

RHINO™: Real-Time Geoscience Logging Tool

Breakthrough Technology Delivering High-Resolution Rock Characterization Data

DataCloud's RHINO™ geoscience logging tool is a transformative Internet of Things (IoT) sensor package that uses seismic-while-drilling (SWD) techniques to measure a variety of previously unavailable rock properties in real-time. The information it provides enables intelligent blast design, improves fragmentation, and enhances ore body definition.

RHINO™ sensors are deployed on drills and collect these measurements at 1-centimeter increments in drilled blast holes, far exceeding the resolution possible with conventional measurement-while-drilling (MWD) technology. The compact RHINO™ sensor package can be installed in minutes and is configured to be “plug and play” ready within DataCloud's MinePortal™ platform.

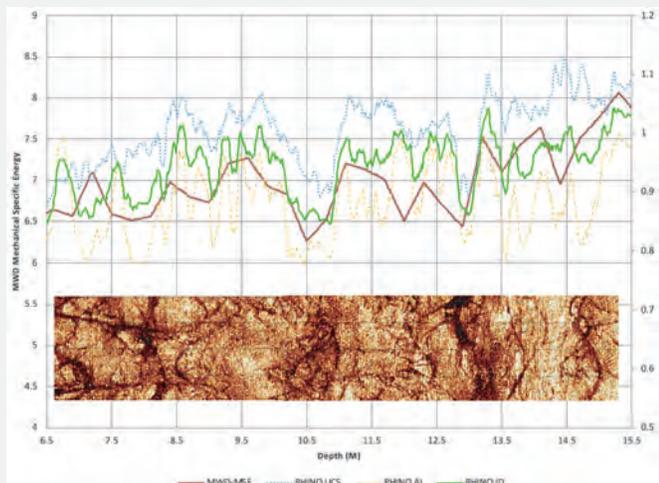
Upon being mounted on client drills, the RHINO™ IoT sensors send high resolution rock properties to MinePortal™, where they are processed, interpreted and made available for visualization, blast planning and / or export via browser, mobile device, or API.

Key Features and Benefits of DataCloud's RHINO™ Logging Tool

- ▶ Real-time, high-resolution subsurface information allows for significantly accelerated decision making
- ▶ Rapid and seamless blast planning that matches energy to rock mechanical and acoustic properties in order to achieve a desired blast outcome
- ▶ Sonic velocities from a drilled pattern can be used to optimize delays and detonation sequencing
- ▶ Access “ahead of bit” measurements, which allows for geostopping at formation tops
- ▶ In certain geologies, high resolution RHINO™ data can combine with big data analytics to control grade by resolving ore and waste rock boundaries
- ▶ Functions seamlessly within DataCloud's MinePortal™ platform
- ▶ Deployable on any rotary drill equipped with a MWD system

RHINO™ measures previously unavailable rock characteristics:

- ▶ Numerous mechanical and acoustic properties
- ▶ Joint spacing and fault detection
- ▶ Lithology changes
- ▶ Grade indicators



Comparison of High Resolution RHINO™ Measurements versus Industry Standard MWD derived from Mechanical Specific Energy

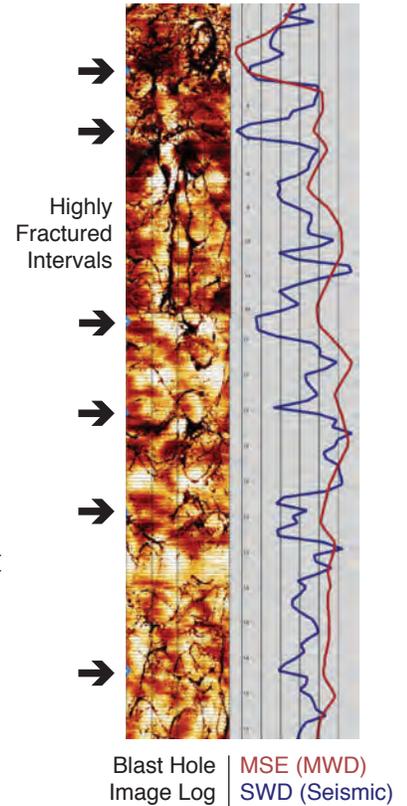


RHINO™ Creating Step-Change Productivity Improvement for Mine Operators

RHINO™ from DataCloud measures previously unavailable, high-resolution SWD rock mass information in blast holes. It is the real-time subsurface measurement technology the mining industry lacked, and needed, to create a step change improvement in productivity.

With RHINO™, DataCloud has successfully tailored subsurface characterization workflows that are widely used for exploration and production efforts in the oil industry and made these work for drill and blast efforts. RHINO™ is enabled by the latest in IoT microprocessors, wireless technology and cloud computing. It is unique in that its primary sensors are deployed on the rotating drill string and communicate via wireless radio to a control console. The high frequency resonances in the drill string allow measurement of rock properties via DataCloud's advanced signal processing.

Only a few years ago, these breakthroughs would not have been possible. However, advances in consumer electronics and cloud computing now enable these workflows to perform at a speed, and for a price, that the mining industry will accept. Without impacting mine site operations, differential blast plans can now be developed based on extremely high-resolution rock data, resulting in significantly improved fragmentation profiles.



About DataCloud: Helping Mining Companies to Grow and Own the Future

At DataCloud, our mission is to create powerful new geoscience technologies like RHINO™ and MinePortal™, and leverage breakthrough blasting techniques, that empower mine operators to fully capitalize on the historic, technology-driven growth opportunities in today's global mining industry.



RHINO™ from DataCloud mounts on the mast machinery. Seamless "set and forget" operability.

DataCloud helps operators conduct the cleanest, most efficient mineral extraction possible, dramatically improving mine performance and productivity. Equally important, this also reduces the environmental impact of mining operations and improves safety.

By mastering the subsurface, DataCloud enables mining companies to transform their economics and own the future.

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