



October 18th, 2016 – TUESDAY

AUDITORIUM XX

09:30 AM - OPENING CEREMONY

Honorary Chairperson: José Fernando Coura – CEO, Brazilian Mining Association (IBRAM), Brazil
Murilo Ferreira – CEO, VALE S/A, Brazil

Congress Chairperson: Prof. Jair Carlos Koppe, Federal University of Rio Grande do Sul (UFRGS), Brazil

World Mining Congress: Prof. Józef Dubiński, Central Mining Institute (GIG), Katowice, Poland

AUTHORITIES & GOVERNMENTS

- Fernando Coelho Filho, Minister of Mines and Energy of Brazil
- Albert Rau, First Vice Minister of Investment and Development of the Republic of Kazakhstan
- Oscar Stenström, Vice Minister of Enterprise and Innovation of Sweden
- Piyus Goyal, Minister of State for Coal in India
- Wang Xianzheng, President of China National Coal Association
- Guests

HOMAGE CEREMONY – Special Honouree: Marcelo Ribeiro Tunes - Director of Mining Affairs of the Brazilian Mining Association

12:00 PM – OPENING THE WMC 2016 EXPO

2:30 PM – TALK SHOW WITH MINING COMPANIES CEOs

“Mining in a World of Innovation: the mining company of the future”

- Murilo Ferreira – CEO, VALE S/A;
- Tito Martins – CEO, Votorantim Metals
- Ruben Fernandes – CEO, Anglo American Brazil
- CEO (4)

MODERATOR: Gillian Davidson, Head Mining & Metals of World Economic Forum (WEF), Switzerland

4:00 PM BREAK

4:15 PM – KEYNOTE SPEAKER:

“Breaking Free: Three Keys to Conquering the Unknown”

Context: Our world is changing faster than ever and yet most companies struggle to adapt and transform, even when they know they must. Explain how human nature perpetuates down-cycles, stifles innovation and slows down progress and the three keys that allow future focused firms to seize opportunity and change the very nature of their industries, are the objectives of this session.

- George Hemingway, Partner & Innovation Practice Lead, Stratalis Consulting, New York City, USA

5:00 – PLENARY SESSION WITH WMC CHAIRPERSONS

“Past, Present and Future: evolution of dialogue and knowledge generated by World Mining Congress”

- Prof. Józef Dubiński, Chairman World Mining Congress, Poland
- Prof. Ferri Hassani (McGill, Canada, WMC2013)
- Prof. Jair Carlos Koppe (UFRGS, Brazil, WMC2016)
- Prof. Zharmanov Abdurassul Aldashevich (WMC2018 in Astana, Kazakhstan)

MODERATOR: Prof. Luis Enrique Sánchez [USP], WMC2016 Congress Co-chair, Brazil



October 19th 2016 - WEDNESDAY

The Conference with Plenary Sessions will be during the morning and the technical sessions in the afternoon

AUDITORIUM XX

08:30 AM - ISSA Mining Symposium on Safety and Health in Mining: Accidents – Fatalities – Diseases: Daily Business or a Need to Change?

Objective of session: The fatality and accident rates in mining are still much higher than in other industries. Workplace exposures cause illnesses and pain. The industry suffers from bad image, economic loss and a lack of acceptance in society due to this non-satisfying situation. ISSA Mining has launched a new success promising strategy to assist mining countries and the mining industry to change and improve. The basic belief of the VISION ZERO Strategy of ISSA Mining is: every accident and every occupational illness is preventable, if leaders and managers care personally for safety and health and act according to their responsibility. Within the session the VISION ZERO Strategy will be explained and the 7 Golden Rules Concept to implement the strategy will be presented. Speakers from different countries and mining industries will give examples how they face these challenges.

Moderator: Helmut Ehnes, Secretary General ISSA Mining, Manager Prevention BG RCI, Germany

Opening Address with Ulrich Meesmann, President of ISSA Mining, Member of the management board BG RCI, Germany

Keynote “VISION ZERO & 7 Golden Rules - The New Global Prevention Strategy for Safe, Healthy and Sustainable Mining”

- Cristian Moraga, Vice President of ISSA Mining, C.E.O. Mutual de Seguridad C. CH. C., Chile

The industry’s perspectives: “How to achieve VISION ZERO?”

