



MONITORING AND INSTRUMENTATION SOLUTIONS

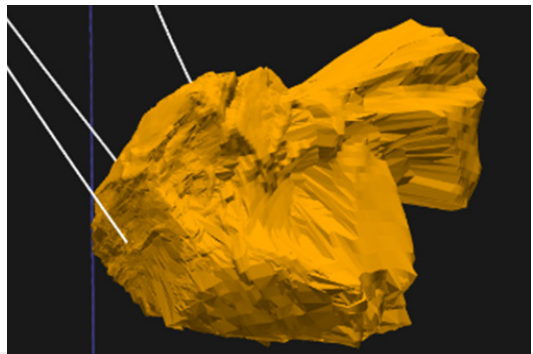
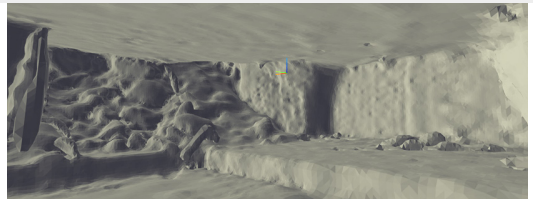


Providing customizable solutions to address our client's specific needs.

VOID SCANNING

- » C-ALS Gyro
- » Void Scanner +
- » Carlson Scan

- » Scan and map voids or areas with little to no access
- » Safely deploy into inaccessible areas
- » Sync to laptop/tablet for easy data viewing and transfer
- » Tie surveyed stations into local coordinate grid

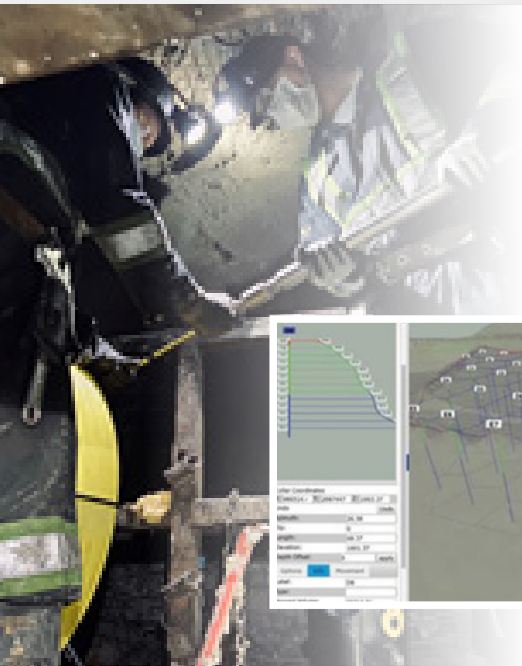


APPLICATIONS IN ACTION

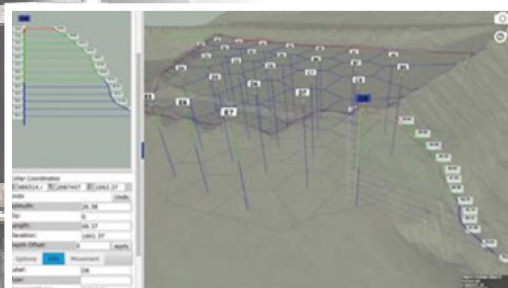
RESPEC successfully scanned a historic underground limestone mine for a remediation project. A laser scanner was deployed down a total of seven existing shafts to survey a void area measuring 30 ft wide, 400 ft tall, and 1,375 ft long for the first phase.

BLAST OPTIMIZATION

- » Boretrak2
- » Quarryman Pro
- » Carlson BlastOps



- » Collect downhole survey information
- » Detailed blast planning
- » 360 degree borehole deployment capabilities
- » Point cloud manipulation for blast optimization
- » 3D surface generation and borehole collar survey



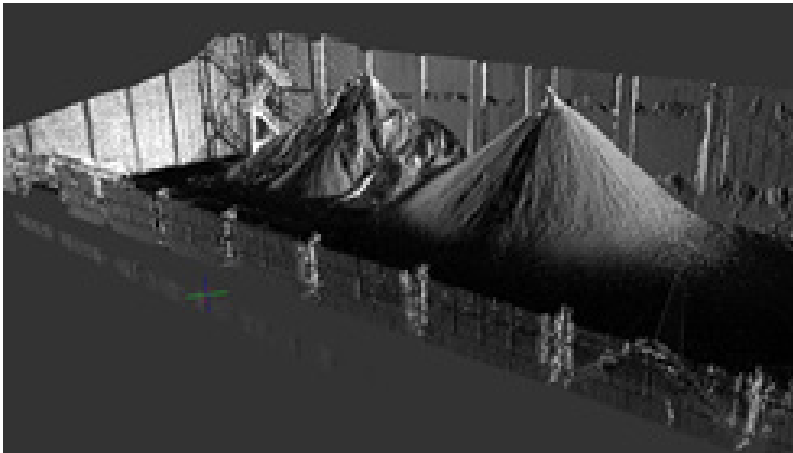
APPLICATIONS IN ACTION

RESPEC has utilized blast optimization instrumentation to assist multiple sites with expanding existing pit limits and access to reserves while effectively protecting the surrounding infrastructure and community. A specific example includes blasting at an elevated location above both a processing plant and community housing.

STOCKPILE SCANNING

- » FiX1 Stockpile Scanner
- » Quarryman Pro
- » Scan 2K

- » Scan stockpile volumes
- » Calculate volume change
- » Stockpile measurement
- » Autonomous data collection
- » Multi-unit compatibility
- » Whole site mapping



APPLICATIONS IN ACTION

Fixed stockpile scanners have been successfully installed in processing plants to more accurately monitor concentrate volumes with increased frequency while reducing the required man hours. Sites with fixed stockpile scanners are able to more accurately track their products and incorporate the real time data in decision making processes to optimize productivity.

SHOTTRACK BLAST MONITORING

- » VOD 305
- » ViB

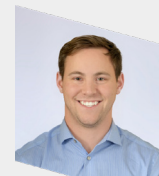
- » Velocity of Detonation (VOD) monitors
- » Broad range vibration monitoring
- » Quick and easy deployment
- » Readily available and cheap consumables
- » Far-near field testing capabilities
- » Rugged and weatherproof

APPLICATIONS IN ACTION

RESPEC measured the VOD of bulk explosive product and the continued consumption of the VOD cable through an air deck. The resulting data helped illustrate the air decks' effect on the blast performance during test blasting designed to decrease the site's blasting costs.



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