

Ore3D Ore Sizing System



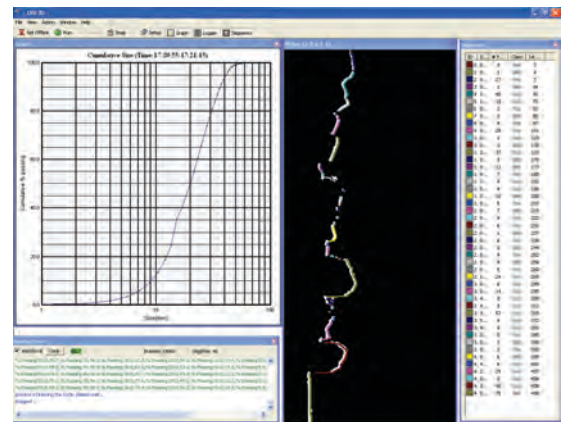
Product Description

The Ore3D Ore Sizing system is the latest breakthrough in online non-contact ore-sizing technology. Exceeding all expectations in performance and accuracy and built upon the already-proven and reliable OOS technology, Ore3D offers real-time size distribution measures, accurate fines detection, volume measures, bulk density, belt-loading optimisation and more advanced features like shape analysis. With many installed sites, Ore3D has proven to be a reliable and proven technology in even the harshest environments.

System Description

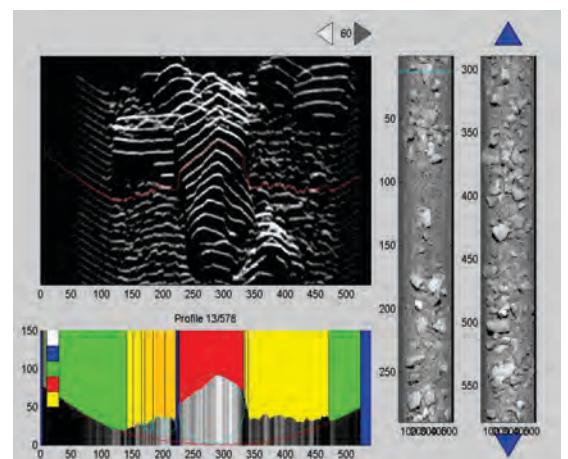
Ore3D is a rugged and inline instrument designed for retrofitting to conveyor belts, and to produce continuous real-time measures of ore size for productivity and efficiency gains. It provides users the ability to measure ore at any stage of the comminution process: ROM, primary crushed ore, feed to SAG mills, screened ore, secondary and tertiary crushed ore. The technology provides feedback to allow control systems and operators to tighten the control of processes and optimise production and efficiency.

Ore3D improves extraction processes, increases throughput tonnage and reduces consumables and power costs. The bottom line is that Ore3D can significantly increase profits while reducing costs. Ore3D is also used as a prevention mechanism tool to detect oversize and avoid potential plant damage, as well as being a maintenance tool to detect screen wear or screen failure.



How It Works

Ore3D has three main components - low power laser light source, machine vision camera and data processor. It uses a technique called active stereopsis to measure ore in three dimensions. A static and continuous laser light line is generated and directed across a moving conveyor belt. The camera offset from the laser, repetitively captures and processes images of the line as it is distorted by ore on the belt as it passes. Individual fragments are identified and their sizes measured. This process is repeated continuously and as the data is gathered it is analysed and processed in real time with sophisticated software algorithms to produce accurate cumulative % passing size distribution curves that match those generated by traditional sieving techniques.



Ruggedisation

The Ore3D system is engineered and ruggedised to withstand the harshest mining environments. It is protected against large temperature swings, moisture and dust. The Adept Turnkey proprietary Dust Barrier device is designed to prevent dust from collecting on the enclosure window surface and has proven to be extremely effective. Current installations have been running for several years with no need for window cleaning and very minimal maintenance to other parts of the system that do not require shutdowns for servicing.

Advantages

The advantages of the Ore3D system are numerous and compelling. They include:

- Measures Full Size Distribution
- Detects Oversize
- Measures Volume -> Bulk Density
- Measures in 3D
- Does not suffer aging light problems, data drift and calibration problems
- Automatically detects empty/partially empty and surging belts
- Non-Contact Sensing
- Easily retrofit to existing conveyors or sampling plants
- Rapid update rate – 50 to 200 scans/second
- On-Line and Automatic
- Instant and Continuous 24/7
- Produces Topographic Maps
- Can produce shape measures
- Requires very Low Maintenance
- Easy to interface to any plant control system
- Tolerant to ore colour change



Interfacing

Data points can be selected randomly when setting up Ore3D, as sizes at selected % passing values or as % passing values at selected size fractions. Volume, Top Size and system diagnostics can also be selected for output. Data formatting is selected with the easy-to-use Graphical User Interface. Data can be stored for auditing purposes and trended in real time.

Applications

Ore3D systems have been successfully installed on Australian iron ore, gold, nickel, tin, lead, zinc, coal mining and steel smelting sites in recent years and applications have included:

- Optimisation of feed-size distribution into grinding mills
- Fragmentation measurement for blasting optimisation
- Primary, Secondary, Tertiary Crusher monitoring
- Oversize ore contamination
- Screen wear and damage detection
- Optimised belt loading
- Automated sample analysis
- Detection of oversize in feed material
- Monitoring oversize and fines in product streams (lumps in fine)
- Size control for product quality, e.g. quarries
- Sorting and recovery - flow rate and size required, e.g. diamond mining
- Volume flow rate for maximised belt loading
- Truck fill volumes
- Plant audits – justification for capital
- Monitoring size fractions in split ore streams
- Measurement of fragmentation from varying blasting designs
- Product quality monitoring at ports after blending
- Monitoring screen wear

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