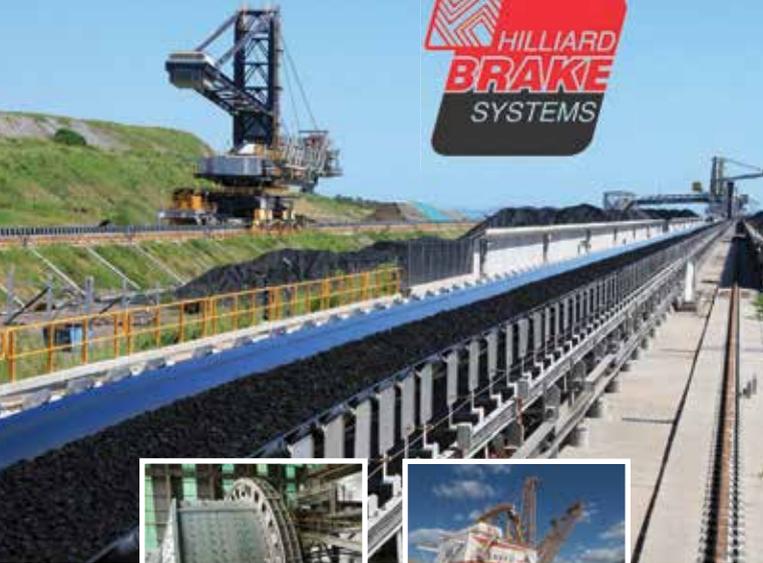




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Agenda

Sunday, March 10

Noon–4 p.m.
6 p.m.–7 p.m.
7 p.m.–9 p.m.

Exhibitor Move In
Reception at Last Territory
Dinner at Last Territory

Monday, March 11

7:30 a.m.–8:30 a.m.
8:30 a.m.–10 a.m.
10 a.m.–10:30 a.m.
10:30 a.m.–Noon
Noon–1:30 p.m.
1:30 p.m.–3 p.m.
3 p.m.–5 p.m.
6:30 p.m.–8 p.m.

Breakfast in Exhibit Hall
Session 1 Presentations
Coffee Break
Session 2 Presentations
Lunch in Exhibit Hall
Session 3 Presentations
Reception in Exhibit Hall
Fireside Safety Chat
Outside Main Hotel Bar

Tuesday, March 12

7:30 a.m.–8:30 a.m.
8:30 a.m.–10 a.m.
10 a.m.–10:30 a.m.
10:30 a.m.–Noon
Noon–1:30 p.m.
1:30 p.m.–3 p.m.
3 p.m.–4 p.m.

Breakfast in Exhibit Hall
Session 4 Presentations
Coffee Break
Session 5 Presentations
Lunch in Exhibit Hall
Session 6 Presentations
Exhibitor Tear Down

Wednesday, March 13

8 a.m.–8:30 a.m.
8:30 a.m.–Noon

Continental Breakfast
Workshop



Opening Reception Western Style BBQ

E&M and *Coal Age* along with Komatsu Mining and TowHaul will host an opening reception Sunday evening at the Last Territory and Courtyard.

Delegates will get a chance to socialize in a classic western-style setting. Organizers will share the scoop on the conference and the golf prizes from earlier in the day will be awarded. Join us to renew old acquaintances and make new friends.

Sunday, 6 p.m.: Reception
7 p.m.: Dinner



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Mobile Event App

New to the conference this year is the Haulage & Loading Mobile Event App!

This feature-packed digital event guide will provide interactive content and activities, engaging attendees and suppliers alike.

Top features include:

- Session agendas;
- Personalized agendas;
- Speaker information & presentations;
- Show floor plan;
- Exhibitor information;
- Activity feed;
- Messaging; and
- Networking.



**Session 1:
Developments With Autonomous Mining**
Monday, 8:30 a.m. – 10 a.m.

**Session 2:
Future Considerations**
Monday, 10:30 a.m. – Noon

The Future of Haulage and Loading

Michelle Ash, former CIO, Barrick Gold

Haulage is a fundamental part of mining, but will it be in the future? What are the emerging and current technologies? How fast are they? What will be their impact as they start to integrate on the mining process? What will the mine of the future start to look like as we automate, electrify, use and produce big data and AI...and how can we start harnessing these technologies? What are the risks to both adoption and non-adoption?

The Future of Mine Safety

Gord Winkel, chair of engineering safety and risk management, University of Alberta

Despite numerous positive achievements, the mining industry remains challenged with safety performance at current levels where major incidents persist in causing significant harm, loss and environmental impacts. In the face of business drivers to boost mine operations efficiency, there is additional stress on sustaining safety programs while “doing more with less.” This presentation shares leading innovations in safety that effectively reduce ongoing significant incidents while simultaneously bolstering mine production.

Mine Design Considerations for the Future

Brian Yureskes, director, global business development, Komatsu

Many mines today are not prepared for and were not designed for immediate full-autonomous operation. The systems that guide these machines struggle with complex traffic patterns. Navigating the loading and dump areas is also a serious consideration. This presentation will discuss the different levels of autonomy that are currently available to mine operators and future mine design considerations.

Space Age Mining at Home

Greg Baiden, CEO, Penguin ASI

Society needs next-generation mining to forge forward. Underwater mining and mining in space will require a much different approach. Who would have thought water would currently be the most important ore to be mined off the planet? An important consideration will include coordinated networking for multi-machine control. Next-generation positioning systems will also play a crucial role in the new methodology. This presentation will focus on this application of Space Age mining to today's terrestrial operations and the advantages and disadvantages for both.

Suncor's Autonomous Experience

Anne Marie Toutant, vice president-mining solutions, Suncor Energy

Suncor was the first North American miner to adopt autonomous hauler technology on a large scale. Nearly a year ago, the company announced it would incrementally roll out a fleet of autonomous haulers at its oil sands mines over the course of the next six years, starting with its North Steepbank mine. In total, the fleet would eventually comprise at least 150 Komatsu haulers. This presentation will offer an insight as to how those decisions were made.

