

AUSTMINE 2019: MINING INNOVATION THE NEXT HORIZON

21-23 May 2019

Brisbane Convention
& Exhibition Centre, Brisbane

CELEBRATING
30 YEARS
AUSTMINE
Smart Mining

www.austmine.com.au



AUSTMINE 2019
MINING INNOVATION
CONFERENCE & EXHIBITION

THANK YOU TO ALL OF OUR CONFERENCE SPONSORS AND PARTNERS!

PLATINUM SPONSOR



GOVERNMENT PARTNER



ASSOCIATE PARTNERS



DIVERSITY & INCLUSION PARTNER



INNOVATION PARTNERS



SPOTLIGHT PARTNERS



AWARD SPONSORS



COLLABORATION PARTNERS



SUPPORTER



SUPPORTING ASSOCIATIONS



MEDIA PARTNERS



CEO's Letter

Austmine 2019: Mining Innovation – The Next Horizon was a landmark event for Austmine and the Australian METS sector. The conference featured participation from over 1,200 mining and METS leaders who shared a passion for ensuring a sustainable and prosperous future for our industry through innovation.

Australia's reputation as a mining technology hub continues to grow, with our audience of mining executives coming from over 20 nations, including Canada, Chile, Peru, South Africa, the USA, Russia, Indonesia, Mongolia, Zambia, New Caledonia, PNG, and of course, Australia.

It was fantastic to see the significant progress we have made as an industry from our last conference in 2017. Not only were technologies such as augmented reality, large-scale automation, artificial intelligence and machine learning discussed and displayed at the event, but many companies had proven examples of their effective implementation in the mining industry.

Furthermore, the appetite for industry collaboration has truly changed, with mining companies more willing than ever to share insights and information and adopt new methods of engagement with the METS sector, including open-source challenges and collaborative working groups.

In addition to the conference program, Austmine 2019 was underpinned by a series of standout interactive elements, live technology demonstrations on a sold-out exhibition floor, and unparalleled opportunities to connect with the world's leading mining and METS companies.

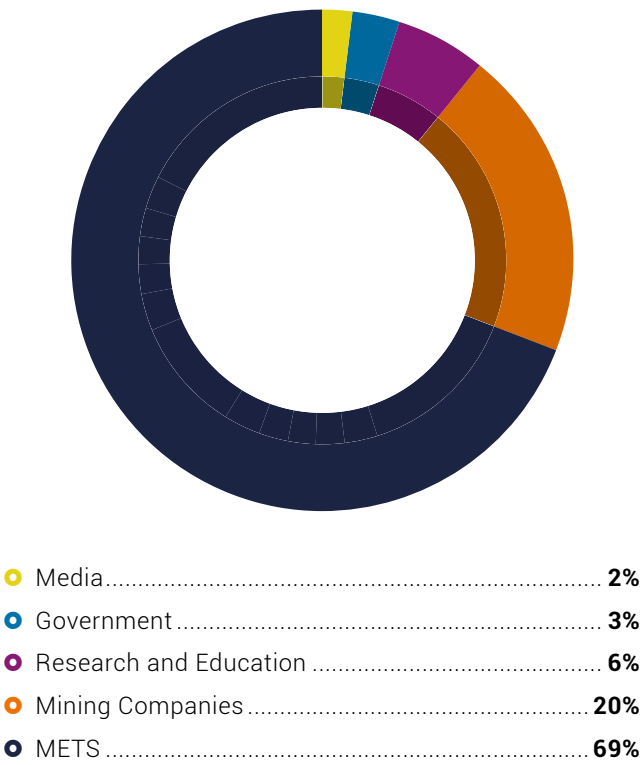
A special thanks to our Platinum Sponsor, Orica, who has given strong support to Austmine for many years, and the Queensland Government for their continued commitment to the METS sector and helping us ensure we had a world class event. Thank you as well to all our members and industry stakeholders for their support of the conference.

With the need and support for innovation only continuing to grow in the mining industry, we look forward to continuing this important conversation leading up to Austmine 2021 in Perth.

