

Cutting-edge technology unveiled to tackle mine safety

The Council for Scientific and Industrial Research (CSIR) has developed cutting-edge technology in an effort to clampdown on the country's deteriorating mine safety.



Monster. Picture courtesy of Boitumelo Mrobe

During a media briefing at the Mandela Mining Precinct in Johannesburg today, the CSIR showcased some of the latest technologies to support the country's mining sector.

Stakeholders including the Minerals Council South Africa, Department of Science and Technology and representatives from industry were present at the briefing.

A robot platform, known as "Monster", was one of the gadgets unveiled at the event. Monster has safety inspection sensors to enter mines during safety periods and assesses and identifies risks in underground mines.

Ground penetrating radar (GPR), which was being researched as one of the South African Mining Extraction, Research, Development and Innovation (SAMERDI) Advanced Orebody Knowledge technologies, was also displayed. This technology contributes to the Zero Harm objective, by enabling miners to visualise potentially hazardous geological structures in the hanging wall that could lead to falls-of-ground.

The CSIR said it had also developed a pedestrian detection system that uses a range sensor to determine the distance to

each identified person and tracks each person to determine if and when a collision is likely to occur.

Addressing the media, CSIR mining experts, Dr Dave Roberts, Dr Shaniel Davrajh and Dr Michael van Schoor, said the organisation was working hard to come up with cutting-edge technologies to improve safety in the mines.

This was after the CSIR was identified as a primary research provider to the Mine Health and Safety Council (MHSC) Centre of Excellence.

“The CSIR has core skills and competence in all of the strategic research areas of the MHSC from a safety perspective. The organisation has invested significantly in laboratories and continues to provide human resources for the provision of services to the sector.

“We have offerings in support of occupational health and safety (OHS) in mining with infrastructure, such as mechanical testing, steel wire rope testing facility, water laboratories and a self-contained self-rescuer testing facility,” said Singh.

Principal engineer, Davrajh said the importance of using robotic technologies in mines was that they could assist in reaching areas that were not accessible during incidents.

“A robot equipped with safety inspection sensors will enter the mine during a safety period. It becomes very difficult and dangerous for humans to enter into the mine after an incident,” he said.

Principal geophysicist, Van Schoor, addressing the use of GPR technology for rock mass stability investigations, said this device could be reliably used in rock mass stability determination.

“Managing health and safety risk in a mine requires real-time monitoring and quantification of the underground hazards and the exposure of personnel and equipment to such hazards,” he said.

RockPulse, expected to assist mines listen to raw micro-seismicity, extracting micro-fracture features and analysing the resulting series of features to detect large instabilities taking place in the rock mass in time, was also exhibited.

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