

Leveraging fixed-wing drones & business analytics for the mining industry

Two companies that got it right.





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A picture is worth a thousand insights

If you've ever had to search for a hardware or software product for your company, there is one thing at the forefront of your mind - getting it right. Your team and clients are depending on you to deliver quality results, and you're determined to succeed.

This is why at Delair, we don't sell products - **we sell solutions.**

While our roots are in drone manufacturing, this has led us to see beyond what a drone photo is and rather envision what the photo could provide. We've evolved into the only company in the drone space which provides a seamless end-to-end solution, starting with the UX11, our long-range fixed-wing drone, to delair.ai, the most powerful cloud platform on the market to manage, process, view, analyze and collaborate around visual data.

Quite simply, this approach results in the solution you need to be fully operational in your day-to-day work.

For our customers launching or improving their drone program in the mining industry, our reputation speaks for itself. This ebook includes success stories from two companies in the mining industry, who through Delair's solutions, were able to save time, resources, increase safety procedures, and generate more revenue.

We work with a network of trusted, local Delair distributors. These partners are on the ground at your location, ready to ensure your drone program thrives.

Others say a picture is worth a thousand words. In the Delair ecosystem, a delair.ai photo is worth the satisfaction of finding the right solution from a thousand data points.



How Wood addresses the challenge of large-scale surveying for mines with the Delair UX11 fixed-wing drone



ABOUT THE COMPANY

Wood is a global leader in cradle to grave energy life cycle solutions. It employs more than 60,000 people in over 400 offices in more than 60 countries globally. The firm has a 160+ year history of providing performance-driven solutions throughout the asset life cycle, from concept to decommissioning across a broad range of industrial markets, including the upstream, midstream and downstream oil and gas, power and process, environment and infrastructure, clean energy, mining, nuclear, and general industrial sectors.



THE CHALLENGE

A key sector for Wood is mining, where it offers surveying and planning services as well as asset management functions for companies excavating mines and quarries and performing large scale construction of mining infrastructure. This includes building associated infrastructure for such operations, as well as material quantification.

These types of projects often present some unique challenges when it comes to surveying and information gathering, including hard-to-access and often times rugged environment.

Initially, Wood tried standard GPS foot surveys, but as they were dealing with areas over hundreds of acres, the team quickly realized this was impractical. They also tried fast topo side by side, and different types of scanners, but such methods were considered too time consuming, and depending on the weather and light conditions, they found the results weren't accurate enough.

On top of that, getting into the desired area by foot was dangerous due to the large moving equipment and constant vibration, so ground methods weren't an ideal option.



Greg Meinecke, Technical Services Manager at Wood, recalls the challenges:

"At one site we worked on, we ran a continuous topo side by side out of a gator... At one point the mining crew started excavating rock, which must be chiseled and blasted. They were working in a small area, but our guy couldn't even walk through it. The mining crew said, 'if you can't fly it, you can't go in there.' So, we said 'I guess we need a drone.'"



THE SOLUTION: THE UX11

Once Wood realized they needed another approach, namely an efficient aerial solution, they quickly concluded that a fixed wing drone like the Delair UX11 was the only solution that made sense. On top of its range and availability to cover large areas, the Delair UX11 offered Wood numerous benefits, including greater speed and accuracy of data gathering, and no lost productivity - since there's no need to shut down large equipment.

Some initial concerns for Wood were both the cost and learning curve associated with bringing on a fixed-wing drone, especially since the team had little experience using this technology. With support from Delair, and its regional reseller partner, Wood was able to address those challenges with its first fixed-wing aerial data collection program.

After the initial training period, the Wood team became comfortable with the operation of the Delair UX11 platform and began to see immediate payback. Wood's team noted the ease of use of the Delair UAV, especially given this was their first experience with fixed-wing flying. The firm was able to train several pilots who specialize in different types of projects to deploy the drone on infrastructure, mining and construction projects around the US.

The Wood team praised the knowledge and experience of the training received from its reseller as critical in getting them up and running quickly. Their local reseller worked alongside Wood's engineering and field experts to evaluate the Delair drone, and ensure it met the firm's requirements, including integration with other important software tools the firm uses such as AutoCad, Trimble Business Center, and the Pix4D photogrammetry suite.



THE RESULTS

In the beginning, Wood saw drone technology just as a way to manage their inventory. The company uses drones to fly over pits and access high-altitude inventory with just one drone pilot. This eliminated the need to send workers up to high altitudes, or hire expensive airplanes for flyovers. With UAVs, site inspections and updates can be done as frequently as 4 times a year. With no people on the ground where large equipment is running, this is a much safer procedure as well.

