CONTENTS

Keynote Papers

Concentrators - Past, Present and Future Trends for Operators and Service Providers
T Hunter 3

Cunning Solutions to Process Improvement
T J Napier-Munn 5

Achieving More with Less - Approach and Methodologies
A J Hill Newell 11

Manual Control, Process Automation or Operational Performance Excellence - What is the Difference?
P Thevetc 13

Continuous Improvement

Recent Process Improvements at Hidden Valley Gold Mine
F Burns and G Peachev 43

Introducing and Sustaining a Continuous Improvement Program in Mines and Smelters
M Costa and I. Polizzi 55

Grinding Circuit Improvements at Evolution Mining’s Edna May Operation
A Dance, D Athwiss, S Williams and D Taplin 63

Maximising Value Through Maintaining Your Flotation Equipment
B Murphy, S O’Connell and J L. Heath 71

Integrated Optimisation of Grinding and Flotation Circuits
K C Rungc, E Tabasa and P Holtham 77

From Magnetite to Chalcopyrite – A Story of Versatility and Efficiency at Glencore’s Ernest Henry Mining Operation
J Siliczar, T Whelbell, T Perkins, H Lane, P Scobie, M Larson and K Burns 85

Energy Reduction

Benchmarking Communion Energy Consumption for Improved Efficiency
G R Ballantyne and M S Powell 95

Implementation Strategies for Energy Effectiveness and Sustainability - Example of Anglo American Platinum
O Bascur and A Soudek 101

Curved Pulp Lifters – Can They Save Energy?
S Ciutina and R J Soriano 109
Coarse Liberation and Recovery of Free Gold and Gold Sulfide Carriers for Energy Reduction in Process Plants
A H Gray, M Davies and G Theletsane

Selective Flotation of Chalcopyrite and Pyrite from a Mixed Copper Mineral Concentrate under Controlled Redox Potential Conditions
I Ametov, S Harmer, S Grano and R Alford

Improved Cleaner Circuit Design for Better Performance Using the Jameson Cell
L Huynh, R Araya, D R Seaman, G Harbort and P D Munro

The Separation of Pentlandite from Chalcopyrite, Pyrrhotite and Gangue in Nickel Projects Throughout the World
V Lawson, G Hill, L Kornos and G Marrs

Characterisation of Silver Minerals in Lead-Zinc Flotation Tailings and Their Response to Cyanidation
M Rohde, N Guresin and N W Johnson

Development of a Laboratory Flotation Method to Test Plant Mineral Aggregation
D Sato, B Lumsden, S Senanayake and D Morgan

A Change in Graphite Depressant to Improve the Recovery of Zinc at MMG Century Mine
R Wynn, R A Lauten, H Liang and N Stoitis

Mitigating the Effect of Surface Coatings on Gold Processing
R Wei and Y Peng

Empirical Evaluation of Factors Affecting Froth Stability in Copper Flotation
M Zanin, E Chan and D Xu

Future Trends

Northparkes Mines – Flotation and Planning for the Future
D Clarke, G Harbort, D Morgan and C Sola

Three Decades of Gold Production at the Newmont Tanami Operations
A Giblett, A Cranley and S Thacker

Recovery-by-size Kinetic Analysis to Determine Where Metallurgical Improvements Occur When Converting to High-chrome Grinding Media
C J Greet, S Jacques and J Kinal
Grinding

Functional Performance of Ball Milling Circuits – A Plant Metallurgist’s Tool for Process Characterisation and Optimisation

K M Bartholomew, R F. McLvor and O Arafat

Cadia Expansion – The Impact of Installing High Pressure Grinding Rolls Prior to a Semi-autogenous Grinding Mill

D Engelhardt, G Lane and M S Powell

Monitoring of M10000 IsaMill™ Process Performance by Passive Acoustic Emissions

C A Jackson, S J Spencer, J Masters, V Sharp, A McEwan, S Rainey, A Catanzaro, G Roberts and M Millen

Ball Mill Poly-Met Liner Evaluation at PT Newmont Nusa Tenggara – Batu Hijau Mine

