VANCOUVER 2015

May 23, 2015

SAG 2015 Conference Update

Dear International and Local Organizing Committee Members,

The SAG 2015 Conference is just a few months away so I wanted to provide an update on organizing progress.

Local Committee – There has a change to the local committee that I want to bring to your attention. Bryan Rairdan, Teck Resources Ltd, has started a new position at the Highland Valley Copper mine. Due to the new responsibilities and relocation away from Vancouver, he thought it best to pass this role on to someone else. On behalf of the organizing committee, I wish him well in his new position and thank him for his contribution to the SAG 2015 Conference.

The local committee decided to appoint two Vice Chairs to replace Bryan. On behalf of the organizing committee, I would like to thank Greg Rasmussen from Glencore Technology and Michael Samuels from New Gold for agreeing to serve as Vice Chairs for SAG 2015.

Presentation Sessions - Interest in the conference has been very positive with over 200 abstracts submitted. However, the Technical Committee was tasked with difficult decisions to cut this to 110 presentations. The "draft" program has been appended; please feel free to distribute.

The deadline for paper submission is the end of May. We have been receiving a steady flow of papers that will need to be reviewed. We will ask the International and Local Committee members to assist by reviewing one or two papers for technical and written content. Papers requiring significant editing will be sent to a technical editor. If you are asked to review a paper, please return your review quickly so we can send your comments to the authors for final revisions. If you are unable to review, please let us know as soon as possible so that we can find an alternative reviewer.

Poster Session - To accommodate more papers, a Poster Session was introduced to SAG 2015. Thirty posters will be presented; and to ensure good visibility, a poster pitch will be made each day, the posters will be displayed in the center of the Technology and Innovation Exhibition area, and the authors have the choice of presenting on LCD monitors allowing high quality images and/or videos. Posters can be submitted as full papers or extended abstracts for publication in the proceedings.

Sponsorship **–** With over $200,000 in commitments, the level of sponsorship has been excellent. Sponsors will be recognized at the sponsored event and via logos on the sponsored items, and sponsor logos will be displayed on the presentation screens and on the inside cover of the SAG 2015 Abstract Notebook. If you are aware of potential sponsors, they should contact Mark Adams; there are a few sponsorship opportunities left.

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Exhibition **–** For the first time, SAG will host an exhibition with the theme *Technology and Innovation*. The exhibition is fully booked with 16 exhibitors. The exhibition area is adjacent to food and beverage service, the poster session area, and to two rooms that will be used for live streaming of conference presentations.

Field Trip **–** The field trip will depart early on September 24 for a tour to Copper Mountain, New Afton and Molycop. The tour can accommodate 50 people and is expected to sell out well before the conference.

Spousal Program **–** The spousal program is through a local tour company that will allow individuals to decide on a range of day trip activities. Please see the website for additional information.

Registration **–** Registration numbers are good and growing quickly. We are encouraging authors and all those who plan to attend to register as soon as possible. At SAG 2011, registration sold out well ahead of the conference and several authors required assistance to be able to register. For those requiring a Canadian Visa, an invitation letter is generated during the online registration process. We encourage those requiring a Visa to apply as soon as possible. Please note that Early Bird registration ends May 31.

Hotel Reservations **–** The Renaissance Hotel has changed ownership and is now the Pinnacle Hotel Vancouver Waterfront. Some rooms are still available at the conference rate, but we recommend booking as soon as possible. Some registrants have communicated that they were not able to book beyond the conference days. We have provided contact information on the website so that you can call the hotel directly to extend your stay ahead or beyond the conference dates.

Other **–** The Coalition for Energy Efficient Comminution (CEEC) are planning a workshop on September 24. For those interested in attending the CEEC Workshop, please contact Sarah Boucaut directly.

I look forward to seeing you at the SAG 2015 conference. For additional information, please check the SAG 2015 website which is being updated regularly. If you have any specific questions or needs, please feel free to contact me directly.