Continuous Surface Mining to Zero Waste

Trevor Kelly, Canadian Mining Innovation Council, and Mal Carroll, Syncrude

The future of surface mining is upon us. The requirements for fundamental change from batch to continuous mining platforms has arrived. Industry trends have generally been going in the wrong direction and need to moved toward zero waste, improving mining intensity, labor intensity, capital and cost efficiency. The Canada Mining Innovation Council (CMIC) is developing and executing projects that align with the industry requirements, CMIC surface mining road, and enabling elements of open collaboration, flexible mine design, integrated digital platform and autonomous mining to respond to these grand challenges.

**Session 3:
Improving Haulage**
Monday, 1:30 p.m. – 3 p.m.

Costing Haul Road Construction or Rebuilds: Where is the value?

Roger Thompson, professor of mining engineering,
Curtin University

A question many surface mine operators face is how to justify expenditure on a haul road, either as a new construction or a rebuild of an existing road. Various design methodologies can be used to build a new road, some approaches being more cost-effective than others. Similarly, for a rebuild or rehabilitation of an existing road, how can investment in road improvements be justified in the context of the total cost of material haulage? This presentation examines these questions, from both conventional and autonomous haulage standpoints.

All-electric Drive Truck

Daniel Robertson, business manager for mobile mining,
large drives and traction drives, Siemens

A mining haul truck driven by electrical wheel motors is proposed with all-electrical power sources; that is, without a diesel engine. On-board energy storage is charged from regenerative braking, and is supplemented with off-board overhead power. This innovative solution offers significant energy savings and productivity increases for haul trucks of all sizes and practically all mine profiles. Beyond eliminating concerns about emissions mandates, an all-electric truck would also remove the costs associated with maintaining a diesel engine and its components.

Improving Mine Haul Roads by Using Advanced Instruments to Measure Haul Road Parameters

Alok Baranwal, technologist,
RM Resource & Mining, Tata Steel

In an open-cast mine, productivity, fuel consumption and speed of haul trucks are key drivers to improve safety and efficiency of mining operations. To ensure efficient haulage, haul road parameters like rolling resistance, gradient, superelevation, curve radius and road friction must be monitored and upgraded regularly. In Tata Steel Ltd. mines, a multiple-sensor-based measuring instrument was used to capture and maintain the parameters for improving haul roads.

Fireside Safety Chat

with Josh Savit

Josh Savit, a leading mine safety consultant, has helped many mines around the world build safety improvement programs. He will share some of his experiences working with mine operators with various levels of sophistication as far as management programs and IT/OT systems that track performance. He will also share thoughts on the direction of safety as far as the current technical capabilities and culture of acceptance drawing from best practices from a global perspective. *E&MJ* and *Coal Age* will provide beverages and cigars. Adirondack chairs around the fire pit are limited.

Monday, 6:30 p.m.-8 p.m.
around the firepit



**Session 4:
Safety & Health**
Tuesday, 8:30 a.m.-10 a.m.

Advances in Wearable Safety Products

Dan Bongers, CTO, SmartCap

Operator fatigue-technologies have been widely available for years, yet the mining industry remains slow to embrace these. Hesitations range from perceptions of newness through to an unwillingness to engage a workforce for fear of pushback. This presentation shares a decade of learnings from fatigue-technology deployments around the globe, with several example case studies showing results and challenges. Suggestions for best practices will be provided.

**Session 5:
Strategies for Pit Management**
Tuesday, 10:30 a.m.– Noon

Meeting Expectations for Profitable Production

Ross Gibbins, principal, growth planning, Thiess

The term costs has different meanings for self-performing mine owners and mining services providers. What is the general and specific definitions of profitable production? How does this relate to business sustainability and why is this important? How is this influenced by pit management? What impacts profitability and/or production? What part does innovation and technology play? This presentation will explore the relationship between operating costs, capital costs and revenue.

Managing Fatal Risks in Mine Equipment Operations

Douglas Jones, safety specialist, and
Mensah Frimpong, mine engineer, Freeport-McMoRan

An analysis of historical incident trends indicates the interaction of large mining equipment with light vehicles and/or pedestrians is a significant cause of safety-related incidents. Engineering, operations, and H&S personnel within Freeport-McMoRan developed a policy to reduce or eliminate these interactions within mining and processing facilities. In 2018, a site-by-site audit was conducted at Freeport's North and South American properties to measure compliance with this policy. This presentation will share the findings, highlighting best practices in design, engineering and operating procedures.

Turning Challenging Mining Conditions into Success

Tawnya Thornton, mine EIT, JDS Energy & Mining

Building a mine is no easy feat; it's even harder in a remote location. JDS has assisted in the development and performance of mines around the world, in a variety of challenging environments. This presentation will discuss some of our greatest operational obstacles, and demonstrate that from Brazil to Baffin Island, a lot of the big problems in open-pit mining are exactly the same.

Actionable Intelligence to Improve Safety

Carey West, managing director, Loadscan

Safety and efficiency when loading trucks is paramount. Therefore, the ability to understand payload is key. In this session, Carey West will explain the advantage of load volume scanning (LVS) systems, which provide real-time, insightful data (including 3D images) for every load. With an LVS in play, loaders and truck drivers have actionable intel, which they can use to improve safety, eliminate overloading, reduce tire wear, optimize truck loading, eliminate wasteful haul-back, and increase fill factors. You'll hear how those already using Loadscan have upskilled their workforce (with live, visual feedback) and increased their trucking factors by approximately 15%.

Strategies to Improve Productivity

Steve Bolen, vice president, construction, KMC Mining

KMC is one of Canada's largest contract miners with significant assets, knowledge and understanding in the oil sands sector. Dealing with ever-changing mining conditions, KMC has developed several strategies over the years to improve productivity in the pits.

**Session 6:
Training & Development**
Tuesday, 1:30 p.m. – 3 p.m.

Mine Operations Supervisor Development Program

Rick Green, senior superintendent,
technical training, Freeport-McMoRan

The Mine Operations Supervisor Development Program is a systematic approach to develop essential skills, knowledge and abilities. The program is based on a simple business model composed of four components: physical assets, processes, people and leadership. Technical competency and business knowledge are key factors in each area of the business model. The program ensures a common foundation for Freeport's mine operations across North America. Concepts are based on best practices, continuous improvement and accepted technical theory.