Participants:

“Safety Challenges in Open Pit Coal Mining”

- Gabriel Martinez Ortega, Corporate H&S Training Manager, Prodeco Group, Colombia

“Peruvian Mining: Vision Zero Accidents at 2021”. Strategies to Reduce Fatal Accidents at Peruvian Bicentennial

- Fernando Borja, General Manager at the Mining Safety Institute of Peru (ISEM), Peru

“Workplace Health Promotion and Wellness Program at Grupo Progreso”

- Ovidio Roberto Hermosilla Colmenares, Cementos Progreso S. A., Guatemala

10:30 AM BREAK

Health topic Mining in High Altitude (to be confirmed)

- Javier Cantuarias, OHS Corporate Manager Collahuasi, Chile

Audience discussion

11:30 AM - Initiative Launching – Video Series “100% Safe Mining”, Social Service of Industry (SESI)

Objective of session: The Series “100% Safe Mining” consists in 50 episodes that shows the most important tools to ensure the worker’s well-being are information, qualification and training. Each episode delves into the main activities in underground and open pits mines. Shows how mining companies and workers can work together to promote general safety.

Session Moderator: Cláudia Pellegrinelli, Coordinator of IBRAM Health & Occupational Safety Program, Brazil

- Marcos Tadeu de Siqueira, Operations Director, Social Service of Industry (SESI)
-



October 19th 2016 - WEDNESDAY

The Conference with Plenary Sessions will be during the morning and the technical sessions in the afternoon

AUDITORIUM XX

08:30 AM - IBRAM/MAC Panel Session on Tailings Management

Objective of session: to provide a forum to discuss global and corporate developments to improve tailings management and safety, including emerging industry standards and regulatory approaches, and corporate and site-level practices for good governance and tailings management.

Session Moderator: Pierre Gratton, President and CEO, Mining Association of Canada (MAC)

Part 1: Emerging Industry Standards and Regulatory Approaches to Tailings Management

- **Tom Butler**, President and CEO, International Council of Mining and Metals (ICMM): *The ICMM's role as an international representative body in undertaking an independent review of tailings management following the tailings dam failure in Brazil, with particular focus on the management of critical controls;*
- **Ben Chalmers**, Vice President, Sustainable Development, Mining Association of Canada (MAC): *The tailings management component of MAC's Towards Sustainable Mining program, and highlight some examples of progressive tailings management;*
- **Harvey McLeod**, Principal, Klohn Crippen Berger, Chair of the Tailings Committee, International Commission on Large Dams (ICOLD): *Canadian and international developments on tailings dam design and management practices that improve safety of tailings dams. The new changes to the Mining Regulations that have been implemented as a result of the Mount Polley tailings dam failure.*

- Comments from panellists, and then comments and questions from session attendees.

10:30 AM - BREAK

Part 2: Good Governance and Tailings Management Practices at Corporate and Site Levels

- **Michel Julien**, Vice President, Environment, Agnico Eagle Mines Limited: *Tailings management across Agnico Eagle's operations, and share some experiences based on over 20 years designing tailings facilities, and on the evolution of tailings management in Canada;*
- **Dr. Caius Priscu**, Head of Mineral Residue Management, Anglo American: *Portfolio risk management and dam safety practice across Anglo American's operations.*

- Comments from panellists, and then comments and questions from session attendees.

AUDITORIUM XX

08:30 AM - Mining Innovation in Sweden

"Model Triple Helix: Industry, Government and Academia, which influences the innovation spirit of the country"

- **Opening remarks.** Vice Minister Oscar Stenström, Ministry of Enterprise and Innovation.

08:40 AM - Mining technology and efficiency: a trade-off with society and environment. Prof. Diego Galar, Luleå University;

09:00 AM - Panel 1: Communication in the mines - Presentation of specific case, followed by a 10 minutes debate

09:40 AM - Panel 2: Autonomous vehicles for the mining industry - Presentation of two cases, followed by a 10 minutes debate

10:30 AM BREAK

Panel "Mining Innovation in Sweden" continuation

10:45 AM - Panel 3: The future of automation - Trends within automation and how technology supports these trends - followed by a 10 minutes debate

11:30 AM - Panel 4: Sustainable and green mining - Safety, energy and water efficiency & CSR and impacts on society - followed by a 10 minutes debate

12:20 PM - Closing remarks

AUDITORIUM XX

2:00 PM - Tribute to Prof. Roberto Cerrini Villas-Bôas (in memorian) – 40 minutes

Organizers:

- **Carlos Peiter**, Center of Mineral Technology [CETEM], Brazil;
- **Marcello M. Veiga**, University of British Columbia, Canada.