Sincerely yours,

Dr. Bern Klein
SAG 2015 Chairman

SAG 2015 Conference Draft Program

Session 1: Energy of Comminution - General

Development of the Comminution 'Energy Curve' to Benchmark Gold and Copper Ores
Grant Ballantyne

Trialing a Method for Energy Benchmarking of Comminution at the New Afton Mine
Stefan Nadolski

Exploring the Energy Recovery Potential on Comminution Efficiency – the Glencore Raglan Mine Case
Peter Radziszewski

Efficiency Metrics for Identifying and Remediating Plant Grinding Performance Issues
Robert McIvor

Close Circuiting the HPGRs: Air classification-their operations and efficiencies
Okay Altun

Session 2: Geometallurgy

Global Trends In Ore Hardness
Stephen Morrell

Reliability of ore characterisation tests
Rajiv Chandramohan

A New Methodology for Geometallurgical Mapping of Ore Hardness
Frédéric Couët

Geometallurgy Applied in Comminution Circuit Design to Minimize Risk and Maximize Project Value
Marcos Beuno

Selective Comminution in Ore Beneficiation - Supported by Quantitative Microstructure Analysis
Holger Lieberwirth

Session 3: Pre-Concentration

The Impact of Grade Engineering on SAG Milling
Grant Ballantyne

Sensor Based Ore Particle Sorting – a Comminution Applications Overview
Jochen Franke

Run Of Mine Ore Upgrading – Proof Of Concept Plant For XRF Ore Sorting
Chris Rule

Correlation and Regression Analysis in the X-Ray Fluorescence Sorting of a Low Grade Copper Ore
Libin Tong

Pre-concentration of SAG Mill Feed using High Voltage Pulses – Potential Applications and Challenges
Frank Shi

Session 4: Test Work and Ore Characterization - SAG Mills

HIT - A Portable Field Device for Rapid Comparative A*b Hardness Index Testing
Toni Kojovic

10th Anniversary of SAGDesign Testing - Production Successes and Developments
Michelle Brisette

The Bonds that Can't be Broken
Mark Sherman

Development of The Detour Lake Grinding Circuit: Integration of the Comminution Testwork Results and the Metallurgical Testwork Program
Jorge Torrealba

Autogenous and Semi-Autogenous Pilot Trials with Itabirite Iron Ore
Armando FdV Rodrigues

SAG Mill Design for Itabirites
Andreia Rosa

Session 5: Test Work and Ore Characterization - HPGRs

Pilot Study of Various HPGR Circuit Arrangements and Crusher Configurations
Brian Knorr

Mathematical-petrographic Rock Characterization as Support for HPGR Sizing
Felix Heinicke

Determining Optimal Energy Input for an HPGR Operation using Piston Press Test
Zorigtkhuu Davaanyam

Compression Breakage of Multicomponent Ore for HPGR and Crusher Modelling
Lian Liu

Session 6: HPGR Circuit Analysis

Creative and Simpler HPGR Circuits may Increase their Application even in the Current Restrictive Financial Environment
Persio Rosario

Various HPGR Circuit Layout Opportunities in Ore Grinding
Hakan Dundar

Pebble Crushing By HPGR
Frank Van Der Meer

A Tabletop Cost Estimate Review of Several Large HPGR Based Projects
Brendan Costello

Session 7: Discrete Element Modelling

Simulation of a Pilot Scale HPGR using DEM
Gabriel Barrios

Linking Modes of Breakage in a Pilot Scale AG/SAG to Discrete Element Modelling
Rob Morrison

Looking Outside the Box of SAG Operation Using an Advanced Model
Rodrigo Carvalho

Using DEM to Study the Effect of Operating Parameters on Liner Wear – Application to Pilot-scale AG Mill
Nirmal Weerasekara

Preliminary Validation of DEM-FEM Coupling to Predict the Mechanical Stresses in SAG Mill Liners
Edison Collinao

Simulation of Mill Discharge and Trommel Flow using Combined DEM and SPH Modelling
Paul Cleary

Session 8: Modeling and Simulation

Multi-component HPGR Model
Hakan Dundar

Use of a Novel Multi-component Approach for Simulating a Comminution Circuit Featuring HPGR and SAG Mill
Bianca Foggiatto

The New JK Variable Rates AG/SAG Mill Model
Marko Hilden

Update on the Modeling of Semiautogenous Grinding Processes in a Moly-Cop Tools Environment
Jaime E. Sepulveda