Reducing Variance Through Simulation-based Training Technologies and Processes

Adam Norris, regional manager, Immersive Technologies

A series of case studies will examine real-world results at mining operations in North America and around the world that improved haulage productivity and machine availability through a focused continuous-improvement approach using simulation as the key driver. The presentation will feature specific examples of actual projects, including methodology and results achieved. There will also be insights into new technologies available to the industry, including the gamification of training.

The Take Charge Training Concept

Gordy Williams, president, EDI

The difference between a “proactive” supervisor and a “status quo” supervisor can amount to millions of dollars in the mining business. The Take Charge approach is a dramatic departure from traditional supervisory training efforts. It focuses on results rather than classroom activities. After each compact skills unit is presented to your management team, they are required to apply the learned skills and tools “back on the job.” They are held individually and collectively accountable to do this. Specially developed tools and measures are used to indicate the degree of success each supervisor achieves. These measures apply to both hard and soft skills.

**Haulage & Loading
Performance Workshop**
Wednesday, 8:30 a.m. – Noon

Positioning Mines to Capitalize on Available Technologies

Dr. Tim Joseph, JPI Mine Equipment
& Engineering Consultants

Dr. Tim Joseph, a recognized authority on mining equipment performance, will lead a certificated industry short course that will permit attendees to explore how they can easily use accessible existing on-board equipment data to evaluate equipment performance. The JPI Beyond the Stopwatch workshop will highlight, through presentation, discussion and exercises, haulage and loading issues and the impact that running surfaces and load balance extend to equipment performance. This half-day workshop session will provide insights, tools and techniques using existing on-board haulage and loader data systems to benchmark and predict adverse operational conditions. Attendees will find low hanging fruit that can be put into operational practice immediately realizing increased availability and productivity through better understanding of asset capability in a mining operation.



Speaker Biographies

See us in
Booth 6



Michelle Ash
Former CIO, Barrick Gold

In her role, as CIO of Barrick Gold, Michelle Ash oversaw the company's Innovation program, looking at how innovation can drive productivity in the existing business as well as how it can be harnessed to deliver alternative business models. Ash joined Barrick in January 2016 and has more than 20 years of experience in the mining and manufacturing sectors.

Prior to Barrick Gold, Ash worked for Acacia Mining in Tanzania as COO, having served earlier as executive general manager, business improvement and planning. Prior to this, she served as the head of alliance planning and coordination at the BHP Billiton Mitsubishi Alliance. Ash held similar improvement and strategic roles at other companies, including the Minerals and Metals Group and Australian Vinyls. She began her career as a blasting engineer with Rio Tinto.

Ash was named to the 2016 list of 100 Global Inspirational Women in Mining by Women in Mining UK. Ash holds a degree in civil engineering and an executive master of business administration from the Melbourne Business School. She also holds degree in psychology from Deakin University. Ash has recently been appointed chairman of GMG.



Greg Baiden
CEO, Penguin ASI

Greg Baiden is chairman and chief technology officer of Penguin Automated Systems Inc., a private research and development company that provides mobile robotic technology solutions based on mining work for numerous clients in various industries around the world. Dr. Baiden holds a doctorate in mining engineering with a specialty in technology and economics.

In 2001, he was awarded the Canadian Research chair in Robotics and Mine Automation at Laurentian. Baiden was a professor at Laurentian University for 14 years before leaving to grow Penguin Automated Systems Inc. This work included numerous projects for major terrestrial mining companies from custom robotics for mining processes to scoping, prefeasibility, and feasibility studies for mines implementing automation and robotics in mining. In addition, he worked in undersea and lunar mining with organizations such as Shackleton Energy, Canadian Space Agency and NASA. Prior to this work, he was a member of Inco Ltd.'s senior management team from 1986-2001.

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Alok Baranwal
Technologist,
RM Resource & Mining, Tata Steel

Alok Baranwal joined Process Technology Group, Tata Steel Ltd., India, in 2016 as manager and later upgraded to technologist in 2018. His primary responsibility is to carry out research based on problems, create and gather knowledge, and cater/equip mining operations team with the latest technology. He has been involved in a range of projects related to haul roads, strata control and blasting in open-pit mines. He has completed his bachelor's degree in mining engineering and master's degree in safety engineering and disaster management in mines from the Indian Institute of Technology Kharagpur.



Steve Bolen
Vice President, Construction and Safety, KMC Mining

Steve Bolen's career in the western Canadian heavy construction and mining fields has spanned more than 30 years. Prior to starting his own civil construction firm, Heavy North, in 2013, he worked his way through the ranks of Kiewit Infrastructure for 27 years. During this time, he gained a unique perspective of the vast operational and project management requirements of the heavy civil construction and mining worlds.

The flagship project of his career was the \$1.5 billion dollar Imperial Oil-Kearl early civil works oil sands project at K2 Mining. This was a joint venture between Kiewit and KMC Mining, where Bolen had the role of project director. His K2 team was awarded the Western Canada Major Projects Safety Award 4 out of the 5 years on this project.

After recently selling Heavy North Construction, he has re-joined KMC Mining as vice president of construction and safety.

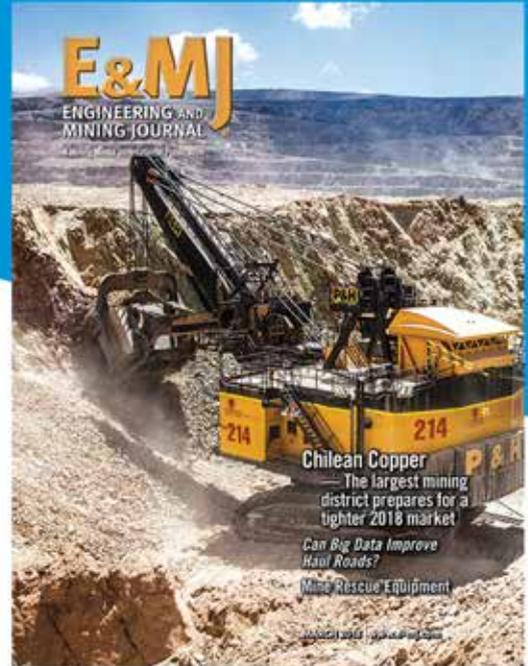


Dan Bongers
CTO, SmartCap

Dr. Daniel Bongers is the creator of the SmartCap fatigue monitoring product, and a co-founder and current CTO of SmartCap Technologies. He has dedicated the last 14 years to working with mines around the

world through the onboarding and change management processes associated with operator-fatigue monitoring. As CTO, he is responsible for exploring new product innovations in line with current trends, engaging with global clients, and speaking about the challenges of technology selection, effective change management, and the upskilling of staff. In 2016, Dr. Bongers was inducted into the International Mining Technology Hall of Fame in recognition for a career of driving innovation and promoting transparency in technology adoption across the mining industry.

