Comminution ’10, Cape Town, South Africa, April 13-16, 2010
Sponsored by:

Monday April 12th
16.00-19.00 Registration and Wine Reception

Tuesday April 13th
07.30 Registration Desk Opens
08.30 Opening Remarks
J. Wills (MEI, UK) and M.S. Powell (JKMRC, Australia)
08.50 Technical Session 1
Chairmen: R.Y. Yang (University of New South Wales, Australia) and P.W. Cleary (CSIRO Mathematical and Information Sciences, Australia)
08.50 Modeling breakage rates in mills with impact energy spectra and ultra fast load cell data
E.T. Tuzcu and R.K. Rajamani (University of Utah, USA)
09.10 Breakage of particles in unconfined particle beds
G.K.P. Barrios, R.M. de Carvalho and L.M. Tavares (Universidade Federal do Rio de Janeiro – COPPE/UFRJ, Brazil)
09.30 Comparison of different breakage mechanisms in terms of product particle size distribution and mineral liberation
Ö. Özcan and H. Benzer (Hacettepe University, Turkey)
09.50 Influence of grinding media contact points’ number in a ball mill on disintegration rate of grains of small size
A. Heim and T.P. Olejnik (Lodz Technical University, Poland)
10.10 Studies of the effect of tracer activity on positron emission particle tracking measurements on tumbling mills at PEPT Cape Town
T.S. Volkwyn, I. Govender, A. Buffler, J.P. Franzidis (University of Cape Town, South Africa), N. van der Meulen and E. Vermeulen (iThemba LABS, South Africa)
10.30 Coffee
11.10 A new method for determination of fine particle breakage
D. Ekşİ, H. Benzer and A. Sargın (Hacettepe University, Turkey)
11.30 Power draw estimations in tumbling mills using PEPT
L.S. Bbosa, I. Govender, A.N. Mainza (University of Cape Town, South Africa) and M.S. Powell (JKMRC, Australia)
11.50 Circulation rate modelling of mill charge using positron emission particle tracking
D.V.V. Kallon, I. Govender and A.N. Mainza (University of Cape Town, South Africa)

12.10 Time-averaged kinematics in tumbling mills using positron emission particle tracking
A.J. Morrison, I. Govender and A.N. Mainza (University of Cape Town, South Africa)

12.30 Simulation of a locked-cycle test using a mechanistic ball mill model
R.M. de Carvalho and L.M. Tavares (Universidade Federal do Rio de Janeiro – COPPE/UFRJ, Brazil)

12.50 Lunch

14.00 Technical Session 2
Chairmen: L.M. Tavares (Universidade Federal do Rio de Janeiro – COPPE/UFRJ, Brazil) and M. Evertsson (Chalmers University of Technology, Sweden)

14.00 Prediction of the Bond Work Index for variability analysis
V.K. Alves (Vale, Brazil) and C.L. Schneider (CETEM, Brazil)

14.20 The effect of mixtures of grinding media shapes on milling kinetics
P. Simba and M.H. Moys (University of the Witwatersrand, South Africa)

14.40 Using DEM and SPH to model wet industrial banana screens
J. Fernandez, P.W. Cleary (CSIRO Mathematical and Information Sciences, Australia) and R.D. Morrison (JKMRC, Australia)

15.00 Study of RTD (residence time distribution) and mill hold up for a continuous centrifugal mill with various G/D ratios
Hee Chan Cho, Kwan Ho Kim and Hoon Lee (Seoul National University, South Korea)

15.20 Coffee

16.00 Classifying best access points for return of external flows into flowsheets
P. Oghazi and B.I. Pålsson (Luleå University of Technology, Sweden)

16.20 Using the same type of hydrocyclones for different duties in the circuit and their contribution to overall plant performance
A.N. Mainza (University of Cape Town, South Africa), M. Lombard, J. Obiri-Yeboah and S. Arthur (Tarkwa Gold Mine, Ghana)