The Delair UX11 provided a solution to another challenge at the mines: quantifying material. As topsoil, overburden, and caprock are stripped, the amount of each material needs to be measured. The traditional measurement method of counting truckloads wasn't reliable or accurate. With the UX11, Wood could do a flyover, establish a ground model, do comparisons against previous ground models, and come up with quantities that are accurate for providing the required information for invoicing (such services are usually priced on the amount of moved material excavated). The accuracy of the data gave Wood confidence that the mine owners could look at the way Wood acquired the data and trust that it was a reliable summary of work performed.

The team also noted the Delair UX11's embedded global shutter camera as well as its PPK (Post Processed Kinematic) capabilities as key to ensuring greater precision in its data collection. With PPK, GPS data from both on-board and off-board systems can be matched after the mission, providing higher degrees of accuracy of the images collected.



“For the scale of the projects we are performing, and the accuracy required, adopting the Delair UX11 was a logical choice. Its long-range capabilities allow us to cover areas not feasible with other data collection methods like hovercraft drones or by foot, so it reduces the cost and time involved. It integrates well with our existing workflows, and features such as the PPK function deliver additional benefits in terms of the precision and flexibility required in challenging environments. We received excellent support from Delair and our local reseller in helping us deploy our first fixed-wing UAV missions and are already seeing results.”

Greg Meinecke.



How Luck Stone leverages **delair.ai's** advanced analytics to improve quarry operations



ABOUT THE COMPANY

Luck Stone produces and supplies sustainable aggregates for civil engineering, private construction, and environmental projects. It offers over 75 crushed stone, sand and gravel products, sourced from the largest quarry network in Virginia. With locations in Maryland and Virginia, Luck Stone's business is thriving and expanding fast.

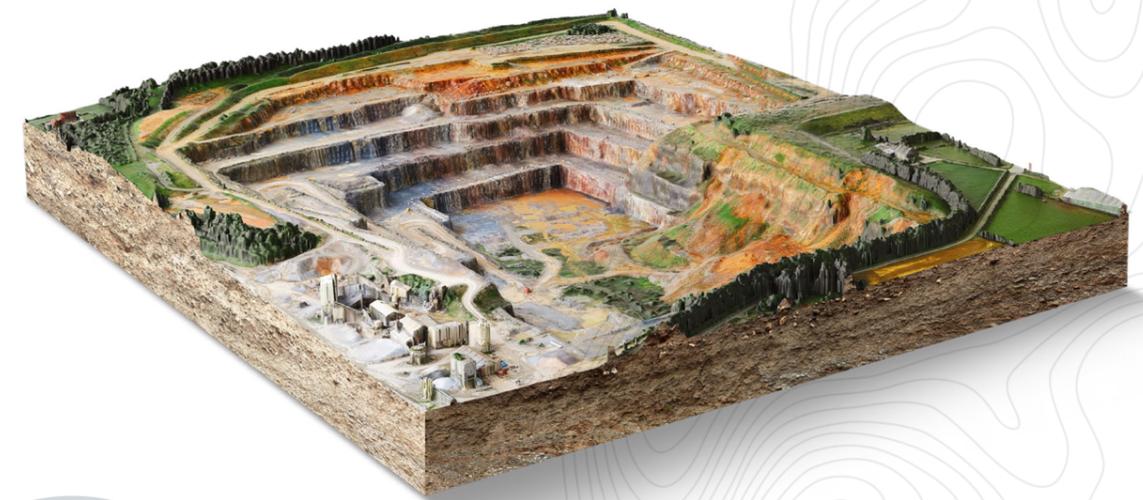
The family-owned company has taken the lead on technological innovation in the aggregates industry. Since 2016, Luck Stone has been using UAVs to transform their operations and environmental footprint. Using Delair's advanced analytics cloud platform, delair.ai, has proven its financial value by increasing efficiency and uncovering untapped reserves of aggregates.



THE CHALLENGE

Luck Stone needs to present detailed, accurate plans to their customers, including the quantity and value of resources available.

Before launching their drone program, Luck Stone used planes to take photos and collect information on their sites twice a year. Then they had to make 3D models of their sites.



According to John Blackmore, surveying supervisor at Luck Stone,

"[Prior to our drone program], we had to fax paper copies of the surveys over to our project managers in various locations and use overnight shipping to ensure that the project data can be shared with others."

For the company, integrating drone data into its core business operations was no longer something on a high-tech wish list – it was a business imperative.



THE SOLUTION: delair.ai

The delair.ai cloud platform opened up a world of possibilities, ultimately saving them time, increasing safety, and tapping into undiscovered resources for more revenue generation.

The idea behind the delair.ai platform is simple: collect your data, upload it to delair.ai, let the platform create the digital twin of your site, and run whatever business analytics you need. The software comes with an open API to customize your analytics, however the cloud platform comes with key analytics for the mining industry out-of-the-box, such as advanced stockpiles, haul roads, safety blocks and highwalls.

