

Day One: Tuesday 10 October 2023

07:30 REGISTRATION

08:30 Welcome and introduction [J Wesseloo](#), Ground Support 2023 Conference Chair, Australian Centre for Geomechanics, The University of Western Australia, Australia

SESSION ONE: MONITORING (1) - SOUTH BALLROOM

CHAIR [A Page](#), Geotechnical Mining Services



08:45 KEYNOTE ADDRESS: The ground support life cycle considering real time ground-consumption monitoring [W Bawden](#), Mine Design Technologies, Canada

09:30 xCell Cyclops: a new technology for an efficient way of monitoring convergence in underground mines [O Vallati](#), Sandvik, Australia; [M Farrington](#), Agnico Eagle Mines, Australia; [P Young](#), S Weaver, Sandvik, Australia

10:00 Principal Sponsor address: Jennmar

10:05 MORNING BREAK

SESSION TWO: MONITORING (2) - SOUTH BALLROOM

CHAIR [P Mather](#), Regis Resources Ltd



10:35 High-resolution ground-deformation and support monitoring using a portable handheld LiDAR approach [S Mercer](#), J Morgenroth, RockMass Technologies, Canada; [B Simser](#), Glencore, Canada

11:05 Monitoring of rock mass movement using a distributed array of wi-fi enabled extensometers [S MacGregor](#), P Seaward, SCT Operations, Australia; [M Farrington](#), Agnico Eagle Mines, Australia

11:35 Automated ground support deformation monitoring: a novel method with new opportunities for geotechnical engineers [J Franke](#), C Gonzalez, Caroni Geospatial, Australia

12:05 Practical application of mXrap Damage Mapping application at Nova nickel mine [M Lane](#), IGO Limited, Australia; [D Cumming-Potvin](#), Australian Centre for Geomechanics, The University of Western Australia, Australia

12:35 LUNCH



PARALLEL SESSIONS

SESSION THREE A: SUPPORT FOR DYNAMIC CONDITIONS (1) - SOUTH BALLROOM

CHAIR [L Moreau-Verlaan](#), RockEng Inc., Canada

13:35 Estimate of ground support response under dynamic loads at El Teniente mine, Codelco, Chile [MS Celis](#), RA Parraguez, Codelco, Chile

14:05 Empirical charting for dynamic ground support at Flying Fox and Spotted Quoll mines [J Graham](#), U Waheed, IGO Limited, Australia; [PA Mikula](#), Mikula Geotechnics, Australia

14:35 Evolution of dynamic rock support systems at the El Teniente mine [TE Rojas](#), [A Muñoz](#), P Landeros Córdova, Codelco, Chile

15:05 Case study: use of rebars with microalloyed steels in tunnels with induced seismicity [A Muñoz](#), C Cifuentes, Codelco, Chile

15:35 AFTERNOON BREAK

SESSION FOUR A: SELF-DRILLING BOLTS - SOUTH BALLROOM

CHAIR [D Cumming-Potvin](#), Australian Centre for Geomechanics

16:05 Design, development and testing of the Falcon Bolt [R Galluzzi](#), M Holden, A Dodds, J Matthews, A Bennett, Jennmar, Australia

16:35 Dynamic impact and static testing of self-drilling dynamic bolt types installed in Normet's urea-silicate injection resin: a new path forward to reducing worker exposure to high-stress ground conditions [A Punkkinen](#), Normet Canada Ltd, Canada; [G Li](#), Queen's University, Canada, and Hebei University of Engineering, China; [A Taheri](#), Queen's University, Canada

17:05 Adopting hollow bar: lessons learned [A Bergman](#), E Fjellner, P Hallén, Boliden, Sweden; [R Penczek](#), DSI Underground, Poland; [K Pérez Hidalgo](#), Boliden, Sweden; [F Scolari](#), DSI Underground, Italy; [M Svanberg](#), DSI Underground, Sweden

17:35 DAY ONE CLOSE

SESSION THREE B: PORTALS AND LARGE CHAMBERS - FRESHWATER BAY ROOM

CHAIR [M Lane](#), IGO Limited

Geotechnical challenges during excavation of Crusher Chamber 1, Andes Norte project, El Teniente mine [R Valdivia](#), R Padilla, W Rodríguez, P Landeros Córdova, A Muñoz, E Rojas, Codelco, Chile

Ground support for large chambers at Didipio mine [JM Bermas](#), DA Dumangeng, CG Reola, OceanaGold Philippines Inc, Philippines; [PB Lourence](#), PB Lourence & Associates, Australia

Mine portal design: considerations, methods and practices [MJ Dunn](#), Debswana Diamond Company, Australia; [TT Parrott](#), Entech, Australia

SESSION FOUR B: VERTICAL EXCAVATION AND OREPASSES - FRESHWATER BAY ROOM

CHAIR [R Stephenson](#), AMC Consultants

Excavation and support of ventilation shafts with blind hole methodology in the Andes Norte project [R Navarrete](#), R Valdivia, Codelco, Chile; [L Bisa](#), Consortium JEJ-CyGSA, Chile

Automated reinforcement of orepasses in the Andes Norte project [F Henriquez](#), R Navarrete, Codelco, Chile

Ground support methods for vertical development [CG Scott](#), D Sidea, SJ Masters, pitt&sherry, Australia

*Correct as at 3 October 2023 and subject to change. See acggroundsupport.com/program for updates.

