



PERCEPTO

AUTONOMOUS DRONES FOR MINING OPERATIONS

In the wake of the 2018 commodities market crash, mining operators reevaluated portfolios, streamlined operations and exploratory efforts, and reduced energy consumption. This ability to adjust, combined with recovering commodity prices, ultimately fueled a 23% rise in revenues after the crash.

But even as profits returned, operators realized the importance of finding new, cutting-edge technologies to improve efficiency and bolster margins. To this end, mining operators have increasingly turned to automation to improve worker safety, reduce operational costs, and boost productivity. The mining automation market - which was valued at \$2.22 billion in 2017 - is projected to grow to \$3.29 billion by 2023.

Autonomous drones are a rapidly-growing factor in mining operations automation. Therefore resulting in lower operational costs, increased productivity, lower safety and regulatory risks, better overall performance, and in-depth data collection that helps mine operations work smarter, not harder.

IMPROVING PILE INSPECTION

Mining operators that stockpile goods have historically fared better through supply and market fluctuations. Yet mining stockpiles are massive. For example, China has reportedly stockpiled enough iron ore to build 13,000 Eiffel Towers. Ensuring the quality and measuring the quantity of these stockpiles is crucial but requires resource-intensive inspections that are cost and time prohibitive.

Current stockpile inspection regimes involve manned teams that measure stockpiles stretching across large areas of land. Gathering data often involves either dangerous methods, such as climbing on stockpiles with GPS equipment, or expensive alternatives like 3D imaging and laser inspection, or hiring manned aircraft to fly over sites.

By operating autonomous drones, companies can reduce employee exposure to such dangerous situations while cost-effectively and accurately carrying out inspections daily, rather than yearly or quarterly. Advanced autonomous drone solutions enable operators to automate inventory management with pre-scheduled missions that provide data seamlessly and without the expense of a human pilot. Additionally, companies can use autonomous drones to carry out site surveillance, including videos, photos and tracking capabilities.

AIDING AREA CLEARANCE

For mining operations, work begins well before a given site enters the production phase. Exploration efforts make sure potential sites are viable - monitoring groundwater and surface water quality, the presence of ores and minerals, and the possible cultural and biological impacts of mining operations.

Area clearance allows sites to be cleared for vehicle operations but often involves dangerous tasks like explosive work or remote terrain navigation. Moreover, these activities take time and divert resources from the operation itself.

Autonomous drones allow companies to carry out initial site inspections without clearing roads or sending in manned teams over dangerous terrain. By using drones to inspect new zones before carrying out planned explosions and moving forward with operations, operators enhance employee safety, speed the exploratory phase of new projects, and gather more comprehensive data.

THE STATISTICS BEHIND DRONE USE FOR MINING



\$4.3 B

value of prospective drone applications in global mining projects



\$6.2 B

expected worth for mining automation market size by 2025

ENSURING SITE SECURITY

With an understanding that commodities are of vital economic and practical importance, mining operators invest in state-of-the-art site security. Remote locations and geographically distributed operations create rich opportunities for theft or damage.

In the past, companies have used everything from traditional security cameras to paramilitary security forces. But these operations require active human oversight and massive expenditures of time and resources.

Autonomous drones can routinely patrol large, remote, and unpopulated areas of a sites – automatically detecting and tracking trespassers with live video until manned teams intercept them.

REDUCE SITE NOISE AND DUST POLLUTION

As consumers and regulators become more invested in the environmental impact of mining operations, companies are required to invest more resources with increasingly strict regulations governing noise and dust pollution.

Yet with demand for resources growing, it is increasingly difficult to adhere to existing and emerging standards on large sites via traditional methods. For example, 43% of workers on mining sites are exposed to noise that is greater than the allowed level and 80% experience noise averages over 85 dB.

Autonomous drones enable mining operators to reduce contact between workers and loud machinery during inspections, while more closely monitoring sites to ensure regular compliance.

Autonomous drones can regularly monitor noise and dust pollution, alerting operators to excessive levels of either. Moreover, more frequent missions allow operators to collect meaningful data about where pollution can be reduced and efficiency improved, all while ensuring the site meets regulatory standards.

BOLSTER EMERGENCY RESPONSES

From explosives to underground operations to large, dangerous equipment, mining sites pose considerable risks to those who work on them. With new mining technologies and processes allowing companies to explore and mine ever more remote areas, the consequences of accidents are higher than ever.

As part of a comprehensive Mine Emergency Response Plan (MERP), companies must consider the best way to assess the severity of emergency situations without delaying necessary medical care or endangering additional lives.

By incorporating autonomous drones into their MERP, mining operators decrease reliance on human involvement in emergencies, thus reducing emergency response time and potentially saving lives. Advanced autonomous drone solutions can reach accident sites faster than ground teams, providing vital information to companies before teams arrive on site and before regulators are notified.





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HOW PERCEPTO'S DRONE-IN-BOX SOLUTION IS DIFFERENT

Drone use isn't just about getting in the air, it's about everything your drone solution allows you to do before and after that moment.

With the comprehensive Percepto Solution, manufacturers can go above and beyond what's possible with manned drone services. Percepto delivers robust data-driven insights enabling operators to identify key trends, and dynamically respond to on-site safety and security incidents.

Our unique, fully autonomous components - the Sparrow Drone, Percepto Base and PerceptoCore - allow manufacturers to monitor, inspect, and maintain site safety, security, and day-to-day operations, around the clock, without human involvement.

ABOUT US

Percepto is the market leader of autonomous drone solutions for the industrial and defense markets. Our on-site autonomous drones change the way aerial data is collected and perceived, providing organizations the benefits of increased productivity, enhanced security and reduced operational costs.



Contact us today to learn more about how our advanced drone solution can help your mining operation save money and increase efficiency.

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