October 20th 2016 - THURSDAY

The Conference with Plenary Sessions will be during the morning and the technical sessions in the afternoon

AUDITORIUM XX

08:30 AM - The Kellogg Innovation Network (KIN): Why Partnering For Development is the Future of Mining

Objective of session: This session will explore the social, economic and environmental dimensions that are so vital for a vibrant mining industry and a future that provides for an equitable distribution of benefits to all stakeholders. As the mining industry deals with the steep downturn in commodity prices and demand, they continue to face complex challenges especially maintaining their social license to operate in the face of increased community activism. The Development Partner Institute will discuss how the Development Partner approach, co-created by a multi-stakeholder group under the auspices of the Kellogg Innovation Network (KIN), can be an effective approach to create a new mindset and conversation

Session Moderator: **Kulvir Singh Gill**, Senior Principal, Clareo and Collaborator at the Kellogg Innovation Network, USA

Participants:

- **Jon Samuel**, Group Head of Government & Social Affairs, Anglo American Plc, UK;
- **Antonio Werneck**, Executive Director, The Nature Conservancy Brazil (TNC), Brazil
- **Sergio Andrade**, Executive Director Agenda Publica, Brazil

10:30 AM – BREAK

AUDITORIUM XX

10:45 AM - Sustainability Governance Initiatives

Objective of session: In the past decade the mining industry has attempted to strengthen their corporate policies, increase their engagement with government, civil society and community actors, and improve their professional capability to respond to environmental and social challenges. But doubt still persists in the minds of those outside the minerals industry about the authenticity of such change. There is also increasing concern from civil society actors about the dramatic shifts in the scale, technology and location of mineral developments. Sustainability Governance Initiatives are increasingly being used by minerals companies and governments as a tool to demonstrate that they are operating responsibly. Some initiatives may also be used by civil society actors to hold mineral companies and governments to account and for companies and governments to demonstrate that they are operating responsibly. This panel session aims to identify what are the key components affecting effectiveness of such initiatives, highlighting their benefits, flaws and improvement opportunities considering the perspective of different stakeholders.

Participants:

- **Renzo Mori Junior**, The University of Queensland, Australia
- **Marcin Piersiak**, Standards Coordinator in the Alliance for Responsible Mining, Peru
- **Dione Macedo**, Coordinator of Socio-environmental Development, Ministry of Mines and Energy, Brazil

Session Moderator: **Cláudia Salles**, Manager of Environmental Affairs of IBRAM, Brazil

AUDITORIUM XX

08:30 AM - Innovation in Mineral Exploration and the Development of Mineral Resources

Objective of session: Innovation has always been an intrinsic factor to success in Mineral Exploration, with new techniques, concepts, tools and procedures developed and tested by major, medium and junior companies supported by research centres, universities and service providers. Like many other areas in modern society, along the recent years we have experienced acceleration in this process but we are still to see the positive impact on new discoveries and cost reductions. This panel is dedicated to present real examples of innovation and how they were incorporated into operations.

Participants:

- **Edson Ribeiro**, Director of Mineral Exploration, VALE S/A, Brazil
- **Olivier Bertoli**, CEO, Geovariances, France (tbc)

Session Moderator: **Prof. Onildo J. Marini**, Executive Director, Agency for Technological Development of Brazilian Mining Industry [ADIMB], Brazil

10:30 AM – BREAK



October 20th 2016 - THURSDAY

The Conference with Plenary Sessions will be during the morning and the technical sessions in the afternoon

AUDITORIUM XX

10:45 AM – Productivity in mining operations: how new innovative approaches could revert the downward trends

Objective of session: The worldwide mining operations have faced a significant decline in the last decade. Many companies are now dealing with this substantial drop-off in productivity through a series of cost-cutting exercises or point solutions. However, the problem is too big only for point solutions to solve on their own and often they have the effect of simply moving the problem further down the supply chain. Real and sustainable productivity gains will only come from broad business transformation. The answer surely will come from new innovation approaches, but mining industry has spends less on research and development for innovation compared to other sectors, especially on mining and processing methods. This session will discuss how innovation could transform this reality.

Session Moderator: (to be indicate)

Participants:

“Where do we go from here – learnings and options”

- Quest for productivity in Mining – key levers;
- Miners response – initiatives and results;
- Where do we go from here – learnings and options.
 - **Afonso Sartorio**, Mining Leader Brazil and South America, EY;

“Productivity in Mining Operations: key levers”

- **Richard Sellschop & Henrique Ceotto**, McKinsey & Company, Inc;

“Leveraging productivity: A collaborative approach for business model and management model innovation”

- Understanding why innovation is imperative for the mining industry;
- Exploring the key elements of a model of success for making innovation happen;
- Real Case: A collaborative approach using design thinking for solving strategic problems focused on productivity and safety.
 - **Rafael Laskier**, Strategy & Innovation Manager, VALE S/A

AUDITORIUM XX

08:30 AM - World Bank Energy and Extractives: Why Climate Change Matters for the Mining Industry?

