Programme - MPES 2015

Day 1
9 November 2015

07:00 - 08:00
Registration & early morning refreshments

Session 1
Chairperson: A Dougall

08:00 - 08:10
Welcome: C Musingwini - Conference Chairperson

08:10 – 08:25
Welcome SAIMM:
Dr RT Jones, SAIMM President

08:25 - 08:50
Conference Opening:
M Teke - President, Chamber of Mines of South Africa

08:50 - 09:10
MPES International Chairperson Address:
R Singhal, International MPES Chair. (Presented by
C Musingwini, Conference Chairperson S.A)

Session 2
Chairperson: A Dougall

09:10 - 09:50
Keynote Address:
Operating a mining company in challenging
times
N Froneman - CEO, Sibanye Gold

09:50 – 10:15
Global Mining Standards Group (GMSG)
Presentation:
D Vogt – CMMS

10:15 – 10:25
Conference Premier Sponsor Presentation

10:25 – 10:55
Mid-Morning Refreshments

Session 3
Mine Planning and Optimisation
Chairperson: B Genc

Session 4
Mining Technical Systems
Chairperson: S Rupprecht

10:55 - 11:20
Integrating mining loading and hauling equipment
selection and replacement decisions using
stochastic nonlinear programming
G. Santelices*, R. Pascual*, A. Luer-Villagra†, A.
MacCawley*, R. Pascual*, A. Lüer-Villagra†,
Pontificia Universidad Católica de Chile, Santiago, Chile
†Universidad Andrés Bello, Santiago, Chile
§Luleå University of Technology, Luleå, Sweden

11:20 – 11:45
Loading and haulage modeling and simulation in a
Brazilian Iron Ore mine
Campos, Pedro Henrique1; Arroyo Carlos E.2; Curi, Adilson3; Cano Abildades4
1 Federal University of Ouro Preto, Brazil
2 Federal University of Minas Gerais, Brazil
3 Federal University of Ouro Preto, Brazil
4 Federal University of Goias, Brazil

Session 5
Mechanisation and Automation
Chairperson: D Vogt

10:55 - 11:20
Comparison of production rates using
different load haul - dump fleet
configurations: a case study from
Kirunavara mine
B. Skawina, A. Salama, J. Greberg,
and H. Schunnnesson
University of Technology, Luleå, Sweden

11:20 – 11:45
Cost effective vehicle management
information systems
S. Gruber, S. Mendes, and F.C. de Vos
Cyset Corporation

11:45 – 12:10
Water hydraulic solutions for longhole
drilling, wide raise development, and
hydro-stopping
P.D. Fraser Hydro Power Equipment
(Pty) Ltd, Randburg, South Africa

Session 6
Open Pit Mining
Chairperson: A Dougall

10:55 - 11:20
Development of production management
at a surface mining operation
E. Baafi and G. Shaw
Faculty of Engineering and Information
Sciences, University of Wollongong, Australia

11:20 – 11:45
Safe and efficient dump body removal
and installation by means of the
Kimbo Dump Body Exchange System
M.A. Giménez* and N. Schwarz†
*Novamine, Antofagasta, Chile
†Schwarz Global Consulting,
Johannesburg, South Africa

11:45 – 12:10
Optimize the technology, process, and
people to achieve a rolling plan process
D. Hanekom, N. Nel, and A. Smith
Anglo American Platinum
Session 7
Mine Planning and Optimisation
Chairperson: G. Smith

1. Poor sampling, grade distributions, and financial outcomes: a quantitative approach using stochastic process simulation (Case study: Bafokeng) – M. K. G. A. Minnitt School of Mining Engineering, University of the Witwatersrand

2. The effect of geological uncertainty on achieving short-term targets: a quantitative approach using the Networked Smart Markers system – M. Soleymani Shishavan and J. Berendorf

3. Geological iso-estimation, reconcilation and its relevance to the extraction strategy at Union Mine – M. Minaei Mobtaker* and M. Osanloo†

12:10 – 12:35

12:35 – 13:00

13:00 – 13:25

13:25-13:50

13:50 – 14:50

Lunch

14:50-15:15

Multinomial logistic regression analysis of a stochastic mine production system – N. S. Magaga†, C. Musigwini*, and M. M. Ait†

Real options technique to determine safety stock for mining production – E. Song School of Engineering, Aalto University, Espoo, Finland

15:15-15:40

Mid-afternoon refreshments

15:40- 16:10

Session 8
Mining Technical Systems
Chairperson: S. Rupprecht

1. Measuring ‘Design and Layout’ software utilization in the South African mining industry – B. Genc and C. Musigwini School of Mining Engineering, University of the Witwatersrand, Johannesburg