16.40 Comparison of different chemicals used in grinding operation on the quality of the cement and the performance of the grinding circuit
N.A. Toprak, O. Altun, N. Aydogan and H. Benzer (Hacettepe University, Turkey)

17.00 Can cyclones improve grinding?
I. du Plessis (Multotec Process Equipment, South Africa)
Wednesday April 14th

08.50 **Technical Session 3**
Chairmen: B.I. Pålsson (Luleå University of Technology, Sweden) and R.K. Rajamani (University of Utah, USA)

08.50 **Real-time statistical process control in crushing plants**
M. Evertsson and E. Hulthén (Chalmers University of Technology, Sweden)

09.10 **A comparative study between cone crushers and theoretically optimal crushing sequences**
E. Lee and C.M. Evertsson (Chalmers University of Technology, Sweden)

09.30 **DEM simulation of performance and rock breakage in cone crushers**
J. Quist and M. Evertsson (Chalmers University of Technology, Sweden)

09.50 **Real-time algorithm for cone crusher control with two on-line variables**
E. Hulthén and C.M. Evertsson (Chalmers University of Technology, Sweden)

10.10 **The advantage of half scale to full scale HPGR modelling**
F. Heinicke (Polysius AG, Germany)

10.30 Coffee

11.00 **A preliminary investigation into the feasibility of a novel HPGR-based circuit for hard, weathered ores containing clayish material**
P. Rosario, R. Hall, B. Klein (University of British Columbia, Canada) and M. Grundy (AMEC Americas Ltd, Canada)

11.30 **Comparison of open and closed circuit HPGR application on dry grinding circuit performance**
O. Altun, N.A. Aydogan, N.A. Toprak, H. Dundar and H. Benzer (Hacettepe University, Turkey)

11.50 **Investigation of the breakage of hard and soft components under high compression: HPGR application**
H. Benzer, N.A. Aydoğan and H. Dündar (Hacettepe University, Turkey)

12.10 **Breakage of waste concrete for liberation using an autogenous mill**
Kwan Ho Kim, Hee Chan Cho and Ji Whan Ahn (Seoul National University, South Korea)

12.30 **SAG kWh/t measured using a standard test – 53 mill design projects in 6 years**
J. Starkey (Starkey & Associates Inc., Canada)

12.50 Lunch

14.00 **Technical Session 4**
Chairmen: H. Benzer (Hacettepe University, Turkey)

14.00 **Optimization of the SAG mill circuit at Kinross RPM Brazil**
M.P. Gomes, L. Tavarez Jr. (Kinross’ Rio Paracatu Mineração (RPM), Brazil), E.S. Nunes Filho, J. Colacioppo and W. Valery (Metso Process Technology and Innovation, Australia)

14.20 **Monitoring of the operational states of a semi-autogeneous mill**
J.J. Burchell, C. Aldrich, J.P. Barnard (University of Stellenbosch, South Africa) and J.W. de V. Groenewald (Anglo Platinum Management Services, South Africa)

14.40 **Wear and design improvements in discharge cones for large SAG/AG mills**
C. Faulkner (Bradken, Australia)
15.00 **Energy efficient grinding circuits from operators’ viewpoint**  
Mingwei Gao (JKTech Pty Ltd, Australia) and R. Harvey (Mount Isa Mines, Australia)

15.20 **The development of a dry energy efficient grinding circuit for Anglo American**  
W. van Drunick, N. Palm (Anglo Research, South Africa) and C. Gerold (Loesche, Germany)

15.40 **Taking advantage of shapes of rock to reduce comminution energy**  
R. Chandramohan, M. Powell and P. Holtham (JKMRC, Australia)

16.00 Coffee

18.30 Coach departs for Conference Dinner at Spier Wine Estate, Stellenbosch
Thursday April 15th

08.30  
**Technical Session 5**  
Chairmen: W. van Drunick (Anglo Research, South Africa) and G. Davey (Metso Process Technology Support, UK)