Objective of session: Discuss the implications of climate change for mining investments and activities in developing countries. Areas covered include managing the transition to a zero carbon future for resource rich developing countries, impacts and adaptation for local communities, water and ecosystems and what a ‘climate smart’ approach in mining related activities might encompass. These issues are only the start of a broader discussion on how mineral rich and fossil fuel dependent countries can diversify and be prepared towards a low emissions future.

Part 1: “Range of Implications of Climate Change for the Mining Industry: from physical impacts to commodity market opportunities”

Session Moderator: Daniele La Porta, Sr. Mining Specialist, World Bank, USA

- **John Drexhage**, Consultant, WBG, Energy and Extractives Sector: *Initiatives from the Mining Sector relating to Climate*;
- **Pierre Gratton**, President and CEO, Mining Association of Canada (MAC). *Mining Association of Canada on Carbon Pricing*;
- **VALE S/A**, *Corporate Plan on Climate Change*
- **Anglo American**, *Climate Change and impacts on supply chain*

Part 2: “Roundtable the Role of Mining and Metals in Addressing Climate Change”

Moderator: Kirsten Lori Hund, Sr. Mining Specialist, World Bank, USA

- **Civil Society Perspective** (tbc)
- **Senior Government Officials** (Africa & Latin America) (tbc)
- **Rinaldo Mancin**, Director of Environmental Affairs, IBRAM, Brazil
- **Carlos Aranda**, **Sociedad Nacional de Minería, Petróleo y Energía** (SNMPE) (tbc)

10:30 AM – BREAK



October 20th 2016 - THURSDAY

The Conference with Plenary Sessions will be during the morning and the technical sessions in the afternoon

AUDITORIUM XX

10:45 AM – Water, Mining and Communities

Objective of session: Water is critical to mining operations. While industry has taken steps to become more water efficient, water quantity and quality continue to impose technical challenges both in regions where new deposits are being found and for established mines. These technical challenges are exacerbated by the growing opposition to mining projects driven, in part, by the concerns of communities, government and other water users about issues related to availability and water quality. At the same time, national and regional governments are facing challenges on how to promote economic and sustainable development, and how to manage water resources to take into account the needs of different users. In some jurisdictions, public-private partnerships (PPP) are seen as opportunities to respond to some of these challenges. In others, participatory environmental monitoring groups have been established as a means to deal with conflicts, address societal concerns, and enable multi-stakeholder participation. This international panel will discuss leading practices, challenges, and opportunities related to integrated water management and the ways in which the mining sector might reduce conflict and contribute to the transition to a more sustainable approach to water management.

Session Moderator: **Andre Xavier**, PhD, University of British Columbia & Canadian International Resources and Development Institute (CIRDI), Canada

Panellists:

- **Tom Butler**, President and CEO, International Council of Mining and Metals (ICMM), UK
- **Manuel Bernales** - Futuro Sostenible a Peruvian NGO that works on Participatory Environmental Monitoring Committees, Peru
- **Jocelyn Fraser** - Senior Communications and CSR mining professional and PhD Candidate at UBC Mining Department, Canada
- **Ben Chalmers**, Vice President, Sustainable Development, Mining Association of Canada (MAC), Canada
- **Bern Klein**, CSR Mining, Canada
- **Maria de Fátima Chagas Dias Coelho**, Director-General, Water Management Institute of Minas Gerais [IGAM], Brazil

October 21st 2016 - FRIDAY

The Conference with Plenary Sessions will be during the morning and the technical sessions in the afternoon

AUDITORIUM XX

08:30 AM - Mining and the Sustainable Development Goals (SDGs)

Objective of session: This panel will explore the mining sector potential contributions to the Sustainable Development Goals. The Agenda 2030 that defines the 17 SDGs envisages a world of universal respect for human rights, equality and nondiscrimination where no one will be left behind. A multi-stakeholder perspective in implementing Agenda 2030 suggests roles and responsibilities to all sectors. Through a global dialogue process mining industries potential contributions have been discussed and potential contributions SDG achievement. In this session we aim to discuss how to operationalize these ideas and proposals within the sector. The suggestions, ideas and recommendations for implementation will be presented as businesses cases by different actors. Results of this debate will feed into on-going global dialogue on extractive industries and SDGs under the auspices of the United Nations, World Economic Forum and other partners.

Chairs:

- **Gillian Davidson**, Head Mining & Metals, World Economic Forum (WEF), Switzerland
- **Casper Sonesson**, United Nations Development Program (UNDP), USA

10:30 AM – BREAK



October 21st 2016 - FRIDAY

The Conference with Plenary Sessions will be during the morning and the technical sessions in the afternoon

AUDITORIUM XX

10:45 AM - Using the social license to prioritize stakeholders

Objective of session: Companies face criticism for ignoring stakeholders, but which ones? Many want special attention while others demand equal treatment. The social license concept helps companies decide which stakeholder deserves more priority. Combined with information on the structure of the network of stakeholders, the win-win overlap between company interests and stakeholder concerns can be translated into strategies for stabilizing the socio-political environment. The panel will discuss practical advice for the prioritizing stakeholders and devising initiatives for engagement.