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Mensah Frimpong
Mine Engineer, Freeport-McMoRan

Mensah Frimpong is an experienced mining engineer and a project management professional. He is the author of, "Project Management for NPOs" that broke new grounds in project management and is being used by the industry and several universities globally. He has three masters qualifications: Ghana (master of science in engineering management), South Africa (master of science in mining engineering with specialization in mineral economics) and USA (master of science in business management) as well as a diploma in project management. Frimpong has more than 20 years of experience in mining, business management, strategy, financial management, continuous improvement, program and project management.

His specific experiences include working as deputy director at the International Development Research Center, a Canadian parastatal based in Johannesburg (1998-2001), lecturer at WITS University in 1998, and program manager at Group For Environmental Monitoring (2001-2003) where he collaborated with the United Nations and the South African government on the organization of the 2002 World Summit on Sustainable Development. Other engagements include working as a management/strategy consultant at MDPS Project Services. He also consulted with some organizations in Africa, including helping set up a World Bank funded program at Forum for Agricultural Research in Africa, located at Accra, Ghana. Other employment includes serving as program manager at Aurecon, 2006-2010, and currently with Freeport McMoran Copper and Gold since 2012.



Ross Gibbins
Principal, Growth Planning, Thiess

Ross Gibbins is a business development, project development and cost estimating/management professional having been employed in the mining and construction industries for more than 40 years commencing as an engineering undergraduate with Thiess in 1974.

For the last 22 years, he has been focused on providing business and project development services, including cost estimating/management for global mining services providers such as Thiess and HWE Mining, both of which are now combined under the CIMIC Group of Companies.

He has also recently managed the bankable feasibility process for the development of a greenfields open pit and underground copper/silver mine in Botswana, including mine infrastructure, development and operations.

Over the last 10 years, he has investigated most forms of mining and processing production data capture techniques together with information management systems and reviewed their application to various mining operations he has been associated with.



Rick Green
Senior Superintendent, Technical Training, Freeport-McMoRan

Rick Green is a senior superintendent of technical training at the Mine Training Institute for Freeport-McMoRan. He currently manages the Tinaja Hills Supervisor Development Program.

Green has been with Freeport-McMoRan for 34 years. He started as a track laborer and held numerous positions, including superintendent of leaching, road maintenance, mine development, fragmentation and loading, all at the Morenci mine. Two accomplishments he is most proud of is the successful startup of the Morenci mine for leach pad and the design and start of the Mine Development Department. He was fortunate to be able to travel to both Cerro Verde and Grasberg on temporary assignments.

Green became the senior superintendent position at Morenci Training Department in 2011 and moved on to his current role February 2017.



Douglas Jones
Safety Specialist, Freeport-McMoRan

Doug Jones has a wealth of experience in mining, in both operations and health and safety. Beginning as a heavy equipment operator in 1997, he assumed a number of roles through the years, including health and safety specialist as well as responsibilities in ERRT, EMS and rope rescue. He developed, organized and sustained the emergency response rope rescue teams at Freeport's Miami and Chino operations. His safety expertise includes all areas of the mine: mine operations, maintenance, and reclamation; concentrator maintenance and operations; and smelter operations. Currently working at Freeport McMoRan's Morenci Operations, Jones is a health and safety specialist serving the mine operations and the property as the radiation safety officer. He has an associate of science in Occupational Safety and Health from Columbia Southern University and holds several other certifications.



Dr. Tim Joseph
JPI Mine Equipment

Dr. Tim Joseph is president and principal engineer of JPI Mine Equipment & Engineering. He is recognized as an expert in mine equipment performance and ground equipment interactions. He delivers certificated industry short courses and mining equipment performance evaluations to the global resource industry, mining equipment manufacturers and service providers, including a 9-week mastering mining operations and decisions 220-plus hour professional development diploma. He is also

vice president of the Association of Professional Engineers and Geoscientists of Alberta (APEGA) and ambassador and former vice president of the Canadian Institute of Mining. Dr. Joseph is progressing to retirement as associate dean, Faculty of Engineering; professor, Mining Engineering at the University of Alberta; and director of the Alberta Equipment-Ground Interactions Syndicate (AEGIS) research program in 2020.

Joseph is a former recipient of the Canadian Institute of Mining (CIM) Distinguished Service Medal and the CIM Past President's Medal for his contributions to the global mining industry and mining engineering education. Joseph has chaired numerous international mining conferences, and acted as honorary chair for many more over an illustrious career.



Trevor Kelly
Innovation Manager, Mining
Canada Mining Innovation
Council

Trevor Kelly has a passion for helping the mining industry adopt/leverage transformational mining and industrial technologies, which includes process efficiencies and effectiveness, to reach full potential results. He is well-connected with a global network of mining companies, subject matter experts and strategic partnerships, including the Canadian Mining Innovation Council (CMIC).

He has worked with some of the largest mining companies in their respective commodities, Barrick Gold, Cameco, BHP Billiton, Teck and Homestake. He has more than 25 years of international open-pit and underground mining experience focusing on technical service, operational execution and asset optimization.

Recently, he was the global director of mining at Barrick Gold Corp. and has provided technical and operational support to 15-plus operating and project sites worldwide.