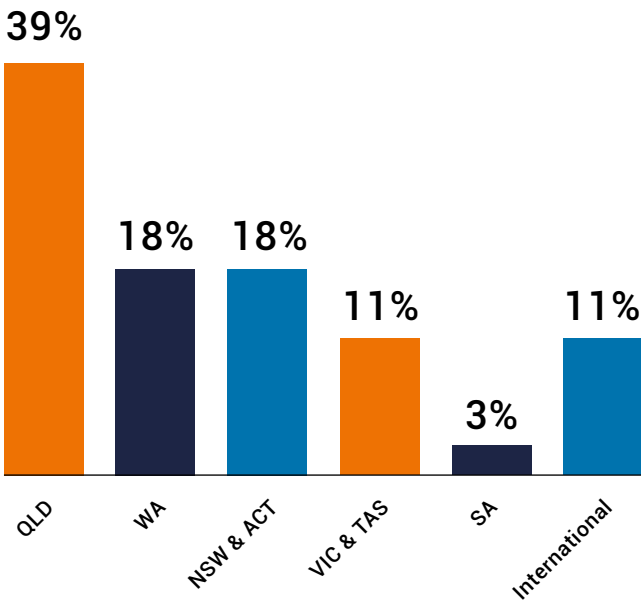


Christine Gibbs Stewart
CEO
Austmine

ATTENDANCE BY INDUSTRY



ATTENDEES BY LOCATION (EVENT WAS HELD IN QLD):



Speaker Highlights 2019

Our two-day conference was packed full of incredible speakers, with insights shared from around the world of how miners and METS are embracing innovation in a meaningful and collaborative way. There were some that certainly stood out to the audience with their thought-provoking presentations.



Andrew Cole
CEO & MD
OZ Minerals

With OZ Minerals supporting Austmine 2019 as an Innovation Partner, Andrew kicked off with a keynote presentation that focused in on what partnerships should really look like and how OZ Minerals is working to encourage these. One example Andrew gave was of their "Explorer Challenge", where OZ opened up their exploration data to people all around the world to analyse, identify the hottest prospect and win from a \$1million prize pool.



Angus Melbourne
Chief Commercial
& Technology Officer
Orica

Recently, Orica demonstrated their commitment to innovation once again with the release of their WebGen™ 100 wireless electronic blasting system. In his presentation, Angus explored the transformation of drill and blast to unlock value for mining operations, highlighting some major breakthroughs over time such as computer-based modelling and wireless blasting systems.



Rag Udd
Vice President,
Global Transformation
BHP

"The technology is coming, whether we like it or not. What will determine who wins in this future, is people." Rag's presentation revolved around this important message, imploring the industry to work together to win our skills challenge. He discussed various programs at BHP to empower their people, including re-training of over 400 vehicle drivers to now be positioned in their IROC.



Ann Burns
Resources Lead, ANZ
Accenture

Ann brought great energy and enthusiasm to the conference as she presented Accenture's vision of a 'Triple Zero – Zero Harm, Zero Loss, Zero Waste' future for mining. She also provided a glimpse of the next technologies set to change the world: DARQ - Distributed Ledger Technology; Artificial Intelligence; Extended Reality and Quantum Computing.



John Welborn
MD & CEO
Resolute Mining

John spoke about Resolute Mining's "crazy" decision to implement the world's most complex underground mining production automation system in Mali, West Africa. Along with the aim of creating an automated haulage loop that allows for 24/7 production, automation will allow Resolute to remove people from the Syama underground mine, which has several hazards such as mud rush, ground failure and vehicle interactions.



Rob Labbé
Director Information Security
Teck Resources

Rob joined us from Canada to discuss the changing "attack surface" that mining provides to hackers. The increasing reliance on IT and the increased use of OT (operational technology) contributes to cyber security being consistently identified as one of the top 5 risks to mining companies. Rob warned that cross-industry and cross-company cyber security collaboration will be critical for the success of digital transformation in mining.



John Vagenas
Managing Director
Metallurgical Systems

John discussed the value of using data in the minerals processing space to diagnose problems and perform metallurgical accounting functions. To describe the scenario faced by mining companies in the new digital environment, John presented the 'blue pill' or 'red pill'. Companies can choose the blue pill and keep the status quo, involving limited use of data and little visibility over operations. Contrarily, they can opt for the red pill and take a pathway of digital transformation to improve reliability and diagnose inefficiencies. Utilising various case studies, he made it clear that the red pill is the only option.



Óscar Castañeda Calderón
General Manager
CodelcoTech

Oscar joined the conference from Chile to present Codelco's innovation and technology strategy. He provided an overview of their key operational challenges, such as lower resource grades and moving from open pit to underground mining. Oscar explored innovative initiatives to combat these challenges, including algorithms for improving copper recovery, development of automated equipment for underground mines and prioritising preventative maintenance strategies.



Matthew Magee
Director of Operations
Interlate

Matthew discussed redefining what 'world class' means in the context of optimising mining and processing operations. Rather than using traditional methodologies to measure best practice, such as inspecting historical performance information or contracting external benchmarking providers, Matthew advocated for a full site view that fuses context, experience, historical information and real-time data. This can supercharge teams to really drive productivity.