Session Moderator: **Liliane Lana Liberato**, Principal, Bridge Communication, Brazil.

Speakers:

- **Dr. Robert Boutillier**, Researcher, Simon Fraser University, President of Boutillier & Associates, Canada
- **Othon de Villefort Maia**, Manager of Communications and Community Relations, AngloGold Ashanti, Brazil
- **Dr. Kieren Moffat**, Senior Research Scientist, CSIRO, Australia
- **Javier Diez de Medida**, Corporate Affairs Manager, Minera San Cristobal SA, Bolivia

AUDITORIUM XX

08:30 AM - Innovation in Blasting with ISEE - International Society of Explosives Engineers

Objective of session: Innovation, products, ANFO, energy and cost

Session Moderator: **Prof. Enrique Munaretti** (UFRGS), WMC2016 Congress Co-chair, Brazil

Speakers:

ISEE - International Society of Explosives Engineers Institutional presentation

- **John William Eloranta (Jack)**, International Society of Explosives Engineers presentation, US

“Harnessing UAV Technology in Blasting Applications” – Throughout history man has derived an advantage by obtaining a view from above. This advantage has been used to win battles, improve the accuracy of maps, determine strategies in disaster relief and measure volumes of bulk commodities and excavation areas. While the value of the overhead view has long been recognized, cost and risk have limited its use. The emerging technology of Unmanned Aerial Vehicles (UAV), commonly referred to as "drones", is changing this equation. Highwall and face profiling, volume calculations, hole placement, fragmentation analysis and blast perimeter security are all essential in modern drill and blast operations and are being used in new and more efficient ways as their application is adapted to UAV overhead data collection. This presentation will discuss the integration of UAV data gathering methods with traditional blast design tools and blasting operations.

- **James P. Daley (Jim)**, International Society of Explosives (ISEE), US

“Decking using bulk explosives, problems and their solutions” - Decking has long been used in construction blasting to control ground vibrations. Many mines now have urban encroachment and pits expanding towards neighbors and are looking towards decking as an option. Construction blasting traditionally uses shorter holes than mining and ANFO or cartridge product, whereas mining in the USA has almost exclusively moved to bulk product. Traditionally the sequence of initiation has been different for construction *versus* mining blasting. Stemming materials react differently upon loading with emulsion explosives and with ANFO in angled holes causing mixing of stemming and explosives reducing the effectiveness of the deck material. Problems in mining include sympathetic detonation of decks or dead pressing which significantly affect the outcome of blasting. The causes of these problems are discussed and the solutions presented.

- **Dr. Paul N. Worsey**, Professor of Mining Engineering at Missouri University of Science and Technology; Discovery Channel Series *“The Detonators, US*

10:30 AM – BREAK



October 21st 2016 - FRIDAY

Continuation Panel Innovation in Blasting with ISEE - International Society of Explosives Engineers

“The question: Which explosive to use? ANFO, Emulsions or Blends?” - Traditionally ANFO has been used for dry holes and emulsion for wet conditions. ANFO is less dense so is loaded in a condensed pattern whereas emulsions are significantly denser which allows expanded patterns. Traditional economic analysis has pitted drilling against explosives costs. However, when using ANFO conditions are not always completely dry and wet holes have to be loaded with emulsion. In this paper an economic analysis is provided based on the percentage of wet holes encountered. Actual costs from the mid 2000’s are used for a crushed limestone operation as an example. At less than 8% wet holes emulsion on an expanded pattern is more economically attractive. In this scenario using emulsion on an expanded pattern eliminates risk and simplifies the charging process. The adoption of this strategy has made certain blasting contractors very successful. The effect of cost differential between ANFO and emulsion is explored along with variation in drilling cost which moves the transition percentage. In addition the use of dry and wet blends on an expanded pattern is explored which can provide additional cost savings.

- **Dr. Paul N. Worsey**, Professor of Mining Engineering at Missouri University of Science and Technology; Discovery Channel Series *“The Detonators, US*

“Blasting Strategies for Increased Mill Productivity” - The current environment for energy usage is ripe for optimization of energy usage in mining and milling. The 1988 paper by Revnitsev, *“We Really Need Revolution in Comminution”* offered a number of observations that demand close examination given the rising cost of electricity and petroleum fuels. Mineral processors have watched the advancement of products and methods that can now reduce energy usage and operating costs. However, commodity prices have been dropping and capital for new equipment and plant flowsheet changes has not been available. Now, ‘push has come to shove’. In a backhanded way, higher energy bills have made it easier to justify outlays for changes. Many iron ore companies need payback periods of less than 24 months to get funding approval. Today’s higher energy bills now shorten up the payback period.