Adam Norris
Regional Manager,
Immersive Technologies

Adam Norris has been helping global mining companies successfully integrate and develop strategic training programs using advanced equipment simulation technology for more than 10 years. He has developed and implemented continuous improvement programs utilizing simulation as the key enabler. He has provided consulting services to analyze opportunities and trends within data management systems to achieve defined mine site objectives. He is currently the regional manager, USA, and has a Green Belt in Six Sigma from the University of Utah, and graduated with a bachelor of science from the University of Central Florida.



Daniel Robertson
Business Manager for Mobile
Mining, Large Drives and Traction
Drives, Siemens

Daniel Robertson is the head of Siemens Mobile Mining in North America, based out of Alpharetta, Georgia. He has worked exclusively with the mobile mining team since joining Siemens in 1998. During this time, he has been awarded numerous patents for his work in drive control systems and their integration with technology, specifically remote access, predictive maintenance, expert diagnostic systems and autonomy. He earned his master of science in electrical engineering degree from the University of South Carolina in 1998. He is a member of IEEE and the Society for Mining, Metallurgy & Exploration (SME).



Josh Savit
Former VP Global Sales and Client
Services for Predictive Safety

Josh Savit, the former vice president of global sales and client services for Predictive Safety, has been responsible for leading companies' global sales organizations, integrating global professional services capabilities, and establishing strategic partnerships in other countries. Savit is a founder of Predictive Compliance, the first fully customizable Mine Safety and Health Administration regulatory compliance management tool. Savit worked with both the end users and the system developers to create the platform, developing what is now considered an industry standard. Predictive Compliance is used widely throughout the mining industry and Savit continues to develop variations for companies in North and South America. Before starting Predictive Compliance, Savit worked with a Fortune 500 company for 10 years in their Southwest sales region. He was responsible for recruitment, sales training, and developing regional marketing campaigns, as well as identifying cross-selling opportunities.

Over the past 13 years, Savit has worked primarily in the EHS arena developing new methodologies and technologies in monitoring fatigue and alertness.

He graduated from the Kansas City Art Institute with a bachelor of fine arts degree and did graduate work at the University of Massachusetts at Dartmouth.



Roger Thompson
Professor of Mining Engineering,
Curtin University

Roger Thompson is professor of mining engineering, Curtin University Western Australian School of Mines, Australia. His work focuses on road design for surface mining and the provision, rehabilitation, or improved design and management

of mine roads. He is the co-author of numerous peer-reviewed publications in the field of mine haul road design and also runs international workshop training in mine road safety for mines and consultants alike. He is a co-author of a new book, "Mining Haul Roads – Theory and Practice" published by Taylor and Francis, which is set to become the go-to reference for surface mine road design.

Prior to Curtin University, Thompson worked in gold- and coal-mining production, qualified as a mine manager, and worked at the University of Pretoria. He was also a guest researcher at the National Institute for Occupational Safety and Health, Spokane Research Laboratory (USA), and is also a Fulbright scholar.



Tawnya Thornton
Mine Engineer in Training
JDS Mining

Tawnya Thornton studied mining engineering at the University of Alberta. She joined JDS in 2013 and has become intimately acquainted with all phases of project development from conceptual study to construction and operation. She understands the challenges of a startup, and uses her experience to provide practical solutions to operational hurdles.



Anne Marie Toutant
Vice President-Mining Solutions,
Suncor Energy

Anne Marie Toutant was appointed vice president, mining solutions, Suncor Energy, in September 2018. Reporting to the EVP Upstream, she is responsible for the future of mining at Suncor enabled by digital transformation. Most recently, she was responsible for the safe commissioning, startup and operations of the Fort Hills project.

Toutant joined Suncor Energy Inc. in 2004, holding the role of vice president, mining operations, for seven years. She oversaw the consolidation of mining activities in the Millennium mine, the approval, development and opening of the North Steepbank mine, and the final reclamation of Wapisiw Lookout, the first reclaimed oil sands tailings pond. Between 2011 and 2015, she was vice president of Oil Sands & In Situ Optimization and Integration. From 2014 through 2018, she led the Fort Hills project.

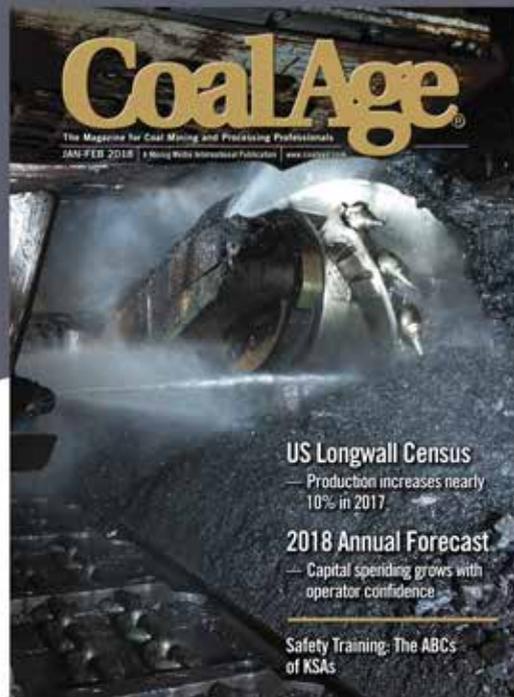
Prior to joining Suncor, she held operations and engineering leadership roles in metallurgical (Cardinal River Mine and Gregg River Mine) and thermal coal mines (Boundary Dam and Bienfait Mines) in western Canada for Cardinal River Coals Ltd. and Luscar Ltd.

She is the chair of the Mining Association of Canada and has been a director since 2007. She is a fellow of the Canadian Institute of Mining and Metallurgy. She has been a board member of the Suncor Energy Foundation since 2012.

She holds a bachelor of science degree in mining engineering from the University of Alberta.

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Carey West
Managing Director, Loadscan

Carey West is owner and managing director of Loadscan, a New Zealand company that pioneered volumetric measurement and is helping customers across the globe realize optimal loading, production and profits.

Combining laser scanning technology and proprietary software, Loadscan's volume scanning systems provide a unique ability to truly understand payload, thus improving safety and efficiency. The first load volume scanners were developed in 1998 by Carey West's father, the late Wayne West. Carey West has built upon the innovative technology his father pioneered and, today, Loadscan field global interest, work across multiple industries, and manufacturer a dozen different product variants.



