As a result, Ozoria and his team needed a way to accelerate their survey data collection without jeopardising worker safety, all while providing an accurate way of measuring Pueblo Viejo's inventory and fielding requests from various technical departments. The solution ultimately came in the form of survey drone technology, Ozoria recalls. While there were other drones to choose from and other drone options to consider, such as fixed-wing and multirotor models, Ozoria and the Pueblo Viejo survey team landed on solutions from senseFly, specifically the eBee fixed-wing drone.

“We decided to use senseFly because senseFly drones are light, easy-to-handle and easy-to-use,” says Ozoria. “We chose fixed-wing drones because they have several advantages over multirotor drones: they can fly faster and longer, which means they can cover larger areas in less time. That was really important to us.”

Ozoria felt confident that the eBee would enhance operational efficiency, but just by how much exceeded his expectations.

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The company’s use of senseFly drones began in 2012, Ozoria recalls, and the operation now uses drones for daily photos, geo-analysis and tracking projects, which helps the mine’s leadership make better, more informed decisions, such as how to best implement mine plans and how to best allocate resources across the mine. Ozoria’s team, however, mainly uses their fleet of drones—one eBee Plus RTK and two eBee Classics—for all surveying calculations at the mine, explaining that the site also uses drones to monitor earth work and material movement as well as for the construction of their tailings dam facility and PAG dump.

“A normal day at the office can start off with a request from a department for a fly-over, so we send our guy to the field to place the GCP,” Ozoria says. “Once the GCPs are ready, they let us know and we create the mission using the drone’s eMotion software and then we go out to do the flyover. Once we’re done with the flyover, we use Agisoft to do the imaging processing and share a link so that each department that needs this information can use it in their software.”

Mapping large areas in less time wasn’t the only benefit to Ozoria and his team. Mines are inherently dangerous places to work, and Ozoria quickly discovered that using survey UAV technology provided a real safety benefit to everyone working on site.

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“We had a lot of challenges,” explains Ozoria. “For example, the surveyors had to walk the stockpiles while we had big trucks unloading nearby and that was very dangerous.”

“For a big mining operation like us, we’re always concerned about worker safety. And because the [eBees] are very life, if something does go wrong, we’re not worried about endangering our staff.”

In addition to improving the survey team’s operational efficiency and mine safety, Ozoria says that additional benefits, such as the drone’s mapping accuracy, became clear as he began to integrate drone technology into his team’s data collection process.

“The eBees we are using are very accurate. We regularly achieve an accuracy of five centimetres or less,” says Lora. “That’s important to us because we provide the data to different departments like geology and they use that data to construct block models. We also use that information to do volume reconciliation, this is how our contractors get paid. And we use the data collected by the eBees for slope monitoring, where we need a high degree of accuracy to track those deformations we want to track.”

The quality of data delivered by Ozoria and his team’s drones has also proven invaluable to Jose Recio, Pueblo Viejo’s Mine Technical Services Superintendent, whose responsibilities include organising and managing all the technical services and the resources available to the long list of teams he oversees.

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“… The drone technology helps me make decisions quickly, but also the right decisions.”

“I use the drone data in many ways but one of the most important is to make short-term decisions at the mine,” explains Recio. “We have a lot of projects, so we have to make decisions quickly to ensure production [at the mine] continues. The drone technology helps me to have that visibility.”

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From an efficiency standpoint, the use of drone technology has proven successful for Barrick Pueblo Viejo mine. Lora and his team can accomplish in half a day what used to take a week. The use of drones has also played an important role in enhancing site and worker safety. Team members no longer need to traverse tricky and dangerous conditions physically to update stock piles and ore pits. Instead, they simply program their mission in eMotion and let the eBee do all the work.

As for individuals who might be unsure about the benefits survey UAVs can bring to their business, Ozoria has this to say: “What I would say to someone who is unsure about getting a drone is that if you want a great solution for managing projects, UAVs are it. It’s much easier to monitor projects, you will have very accurate data and it will pay for itself in a couple of months.”

Recio confirms that the use of survey drones, such as senseFly’s eBees, has resulted in a positive return on investment for Pueblo Viejo. “One aspect where drone technology has also really helped us is with cost reduction,” says Recio. “If we didn’t have the drone technology, we would be spending a lot more.”

That savings, it turns out, is rather significant. As Recio recalls, “If we didn’t have the drone technology right now, we would have to spend half a million dollars on equipment just to fulfil the requirements of the mine. In three years alone [since implementing drone technology], we have managed to reduce the budget of the survey department by 25-30 percent by using drones.”

RESULTS

- Full mine survey takes half a day
- Improved worker and site safety
- Frequent and accurate survey data
- Half a million dollars saved on equipment
- 20-30 percent reduction in survey costs

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How Barrick Gold Uses senseFly Surveying Drone Technology to Reduce Costs & Improve Worker Safety