- **John William Eloranta (Jack)**, International Society of Explosives Engineers, US

Audience discussion and Closing remarks

Followed by papers of blaster issues in the afternoon

AUDITORIUM XX

08:30 AM – MINING ECONOMICS

Objective of session: Mining investment has grown exponentially over the past decade, especially in reason of the “boom” in terms of commodities prices, leveraged mainly by the China’s growth index. However, the significant decline of prices imposes new challenges to the mining industry development continuity. The panellists will talk about the ways, challenges, tendencies and opportunities to the mineral sector for the next years, under a global and regional focus.

KEYNOTE SPEAKER

“Global mining - when will we see light at the end of the dark tunnel?”

- **Prof. Magnus Ericsson**, Luleå Technical University, Sweden

09:15 AM - KEYNOTE SPEAKER

“Investment Projects in the Peruvian Mining”

- **Rómulo Mucho Mamani**, Instituto de Ingenieros de Minas del Perú

09:45 AM - KEYNOTE SPEAKER

“World Mining: Overview and Trends”

- **Rachael Bartels**, Global Mining Lead, Accenture, UK

10:30 AM – BREAK



October 21st 2016 - FRIDAY

The Conference with Plenary Sessions will be during the morning and the technical sessions in the afternoon

AUDITORIUM XX

10:45 AM – Special Session

“The future of mining in Americas”

Objective of session: *The Presidents of the core mining associations analysing the main challenges and opportunities for mining activity in Americas, under a discussion moderated by the Organismo Latinoamericano de Minería (OLAMI).*

Session Moderator: Hugo Nielson, General Secretary of OLAMI

- Argentina
- Brazil
- Canada
- Chile
- Colombia
- Ecuador
- Mexico
- Peru

AUDITORIUM XX

08:30 AM - Developing the right approach to drive innovation in mining

Objective of session: The actions for attitudes’ creation to boost research, development and innovation (RD & I), in order to increase the competitiveness of the mining industry at international scale, demand a set of scientific and technological platforms that enables a qualitative leap, raising the competitive level of companies worldwide. These platforms cover areas and strategic sectors and aiming to stimulate the capacity of positive impacts generation on the social and economic conditions in a country. Therefore, technologies are the main agents of change in the modern world. Although, not without risks, a technological advance promise innovative solutions for the most pressing global challenges of our time. Emerging technologies offer a clear view of the power of innovation to improve life’s quality, transform companies and protect our planet.

Session Moderator: Luiz Eugênio Mello, Instituto Tecnológico Vale (ITV), Brazil

“Defining innovation for mining sector: trends and outcomes”

- Eduardo Tavares Raffaini, Partner | Consulting - Energy & Resources, Deloitte Touche Tohmatsu, Brazil

“Project MACKGRAPHE: applied research to new graphene uses”

- Prof. Thoroh de Souza, Researcher at Universidade Presbiteriana Mackenzie, Brazil

“Project Rare Earths of CBMM”

- Tadeu Carneiro, CEO, CBMM, Brazil

10:30 AM – BREAK

10:45 AM –KEYNOTE SPEECH: INOVA MINERAL PROGRAM, FINEP & BNDES, BRAZILIAN GOVERNMENT (to be confirmed)

Objective of session: The “Inova Mineral” is a joint initiative of the BNDES & FINEP intending to foster and select investment’s plans that includes technology development, production and marketing of products, innovative and more sustainable processes, aiming at the development of Brazilian companies and technologies in the production chains of the mining and mineral processing industry.

October 21st 2016 - FRIDAY

AUDITORIUM XX

04:00 PM – CLOSING CEREMONY

Closing Session with Scientific Committee and Ceremony of the “Falum Lamp” (symbolizes the granting of the right to organize the next WMC) in Astana 2018.

Keynote Speech:

- José Fernando Coura – CEO, Brazilian Mining Association (IBRAM), Brazil
- Prof. Jair Carlos Koppe, WMC 2016, Chairperson, Brazil
- Prof. Józef Dubiński, Chairman World Mining Congress, Poland
- Kazakhstan Representative (tbc)



19 a 21.outubro.2016 | October 19th to 21st. 2016

TECHINICAL PROGRAM

The WMC and Expo is a preeminent international event that brings together the world's leading experts on the mining, energy and mineral processing industries. This high-level congress gives mining professionals the opportunity to share insight into the innovations, advances and trends that are shaping the industry's future.