Gordy Williams
President, EDI

Gordy Williams is president of EDI Resources of Scottsdale, Arizona. He has developed many well-known performance improvement techniques and programs for the mining industry. Some of them are

the Accountability Checkpoint Technique (ACT), True Cause Tracking (TCT), World Class Safety, and Take Charge Supervisory Development.

He also developed a unique process to identify and benchmark a company's management practices against world-class performers in the mining industry. This tool is called the Management Practices Index (MPI) and has been utilized by more than 100 mining operations.



Gord Winkel
Chair of Engineering Safety and Risk Management, University of Alberta

Retired as a vice president from Syncrude Canada Ltd., Gord Winkel joined the

University of Alberta in 2010 and helped establish the David and Joan Lynch School of Engineering Safety and Risk Management in 2015. His work to improve safety and technology in mining led to Distinguished Lecturer Awards from the Canadian Institute of Mining in 2002, 2008 and 2013.

Winkel chairs the J.T. Ryan Safety Committee for the Canadian Institute of Mining(CIM). He adjudicates the Hatch-CIM Mining and Minerals Project Development Safety Award and is a member of the CIM Executive Safety Strategy Committee. He is vice chair for the University of Alberta Board of Governors Safety, Health and Environment Committee, and chairs the Bio Safety Committee and the Enhanced Biocontainment Standing Committee. He is a longtime member on the Alberta Health Services Safety and Quality Committee. He serves on a board for the commissionaires of Northern Alberta Division and on the Board for Careers, The Next Generation. He is an executive advisor on the Alberta Mining Safety Association Board.

World Mining Equipment

The online directory of equipment, products and services for the global mining industry



The World Mining Equipment Directory:

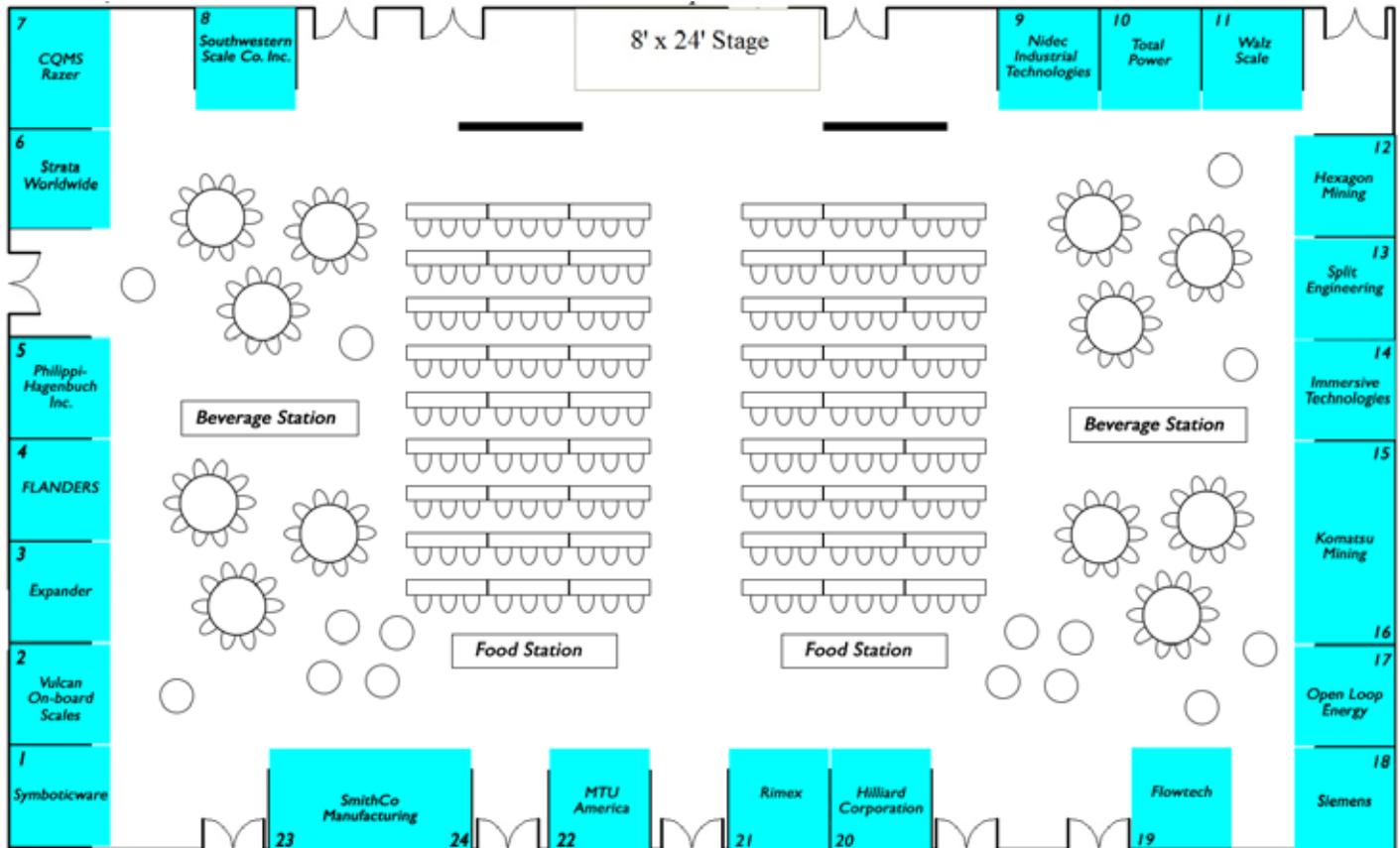
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Exhibitor Profiles

CQMS Razer

2500 Legacy Drive, Suite 206,
Frisco, TX 75034
T +1 469 269 2500
www.cqmsrazer.com



CQMS Razer is a global engineering, software, and manufacturing company that delivers productivity technology to large surface mining operations around the world. It describes itself as a leader in engineering innovation and manufacturing of mining equipment. Its range of products includes cast lip systems with rope shovel cast lips, ground engaging tools (GET), load haul optimization software systems, dragline buckets, dragline rigging and fixed plant wear products. The company operates globally, covering major mining regions with dual headquarters in the USA and Australia, plus manufacturing facilities spread throughout Australia and China, as well as a Global Technology Center located in Queensland, Australia.

