

Deep mining shakes Perth!

The Australian Centre for Geomechanics (ACG), The University of Western Australia contributes to finding better solutions for deep mining by hosting the Eighth International Conference on Deep and High Stress Mining in Perth in March 2017. The conference will provide a forum for sharing experiences (the good, the bad and the ugly), discovering and discussing both new technologies and old technologies applied in new ways.

Humankind's hunger for resources is increasingly causing us to dig deeper into the Earth's crust to find new ore deposits as those closer to the surface are being mined out. Mineral reserves previously considered unmineable are now considered favourable. In Australia, the deepest mines are currently reaching operating depths of about 1600 m with high stress. In Canada, depths of about 3000 m are reached whilst in South Africa operating levels are now nearing 4000 m.

Conference chair, Dr Johan Wesseloo, Senior Research Fellow - Rock Engineering, ACG says that, in spite of the increasing difficulties posed by the deep and high stress environments, the industry is able to maintain and improve its safety record. This is testimony to the fact that the industry uses events like these to improve itself and rise to the challenges posed by deep and high stress mining.

Increasing mining depths brings with it, its own set of unique challenges which need to be addressed in order to supply the world with necessary and desired commodities.

At depth, the ambient temperature of the rock is high and ventilation and refrigeration alone pose a significant challenge to engineers. The rock mass' response to mining is complex and provides many challenges to mining operations at depth. Some of those challenges are in the form of seismicity and rockburst where sudden and violent rock failure may put personnel and the operation at risk. Other rock masses experience squeezing ground conditions where weak rock under high stress undergoes considerable deformation, to the extent where access to the excavations is not possible. In these varying conditions, the design, installation and monitoring of appropriate and sufficient ground support is important.

Ground support technology, however, cannot be relied on to negate the risks entirely. Geotechnical and financial risk assessment and management strategies form an integral part of the mining process and these strategies need to be improved as our knowledge and technology advances.

Groundwater at depth also brings with it the tasks of dewatering and dealing with highly corrosive environments where water causes ground support deterioration.

Materials handling is another area where deep mining increases cost, putting pressure on the economic viability of the operation. Low commodity prices put further pressure on deep operations and better technology and innovative economic solutions need to be found to overcome these challenges for sustainable deep mining.

The ACG is thrilled that Mr Graham Ehm, Executive Vice President, Planning and Technical, AngloGold Ashanti Australia Ltd will open the Deep Mining 2017 Conference with his presentation "Deep mining – an investor's perspective". Keynote speakers include William Joughin, SRK Consulting (South Africa) (Pty) Ltd on "Dealing with uncertainty in rock engineering design" and Professor Boris Tarasov, Centre for Offshore

Foundations, The University of Western Australia on, “Shear ruptures of extreme dynamics in laboratory and natural conditions”.

The ACG looks forward to welcoming delegates to the Eighth International Conference on Deep and High Stress Mining in March 2017. More than 70 papers will be presented over the three days. For further information on Deep Mining 2017, please visit www.deepmining2017.com.

About the ACG

The Australian Centre for Geomechanics is a not-for-profit mining research centre based at The University of Western Australia, Perth. The ACG undertakes research, education and training activities in the geomechanics disciplines to provide industry with the necessary tools and knowledge to ensure that safety is not simply a top priority on par with productivity, but rather an ethic that guides everything. More information on the ACG and its services can be found at www.acg.uwa.edu.au.

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