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De-risking quarry surveying

Acquiring survey and mapping data in quarries poses a myriad of logistical, financial and safety challenges. Here, Francois Gervaix, looks at how Unmanned Aerial Vehicles (UAVs) are already being used to cut the risk



Aerial surveying using drones such as the eBee, as pictured here, has particular advantages in complex and challenging environments. Photo: senseFly

Quarries play an important role in meeting the needs of societies worldwide, with the extraction of raw materials proving vital in construction, chemical and energy applications. However, sites of this kind are complex and come with a range of unique challenges that, if not correctly or efficiently surmounted, can make working in them a lengthy and risky business.

Obtaining accurate, in-depth geospatial data about quarries can yield vital insights into material stockpiles, environmental impact planning and pre- and post-blasting analysis. Surveying can also help identify hazardous areas, eliminate unsafe working practices, and assess the potential for future extraction. While the knowledge gleaned from such surveys is extremely valuable, the nature of quarry landscapes makes them challenging to navigate.

Geospatial professionals have traditionally mapped quarries using terrestrial surveying methods such as 3D laser scanning and Total Stations. However, these techniques are disadvantaged by the fact that data collection may take days or even weeks, and must be carried out almost entirely on foot. Aside from being time and labour-intensive, the activity poses additional risks to surveyors. Subsequently, the integration of UAVs into workflows was an almost inevitable step in improving the efficiency of surveying complex sites.

Navigating the challenges

Drones offer the unique benefit of being able to reduce time spent in the field as they are able to map large sites remotely, accurately, and

in a single flight. In high-risk environments, this is an important step towards improving health and safety practices. The improved speed also means the technology delivers significant cost benefits and can help surveyors assess the viability of a project at an earlier stage and before too much time or money has been invested.

While drones are increasingly designed to complement existing ways of working, there has been some scepticism around ease of integration and regulatory challenges. At senseFly, we've invested time and resources to ensure our solutions, such as our eBee and eBee Plus drones, are fit-for-purpose and can integrate seamlessly into existing workflows. They also work in sync with Computer Aided Design (CAD) software, thereby reducing the potential costs that arise from changing surveying equipment. In addition, our work with regulators and industry partners gives our drone operators confidence that they are complying with the relevant regulations and have full, end-to-end support in drone surveying applications.

Surveying the future

Choosing the most effective technique for a mapping project is vital, and the benefits of UAV technology in quarry surveying – e.g., enhancing efficient data collection, improving safety in the field, and delivering highly accurate results – are becoming more widely accepted. The result is a revolution in the way that surveyors are meeting the demand for faster, safer and more efficient surveying practices in challenging environments.