Rafael Estrada
Manager of Information
Technology, Telecommunications
and Process Control
Antamina Mining

Rafael discussed the innovation approach of Antamina Mining, exploring their key pillars of strategic direction, industry ecosystems, culture and technology. He also highlighted the importance of cyber security in a digital transformation program, pointing to high-profile mining industry attacks in Malaysia, Canada, Ukraine and Australia to demonstrate this pressing challenge.



Barry Elliott
Vice President
– Enterprise Accounts
Rockwell Automation

Barry delved into the utilisation of data in mining, highlighting that mining companies use less than 1% of data on average and 63% struggle to integrate their data across systems. He presented a pathway for effective use of data, including analysing it in the right place, giving it to the right people, providing the right context and creating meaningful interactions with it.



Natascha Viljoen
Global Head Processing
Anglo American

Natascha shared Anglo's vision for the mine of the future, which is Concentrated, Waterless and Modern. All three of these pillars incorporate visions of mining where it is welcomed and embraced by the local communities, delivering shared value through the use of renewable energy, precision mining techniques, and repurposing land use.

Key Themes

PARTNERSHIPS AND COLLABORATION

Collaboration has been an industry buzz word for several years now, but never has its true meaning been challenged or held up to the microscope to the extent it was at Austmine 2019. From the opening keynote presentation by Andrew Cole, CEO & MD of OZ Minerals, to the closing mining leaders panel discussion, it was clear that there is an appetite to transform relationships between mining companies and the METS sector.

INNOVATION ADOPTION CYCLE

Mining is well known for being first to be second, a cultural attitude that has not allowed the industry to adequately accelerate the innovation adoption rate. However, this paradigm is shifting, and several mining executives explained that they now see the pace of technological implementation and digital transformation as a source of competitive advantage.

TOWARDS ZERO

As described by Ann Burns, Resources Lead, ANZ, Accenture, the growing pressures on the mining industry to preserve our license to operate and maintain community support can be tackled through the lens of triple zero: zero harm, zero loss and zero waste. These three aims are driving many of the strategic actions implemented by mining companies across the globe.

THE PEOPLE FACTOR

The importance of people in the innovation journey was firmly in the spotlight for many at the conference, with the underlying message being that technology is only as good as the people using or interacting with it. With the mining industry transforming at an unprecedented speed, leading companies are seeking to retrain and upskill staff to adapt to this new technological landscape.

CYBER SECURITY

It would have been impossible to hold a technology conference where themes such as big data and automation are discussed without exploring cyber security. Various speakers pointed to a myriad of high-profile cyber-attacks to demonstrate that this is not a challenge for the future, it is a challenge for now.



Industry Leaders' Dinner and Awards



The social highlight of the conference was Austmine's Industry Leaders' Dinner and Awards. The dinner took place on Wednesday 22nd May and welcomed 750 guests for three hours of celebration and entertainment. Our four prestigious awards were presented throughout the evening, and attendees were witness to an inspiring presentation from Curtis McGrath OAM, who detailed his journey from losing his legs in an IED explosion in Afghanistan, to becoming a Paralympic champion.

The dinner also provided a fantastic opportunity to acknowledge Austmine's Foundation Members, who have been with us from the start, 30 years ago.

Congratulations once again to all the finalists, and of course, our very deserving 2019 Austmine award winners!

Our 2019 Award Winners



CRAIG SENDER EXCELLENCE IN EXPORT

Sponsored by Austrade

WINNER

Metallurgical Systems

Founded in 2010 and 100% Australian owned, Metallurgical Systems is a world-leading technology company with a specific focus on improving outcomes for minerals processing plants. Their software is unrivalled globally, and they have installed their software in 7 countries, across 4 continents and in 3 different languages. The judges said of Metallurgical Systems that they are innovative and pioneering, with an impressive export strategy and achieving overwhelming success in export markets. Their collaboration with overseas miners is outstanding, and they are a very deserving winner of the 2019 Craig Senger Excellence in Export Award.



AUSTMINE MINERS INNOVATION AWARD

Sponsored by Dingo Mining

WINNER

PanAust – Diesel Fuel Backloading System

The PanAust commercial team designed and built 18 half-height 20 feet fuel tanks to backload diesel fuel from a local vendor to its Phu Kham Copper-Gold Operation. The backloading of diesel fuel has removed 8-10 contractor fuel tankers from the mine site route on a daily basis and ensures 100% utilisation of the associated trucks. This unique transport model demonstrates miner-driven innovation and a smarter way of operating. The judges selected PanAust's diesel fuel backloading system as a true example of miner conceived and driven innovation. The project took considerable effort, delivering significant environmental, cost and efficiency benefits to the operation, whilst increasing gender diversity in the logistics teams.



