INTRODUCTION

Across the Middle East, clients are increasingly looking for innovative solutions that can help them to deliver their construction projects in a safer, quicker, and more cost-effective way than ever before. Embracing technology and new ways of working is the only way to meet this challenge. One area where we see huge potential to disrupt some of the more traditional construction processes is through the use of Unmanned Aerial Vehicles (UAV), or drones, as they're more commonly known.

In Qatar, the regulatory environment has recently changed and this has opened up opportunities to use drones for commercial purposes, including within the construction industry. At Arcadis, we’re already using UAV solutions on several client commissions including transport infrastructure schemes, real estate developments and water and utility projects.

WHAT BENEFITS CAN DRONES BRING TO CONSTRUCTION PROJECTS?

We find that drones can help to address a wide range of challenges that clients typically face on large-scale construction projects. Some of the key benefits that we’ve seen delivered on real-life projects include the following:

1. IMPROVING THE ACCURACY AND QUALITY OF DESIGN WORK:
   The quality of the scans and aerial imagery that drones can provide is absolutely first-class. By exporting these into software packages like CAD or Autodesk Cloud, we can develop 3D models that are within 2cm accuracy of real-life conditions. This complements the results that can be achieved through more traditional methods (in a much shorter timeframe), and helps to reduce the risk of incorrect decisions being made on a project.

2. DELIVERING SIGNIFICANT COST SAVINGS:
   Using a drone to carry out standard survey and inspection activities is a much more cost efficient approach as it removes the need to erect scaffolding or mobile platform equipment. As an example, for a typical topographic survey, the use of a drone can help to reduce costs by approximately 50%. Furthermore, the quality of the information provided also means that less rework is required. By overlaying imagery collected from the drone with the original design, errors and mistakes can be spotted before they’re submitted to a client and long before they become costly to fix.

3. COMPLETING WORK FASTER THAN BEFORE:
   The use of drones can reduce the length of time needed to carry out basic surveying and scan work, as there’s no need to build scaffolding in order to reach hard-to-access locations. The regulations require the drone pilot to remain within line of sight of the drone but this can be done on firm ground at the site. This enables consultants to gather data and turn around high-quality reports much quicker than ever before. Similarly, the unobtrusive nature of UAVs means that maintenance inspection work like pipeline or flare stacks, can be carried out safely without needing to shut down active work sites. This allows normal work to continue even while other activities are taking place.

4. REDUCING RISK AND KEEPING PEOPLE SAFE:
   The construction industry has made great strides in recent years to improve site safety. UAV technology can help to further support the drive towards zero incidents by taking away some of the risks associated with construction activities. As an example, the use of drones removes the need for labourers to work at heights when inspecting assets like bridges, which are often hard to access.

5. CAPTURING INFORMATION ON THE EVOLUTION OF A PROJECT:
   Drone technology allows you to monitor the progress being made on-site on an ongoing basis. With a drone, you can save the pre-programmed flight path for a site and fly the same flight path each time, enabling you to record developments in a visually appealing manner. Capturing this information also provides a robust record of the project’s evolution just in case any issues arise on site. This can be important evidence if the project does ultimately end up in dispute.
If you would like to discuss any of the points raised in this paper in further detail, then please get in touch:

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