Conference Venue and Accommodation

The ACG team is delighted to be hosting the Ground Support 2023 conference at the Hyatt Regency Hotel Perth. To learn more and book your accommodation, visit acggroundsupport.com/conference-venue

Day Two: Wednesday 11 October 2023

SESSION ONE: DYNAMIC TESTING OF REINFORCEMENT - SOUTH BALLROOM

CHAIR *D Sewnun, Australian Centre for Geomechanics*

08:30 KEYNOTE ADDRESS: Laboratory-based drop testing of rock reinforcement *G Knox, University of Toronto, Canada*

09:15 A comparison between laboratory and in situ dynamic testing on the MDX bolt *B Darlington, O Vallati, P Young, Sandvik, Australia*

09:45 MORNING BREAK

SESSION TWO: SUPPORT FOR DYNAMIC CONDITIONS (2) - SOUTH BALLROOM

CHAIR *I Morkel, IGM Geotechnical*

10:15 Dynamic modelling of strainbursting around tunnels *A Rigby, Institute of Mine Seismology, Australia*

10:45 Delineation of hazard-based design events for dynamic support system analysis *N Dadashzadeh, L Moreau-Verlaan, K Kalenchuk, RockEng Inc, Canada*

11:15 Utilisation of seismic data in the assessment of displacement and energy demand imposed on ground support by strainbursts *D Malovichko, Institute of Mine Seismology, Australia*

11:45 Dynamic support evaluations for implementation by seismic hazard domains *K Kalenchuk, N Dadashzadeh, L Moreau-Verlaan, RockEng Inc, Canada*

12:15 LUNCH

SESSION THREE A: LABORATORY TESTING OF MESH - SOUTH BALLROOM

CHAIR *W Duan, Westgold Resources Limited*

13:15 A review of ground support mesh testing around the world *IG Morkel, IGM Geotechnical, Australia; PA Mikula, Mikula Geotechnics, Australia; RK Whiting, Rowland Whiting Technical Services, Australia*

13:45 Large-scale tests of weld mesh versus high-tensile chain link mesh on mesh overlap load transfer *R Brändle, Geobrugg, Switzerland; R Bucher, Geobrugg, Australia*

14:15 A laboratory-scale dynamic test of load distribution elements at Rancagua testing facility *M Hinojosa, JA Vallejos, E Marambio, Universidad de Chile, Chile; G Fischer, G von Rickenbach, Geobrugg, Chile*

14:45 AFTERNOON BREAK

SESSION FOUR: SUPPORT MECHANISMS - SOUTH BALLROOM

CHAIR *A Kusui, Beck Engineering*

15:15 Simulating static pull tests, shear tests and dynamic drop tests to identify basic parameters for subsequent support design *PM Dight, Australian Centre for Geomechanics, The University of Western Australia, Australia*

15:45 Performance in shear of mechanical hybrid rockbolts *G Knox, J Hadjigeorgiou, University of Toronto, Canada*

16:15 Effect of mobilised length on the performance of a paddled energy-absorbing rockbolt *DL Venter, Epiroc, Australia; G Knox, Epiroc, South Africa*

16:45 DAY TWO CLOSE

18:30 DINNER - OPTUS STADIUM



SESSION THREE B: CORROSION - FRESHWATER BAY ROOM

CHAIR *R Hassell, Mining & Civil Integrity Testing*

An acidic water corrosive environment and ground support strategies at the Grasberg Block Cave mine, Indonesia *JPE Hamman, REP Belsaran, B Kriska, T Ramadhan, AY Sugiyanto, H Banda, PT Freeport Indonesia, Indonesia*

Accelerated galvanic corrosion between graphitic rock from underground mines and metal coupons *C Stazick, G Feagan, S Sunderman, Centers for Disease Control and Prevention, National Institute for Occupational Health & Safety, Spokane Mining Research Division, USA*

SESSION THREE C: PRE-TENSION - FRESHWATER BAY ROOM

Importance and development of pre-tension on bolt support systems: implications to hanging wall beam stability *MN Masitise, M Muzavazi, Mohlalefi Engineering, South Africa*