Stochastic Modelling to Assess the Impact of Rock Mass Variability on Grinding Circuit Performance
Anand Musunuri

Session 9: Comminution Circuit Design

Cerro Verde 240,000 mtpd Concentrator Expansion
Jim Vanderbeek

Design and Operation of the Metcalf Concentrator Comminution Circuit
Mike Mular

Highlights of the Performance of the HPGR on Tarkwa Site of Gold Fields Ghana Limited
Richard Boakye

Comminution Circuit Design for the Constancia Project
Greg Lane

Utilising a Tertiary Stirred Mill to Recover Grind Size after Expansion of an SABC Circuit
Samayamutthirian Palaniandy

Session 10: Mill Drives

The Siemens 42ft GMD, still an Evolutionary Design Approach?
Kurt Tischler

QUADREX®, A Mechanical Drive Train Solution for High-Powered Grinding Mills
Frank Tozlu

Increasing Throughput, Reducing Energy Consumption and Minimizing Wear on Grinding Mills with an Advanced Ring-Geared Mill Drive Control
Marcelo Perrucci

Mill Drives: The Desire for Increased Power and the Associated Limits and Conditions
Derek Barratt

The Engineering and Process Effects of Choosing a Motor Design Speed
Alex Doll

Resonance at Red Dog
Brendan Vermeulen

Session 11: Mill Liners

Improving Liner Design for Efficiency and Life
Mohsen Yahyaei

Evolution of AG Mill Shell Liner Design at the Gol-E-Gohar Iron Concentration Plant
Samad Banisi

PolyStl Liner Development at Chirano Gold Mines Limited
Raj Rajamani

Simulation as a Tool to Enable World's Best Mill Relining Practice - a Sense-making Tool for Decision-makers
Cherylyn Stewart

Session 12: Autogenous Grinding

The Development of FAG Grinding at LKAB
Erik Niva

Pebble Sizing Study in Autogenous Grinding - Pebble Crusher - Pebble Milling Circuit
Aaron Ritthaler

Optimisation of Secondary Grinding, using Pebble Size, Mill Filling and Mill Speed
Brian Loveday

Implementation of Advanced Grinding Circuit Control at First Quantum Minerals's Kevitsa Mine
Ari Rantala

Session 13: Fine Grinding

Towards Sustainability by Bridging the Gap in Comminution – From Finely Crushed Ore to Stirred Media Milling
Hamid-Reza Manouchehri

Stirred Milling Optimisation and Determining Fine Grinding Potential of Different Streams in a Platinum Concentrator
Andre Van der Westhuizen

The Grinding Efficiency of the Largest Vertimill Plant of the World
Douglas Mazzinghy

The Arrium Mining IsaMill from Inception through Continuing Optimization
Michael Larson

Pushing the Boundaries of Feed Size with IsaMill Inert Grinding
Chris Rule

Can a Vertical Attrition Mill Grind Ball Mill Duty?
Hanspeter Erb

Session 14: Plant Start-Up - AG/SAG Mill Circuits

Commissioning and Operation of the Mt Carlton Single Stage SAG Mill
Andrew Cervellin

Commissioning of Sandfire Resources Copper Processing Plant at Degrussa, Western Australia
Sanjeeva Latchireddi

New projects in Russia for Hard and Soft Ores with SAG Mills Selected from the Results of SAGDesign Testing
Arkady Senchenko

Operation and Process Optimisation of Sino Iron's AG Milling Circuits
Jianjun Tian

Bringing Life Back to Pueblo Viejo – Ore Grinding Equipment Selection, Design, Construction, and Commissioning
Richard Williams

Session 15: Plant Start-Up - HPGR Circuits

Building the World's Largest HPGR - The HRC3000 at the Morenci Metcalf Concentrator
Victoria Herman

A Premiere for Chile: The HPGR Based Copper Concentrator of Sierra Gorda SCM
Egbert Burchart

Rapid Ramp Up of the Tropicana HPGR Circuit
Fred Kock

The Cadia HPGR-SAG Circuit – from Design to Operation - the Commissioning Challenge
Dieter Engelhardt

