Drone Data Solutions For Mining

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AMPS | DRONE SERVICES

We've put together this ebook to show how AMPS|Drone Services can help you measure and manage your site.

We can help you measure progress, productivity, quality, and cost on your site. Here you can find a deep dive into how AMPS|Drone Services delivers on those values for mining.

By the end of this ebook, you'll know how AMPS|Drone Services can show how much work is done, how fast it's progressing, whether or not you're matching the plan, and if you're going to make money.

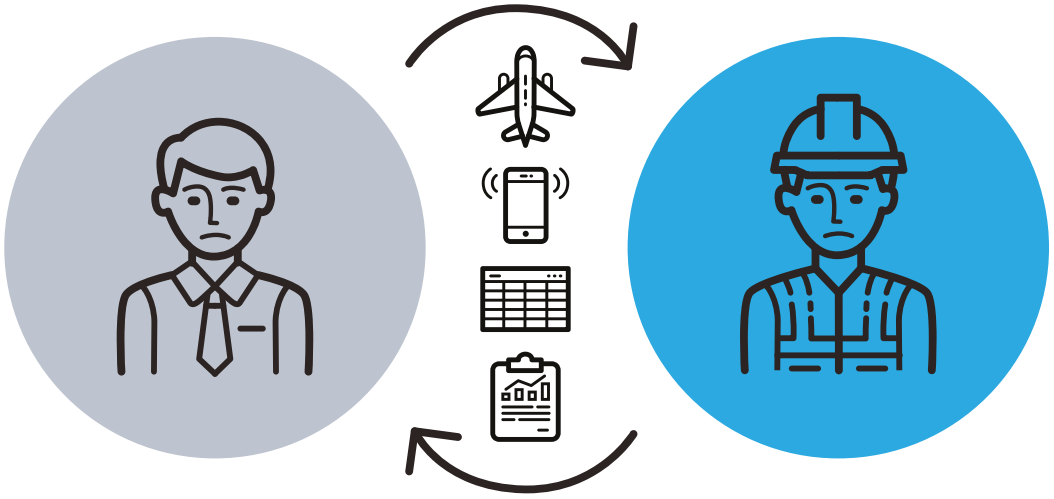
AMPS|Drone Services can be used to:

- Know the status of your mine
- Manage your ROM volumes
- Avoid environmental irregularities
- Track progress against design
- Ensure safety on your mine
- Keep your road grades consistent
- Collaborate using a single source of truth
- Work and plan with confidence

Drone Data Solutions for Mining

We're going to break down how AMPS|Drone Services can streamline these workflows to save time and, ultimately, money by closing the information gap between you and your site.

Information Gap



Shared Source of Truth

Commercial drones are revolutionizing mining

It’s a fact: surveying is an irreplaceable part of mining, but it can be time-consuming, costly, and sluggish overall. And, depending on your operations, infrequent. You need to have right and recent data to effectively manage ROM volumes, see progress and productivity, and, of course, conform to design. For the last, you want to know as soon as possible if you’re outside of design.

Advances in technology have made the drone an affordable tool for worksites. While they may seem like a fancy piece of equipment, drones have become no more unusual than a GPS rover, but just as vital.

The benefits for using AMPS|Drone Services are:

- No costs for purchasing, installing and maintaining equipment
- No legal and administrative costs of training pilots, maintaining licenses and obtaining regional aviation certifications and insurance
- Reduce the time surveyors and other personnel spend manually inspecting stockpiles, pits an d blast areas
- Minimize the hours spent on potentially dangerous manned ground security

Know the status of your mine

After we've flown and photographed your mine our Platform uses photogrammetry methods and our software to stitch the images together. This involves pinning the images to the ground control positions, and getting powerful machines and data experts to digest all the raw photos, find overlaps and common points in images, and make a 3D reconstruction of the terrain.

Thanks to ground control points (GCPs) and a known coordinate system (local calibration or otherwise), the data is accurate. This means you can measure your data right off the visual representation on our platform, from your browser. You can know your site's progress and productivity in a few clicks by reviewing the timeline and checking the 3D site survey against design.

AeroPoints are the world's first smart ground control solution, purpose-built for drone operations.

Featuring a solar panel, battery, GPS, and WiFi inside each fully sealed, rugged, lightweight unit, AeroPoints make capturing accurate data simple and affordable.

See how much has been extracted and what's left to do

You can check/view ROM pad volumes and then track changes over time with our reports and timeline features

While we'll be talking more in-depth about safety later, it's important to note that drone surveying enables you to monitor haul roads more closely and access potentially hazardous areas without endangering personnel. With frequent surveys and easy grade checks, you can keep track of performance and change roads for optimal fuel burn and measure heights of safety windrows.