AUSTMINE METS INNOVATION AWARD

Sponsored by Department of Industry, Innovation and Science

WINNER

Orica

WebGen™ 100 wireless electronic blasting system is the world's first wireless through earth electronic blasting system. WebGen™ 100 has demonstrated that it will reduce the exposure of people in higher risk environments, delivers significant productivity gains and increases reliability with less misfires, production delays and eliminating the need to re-drill.

The judges noted that Orica is a very worthy winner, with their WebGen technology being a gamechanger. Their technology represents not only a technological breakthrough, but also a step-change in safety and productivity for the industry.



AUSTMINE CHAMPION OF INNOVATION AWARD

Sponsored by Hitachi

WINNER

Steve Durkin, Managing Director, Safescope

Steve Durkin is the owner, Founder and key driver of Safescope. Holding a Bachelor of Engineering in Mining and starting his company in 2009, Steve's innovative mind and deep passion for mining played a large part in the development of Safescope's Laddertube. Throughout Steve's career, he has continually challenged the status quo focusing on innovative inventions to improve safety in the METS industry.

The judges congratulated Steve on being more than deserving of the title of Champion of Innovation. Steve has embraced and inspired innovation across his career, both within his own world-leading company, Safescope, and also within others he has partnered with and mentored. He is a proven, long-term innovator, with impressive commercial success with his innovations.



The Ideas Exchange

Working with our Innovation Partners, Roy Hill, OZ Minerals and Resolute Mining, attendees had the opportunity to tackle some of the top challenges facing our industry, submitting their thoughts live through our Ideas Exchange online collaborative platform.

Our partners presented 6 critical industry challenges that were brainstormed throughout the conference, including issues surrounding energy, digitisation and workforce skills. Roy Hill, OZ Minerals and Resolute Mining were also on hand at kiosks in the exhibition hall to discuss the challenges further with individuals interested in presenting solutions.

The Ideas Exchange was a fantastic example of the power of harnessing a diverse range of ideas throughout the mining industry. We look forward to continuing the various conversations and seeing what outcomes the ideas lead to.



MINING'S BIG IDEA

Austmine was excited to launch the Mining's Big Idea competition at Austmine 2019. This was our search for a new concept that could significantly impact the future of our industry and change the way that we operate. It was fantastic to see great interest in the competition in its inaugural year and we had an exceptional list of finalists.

Congratulations to Sue Aitken for claiming top spot. Qatar Airways kindly presented Sue with 2 return business class flights as part of her prize!

- **Sue Aitken**
Beca (Winner)
Dry stack tailings management through pressure filtration technology.
- **Peter McCarthy**
AMC Consultants
Swarms of autonomous drones and highly-selective smart rock cutting machines.
- **Peter Kittel**
Axis Energy Group
Modular technology allowing reliable and secure large-scale electricity supply with no interruptions.
- **Chris Johnson**
Jayben
A fully remote-controlled crawler vehicle for open pit mines.
- **Kevin Harney**
ISOE
Development of the Mining Ant, a 20t payload autonomous electric self-loading haul truck using batteries and trolley assist.
- **Rob Cunningham**
CMOC Northparkes
Wireless detonators and smart blast design to eliminate the Undercut Level of a block cave mine.

Exhibitor Highlights

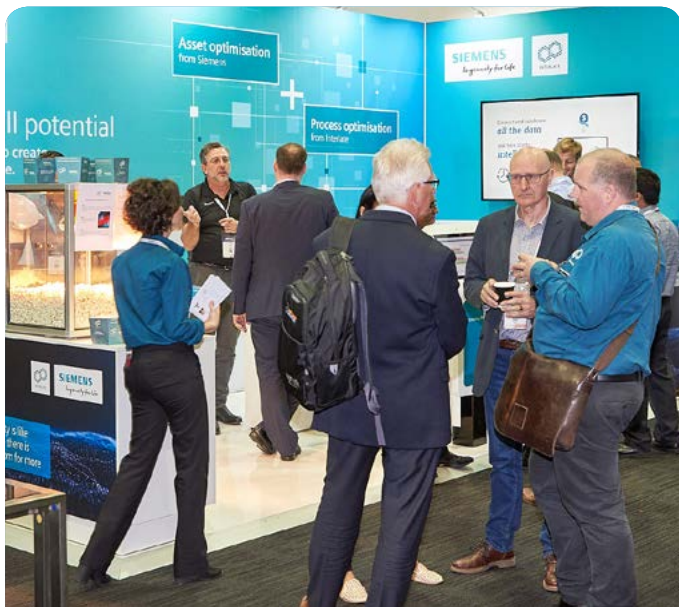
The Austmine 2019 exhibition featured our largest ever display of cutting-edge equipment, world leading service providers and outstanding technology demonstrations. Hosting over 80 leading METS companies, the exhibition hall had a great mix of interactive elements, new product launches and digital displays. See the best of the exhibition below!