Expander Americas Inc.

223 Industrial Street
DeWitt, IA 52742
T: +1 888 935 3884



www.nord-lock.com/expander-system

Expander System pivot-pin technology provides a permanent solution to lug wear. The system can be installed directly into the lugs of a new machine or be used as a spare part for repairs, eliminating the need for expensive welding and line boring.

FLANDERS

8101 Baumgart Rd.
Evansville, IN 47725
T + 812 867 7421
www.flandersinc.com



Flanders is a global leader in motors, drives, electronics and control systems for heavy industrial machines. The privately owned company has more than 70 years of experience in engineering, manufacturing, and servicing large electrical-rotating equipment and systems that bring massive machines to life. Today, Flanders develops some of the most advanced controls and software for heavy machines in the connected era of Big Data, and continues to provide its trusted hands-on repair of motors and electrical systems. Flanders has offices, warehouses, and regional service centers in North America and South America, Australia and Africa. The corporate headquarters are based in Evansville, Indiana.

FlowTech Fueling

92 Robinson Road
Moorcroft, WY 82721
T +307 756 3523
www.flowtechfueling.com



FlowTech Fueling is located in the Powder River Basin of Wyoming. With more than 80 years of combined mining experience, FlowTech has become known for its commitment to providing complete fueling solutions with quality products and outstanding service. Whether a company is interested in mobile fuel depots, non-pressure fueling systems or comprehensive fuel/lube filtration, FlowTech can help them achieve improved safety and multidimensional savings while greatly reducing environmental impacts.

Hexagon Mining

40 East Congress St., Suite 300
Tucson, AZ 85701
T +1 520 795 3891
www.hexagonmining.com



Hexagon's Mining division combines surveying, design, fleet management, production optimization, and collision avoidance in a life-of-mine solution that connects people and processes. According to Hexagon, its customers are safer, more productive, and can make sense of their data. They are shaping smart change by helping to connect all parts of a mine with technologies that make sense of data in real time. Driven by professionals for professionals, Hexagon's solutions are tailored to a customer's needs and delivered on their terms — short term, long term for the life of a mine.

Hilliard Corp.

100 West Fourth Street
Elmira, NY 14901
T + 607 733 7121
www.hilliardcorp.com



The Hilliard Corp. is a leader in industrial braking technology. Hilliard braking systems have a proven track record of performance, reliability and value to its customers. Hilliard offers an entire range of industrial modular brakes, caliper brakes, rail and disk brakes, electric brakes, and power units, mounting brackets, and discs and hubs. Customers can choose from a complete line of fail-safe and active-braking systems to meet the needs of their specific application. With more than 110 years of experience, Hilliard's industrial brakes can work for any application or industry.

Immersive Technologies

9746 Sandy Parkway
Sandy, Utah, 84070
T + 1 801 748 0844

www.immersivetechologies.com



Immersive Technologies' mission is to increase a customer's site's profitability by optimizing the safety and productivity of their operators. Immersive Technologies delivers on this mission through an effective workforce optimization strategy, aligning people, process and technology. This methodology reduces risk, proves training impact and effectively manages the training process. It is the a worldwide equipment simulator supplier with a consistent and proven track record of delivering significant and measurable in-pit cost reductions, productivity gains and safety improvements. Operators learn in a highly realistic simulator, allowing the transition to the real machine to be completed faster and with more confidence. With the largest deployment of mining simulators, a global customer base, original equipment manufacturer endorsements, proven results and engineering expertise, Immersive Technologies is a recognized and trusted leader in mining training solutions, according to the company.

Komatsu Mining

4400 W. National Ave.
Milwaukee, WI 53214
T +1 414 671 4400

www.mining.komatsu



Komatsu is a partner to the mining, forestry, industrial and construction industries that maximizes value for customers through innovative solutions with original equipment and services, the company said. Through its full line of products supported by advanced internet of things (IoT) technologies and global service network, the company helps customers safely and sustainably optimize their operations. Komatsu's Autonomous Haulage System (AHS) leads the industry in tons hauled and years in commercial use, according to the company.

MTU America

39525 MacKenzie Drive
Novi, Michigan 48377
T +1 248 560 8000

www.mtuamericacareers.com



MTU America Inc., a Rolls-Royce Power Systems company, develops and supports engines ranging from 101 bhp to 4,023 bhp (75 kW to 3,000 kW) for underground and open-pit mining.

Nidec America

7555 E. Pleasant
Valley Rd., Ste. 100
Independence, OH 44131
T + 1 216 642 1230

www.nidec.com



Nidec manufactures medium-voltage drives, motors, generators, battery electric storage systems, rectifiers and more. It is also a

leader in AC and DC drives systems for excavators, crushers, and conveyors. It also provides local service. Nidec is a full-service solutions provider to the mining industry.

Open Loop Energy

1878 N. Safford Bryce Rd.
Safford, AZ 85548
T + 928 348 9200

www.openloop.net



With corporate headquarters in Safford, Arizona, and branches in Winnemucca, Nevada, Salt Lake City, Utah, and Farmington, New Mexico, (San Juan Spring Co.), Open Loop Energy Inc. provides superior hydraulic, manufacturing and support services to the global mining industry. Open Loop Energy said it stands apart from other hydraulic companies with innovations that provide solutions to the customer's problems. Product specialties include suspensions (new manufacturing) and repair; accumulators (new manufacturing) and repair; digital-controlled water distribution system (G2) for water trucks; authorized warranty repair center for Parker Hannifin (Denison pump, motors, valves); and HydroSnub (electric-shovel dipper-door snubber).

Philippi-Hagenbuch

7424 W. Plank Road
Peoria, IL 61604
T +1 309 697 9200

www.philsystems.com



For 50 years, PHIL has engineered and manufactured the best enhancements for off-highway trucks found in the world. From its innovative HiVol Bodies to Water Tanks and Lowboy Trailers, Philippi-Hagenbuch is known for exceeding its clients' expectations while maximizing the efficiencies within their off-highway truck fleet, according to the company. For more information on PHIL equipment solutions, visit www.philsystemes.com.