2. Implementation of novel subsurface deformation-sensing device for open pit slope stability monitoring – F.T. Suorineni UNSW Australia School of Mining Engineering, Kensington, Sydney

3. Making hard decisions in mining operations – M. Yavuz Eskisehir Osmangazi University, Turkey


12:10 – 12:35

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Real options technique to determine safety stock for mining production – E. Song School of Engineering, Aalto University, Espoo, Finland

15:15-15:40

Mid-afternoon refreshments

15:40- 16:10

Session 9
Mechanisation and Automation
Chairperson: J. Porter


2. A review of diagnosis of steel cord conveyor belt cores condition, with applicability to puncture resistance and operations in Poland – M. Bajda, R. Blatuz H. Hardygöra, and L. Jurdziaık Wroclaw University of Technology

3. The importance of people in the process of converting a narrow tabular, hard rock mine to mechanization – D. Vogt and T. Hattingh Centre for Mine Co. Ltd, Japan

12:10 – 12:35

12:35 – 13:00

13:00 – 13:25

13:25-13:50

13:50 – 14:50

Lunch

14:50-15:15

Enhancement of productivity in surface mines through analysis of Production Index: a case study – M. Mohammadi†, P. Raiz, T. Z. Mansouri*, and A.M.M. Panahi*

“Division of Mine Engineering, Gochar Zamin Iron Ore Company, Sirjan, Iran. †Faculty member, Department of Mine Engineering, Islamic Azad University, Sirjan branch, Sirjan, Iran. ‡Professor, Department of Mine Engineering, Indian Institute of Technology (BHU), Varanasi, India.

15:15-15:40

Mid-afternoon refreshments

15:40- 16:10

Session 10
Open Pit Mining
Chairperson: A. Dougall

1. Impact of electric excavators on voltage quality of a Vietnam open pit coalmine’s 6 kV electrical system – T. Le Xuand HoNi University of Mining and Geology, Vietnam

2. Methodical support of modelling and scheduling of mining and transport operations using trucks and conveyors – Z. A. Adlikhanova and A. A. Boyandinova Mining Institute after D. A. Kunayev, Almaty, Kazakhstan


12:10 – 12:35

12:35 – 13:00

13:00 – 13:25

13:25-13:50

13:50 – 14:50

Lunch

14:50-15:15

15:15-15:40

Mid-afternoon refreshments

15:40- 16:10

Session 11
Mine Planning and Optimisation
Chairperson: G. Smith

1. Chaos in iron ore price prediction – M. Minasi Mobtaker* and M. Osanlo†

2. The importance of people in the process of converting a narrow tabular, hard rock mine to mechanization – D. Vogt and T. Hattingh Centre for Mine Co. Ltd, Japan

3. The effect of geological uncertainty on achieving short-term targets: a quantitative approach using the Networked Smart Markers system – M. Soleymani Shishavan and J. Berendorf

14:50-15:15

15:15-15:40

15:40- 16:10

Mid-afternoon refreshments

Session 12
Mining Technical Systems
Chairperson: C. Birch

1. Changes in acoustic emission during linear cutting – C. Büschgens and T. Bartniitzki Institute for Mining and Metallurgical Machinery, RWTH Aachen University

2. The importance of people in the process of converting a narrow tabular, hard rock mine to mechanization – D. Vogt and T. Hattingh Centre for Mechanised Mining Systems, University of the Witwatersrand, Johannesburg.

3. Impact of electric excavators on voltage quality of a Vietnam open pit coalmine’s 6 kV electrical system – T. Le Xuand HoNi University of Mining and Geology, Vietnam

14:50-15:15

15:15-15:40

15:40- 16:10

Mid-afternoon refreshments

Session 13
Mechanisation and Automation
Chairperson: L. Zindi

1. Mogalakwena Mine: mutual coexistence of mining selectivity with the effectiveness and efficiency of high-volume mechanized mining and processing – T. Muzondo and A. Willems Anglo American Platinum Limited

2. Fundamentals of traffic control and dispatching in surface mining – G. Nyawo* and P. Leeuw†

3. Enhancement of productivity in surface mines through analysis of Production Index: a case study – M. Mohammadi†, P. Raiz, T. Z. Mansouri*, and A.M.M. Panahi*

14:50-15:15

15:15-15:40

15:40- 16:10

Mid-afternoon refreshments
| Session 14 | Mine Planning and Optimisation  
Chairperson: G Smith |
| Session 15 | Mining Technical Systems  
Chairperson: C Birch |
| Session 16 | Mechanisation and Automation  
Chairperson: L Zindi |