DeGrussa Milling Circuit - Critical Issues, Modifications and Results
John Knoblauch

Session 16: SAG Pre-Crushing

An Analysis on SAG Pre-Crush Circuits
Kelvin Lee

Meadowbank SAG Mill Throughput Ramp-Up
Pathies Nawej Muteb

Increasing SAG Mill Capacity at the Copper Mountain Mine through the Addition of a Pre-Crushing Circuit
Mike Westendorf

Improved SAG Mill Circuit Performance due to Partial Crushing of the Feed at Tarkwa Gold Mine
Aubrey Njema Mainza

Full Pre-crush to SAG Mills – the Case for Changing this Practice
Malcolm Powell

Session 17: Process Control

Design And Optimization Of Raglan Sag Mill Process Control
Michel Ruel

Optimal SAG Mill Control Using Vibration & Digital Signal Processing Techniques
Karl Gugel

Diagnosis of Process Health, its Treatment and Improvement to Maximise Plant Throughput at Goldfields Cerro Corona
Robert Valle

Insights into Different Operating Philosophies – Influence of a Variable Ore Body on Comminution Circuit Design
Paul Bepswa

Session 18: Operation and Maintenance Practices

15 Years of Successful Operation of a Loesche VRM Type LM 50.4 in a Hard Rock Application at Foskor Pty (Ltd) in Phalaborwa
Pieter Jacobs

Determination of Particle Trajectories, Toe and Shoulder Dynamics using a Non-Contact Acoustic Array on a Industrial SAG mill
Randol Pax

Milling in Acid-Copper Raffinate at the MUMI Phase 4 Operation
Mark Elphinston

Your mill just stopped – are you sure that correct actions are happening NOW?
Jari Koponen

Extending SAG Mill Life beyond Design
Karl Heyerichs

Session 19: SAG/AG Circuit Optimization Part One

Are SAG Mills Losing Market Confidence
Paul Staples
Mine to Mill Optmisation at Paddington Gold Operations
Anand Musunuri
Blasting Influence on Comminution
Dennis Murr
A Review and Update of the Grinding Circuit Performance at the Esperanza Concentrator, Chile
David Meadows
SAG Mill Expansion at the Lake Shore Gold Bell Creek Mill
Dave Felsher
Sossego SAG Mill – 10 Years of Operation and Optimizations
Mauricio Bergerman

Session 20: SAG/AG Circuit Optimization Part Two

Operational Evaluation of AG/SAG Mills in China
Jue Kou
Batu Hijau Mill Throughput Optimization: Milling Circuit Configuration Strategy Based on Ore Characterization
Fatih Wirfiyata
Improving Plant Performance by Optimising Selected Design and Operating Variables for the Rom Ball Mill – a SAG/Ball Hybrid Type of Mill
Nomonde Solomon
Gold Fields Granny Smith Grinding Circuit: a Metallurgist's Four Year Journey of Progression
Adrian Dance
Grinding Optimization of the New Afton Concentrator
Jeffrey LaMarsh

Session 21: HPGR Circuit Optimization

Reflections on HPGR Circuit Operation at Newmont Boddington Gold
Steve Tavani
Assessing Performance of Cadia's Hybrid HPGR, SAG Circuit Treating Block Caved Ore
Mohsen Yehyaei
HPGR Application at Gold and Copper Processing Plants of Russia and Kazakhstan
Arkady Senchenko
First Year of Operation of HPGR at Tropicana Gold Mine – Case Study
Andrew Gardula
Understanding the Optimal Operation of Crushing –HPGR Circuits
Malcolm Powell

Session 22: General Interest

Studying the Impact of SAG Mill Performance on Flotation Efficiency –Case Study: Ernest Henry concentrator
Mohsen Yahyaei
Influence of Effects of Copper Ore Comminution in HRC Press on the Effectiveness of Useful Mineral Liberation
Daniel Saramak
A New Visco-plastic Rheology for Describing Granular Flow in Comminution
Indresan Govender
A Positron Emission Particle Tracking Study of Power Dissipation in Tumbling Mills
Maximilian Richter
Vertical Roller Mill: A Step Change in Ore Grinding
Deniz Altun