08.30  
**Interpretation of vibration signal of tumbling mills**  

08.50  
**Ball-charge optimization of cement mills**  
P. Fleiger and S. Woywadt (Verein Deutscher Zementwerke e.V., Germany)

09.10  
**Total primary milling cost reduction by improved liner design**  
J. Dahner (Magotteaux (Pty) Ltd, South Africa) and A. Van den Bosch (Magotteaux SA, Belgium)

09.30  
**Milling rate of chosen mineral materials in a ball mill under changing apparatus – process conditions**  
T.P. Olejnik (Lodz Technical University, Poland)

09.50  
**Modeling the residence time distribution of a large ball mill as a function of load volume and percent solids**  
A.B. Makokha and M.H. Moys (University of the Witwatersrand, South Africa)

10.10  
**Coarse grinding applications using the Metso Vertimill®**  
G. Davey (Metso Process Technology Support, UK)

10.30  
Coffee

11.10  
**Optimisation of the secondary ball mill using an on-line ball and pulp load sensor – the Sensomag**  
P. Keshav (Anglo Platinum, South Africa), B. de Haas, B. Clermont (Magotteaux, Belgium), A. Mainza (University of Cape Town, South Africa) and M. Moys (University of the Witwatersrand, South Africa)

11.30  
**Comparison of the overall circuit performance in the cement industry: high compression milling vs ball milling technology**  
N.A. Aydogan and H. Benzer (Hacettepe University, Turkey)

11.50  
**Simulation assisted capacity improvement of cement grinding circuit: case study cement plant**  
H. Dundar, H. Benzer, N.A. Aydogan, O. Altun, N.A. Toprak, O. Ozcan, D. Eksi and A. Sargin (Hacettepe University, Turkey)

12.10  
**Analysis of a stator earth fault protection system of a grinding mill converter-fed synchronous motor**  
R. Vargas and J. Pontt (Technical University Federico Santa María, Chile)

12.30  
**Synchronous electric drives for grinding mills**  
M. Ploc (GE Energy, Canada) and M. Clatworthy (GE Energy, Australia)

12.50  
Lunch

14.00  
**Technical Session 6**  
Chairmen: A. Mainza (University of Cape Town, South Africa) and J. Favier (DEM Solutions Ltd, UK)
14.00  **Less invasive vibrations measurement for monitoring and surveillance of grinding mills with gearless drives**  
J. Pontt, U. Ramos, F. Rojas, W. Valderrama and M. Olivares (Technical University of Santa Maria, Chile)

14.20  **Comparison of wet and dry centrifugal based classification efficiency**  
H. Benzer, O. Altun (University of Hacettepe, Turkey) and A. Mainza (University of Cape Town, South Africa)

14.40  **Implementing strategies to improve mill capacity and efficiency through classification by particle size only, with case studies**  
N.J. Barkhuysen (Derrick Corporation, South Africa)

15.00  **DEM modelling of liner and lifter wear in grinding mills**  
M.S. Powell, N.S. Weerasekara (JKMRC, Australia), S. Cole, R.D. LaRoche and J. Favier (DEM Solutions Ltd, UK)

15.20  **Prediction of mill structure behaviour in a tumbling mill**  
P. Jonsén, B.I. Pålsson (Luleå University of Technology, Sweden), K. Tano (LKAB, Sweden) and A. Berggren (Boliden Minerals, Sweden)

15.40  Coffee

16.10  **Understanding fine ore breakage in a laboratory scale ball mill using DEM**  
P.W. Cleary (CSIRO Mathematical and Information Sciences, Australia) and R.D. Morrison (JKMRC, Australia)

16.30  **Is fine grinding an appropriate technology for the optimal extraction of refractory gold ores?**  
D. Capstick (Deswick Mining Consultants (Pty) Ltd, South Africa)

16.50  **Investigation on the residence time and fine grinding at Float Characteristic Test Rig**  
F. Francis, J. Kabuba, E. Muzenda and M. Mollagee (University of Johannesburg, South Africa)

