Szkoda and me, a chartered building surveyor.

The answer at that time was a very expensive cherry picker. However, our interest was piqued and after detailed research and enquiries, we developed the concept of using an unmanned aerial vehicle with a camera and our company HeliDrone Surveys was born. This was not a new idea, but one with very limited use in the surveying profession at that time.

It soon became apparent that there are stringent rules and regulations when flying for commercial gain. The Civil Aviation Authority (CAA) requires minimum standards for pilots, involving a theory examination, a practical flying test and approval of an organisation's operations manual. All this can be very daunting.

Required procedures

Prior to visiting a property, we produce standard risk assessments and method statements, which are then reviewed and amended as necessary before we contact air traffic control for approval. Without stating the obvious, we also have a sizeable public liability insurance cover.

On arrival, we establish our safe zone together with a secondary zone, run through pre-flight procedures and then start the drone, allowing it to establish its GPS location. This is very important because in the event of a problem, it will come 'home'.

Pros and cons

In our opinion, the advantages of drones far outweigh the disadvantages. Dealing with the latter first, it is not advisable to fly a drone in strong or gusting winds. Despite their GPS technology, they can be pushed off course and if they strike a tree or building, you could be looking at a replacement or worse.

Heavy rain also causes the photographic images to blur. But put bluntly, how many of us would want to stand in a cherry picker carrying out a survey in heavy rain or strong wind?

The advantages of the drone are:

- **A much reduced health and safety risk:** there are no people or plant up in the air, only a vehicle with inbuilt safety features including battery power monitor, come-home locator and kill switch. If operated correctly, the drone knows the location from where it took off and if the battery runs low, it ignores all external commands and comes home; equally, a switch on the control panel achieves the same function.
- **Minimal disruption:** the pilot only requires a clear line of sight of where the drone is flying and can operate it from a distance of 400m. Therefore, unlike a cherry picker or scaffolding that may obstruct an entrance or occupy parking spaces, a safe zone can be established away from the building.
- **Better quality images:** a drone-mounted camera takes photographs at predetermined intervals (ranging from one to 30 seconds) together with continuous film footage. The images are very high resolution, enabling the viewer to zoom in and see a high level of detail. They can also be issued electronically within a few hours of the survey or if required, downloaded onto a USB while still on site.
- **Reduced survey time:** compared to cherry pickers or scaffolding, the drone can be set up and ready to fly in approximately 20 minutes.

> "There are very stringent rules and regulations when flying for commercial gain

Images © HeliDrone Surveys Limited

A drone survey allowed inaccessible areas of Spains Hall, Finchingfield, to be inspected

The usual flight operation is 30 minutes and covers a very large area. Because it flies in different directions over the target building, images are obtained from various angles.

- **Environmentally friendly:** because they are operated by rechargeable batteries, drones do not generate any fumes. The only potential disturbance is the whirring of the rotors.
- **Access:** in some circumstances, it may not be physically possible to use a cherry picker or scaffolding to reach a roof or high-level elevation due to access or weight constraints, which could result in very high costs. The costs of using a drone are fairly low, they are carried in a case that is easily accommodated on public transport and only need an area of around 4m x 4m to be set up.

Benefits for surveyors

During the survey, the surveyor will be given a remote monitor allowing a drone's-eye view of the building. They can direct the flight path or request more time in the event of unforeseen elements that are only visible once the drone begins flying. The monitor works over quite a distance, giving the additional advantage that they can remain in the warm while the pilot is outside. Numerous people, e.g. clients and occupiers, can view the monitor at any one time.

It is very easy to reassemble the drone at another property, perhaps just around the corner or a few miles up the road. We always travel with spare batteries; the more surveys that can be carried out on a single visit, the more financially beneficial it is for the client.

The feedback on the use of drones has seen some surveyors immediately excited by the new technology, while others were sceptical about the potential results and advantages. When given the opportunity, we hope we have proved the sceptics wrong.

We initially launched HeliDrone Surveys at the RICS Dilapidations Conference 2014 and the interest shown was amazing, with surveyors all keen to find out its capabilities. The same was experienced at the RICS Building Surveyors Conference 2015.

Since the organisation was granted permission for aerial work by the CAA, it has undertaken numerous surveys nationwide, ranging from large industrial facilities to small city-centre terraced houses. We are getting repeat instructions from surveyors, and although the initial aim was to photograph, be it roofs or elevations, we are now receiving more complex and varied requests. The possibilities are probably only limited by imagination.

Unfortunately, unqualified people are using drones to the detriment of the many responsible pilots, resulting in bad reviews that are not reflective of the industry. Use of drones is relatively new and existing regulations are being reviewed and adapted. Other than the CAA, there are various forums and groups (we belong to the Association of Remotely Piloted Aircraft Systems UK), which are all striving to make drone use more accepted while maintaining safety standards.

More information

> **www.helidronesurveys.co.uk**

Should you pursue drone technology?
http://bit.ly/1JYwMct

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