RIMEX Supply Ltd.

9726 - 186 Street
Surrey, BC V4N 3N7
Canada
T +1 604 888 0025
www.rimex.com



An industry leader for more than 40 years, RIMEX Supply Ltd. is recognized as the premier manufacturer and innovator of wheels and rims for the world's most challenging industrial applications. By focusing on the requirements of its customers, RIMEX builds custom solutions and specialized products ranging from advanced wheels and rims available to the TyreSense TPMS and peripheral technology system that sets new standards for tire monitoring and asset management. With sales and inspection/repair centers around the world and a track record second to none, RIMEX continues to be a trusted global partner to the industrial equipment community.

Siemens Drive Technologies
100 Technology Dr.
Alpharetta, GA 30005
T +1 770 740 3773
www.siemens.com



With innovative, integrated technologies for electrification, automation and digitization across the entire life cycle, Siemens help customers increase productivity, and improve the reliability, safety, and efficiency of products, processes and plants. Siemens mobile mining combines innovative custom-system solutions for electric rope shovels, haul trucks and draglines with worldwide aftersales support. It sustains competitiveness through service aimed not only at optimizing the efficiency of system components, but also at achieving lasting improvement in processes. As a trusted mining partner, it helps customers meet their challenges thereby enabling them to set new benchmarks within their fields, according to Siemens.

SmithCo
30902 C-38
P.O. Box 932
Le Mars, IA 51031
T + 1 712 546 4409
www.sidedump.com



SmithCo offers Mine Series side-dump trailers from 60-ton to 100-ton single trailers and they can be pulled in train for additional payloads. Truck and trailer is an ideal haulage solution for distance hauling, according to SmithCo. Smaller haul roads open up the possibility of opening those satellite mine sites that have been cost prohibitive before, SmithCo said.

Southwestern Scale Co.
2535 W. Broadway
Phoenix, AZ 85041
T + 1 602 243 3951
www.swscale.com



Southwestern Scale is an industry leading provider of weighing systems, solutions and services for mining operations, including haulage and loading environments. These solutions and services include truck scales, weight study services, static and in motion scales for haul trucks and rail cars, cathode production scales, belt scales, weight-based hopper and batching solutions, and preventive maintenance services.

Split Engineering
2555 N. Jackrabbit Avenue
Tucson, AZ 85745
T +1 520 327 3773
www.spliteng.com



Split Engineering provides measurements to manage fragmentation from pit to plant to improve mine profits. It quantifies a company's fragmentation. It said it is a leader in providing coarse rock size measurement systems and software for every stage in the comminution process. Split-Online sets the standard for

automated coarse rock fragmentation size measurement systems, installed at more than 140 different mine operations with more than 720 camera locations on five continents, according to the company. Split-ShovelCam and Split-TruckCam system provides real-time measurement of post-blasted rock in the mine. Since 1997, Split Engineering has been providing systems, software and service to the worldwide mining industry to enable process measurement and control.

Strata Worldwide
1000 Marietta St.
Atlanta, GA 30318
T + 1 404 549 2420
www.strataworldwide.com



Strata Worldwide has spent decades becoming a global provider of products, services and technologies that are vital to bringing the highest level of safety to mining across the globe. One of Strata's most dominant safety products is HazardAvert proximity detection and collision avoidance. The ever-enhancing technology is designed specifically to overcome the most prevalent accidents experienced in surface operations around the world today, according to Strata. The system promotes safer work practices through increased safety awareness and modified worker behavior. It helps to prevent vehicle-to-vehicle and vehicle-to-pedestrian accidents and collisions, which in turn improves overall mine productivity and efficiency, Strata added.

Symboticware
1545 Maley Drive
Sudbury, ON, P3A 4R7
Canada
T +1 800 519 5496
www.symboticware.com



Symboticware provides an industrial industry of things (IoT) hardware and software platform to help customers unlock, collect and analyze valuable data from their industrial mobile and fixed assets to help improve business outcomes based on optimizing productivity; identifying opportunities to increase efficient use of their resources; increasing equipment availability through better condition and preventative maintenance; and enhancing safety by real-time feedback to operators, according to the company. Originally developed for monitoring in underground mining, Symboticware technologies are used in many remote and rugged applications, from the far north to kilometers below the earth's surface.

Total Power
11199 Sorrento Valley Rd
Suite 205
San Diego, CA 92121
T +1 858 677 9211
www.tpxtech.com



With more than 22 years in business, Total Power is a specialist in fuel additives and fuel management/accounting systems for open-pit and underground mining operations. They optimize fuel burn, emission reduction, fuel data analysis and management, according to the company.

Vulcan On-Board Scales
5920 South 194th Street
Kent, WA 98032
T +1 800 237 0022
www.vulcanscales.com



Vulcan OnBoard Scales has weighing solutions for underground and above-ground vehicles. Customers can weigh their mining payload at the pickup point while also tracking truck frame fatigue, according to the company. It offers model-specific onboard weighing solutions for high-capacity dump and articulated dump trucks carrying greater than 20 tons. The scales include a meter in the cab of the truck and warning options to let the loader know when the maximum capacity has been reached. Additional options include Vulcan's V700 Remote Display and exterior mounted scoreboards.

Walz Scale
656 High Point Lane
East Peoria, IL 61611
T +1 309 228 9170
www.walzscale.com



Walz Scanner is a customer's single source for volumetric measurement systems. Its extensive volumetric management systems provide operations with advanced tools for managing vehicle, belt and stockpile volumes, according to the company. Volumetric load scanners offer an effective solution to tangible weighing systems.

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www.towhaul.com
406.388.3424



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At Komatsu, we provide equipment that helps you supply the world with essential minerals, such as copper, that power communication, entertainment and technology. Our innovative autonomous haul trucks help remove people from harm's way while efficiently transporting the materials that move society ► **FORWARD.**

To learn more about Komatsu's mining business, visit www.mining.komatsu

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