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REPUBLIC OF SOUTH AFRICA

CSIR
Touching lives through innovation

THE CSIR INTEGRATED ROCK MASS IMAGING: FROM RADAR ANOMALIES TO VALIDATED ROCK MASS MODELS

The CSIR Integrated Rock Mass Imaging (IRMI) combines directional bi-static borehole radar, surface-based radar, spatial mapping and borehole observations to build a three-dimensional interpretation of rock-mass conditions ahead of the mining face. The CSIR collaborates with HelixGeotech, Reutech Mining, Stratafy and mine partners to work on validating the workflow underground.

Individual sensing tools traditionally show only part of the rock mass, and radar anomalies need accurate spatial registration and independent geological checks. Without integrated geometry and validation, it is harder to relate subsurface features to the excavation and mine coordinates.



| Stratafy Seeker Photogrammetry





| HelixGeotech Borehole Radar

TECHNICAL ABILITIES

The IRMI workflow integrates radar options with 3D mapping, borehole observations and mine survey control. Spatial alignment provides context for interpreting radar responses and reconstructing features ahead of mining.

Its special features include directional bi-static borehole radar; Reutech sub-surface profiler surface-based ground-penetrating radar; Stratafy Seeker Photogrammetry; iPhone Light Detection and Ranging (LiDAR); optical televiewer and borehole camera; mine survey control and integrated three-dimensional spatial reference.

INDUSTRY AUDIENCE

The IRMI solution is intended for rock engineers, geologists, geophysicists, surveyors and mine planners assessing ground conditions and planning extraction. It is especially useful to teams that need to combine geological and geophysical datasets.

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