Orica demonstrated their WebGen electronic blasting system using VR



Safesafe launched their Bortana EV



Siemens and Interlate partnered to deliver the power of data... and popcorn!

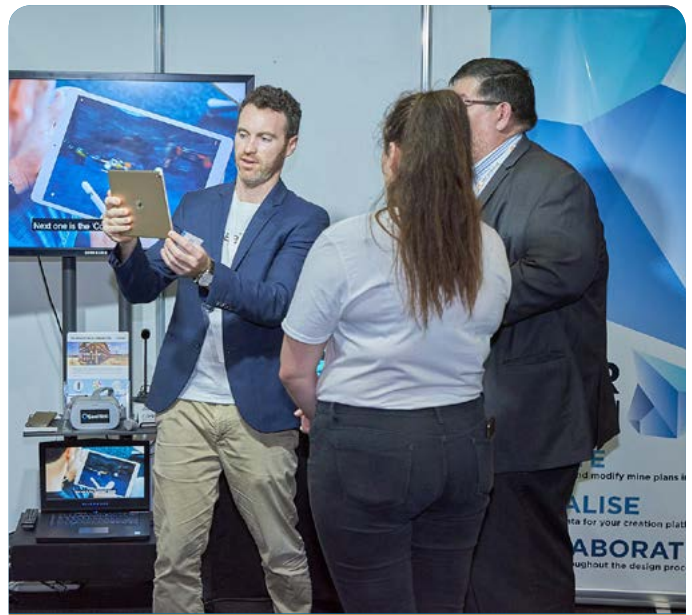


Jolimont demonstrated their portfolio of world-leading METS companies

Exhibitor Highlights



MICROMINE helped attendees relax and unwind over a game of mini golf



SeePilot presented their impressive 360 degree workplace platform



Aveva showcased their Command and Control Centre



METS Ignited provided a hub for up and coming Australian innovators



BHP DIVERSITY & INCLUSION BREAKFAST PANEL

Austmine was pleased to have BHP join the conference as our Diversity and Inclusion Partner. The values of diversity and inclusion are critical to delivering the workforce skills and organisational cultures that will drive success and sustainability of the mining and METS sectors in the long-term. BHP hosted a breakfast panel at Austmine 2019 on the topic of "Inclusion and Diversity – A Leading Indicator of Innovation". This panel featured:

- **Susan Lasecki**
Head of Supply Innovation
BHP
- **Sharna Glover**
Program Director Robotics & Autonomy
BHP
- **Andy Reynolds**
Managing Director
Alacris
- **Shyamal Sharma**
Managing Director
Haultrax

The panel discussed the importance of diversity, of all kinds, to modern organisations and provided success stories from their companies. They explored how their business cultures have transformed by embodying these values, fostering an environment where an entrepreneurial spirit is embraced and teams are more willing to think outside the box and challenge the status quo, often with exceptional results.



Workshops



Machine Learning: What Does that Actually Mean for a METS Business?

METS Ignited hosted this workshop to help participants understand the opportunity and limitations of machine learning for their business and the mining sector. Speakers challenged attendees to think about how to capture value from machine learning in the mining industry, with some great potential projects explored.

Future METS Workforce Forum: Connecting Education with Industry

Tackling our industry's significant skills shortage, this workshop connected business leaders and academic institutes to discuss skills gaps and brainstorm projects that can attract STEM-qualified students into the METS sector.



Beating Cyber Attackers by Becoming One

Accenture shared their intelligence on cyber security threats across the globe and explored the key priority areas as we embrace digital and automation. There was also an alarming demonstration of a real-world cyber attack scenario and how malware from the internet can destroy a physical processing plant.

Marketing for METS

Austmine led this workshop to help METS companies get the most bang from their buck on marketing efforts. It included discussion about tightening the value proposition, sifting through data, optimising social media and utilising content marketing to boost exposure.



World-Class Networking



World-Class Networking





AUSTMINE 2021

MINING INNOVATION
CONFERENCE & EXHIBITION

25 – 27 May 2021
Perth Convention & Exhibition Centre

www.austmine.com.au

AUSTMINE FOUNDATION MEMBERS

AECOM



SEDGMAN



www.austmine.com.au