

RHINO™

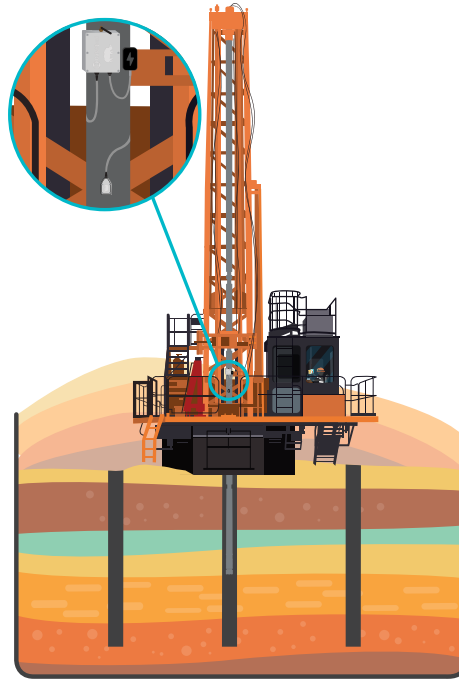
IoT Enabled Logging While Drilling Sensor

RHINO™ is DataCloud's breakthrough autonomous geophysics sensor that delivers high-resolution, enhanced orebody knowledge in real-time.

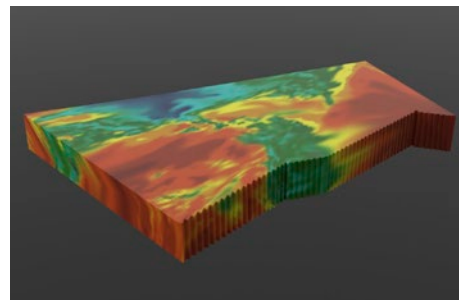
The rock properties RHINO™ measures are used to improve fragmentation profiles, reduce dilution, increase throughput, and strengthen your license to operate. This transformative Internet of Things (IoT) enabled sensor package uses seismic while drilling techniques to measure a variety of previously unavailable rock properties.

RHINO™ sensors are deployed on drills and collect measurements at 1-centimeter increments from production blast holes, Reverse Circulation grade control drills, or during core exploration efforts. The variety of high-resolution measurements RHINO™ provides far exceeds the rock mass characterization capabilities of conventional measurement while drilling technology. The compact RHINO™ sensor package can be installed in minutes, is “set and forget”, and requires no additional personnel on the bench.

RHINO™ is configured to be “plug and play” ready within MinePortal™, DataCloud's cloud-hosted earth model platform. The RHINO™ subsurface information is accessed in MinePortal™ via browser or mobile devices. It can thereafter be exported through APIs and used in third party mine planning or blast planning software per client requirements.



RHINO's IoT Enabled Logging While Drilling Sensor on drill.



High-Resolution, Real-Time Iron Ore Rock Data Visualization

RHINO™ At A Glance

High-Resolution, Real-Time Orebody Knowledge

Measures Rock Properties:

- » Compressive Strength
- » Modulus
- » Velocity
- » Density

Accurately Detects:

- » Joint Spacing
- » Fractures and Faults
- » Lithology Changes
- » Grade Indicators
- » Ore / Waste Boundaries

Proven Environments:

- » Hard Rock, Fractured Copper / Gold Porphyry
- » Soft Iron Ore, Hard Taconite, BIF
- » Coal, Mudstone, Sandstone



3 PROVEN APPLICATIONS

1. Grade Detection in Banded Iron Formation and Massive Sulfides

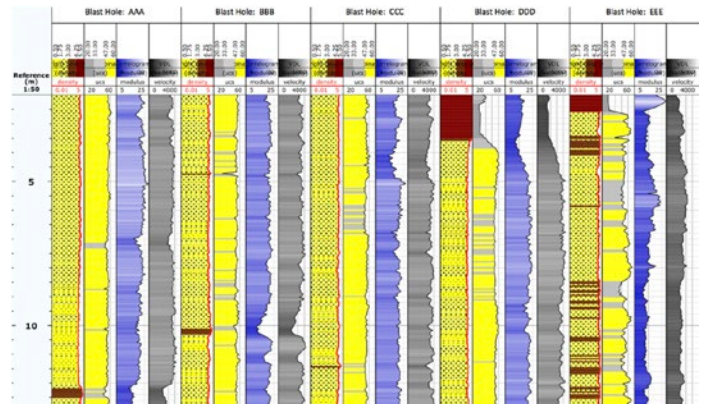
- » **Compressive Strength** – Key measure for Drill-to-Mill tracking and productivity improvements
- » **Modulus** – Plastic and elastic properties to match explosive energy to geology
- » **Velocity** – Optimize delays and sequence of detonations
- » **Density** – Perfect proxy for ore / waste boundary identification

2. Fracture Identification in Porphyry Deposits

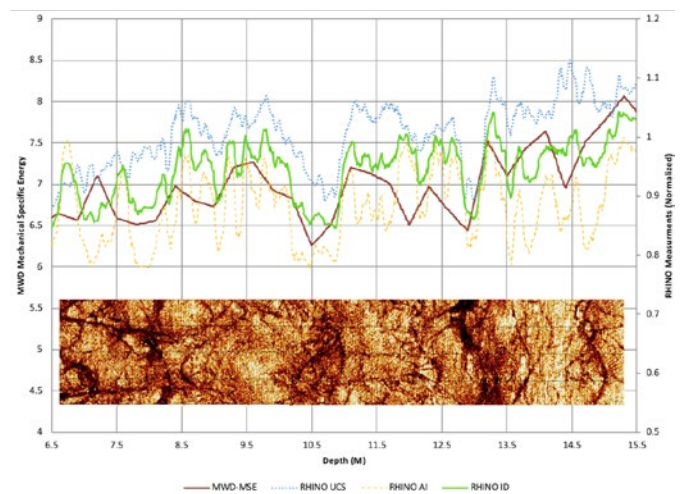
- » **Compressive Strength** – Much better measure of hardness than mechanical specific energy
- » **Velocity** – Optimize delays and sequence of detonations
- » **Acoustic Impedance** – Fracture identification and rock-quality designation calculations

3. Loss Preventions in Metallurgical Coal

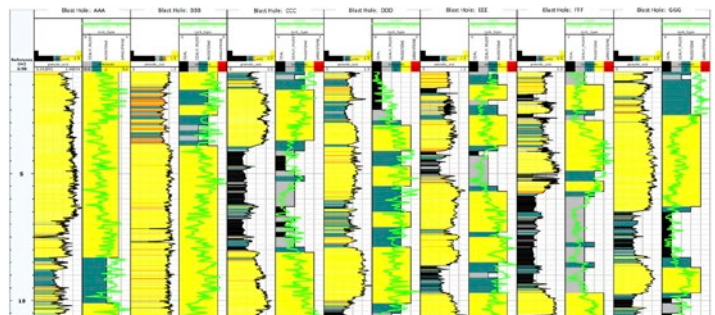
- » **Compressive Strength** – Highly accurate discrimination between metallurgical coal and other lithologies removes the need for downhole gamma ray logging
- » **Acoustic Impedance** – Geostopping above seams reduces damage and real-time seam delineation improves cycle times



High-Resolution Iron Ore Blast Hole Logs



High-Resolution Porphyry Deposit Blast Hole Logs



High-Resolution Metallurgical Coal Blast Hole Logs



Learn more on how RHINO™ can enhance your orebody knowledge

Download *The Economic Benefits of RHINO™* and view our videos at DataCloud.com/resources