The World Mining Congress 2016 also will have a Mining Exhibition and a Congress, in addition to the technical sessions (oral and poster sessions). The oral session will be with 20 minutes for the presentation and 5 minutes for a question and answer period.

The Mining Exhibition will have free entrance the Congress and Technical Sessions are exclusively for the delegates of the 24th edition of World Mining Congress. Simultaneous interpretation will be available in English and Portuguese.

Register yourself and became a delegate

PROGRAMA TÉCNICO

O WMC e a Exposição de Mineração são eventos internacionais que reúnem os líderes mundiais e especialistas das indústrias de mineração, de energia e de processamento mineral. Este Congresso de alto nível dá aos profissionais de mineração a oportunidade de compartilhar *insights* sobre as inovações, avanços e tendências que estão moldando o futuro desta indústria.

O Congresso Mundial de Mineração 2016 também terá uma Exposição de Mineração e um Congresso Internacional, além das sessões técnicas (sessões orais e pôsteres). A sessão oral será com 20 minutos para a apresentação e 5 minutos para um período de perguntas e respostas.

A Exposição de Mineração terá entrada gratuita, já o Congresso Internacional e as Sessões Técnicas são exclusivamente para os congressistas da 24^a edição do Congresso Mundial de Mineração. A tradução simultânea estará disponível em Inglês e Português.

Registre-se e torne-se um Congressista

TECHNICAL SUBJECTS FOR AUTHORS / TEMAS TÉCNICOS PARA AUTORES DE TRABALHOS:

- [Mineral Exploration](#) / Pesquisa Mineral
- [Surface Mining](#) / Mina a Céu Aberto
- [Underground Mining](#) / Mineração Subterrânea
- [Mine Economics](#) / Economia Mineral
- [Mining Sustainability](#) / Sustentabilidade na Mineração
- [Mineral Processing](#) / Processamento Mineral
- [Automation and Robotics](#) / Automação e Robótica
- [Mining Innovation](#) / Inovação em Mineração

Oral Sessions will be a maximum of 25 minutes each, total of 10 per room in the afternoons from 19th to *21st October 2016.

Beginning of the Oral Sessions:

1st at 14:00; 2nd at 14:25. 3rd at 14:50; 4th at 15:15; 5th at 15:40; Break at 16:05; 6th at 16:25; 7th at 16:50; 8th 17:15; 9th at 17:40, and 10th at 18:05 ending the day at 18:30

*Day 21st October 2016 maximum 5 Oral Sessions per room due the Closing Session at 16:00

Sessões Orais serão com duração máxima de 25 minutos cada, total de 10 por sala nas tardes de 19 a *21 de outubro/2016.



Horários de Início das Sessões Orais: 1ª às 14:00 ; 2ª às 14:25. 3ª às 14:50; 4ª às 15:15; 5ª às 15:40 ; Intervalo às 16:05; 6ª às 16:25; 7ª às 16:50; 8ª às 17:15; 9ª às 17:40, e 10ª às 18:05 finalizando o dia às 18:30

*Dia 21 de Outubro/2016 máximo de 5 Sessões Orais por sala devido à Cerimônia de Encerramento às 16:00

Any doubt, please read the [Author's Guideline](#)

PRELIMINARY DISTRIBUTION OF TECHNICAL SESSIONS/ORAL PRESENTATION BASED ON PERCENTAGE OF SUBJECTS SUBMITTED TO THE SCIENTIFIC COMMITTEE / DISTRIBUIÇÃO PRELIMINAR DE APRESENTAÇÕES ORAIS BASEADA NO PERCENTUAL DE TRABALHOS RECEBIDOS PELO COMITÊ CIENTÍFICO

19 de outubro.2016 October 19 th 2016 - WEDNESDAY		
Surface Mining / Mina a Céu Aberto	Mining Innovation / Inovação em Mineração	Mining Sustainability / Sustentabilidade na Mineração
Automation and Robotics / Automação e Robótica	Underground Mining / Mineração Subterrânea	Mineral Processing / Processamento Mineral
Pesquisa Mineral / Mineral Exploration		

TECHNICAL SESSIONS/ORAL PRESENTATIONS DURING THE AFTERNOON

20 de outubro.2016 October 20 th 2016 - THURSDAY		
Mining Innovation / Inovação em Mineração	Mining Sustainability / Sustentabilidade na Mineração	Surface Mining / Mina a Céu Aberto
Mineral Processing / Processamento Mineral	Underground Mining / Mineração Subterrânea	Mine Economics / Economia Mineral