17.10  **The effect of the design of a secondary grinding circuit on platinum flotation from a UG-2 ore**  
L. Maharaj, J. Pocock and B.K. Loveday (University of KwaZulu-Natal, South Africa)
Friday April 16th

08.30  Technical Session 7
Chairmen: A. Kwade (Technische Universität Braunschweig, Germany) and J. Pontt
(Technical University Federico Santa Maria, Chile)

08.30  Towards a mechanistic model for slurry transport in tumbling mills
I. Govender, G.B. Tupper and A.N. Mainza (University of Cape Town, South Africa)

08.50  New developments in dry grinding with Jet-mills using air and steam
U. Enderle (NETZSCH-Feinmahltechnik GmbH, Germany)

09.10  Shifting from the norm: coarse grinding in stirred mills
K. Barns, G. Anderson, D. Smith and H. De Waal (Xstrata Technology, Australia)

09.30  Using the IsaMill technology in mainstream grinding applications
B. Chaponda, A.N. Mainza (University of Cape Town, South Africa), B. Durant (Anglo
Platinum, South Africa) and C. Walstra (Xstrata Technology, South Africa)

09.50  Selection criteria of stirred milling technologies
B.R. Knorr (Metso Minerals Industries, Inc., USA)

10.10  Stress model as basis for optimization and scale-up of bead milling processes
A. Kwade (Technische Universität Braunschweig, Germany)

10.30  Coffee

11.10  Tracking the motion of media particles inside an ISAmill using PEPT
A. van der Westhuizen, I. Govender, A. Mainza (University of Cape Town, South Africa) and
J. Rubenstein (Xstrata Technology, Canada)

11.30  Fluidized mill media selection considerations
M. Gallimore (Metso Mining and Construction Technology, USA)

11.50  Effect of media size and mechanical properties on milling efficiency and media
consumption
B.Y. Farber (Zircoa Inc., USA), B. Durant and N. Bedesi (Anglo Platinum Corp., South
Africa)

12.10  A methodology for characterising in-situ viscosity profiles in tumbling mills
N. Mangesana, I. Govender, A.N. Mainza and J.-P. Franzidis (University of Cape Town,
South Africa)

12.30  Grinding circuit optimization by model predictive control
T. Marx (ABB, Switzerland)

12.50  Lunch

14.00  Technical Session 8
Chairman: M.S. Powell (JKMRC, Australia)

14.00  Characterising porosity of multi-component mixtures in rotary mills
K Sichalwe, I Govender and A.N. Mainza (University of Cape Town, South Africa)

14.20  Validation of a DEM-CFD model for simulating particle-slurry flow in a stirred mill
C.T. Jayasundara, R.Y. Yang, A.B. Yu (University of New South Wales, Australia), I.
Govender, A. Mainza, A. Westhuizen (University of Cape Town, South Africa) and J.
Rubenstein (Xstrata Technology, Canada)
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<th>Time</th>
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<tr>
<td>14.40</td>
<td>An investigation of fluid flow through the dynamic porous bulk of a tumbling mill using SPH, DEM and Positron Emission Particle Tracking</td>
<td>I. Govender, A.N. Mainza (University of Cape Town, South Africa) and P.W. Cleary (CSIRO Div. of Mathematics and Information Sciences, Australia)</td>
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<td>15.00</td>
<td>Predicting patterns of slurry flow in a 3D pilot SAG mill</td>
<td>P.W. Cleary, P.J. Owen (CSIRO Mathematics, Informatics and Statistics, Australia) and R.D. Morrison (JKMRC, Australia)</td>
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<td>15.20</td>
<td>Predicting charge and slurry behaviour in a full scale Isamill</td>
<td>P.W. Cleary, G. Pereira and M.D. Sinnott (CSIRO Mathematical and Information Sciences, Australia)</td>
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<td>15.40</td>
<td>Enlightened circuit design is essential to the take-up of new equipment</td>
<td>M. Powell (JKMRC, Australia)</td>
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<td>16.00</td>
<td>Coffee and Wine</td>
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