GroundProbe®

Part of ORICA Monitor

# GML: Convergence Monitoring

The GML - together with its Convergence Monitoring Module - is GroundProbe's industry-disrupting underground monitoring solution.

Capable of detecting rock and ground support movement with submillimetre accuracy, the GML offers a range of unprecedented features and benefits for underground monitoring.

The system can be deployed to meet the needs of any operation, at any stage.

Users can choose continuous or periodic monitoring and deploy the device on a wall-mounted bracket (continuous monitoring), tripod or vehicle-mount solution (periodic monitoring).

**UNRIVALLED SUB-MILLIMETRE ACCURACY FOR EARLY DETECTION**

Boasting unrivalled precision, the GML provides continuous submillimetre accuracy of 0.01mm to 0.4mm, making it capable of detecting the slightest rock and ground support movement and 170 times more accurate than the raw data from a standard time-of-flight laser.

Detecting very slight changes in velocity over short periods of time, possible only with sub-millimetre accuracy, ensures the best chance of a fast response.

# Features and Benefits

## MAXIMUM REPEATABILITY

Designed to reduce mechanical inaccuracies whilst allowing for maximum repeatability, the system rescans an area with high accuracy, with virtually no loss in precision between periodic or episodic continuous monitoring campaigns.

## FAST SCAN MODE

When users require a quick but reliable reading, the GML can be deployed in fast scan mode.

With the ability to take multiple readings rapidly, fast scans can be batch-processed to provide a marginally lower resolution snapshot of an operation in significantly less time.

## LIGHTWEIGHT DATA

Our proprietary data decimation processing algorithm produces scan file sizes typically 1% of the size of standard LiDAR data files, resulting in ultra-lightweight data of only 3MB per front-view scan.

Data is streamed fast, even over low bandwidth connections, for multi-user remote visualisation and analysis.

## SSR-VIEWER COMPATIBLE

The GML comes complete with GroundProbe's patented SSR-Viewer software, offering the rapid analysis of data to detect trends, the precise tracking of areas of interest and fast reporting to invested parties.


It's the industry's leading hazard detection and analysis software – intuitive, easy to use and renowned by Geotechs worldwide.

## ACCURATE ALARMING WITH REAL-TIME NOTIFICATIONS

Users can set a range of alarm parameters that are networked, stackable and accurate.

Specifically developed for monitoring, alarms can be set on convergence, coherence, amplitude, velocity, inverse velocity, and our patented velocity ratio, allowing the user to correlate data to identify trends.

They trigger on any device, anywhere in the world, in real-time.

## FULL COVERAGE, COMPLETELY CUSTOMISABLE

With 360° x 270° coverage, the GML is perfectly suited to be deployed in any work area.

Its all-encompassing horizontal movement can effortlessly monitor the breadth of a crusher chamber or long sections of wall, while its elevation angles ensure the floor of a drive and its backs or roof above can be monitored without difficulty.

The scan area is completely customisable, so smaller targeted scans can be delivered according to user needs, faster.

## LIVE DATA STREAMING

Continuous monitoring data is processed underground and streamed through the mine network to the surface every few minutes.

All critical metrics are transferred to the mine office for real-time monitoring.

The fully-processed data can be accessed by multiple users at any one time, on-site or remotely, without the need to connect to a Virtual Network Computing server underground.

## GEOREFERENCED 3D DATA

All data gathered by the system can be fully georeferenced. This allows users to export a georeferenced point cloud of a scan or specific highlighted areas.

The data can easily be imported into complementary software, correlated to the exact location, ensuring the device fits seamlessly into any operation.

## CAN SEE BETWEEN MESH AND METAL

With near real-time automated data filtering, interference from mesh and other mining infrastructure is all but eliminated.

Unlike interferometric-based underground radar technology, the GML sees between the mesh and metal reinforcement, eliminating noise which might otherwise obscure the real deformation occurring behind.

## FAST, DURABLE DEPLOYMENTS

The GML can be deployed quickly and easily by one person, with minimal time between deployments to live, continuous or periodic monitoring of any work area.

Mechanically sound and delivering reliable data, the GML capably operates in sites that range in temperatures from -5°C to +45°C.

## EARLY MICRO-FRACTURE DETECTION FOR EARLY ACTION

Using SSR-Viewer's proprietary coherence metric, micro-fracturing of rock and fibrecrete can be detected early, with ultra-high precision.

Whether detecting new cracks or tracking the progression of existing ones, the coherence measurement accurately assures its users how much the area of interest is moving, and if action needs to be taken.

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