Monitor mine productivity and mill quality

A good way to think of drone data solutions is how it improves run of mine (ROM) volumes. The ease of surveying with an unmanned autonomous vehicle (UAV) allows for more frequent surveys. AMPS|Drone Services accurately calculate volumes which increases ROM management, with more consistent grades throughout the mill, and overall accuracy and safety.

Ensuring you have the correct grade blends going through your mill is essential to success. Too often, insufficient input grades are only discovered after the fact, when the final resource doesn't add up with what went in to your mill. Instead of backtracking to see what went wrong where, you can use data to monitor your ROM volumes quickly and accurately.

We know stock pile surveys can be difficult. It's nearly impossible to send someone out to walk those piles, but with drone surveying you can capture the data you need in hours not days.

Should your mine be using any autonomous machines, updating plans of the entire working area with each new drone survey can increase their safety and efficiency. Mine plans for autonomous machines refreshed with new data more frequently grant greater accuracy on as-mined surfaces and other jobs.

Manage your ROM volumes accurately and efficiently

When it comes to the material itself, We provide layers and layers of oversight to make sure the mine is running smoothly. For ROM volumes, the ease of surveying with a drone and calculating volumes with our Platform allows for more frequent flights, which means better ROM management and more consistent grades throughout the mill. We fly weekly or daily instead of the traditional monthly surveys.

On top of all the workflows mentioned above, you also have to worry about internal management. Thankfully, regular drone surveys mean you have frequent data on your mine. This means that you can keep an eye on the work being done as often as we fly.

AMPS| Drone Services renders your drone data in 3D, as close to the physical world we live in as possible. In a few clicks you can see the volume and tonnage for a specific pile or multiple piles.

Similarly, because we've been collecting multiple site surveys over time, we can create a visual timeline of changes in our platform. This provides direct and readable proof of changes to your mine.

Overall, coupling the data and reporting with the ease of sharing said data can reduce contract disputes. Transparency increases and everyone is working from the same information. The have a single source of truth they can trust.

Avoid Environmental Irregularities

Environmental regulations are a regular part of mining. Whether it's checking runoff after a large rainfall or waste dump conformance, keeping everything to code is a regular part of the workweek.

While your mine is still operational, you need to keep tabs on your site boundaries and no-go zones to avoid any irregularities associated with failed inspections or violations. In addition to the benefits delivered with more frequent surveys and a visual 3D interface, You can mark off protected areas on your site and share those with your team. This gets everyone on the same page and highlights exactly where they need to be cautious.

Our platform's timeline slider packages many site surveys into one package. You can view before and after images of big events, like seeing the runoff channels after a big rainfall. You can keep watch on those environmental no-go zones, too, and make sure they're not disturbed over time.

But the big environmental jobs—and the big cost—comes during rehabilitation. Once your mine begins rehabilitation, you need to be sure that it conforms to design or risk losing money to environmental regulations.

On top of the survey frequency we've discussed above, you can quickly and visually measure progress and adherence to end-of-life design in the Platform. Since everything in the Platform is rendered in 3D, we can upload the final design surface and see it as an overlay on your 3D site survey.

This removes the communication barriers that arise when you use drawings or visual inspections to gauge where you're at against design. A trained engineer might have no problem visualizing a end-of-life plan in their mind, but if you want to brief one of your internal team members—or your boss—it's easier to take abstraction out of the conversation. This view—along with all the flight history—can be used to demostrate that mine rehabilitation is going to plan and schedule.

Track progress against design

Regularly tracking your mine's overall progress against design goes a long way towards efficiency, but it's difficult to generate those comparisons quickly with traditional methods. Spotting a problem before it becomes expensive is ideal, but is not typically a part of the status quo. AMPS|Drone Services is changing that.

AMPS|Drone Services, offers the client a view-only option for up-to-date information.
Uploaded design surfaces can be viewed at any time against any survey captured for that site.

And the return on investment continues to pay it forward because you're working with trusted data, you can count on more accurate planning and budgeting. This means less time starting over, fewer unseen delays, and tighter planning.

Ensure safety on your mine

The first priority on any mine is safety. From everyday safety plans to inspections to traffic management, safety is in everything you do. However, these things take time and resources to get right, and they are mandatory. Our Platform allows you to trim time off these tasks, thanks to the shareable 3D survey we provide.

Because the surveys are accurate and up-to-date, the need for in-person inspections are decreased, or sometimes eliminated.

You can quickly measure haul roads to ensure they meet safety standards for both grades and windrow heights. Inspections no longer have to be done in person.

Fixed plant and pit face inspections, slip management can be done with ease. Short- and long-term traffic management can be streamlined with accurate, bird's eye visuals of assets, past vehicle movement, and existing roads.

And, of course, we can't underestimate the value of accurate and up-to-date site maps. Both the orthophoto and individual shots are accessible and downloadable from the Platform. Use them however you like: tack up the site photo in the office, use it to map out the day's route with your team or visitors, etc.

