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CASE STUDY
Mining

BHP Spence Optimizes Dust Control with Oizom's Dustroid Max

INTRODUCTION: Dust—A Silent Challenge in Copper Extraction

BHP Spence operates in the Antofagasta region with a strong focus on copper extraction via leaching and concentration. Its processes, ranging from primary to tertiary crushing, drum-based acid curing, dynamic heap leaching, flotation, and electrowinning, generate considerable dust emissions, particularly in the dry area and concentrator.

To safeguard worker health, comply with environmental norms, and evaluate the efficiency of dust mitigation systems, BHP Spence required a high-precision, rugged, and scalable air quality monitoring solution. Oizom's Dustroid and Pollusense emerged as the ideal fit for this need.

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THE CHALLENGE: Dust Monitoring in High-Intensity Mining Environments

BHP Spence encountered several key challenges in managing airborne particulate matter:

1. **High PM10 Emissions During Crushing:** Crushing and handling of ore in the dry area released significant dust levels, particularly PM10, requiring constant monitoring.
2. **Real-time Particulate Monitoring:** Accurate, real-time measurement of PM (PM1, PM2.5, PM10, PM100), along with wind speed and direction, was essential for effective dust control strategies.
3. **Remote Location & Harsh Conditions:** The remote, high-altitude site demanded equipment that was robust, weatherproof, and capable of delivering uninterrupted real-time data.
4. **Wind-Driven Dust Migration:** Changing wind patterns made it difficult to track fugitive dust emissions without accurate wind speed and directional insights.
5. **Compliance with Stricter Environmental Norms:** With tightening environmental regulations in Chile's mining sector, BHP Spence needed a future-ready solution to ensure audit readiness and continuous regulatory compliance.

They required a rugged, high-precision dust monitoring system with real-time data access and remote monitoring capabilities to solve these challenges.

THE SOLUTION: Oizom's Dustroid Max for Strategic Dust Surveillance

To tackle these environmental challenges, BHP Spence deployed Dustroid, Oizom's advanced dust monitoring system, and Pollusense system.

1. **Multi-Parameter Dust Monitoring:** Accurately captures PM1, PM2.5, PM10, and PM100 levels along with wind speed and direction, offering a complete picture of airborne particulates.
2. **Heated Inlet for Maximum Accuracy:** The heated inlet dehumidifies air samples, ensuring high-precision readings even during moisture fluctuations—critical in Chile's variable conditions.
3. **MCERTS-Certified and Weatherproof:** This MCERTS-certified device is built with a weather-resistant, corrosion-proof enclosure suitable for mining terrain, ensuring precision even in the harshest conditions.
4. **Real-Time Wind Data Integration:** Measures wind speed and direction to track dust movement and dispersion, help to identify the source of airborne particles, and predict their spread.
5. **Portable Monitoring Support:** They combined Dustroid with Pollusense, a portable monitor, for localized, on-the-spot assessments of dust levels across the site.
6. **Automation Capability:** Dustroid features relay-based automation that activates mitigation systems instantly when pollutant levels exceed the set threshold, ensuring proactive dust control.

The installation of Dustroid and Pollusense has enabled BHP to get real-time data and instant alerts whenever pollutant levels exceed the threshold, ensuring a safe environment.

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THE TRANSFORMATION: Measurable Benefits Post-Installation

Since the installation of Oizom's Dustroid and Pollusense, BHP Spence has seen tangible improvements across multiple operational dimensions:

1. **Improved Emission Control & Regulatory Compliance:** Real-time dust and wind data helped ensure compliance with environmental norms by identifying high-emission areas and implementing targeted control strategies.
2. **Data-Driven Equipment Efficiency Assessment:** The dust containment performance of each suppression system is now monitored and optimized based on quantifiable data, enhancing overall operational efficiency.
3. **Targeted Mitigation & Predictive Planning:** The ability to pinpoint major dust sources and model windborne dispersion has allowed BHP Spence to focus its mitigation efforts, reduce fugitive emissions, and plan proactive interventions.
4. **Enhanced Operational Transparency:** Continuous monitoring and historical data logs offer full traceability for internal audits and external regulatory reporting, improving transparency and accountability across departments.
5. **Empowered On-Ground Teams with Actionable Insights:** Site managers and environmental teams can now access real-time dashboards and alerts, enabling faster response times and smarter field decisions during high dust events.

The deployment of Oizom's Dustroid and Pollusense at BHP Spence has enabled accurate, real-time monitoring of high-concentration particulate levels. Proactive dust monitoring and regulatory compliance have significantly improved air quality, optimized operational efficiency, and created a safer, healthier work environment.

BROADER IMPACT: Leading by Example in Sustainable Mining

By choosing Oizom's cutting-edge monitoring solutions, BHP Spence has set a precedent for how smart environmental technologies can transform dust management in copper mining:

1. **Strengthening Environmental Stewardship:** The implementation of dust monitors reinforces BHP's commitment to health, safety, and environmental excellence.
2. **Community & Worker Health Protection:** Reduced dust levels contribute to a safer work environment and healthier surroundings for local communities.
3. **Replicability Across Operations:** The success of this deployment showcases the scalability of Oizom's Dustroid across similar mining and industrial sites globally.

INSTALLATION DETAILS

2 UNITS of **DUSTROID MAX & 1 UNIT** of **POLLUSENSE**

CONCLUSION: BHP Spence Embraces Smart Monitoring for Cleaner Mining

By integrating Oizom's Dustroid and Pollusense into its dust control strategy, BHP Spence has taken a proactive step toward sustainable, data-driven copper extraction. The precision, reliability, and real-time insights the system offers have enabled smarter decisions, improved worker safety, and greater environmental responsibility.

Oizom is a company specializing in environmental monitoring solutions. They offer products to monitor air quality, weather conditions, and other environmental factors. Utilizing advanced sensor technology and data analytics, Oizom aims to provide actionable insights for construction, industrial compliance, and community awareness. Their solutions can be applied in various sectors including government, industries, and community initiatives.