**Session 14**

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<th>Topic</th>
<th>Authors</th>
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<tbody>
<tr>
<td>16:10-16:35</td>
<td>L.D. Meyer*, E.P. Preis*, J. Jacobs*, and P. Moller†</td>
<td>Immersive mine design</td>
<td>University of Pretoria, Mining Engineering Department; Maptek South Africa</td>
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**Session 15**

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<tr>
<td>16:10-16:35</td>
<td>P. Stasa*, O. Kodym*†, and V. Kebo*</td>
<td>CFD code Fluent as a tool for gas flow study in underground coal mines</td>
<td>VSB – Technical University of Ostrava, Faculty of Mining and Geology, Poruba, Czech Republic; College of Logistics, Prerov, Czech Republic</td>
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**Session 16**

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<tbody>
<tr>
<td>16:35-17:00</td>
<td>Study on the characteristics of EMR signals induced from fracture of rock samples and their application in rock burst prediction in a copper mine</td>
<td>E. Wang*†, X. Liu*†, Z. Li†, X. He‡, and L. Qu†</td>
<td>School of Safety Engineering, China University of Mining and Technology, China; Key Laboratory of Gas and Fire Control for Coal Mines, China; North China Institute of Science and Technology, China</td>
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<tbody>
<tr>
<td>16:35-17:00</td>
<td>Rock strength domaining at Mogalakwena Mine, South Africa</td>
<td>J.P. Germiquet* and R.C.A. Minnitt†</td>
<td>Geology Department, Mogalakwena Mine, South Africa; University of the Witwatersrand</td>
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**Session 15**

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<tbody>
<tr>
<td>16:35-17:00</td>
<td>Determination of fleet size and cost per ton for a circular open pit mine – an illustrative comparative study</td>
<td>T. Zvarivadza</td>
<td>School of Mining Engineering, University of Witwatersrand</td>
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**Session 16**

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<tr>
<td>16:35-17:00</td>
<td>A review of hard-rock cutting equipment technology development at Anglo American and Anglo Platinum</td>
<td>D. Janicijevic* and P. Valicek†</td>
<td>Anglo American; Anglo American Platinum Limited</td>
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Day 2  10 November 2015

07:00 - 08:00  Registration & early morning refreshments

Session 17  Chairperson: M Woodhall

08:00 - 08:10  Welcome  C Musingwini, Conference Chairman

08:10 - 08:50  Keynote Address: Smart Innovation in Mining  G Lane - MD, NXGN

08:50 - 09:15  Impact of the South African mineral resource royalty on cut-off grades for narrow tabular Witwatersrand gold deposits  C. Birch  School of Mining Engineering, University of the Witwatersrand

09:15 - 09:40  Planning for uncertainties in open pit to underground transition for gold mines  S. Opoku  AngloGold Ashanti

09:40 – 10:05  Estimating mine planning software utilization for decision-making strategies in the South African coal mining sector  B. Genc and C. Musingwini  School of Mining Engineering, University of the Witwatersrand

10:05 - 10:15  Conference Premier Sponsor Presentation

10:15 - 10:45  Mid-Morning Refreshments

Session 18  Mine Planning and Optimisation  Chairperson: A Bascetin

10:45 - 11:10  Determination of value at risk for long-term production planning in open pit mines in an environment of price uncertainty  M. Rahmanpour* and M. Osanloo†  "Department of Mining and Metallurgical Engineering, Amirkabir University of Technology, Tehran, Iran

11:10-11:35  Determining a reliable ultimate pit design under conditions of grade, price, and slope uncertainty  M. Rahmanpour and M. Osanloo  Department of Mining and Metallurgical Engineering, Amirkabir University of Technology, Iran

11:35-12:00  A holistic approach to mine planning  P. Doig Deswik, Brisbane Australia

Session 19  Mining Technical Systems  Chairperson: M Osanloo

10:45 - 11:10  A new approach for rock mass characterization using density of intersection points on free surfaces  Alparsan/Turanyboy NE University, Konya, Turkey

11:10-11:35  Selection of a suitable schematic diagram for 35 kV/33 kV coal mine transformer substations to protect correction capacitor banks from series resonance caused by power harmonics  L. Xuan Hafoi University of Mining and Geology, Vietnam

11:35-12:00  Rock slope design at great depth as open pit mining progresses beyond the available experience base: expected behaviour and potentially robust design approaches  T. Zvarivadza  School of Mining Engineering, University of the Witwatersrand, Johannesburg