Data from their choice of UAV is instantly uploaded and shared, ready for analysis by engineers and project designers. Luck Stone can then make use of the delair.ai platform **to manage, process, view, analyze and collaborate around aerial data.**

Operations managers can use such data to digitally map existing conditions and measure stockpile volumes for inventory management, production forecasts, and auditing. Broader views of the territory around extraction pits has even helped project designers to place safety berms more effectively.

“Luck Stone collects aerial imagery to make high-resolution maps and 3D models of work sites to visualize what a site looks like currently and what it looks like in the future,” says Blackmore.

More accurate information helps to manage contractor costs, while maximizing profits for customers. This enables everyone at Luck Stone to use the latest, most accurate data in their decision-making.

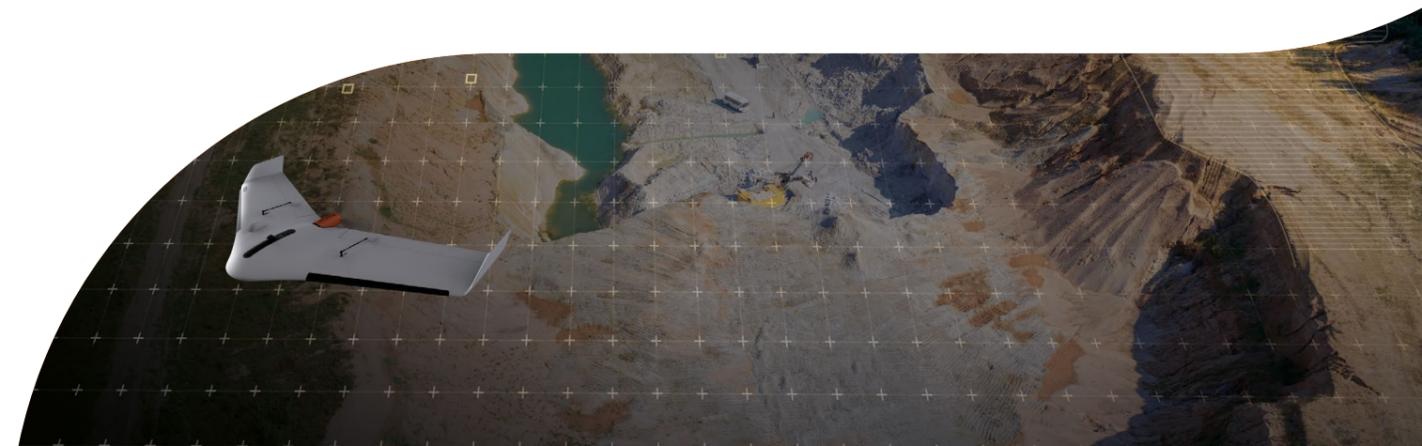
“We’ve been able to learn through our [Delair] partnership that there’s so much more value and other types of analysis as well,” affirms Blackmore.

THE RESULTS

Luck Stone’s drone fleet collected information about truck routes, distances and gradients. The delair.ai platform took this information and used it to optimize the fleet of haul vehicles, and the volumetrics analytics were used to calculate how much dirt had been shifted by transport contractors. **In one instance, Luck Stone calculated that there was still approximately \$60,000 of value left at each site.**

Insights derived from delair.ai removed the guesswork from planning new projects. Detailed maps and contour surveys are combined with geological data to project scenarios and test out designs. Aerial imaging analysis enables Luck Stone to capture and analyze more granular site detail than a ground-based survey team. The up-to-date, high resolution, geo-localized sky images can be transformed into actionable aerial data. **For example, Luck Stone project designers used delair.ai to determine the route of a new road, and this informed decision protected 1 million tons of aggregate reserves for extraction at a later date.**

Luck Stone extracts more value from their sites, as delair.ai enables the company to uncover insights throughout the entire mining lifecycle. Such data can be harnessed so that it is consumable, actionable and shareable.



ABOUT DELAIR

Delair is a leading provider of end-to-end, visual intelligence solutions that enable enterprises to capture, manage and analyze their assets and turn the collected data into valuable business insights. The company's offerings combine high performance UAV hardware with delair.ai, the industry's most robust platform to power your entire visual intelligence workflow, from data management to advanced analytics. Its solutions are sold in over 70 countries with a network of more than 100 resellers in industries such as mining, construction, agriculture, oil and gas, utilities and transportation. Delair has strengthened its position as a global leader through strategic acquisitions (Gatewing, Airware/Redbird), and a strategic investment by Intel Corporation. Founded in 2011 by experts in the aerospace industry, the company employs 180 people and has offices in Toulouse, Paris, Los Angeles and Singapore.

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