Keep your road grades consistent

Even small alterations from haul road design can mean an increase in cycle times and fuel burn. Not to mention falling outside of proper safety guidelines and wearing out your trucks sooner. The time, legwork, and safety risk associated with monitoring and fixing those issues add up.

With drone surveying and the platform, you no longer need to leave the office to troubleshoot any of it. Because the 3D survey is accurately mapped and rendered, you can measure grades and cross-slopes directly in your web browser. Check road widths and windrow heights in one click. With those measurements in hand, you can ensure they meet efficiency and safety requirements.

It's hard not to overstate the value of being able to survey more often. With frequent data you can take the pulse of your site and do remote inspections via our platform. Monitor and stop problems before they become expensive or require starting work over. Check road grades as often as you like with just a couple clicks. See changes in roads over time with the timeline tool that easily connects past surveys into one visual timelapse.

Collaborate using a single source of truth

Everyone reports to somebody. Collaboration and reporting should be painless, though it's often anything but. And collaboration challenges—internal and external—span the entire life of any mine. At each stage, ensuring the right parties have the information to understand a project's needs and complete their work on time, on budget, and to specification is critical to success. You and your team need to be able to check if estimates are correct, see overall progress, and ensure the right grades are going into your mill throughout the life of the mine.

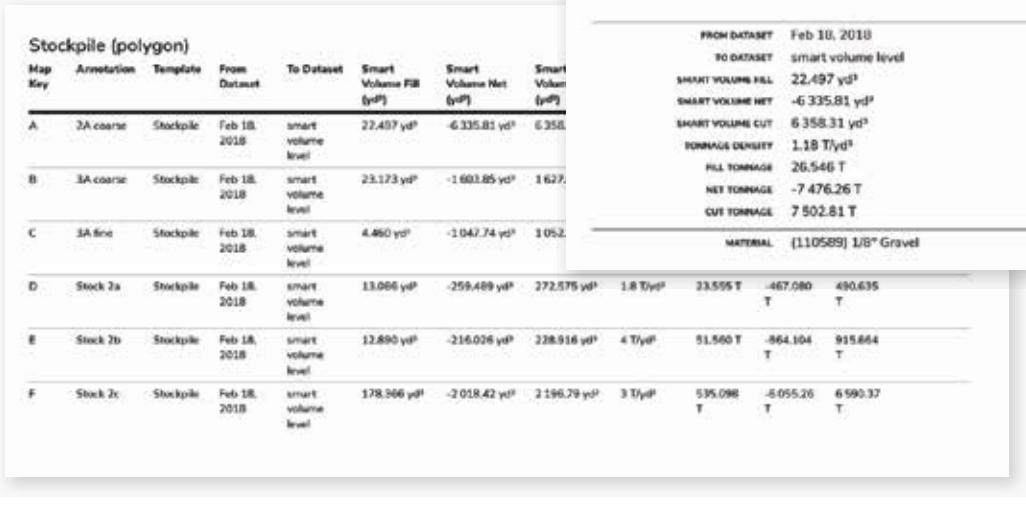
Because our Platform is a browser-based tool, anyone with an internet browser can use it without installing complicated programs. Internal and external collaboration is made easy.

It's simple to let personnel back at the main office see the same information and share measurements and notes with the whole team. Drone survey data can be uploaded from wherever you are. This is not limited to a single mine The Platform itself can give you an overall view of multiple sites, allowing for greater insight into each, while significantly reducing the need for site visits.

Further, it houses everything in the same place: present and past surveys; designs and any iterations; notes; reports; and, of course, all files, in the formats you require. This makes access and collaboration, whether with the head office or your internal team, a piece of cake.

However, not every person on your mine needs, or should, know what's happening everywhere. AMPS|Drone Services platform offers a certain number of view-only users you can share your data with, making it simple and cost effective to give everyone the best collaboration solution available. We provide set permissions for different teams or individuals, as you see fit.

Additionally, we provide readable, ready-to-go reports in PDF that you can pull to send to your boss or your direct reports. These, and the Platform overall, can help mitigate delays due to inclement weather, accidents, bad estimates, and more. With AMPS|Drone Services platform, you can close the information gap between you and your mine.



Work and plan with confidence

Measuring and managing your mine with AMPS|Drone Services saves on time and money, and prevents mistakes and rework. As we've seen, AMPS|Drone Services provides you with the power to see the status of your mine in minutes, measure ROM pad volumes, ensure the best haul road grades for your machines, and, with rock solid data and a timeline for the life of your site, resolve disputes should they arise.

Further, you can streamline workflows related to safety and inspections, collaboration and planning, and day-to-day operations all from your browser. Cut down on commute time and cost by having a recent visual of your mine with you wherever you are.

Like what you've read so far? Please give us a call
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