Session 20  Mechanisation and Automation  Chairperson: G Lane

10:45 - 11:10  Mining equipment overall efficiency improvement initiative instrumental in turning around the overall performance of a mine – a case study  H. Fourie Anglo American Platinum

11:10-11:35  Management operating systems to optimize mechanization within Anglo American Platinum  G. Krafft, S. Strydom, F. Fourie, P. Valicek, and J. Sevenoaks Anglo American, South Africa

11:35-12:00  Identification of key performance areas and indicators in the southern African underground coal mining delivery environment  A.W. Douall  The University of Johannesburg

Session 21  Underground Mining  Chairperson: S Rupprecht

10:45 - 11:10  Experience of developing new ore deposits in Kazakhstan  I. Yedilbayev, K.S. Chokin, V.D. Yugay, V.F. Zybkin, and V.S. Muzgina  ‘Gornoe Buro’ LLP, Almaty, Kazakhstan

11:10-11:35  Multi-seam mining of the deep Waterberg resources  C.K. Chabedi and T. Zvarivadza  School of Mining Engineering, University of the Witwatersrand

11:35-12:00  Room and pillar mining systems for Polish copper orebodies  J. Butra, R. Dębowski, and M. Szpak  KHHM CUPRUM Research and Development Centre, Poland

Session 22  Mine Planning and Optimisation  Chairperson: A Bascetin

12:00 – 12:25  Optimization of mining operations with intermediate storage based on operational scheduling  S.J. Petrovich*, M.A. Fazaulin, N.G. Stukalov†, and V.S. Muzgina††  "Sankt-Peterburg, Russia TAlmaty, Kazakhstan. D.A.Kunayev Mining Institute TAlmaty, Kazakhstan, RSE "NC CP&MRM RK" TAlmaty, Kazakhstan, Gornoe Buro LLP

12:00 – 12:25  Predicting average block size of blasted rock in calcite quarries using regression and artificial neural networks analysis  S. Kahraman* and B. Aykan†  "Mining Engineering Department, Hacettepe University, Ankara, Turkey TGraduate School of Natural and Applied Sciences, Nigde University, Nigde, Turkey

Session 23  Mining Technical Systems  Chairperson: L Zindi

12:00 – 12:25  Predicting average block size of blasted rock in calcite quarries using regression and artificial neural networks analysis  S. Kahraman* and B. Aykan†  "Mining Engineering Department, Hacettepe University, Ankara, Turkey TGraduate School of Natural and Applied Sciences, Nigde University, Nigde, Turkey

Session 24  Mechanisation and Automation  Chairperson: G Lane

12:00 – 12:25  Mine Facility Location Selection in Open Pit Mines Using a new multistep-procedure  Fazeli, M., and Osanloo, M., M. Rezaee Amirkabir University of Technology, University of Kentucky (Presentation Only)

Session 25  Underground Mining  Chairperson: S Rupprecht

12:00 – 12:25  3D geotechnical input to optimize shaft at Tumela Mine  M.R. Makgato and S. Malenga  Anglo American Platinum Ltd
Introducing the geological risk assessment into strategic LOM planning using conditional simulations.

Towards virtualization of underground mines using mobile robots – from 3D scans to virtual mines.

Trends in productivity in the South African gold mining industry

The power of the worked-out mine: Conceptual designs for mine-based pumped-storage hydropower.

Utilization of underground spaces: field experiments and practical experiences.

Impact of footwall fault on mine planning, grade dilution, and plant recoveries: risks and amelioration strategies adopted to ensure business continuity and long-term viability of MSZ mining at Unki Mine, Zimbabwe.

The delivery of two EPBMs in twin metro tunnel construction in soft ground.

The use of a smart communication technology platform to bring convergence to smart mining technologies.

The impact of groundwater in business planning at Dishaba Mine.

The Dednam Fault at 5W, Bathopele Mine – its impact on mining, planning, and risk management strategies.

The use of a smart communication technology platform to bring convergence to smart mining technologies.

At the tribute system as a funding model for artisanal and small-scale mining: a Zimbabwean case study.