TECHNICAL SESSIONS/ORAL PRESENTATIONS DURING THE AFTERNOON

21 de outubro.2016 October 21 st 2016 - FRIDAY		
Papers of blaster issues with ISEE - International Society of Explosives Engineers	Mining Innovation / Inovação em Mineração	Papers of water and sustainability Continuation of Water, Mining and Communities with Andre Xavier, PhD
Mining Sustainability / Sustentabilidade na Mineração	Underground Mining / Mineração Subterrânea	Mining Sustainability / Sustentabilidade na Mineração

TECHNICAL SESSIONS/ORAL PRESENTATIONS DURING THE AFTERNOON

The Authors will receive a notification informing the schedule (date and hour) of presentation, from September 15th.

TECHNICAL SESSIONS/POSTER PRESENTATIONS DURING THE AFTERNOON

The poster session will be presented from **October 19th to 21th, from 14:00hs to 18:30hs.**

When presenting posters at the 24th World Mining Congress, the presenter usually stands next to the poster, thus allowing passers-by to engage in one-on-one discussions with the presenter. The Author will receive a notification informing the schedule (date and hour) of presentation, from September 15th.

The final printed version should be delivered on the first day of WMC 2016, October 18th, in Rio de Janeiro, with the removal of the credential/badge to be received at the Registration Desk in the Congress.

Venue: SulAmerica Convention Center Address: Av. Paulo de Frontin, 1 - Cidade Nova, Rio de Janeiro



Important - Please be informed that the presentation and publication of a poster in the congress is only possible if at least one of the authors is fully registered as Author by **August 30, 2016**.

CONFIRMED SPEAKERS available at http://www.wmc2016.org.br/img/Confirmed_Speakers.pdf

Any comment about this Preliminary Program, please use our link: <https://ibram-pesquisa.typeform.com/to/PvYtf8>

The list with all **papers analysed** are available at http://www.wmc2016.org.br/img/Papers_under_evaluation.pdf

E-mail WMC Secretariat ✉ secretary@wmc2016.org.br



Linked 

WMC 2016 Synthetic Program View



All the Sessions will run simultaneously, from October 19 to 21, mornings and afternoons.

TECHNICAL PROGRAM				
OCTOBER 18th - TUESDAY				
09:30	Opening Ceremony			
12:30	Opening The EXPO			
	LUNCH			
14:30	Talk Show With CEO's			
16:00	REFRESHMENT BREAK			
16:15	Keynote Speaker			
17:00	Plenary with Chairpersons			
OCTOBER 19th - WEDNESDAY				
MORNING				
	Auditory 1	Auditory 2 e 3	Auditory 4	
08:30	ISSA Mining Symposium on Safety and Health in Mining and SESI - Brazil	IBRAM/MAC Tailings Management	Mining Innovation in Sweden	
10:30	REFRESHMENT BREAK			
10:45	ISSA Mining Symposium on Safety and Health in Mining and SESI - Brazil	IBRAM/MAC Tailings Management	Mining Innovation in Sweden	
12:30	LUNCH			
AFTERNOON				
14:00	Technical Papers Presentation	Technical Papers Presentation	Technical Papers Presentation	
16:00	REFRESHMENT BREAK			
16:30	Technical Papers Presentation	Technical Papers Presentation	Technical Papers Presentation	
OCTOBER 20th - THURSDAY				
MORNING				
	Auditory 1	Auditory 2	Auditory 3	
08:30	The Kellogg Innovation Network	Mineral Exploration	Climate Change and Mining Industry	
10:30	REFRESHMENT BREAK			
10:45	Sustainability Governance Initiatives	Productivity in mining operations	Water, mining and Communities	
12:30	LUNCH			
AFTERNOON				
14:00	Technical Papers Presentation	Technical Papers Presentation	Technical Papers Presentation	
16:00	REFRESHMENT BREAK			
16:30	Technical Papers Presentation	Technical Papers Presentation	Technical Papers Presentation	
OCTOBER 21th - FRIDAY				
MORNING				
	Auditory 1	Auditory 2	Auditory 3	Auditory 4
08:30	Mining and Sustainable Development Goals	Innovation in Blasting with ISEE	Mining Economics	Developing Innovation in Mining
10:30	REFRESHMENT BREAK			
10:45	Using social license to prioritize stakeholders	Innovation in Blasting with ISEE	The future of mining in Americas	INOVA MINERAL PROGRAM - BRAZIL
12:30	LUNCH			
AFTERNOON				
14:00	Technical Papers Presentation	Technical Papers Presentation	Technical Papers Presentation	
16:00	Closing Session and Ceremony of the Falum Lamp to Republic of Kazakhstan			