A Maclean, F Wirfjola, G Khomaeni, A Jankovic, G Pasin and W Valery

VertiMill® Performance Updates in Secondary and Regrind Duties at Cannington Mine, BHP Billiton

S Palaniahu, M S Powell, M Hilden, J Allen, K Kernanwalhi, B Oats and M Lollback

Implementation of Acoustic Arrays for Semi-autogenous Grinding Mill Operation

R A Pax, R Wynn, S Mann and B Cornish

Comparison of Semi-autogenous Mills Operations in Andean Countries

J Rayo

The Benefits of Using SmartEar™ at Pueblo Viejo

D Shuen, R Sales, M Wortley and D La Rosa

Methodologies

How to Prioritise Process Improvements

D J Hill

Copper-Molybdenum Concentrator Surveys Using Mineralogy and Process Benchmarking Tools to Improve Overall Plant Performance

D Meadows, G Hall, D Rose, P Thompson, W Baum, R Zalm and S Yu
## Process Control

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developing Process Control Standards for Optimal Plant Performance at PanAust Limited</td>
<td>D Baas, D Bennett and P Walker</td>
<td>325</td>
</tr>
<tr>
<td>Optimisation of the Peak Gold Mine's Processing Plant through Advanced Process Control</td>
<td>J Hartog, V Beehan, J Karageorgos and D Beeson</td>
<td>335</td>
</tr>
<tr>
<td>Porgera Flotation Circuit Upgrade and Expert System Installation</td>
<td>T Keve, N Moffatt and M Schaffer</td>
<td>345</td>
</tr>
<tr>
<td>Implementation of an Advanced Milling and Flotation Control System at Mopani Mufulira Copper Mine</td>
<td>A Naaidoo, B E De Gee and N Viviers</td>
<td>363</td>
</tr>
<tr>
<td>Implementation of Advanced Flotation Control at First Quantum Minerals' Kevitsa Mine</td>
<td>A Rantala, I Muzinda, J Timperi, C Cruickshank and O Haavisto</td>
<td>369</td>
</tr>
</tbody>
</table>

## Process Management

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Throughput Forecasting and Optimisation at the Phu Kham Copper-Gold Operation</td>
<td>D Bennett, A Tordoir, P Walker, D La Rosa, W Valery and K Duffy</td>
<td>381</td>
</tr>
<tr>
<td>Advances in the Simulation of Flexible Circuits</td>
<td>B Feggiatto, M M Hilden and M S Powell</td>
<td>391</td>
</tr>
<tr>
<td>Effectively Installing and Commissioning Flotation Equipment</td>
<td>J L Heath, B Murphy and P Bourke</td>
<td>399</td>
</tr>
</tbody>
</table>

## Specific Improvements

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>An Alternative Circuit for Chalcopyrite-Pyrite Ores with Elevated Pyrite Content in Cu-Au Ore Treatment</td>
<td>C Akop, S Farrokhpour and N W Johnson</td>
<td>407</td>
</tr>
<tr>
<td>MMG Century Mine, A Case Study – Maximising Project Net Present Value Through Targeted Capital Expenditure and Process Optimisation Against a Backdrop of Falling Metal Prices and Feed Grades</td>
<td>T J Akroyd, R Wynn and C Costa</td>
<td>417</td>
</tr>
</tbody>
</table>
Interactions between Flash Flotation and Gravity Concentration – An Industrial Case Study of a Refractory Gold Concentrator

Challenges in Developing Integrated Process Models Based on Industrial Survey Data

Technology Applications

Innovative Use of Screw Press Filtration in Tailings Dewatering Plant Design

Development and Application of a Piezoelectric Sensor for Turbulence Measurement in Industrial Flotation Cells

The Benefits of Technology Partnerships during Brownfield Upgrades

Case Study – Engineering Design for a Slurry Preparation Plant for a Paste Application in West Africa

Application of High Efficient Fine Screen to Improve the Recovery of Tin Concentrate

Author Index