Synthesis and determination of heavy and rare metals adsorption capacity of carbon materials from rice hulls, cellulose, and lignin.
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<th>Session 31</th>
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<td>08:00</td>
<td>Keynote Address: R. Webber-Youngman - Head, Mining Engineering Department, University of Pretoria</td>
<td>Chairperson: K. Chabedi</td>
<td>Mining Technical Systems Chairperson: S. Yefremova</td>
<td>Material for construction of seabed structures using fly ash-surfactant mixtures</td>
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<td>08:10</td>
<td>Welcome &amp; Vote of Thanks</td>
<td>Logic of the SAMREC Code</td>
<td>Automated operator expert system for subsol use</td>
<td>H. Shimada, A. Hamanaka, T. Sasakawa, Y. Yoshida, and S. Fujita Kyushu University, Japan</td>
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<tr>
<td>08:20</td>
<td>C. Musingwini, Conference Chairman</td>
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<td>A.A. Boyarinova and Z.A. Adilkhanovalov</td>
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<tr>
<td>09:00</td>
<td>Keynote Address: The Frontiers of Research and Technological Innovations in Heavy Mining Machinery in the United States</td>
<td>Invited to CAM / SVEUMP 2016</td>
<td>Mining Institute after D.A. Kunayev, Almaty, Kazakhstan</td>
<td>Resolving artisanal and small-scale mining challenges: moving from conflict to cooperation for sustainability in mine planning</td>
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<tr>
<td>09:30</td>
<td>Samuel Frimpong, Professor, Missouri University of Science and Technology</td>
<td>Istanbul, Turkey, Prof. Bascetin</td>
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<td>T. Zvarivadza and A.S. Nhleko</td>
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<td>10:00</td>
<td>Invitation to CAM / SVEUMP 2016</td>
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<td>The amendment of the Mine Ventilation Instruction</td>
<td>School of Mining Engineering, University of the Witwatersrand, Johannesburg, South Africa</td>
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<td>10:30</td>
<td>(Istanbul, Turkey), Prof. Bascetin</td>
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<td>Instruction</td>
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<tr>
<td>11:00</td>
<td>Session 29: Mine Planning and Optimisation</td>
<td>Chairperson: B. Gene</td>
<td>Mid Morning Refreshments</td>
<td>Session 31: Sustainability Chairperson: C Relief</td>
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<tr>
<td>11:10</td>
<td>Mine Planning and Optimisation</td>
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<td>10:40 – 11:10</td>
<td>Selective disposal of mine wastes in an iron ore operation</td>
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<td>11:30</td>
<td>Chairperson: B. Gene</td>
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<td>Mid Morning Refreshments</td>
<td>A. Cuni and A. C.P. da Rocha * Ouro Preto Mining School, Universidade Federal de Ouro Preto, Brazil</td>
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<td>12:00</td>
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<td></td>
<td>10:40 – 11:10</td>
<td>Analysis of CO2 storage possibilities in excavated underground mines</td>
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<td>12:30</td>
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<td>Morning Refreshments</td>
<td>J. Zavada, P. Stasa, K. Matejickova</td>
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**Session 30**

- Automated operator expert system for subsol use
- Mining Institute after D.A. Kunayev, Almaty, Kazakhstan

**Session 31**

- Material for construction of seabed structures using fly ash-surfactant mixtures
- H. Shimada, A. Hamanaka, T. Sasakawa, Y. Yoshida, and S. Fujita Kyushu University, Japan

**Session 32**

- Assessment of possibility for safe mining of resources at Arcelor Mittal Temirtau's Zapani, Karazhal mine by the numerical simulation methods
- R. Kojaev, R. Gabaidullin, and S. Assainov

**Session 33**

- How behaviour of tamping paste in surface paste disposal technology
- O. Ozdemir, A. Bascan, D. Adiguzel, and S. Tuyk Istanbul University, Engineering Faculty, Mining Engineering Department, Turkey

**Session 34**

- Assessment of possibility for safe mining of resources at Arcelor Mittal Temirtau's Zapani, Karazhal mine by the numerical simulation methods
- R. Kojaev, R. Gabaidullin, and S. Assainov

- How behaviour of tamping paste in surface paste disposal technology
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<tr>
<td>12:50-13:15</td>
<td>Risk assessment in open pit mining and economic uncertainty modelling</td>
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<td>using stochastic simulation – a case study of an iron ore deposit</td>
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<td>A.B. Jalloh*, K. Sasaki* and Y. Jalloh†</td>
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<td></td>
<td>*Kyushu University, Fukuoka, Japan</td>
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<td>†Fourah Bay College, University of Sierra Leone, Freetown, Sierra Leone</td>
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<td>13:40-14:40</td>
<td>Lunch</td>
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<td>12:50-13:15</td>
<td>Mine Planning through effective Identification of Key Performance</td>
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<td>Indicators in Surface Mining</td>
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<td>A.W. Dougall, The University of Johannesburg</td>
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<td>13:40-14:40</td>
<td>Lunch</td>
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<td>12:50-13:15</td>
<td>Evaluation of the pollution potential of tailings basins</td>
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<td>M. Cigagna, V. Dentoni, and B. Grosso</td>
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<td>DICAAR, Italy</td>
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