SESSION SPONSOR



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Keynote Speakers



Dr Will Bawden

President

Mine Design Technologies, Canada

Keynote title: The ground support life cycle considering real time ground-consumption monitoring



Greig Knox

PhD Student

University of Toronto, Canada

Keynote title: Laboratory impact testing of rock reinforcement

Day Three: Thursday 12 October 2023

SESSION ONE: GROUND SUPPORT DESIGN AND MAINTENANCE (1) - SOUTH BALLROOM

CHAIR J Burns, Rio Tinto, Canada

08:30 Numerical forecast of central access ground support behaviour at Cadia East PC1-2 E Ghazvinian, Itasca Consulting Group, Inc, USA; C Orrego, Newcrest Mining Limited, Australia; M Fuenzalida, Itasca Consulting Group, Inc, USA

09:15 Suggested framework for design effort and acceptance criteria for underground mine excavations MJ Dunn, Debswana Diamond Company, Australia; PHJ de Graaf, Anglo American, Australia

09:45 MORNING BREAK

SESSION TWO: GROUND SUPPORT DESIGN AND MAINTENANCE (2) - SOUTH BALLROOM

CHAIR D Tyler, Newcrest Mining Limited

10:15 Vuggy and cavernous rock mass conditions: implications for the early detection, management, ground support and development of tunnels TT Parrott, Entech, Australia; L Montaldi, Regis Resources, Australia; S Muir, Entech, Australia; J Gibb, Entech, New Zealand

10:45 Evolution of ground support designs for blasthole stoping in kimberlite at Diavik Diamond Mine JM Burns, Rio Tinto, Canada

11:15 A numerical approach for a displacement-based ground support capacity consumption forecast S Dehkoda, Beck Engineering, Australia; F Reusch, G Putzar, Beck Engineering, Germany. Presented by A Kusui, Beck Engineering

11:45 LUNCH

PARALLEL SESSIONS

SESSION THREE: GROUTING - SOUTH BALLROOM

CHAIR N Gamble, Glencore

12:45 Improving underground development cycle time using performance mine grouts A Safari, IGO Limited, Australia; P Jere, Sika Australia, Australia

13:15 Application of modern pumpable polyester resin to the mining cycle T Roberts, D Faulkner, Jenmar, USA; R Koekemoer, Komatsu, Canada

13:45 How the strength and deformability of thixotropic resins depend on their structure and what is the true thixotropic behaviour of the mixture M Petranek, Normet International Ltd, Czech Republic; S Korec, SChem a.s., Slovakia; H Golasovská, K Jiříčková, SChem a.s., Czech Republic

14:15 Trial of high early-strength grout-hardening accelerating admixture for cable bolts M Lane, IGO Limited, Australia; M McInnes, Sika Australia, Australia

14:45 AFTERNOON BREAK

SESSION FOUR: STABILISING POOR GROUND - SOUTH BALLROOM

CHAIR JP Hamman, PT Freeport Indonesia, Indonesia

15:15 A case study for rebar-reinforced shotcrete arches and void filling at the Grasberg Block Cave mine, Indonesia A Setiawan, B Cahyono, B Kriska, R Ginting, D Napitupulu, PT Freeport Indonesia, Indonesia

15:45 Stabilising drawpoints for breccia stopes CG Reola, OceanaGold Philippines Inc, Philippines; PB Lourence, PB Lourence & Associates, Australia; JM Bermas, DA Dumangeng, OceanaGold Philippines Inc, Philippines

16:15 Installation of lattice girders with Toussaint-Heintzmann yielding elements in poor ground O Belov, Rio Tinto, Mongolia; T Roberts, Jenmar, Australia; KJ Ma, Jenmar, USA; J Ooi, Rio Tinto, Australia; B Baasanjav, Rio Tinto, Mongolia

16:45 FAREWELL ADDRESS AND CLOSE J Wesseloo, Ground Support 2023 Conference Chair, Australian Centre for Geomechanics, The University of Western Australia, Australia

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Professional Development Hours

Attendance at Ground Support 2023 may entitle you to up to 20 PD hours. Please email info-acg@uwa.edu.au for your certificate of attendance, post-event.



Conference Dinner

Venue: Optus Stadium, Victory Lounge, Access via Gate D
Address: 333 Victoria Park Dr, Burswood WA 6100
Date: Wednesday 11 October 2023
Time: 18:30
Dress: Smart casual

Registered attendees will enjoy an evening of networking, sweeping views and a sit-down, three-course dinner in one of Perth's most exciting venues, Optus Stadium, situated on the banks of the picturesque Swan River.

Dinner is now SOLD OUT.

