

TABLE OF CONTENTS

Australian Centre for Geomechanics.....	iii
Golder Paste Technology Ltd.....	iv
Committees	v
Preface.....	vii
Sponsors.....	ix
Exhibitors	x

TAILINGS MANAGEMENT

Keynote Address

Thickening/mud stacking technology – an environmental approach to residue management.....	3
---	---

J. Doucet and R. Paradis, Rio Tinto Alcan, Australia

Ensuring the credibility of thickening technology	23
---	----

R.J. Jewell, Australian Centre for Geomechanics, Australia

Does thickening save water?.....	33
----------------------------------	----

A.J. Vietti, Paterson & Cooke, South Africa; J.C.J. Boshoff, SRK Consulting, South Africa; A. Cope, Anglo Platinum Limited, South Africa

Paste operations training at Barrick’s Bulyanhulu Gold Mine	41
---	----

T.W. Weatherwax, Barrick Global Shared Service, Canada; A. Kipara, Barrick Bulyanhulu Gold Mine Limited, Tanzania

Polymer modified paste fill for isolation of waste disposal sites.....	51
--	----

M. Fall, J.C. Celestin and F.S. Han, Department of Civil Engineering, University of Ottawa, Canada

Diagnosis of mud displacement in gravity settlers from analysis of their residence time distribution	61
--	----

M.L. Bouchard, A. Leclerc and G. Simard, Université du Québec à Chicoutimi, Canada; G. Peloquin, Rio Tinto Alcan, Arvida Research and Development Centre, Canada

Application of paste technology to mitigate the dust emissions from handling of fly and bottom ash at coal fired power plant – CGTEE in Candiota, Brazil.....	73
---	----

M. e Silva Marques, Golder Associates Peru, Peru; H. Lima, Golder Associates Brazil, Brazil; B. Mandl, R. Francoeur and F. Palkovits, Golder Paste Technology Ltd., Canada; R. Blois, Companhia de Geração Térmica de Energia Elétrica, Brazil

UNDERGROUND AND BACKFILL APPLICATIONS

Keynote Address

In situ monitoring for ground truthing paste backfill designs	85
---	----

M.W. Grabinsky, University of Toronto, Canada

Paste backfill – adding value to underground mining.....	99
--	----

N.M. Slade, Golder Paste Technology (Europe) Ltd, UK

Applying the operating range method to paste backfill systems	111
---	-----

D.J. Hallbom, Pipeline Systems Incorporated, Canada

Predicting the temperature and strength development within cemented paste backfill structures	125
M. Fall and O. Nasir, University of Ottawa, Canada	
Role of admixtures in the optimisation of paste backfill systems	137
T.W. Weatherwax and R. Evans, Barrick Global Shared Services, Canada; W. Brosko, BASF, Canada; J. Champa, BASF Construction Chemicals, USA	
Time-dependent failure criterion for cemented paste backfills	147
T. Belem, Université du Québec en Abitibi-Témiscamingue, Canada; A.B. Fourie and M. Fahey, The University of Western Australia, Australia	
Influence of pyrrhotite content on the mechanical and chemical behaviour of cemented paste backfill	163
J. Godbout, B. Bussière, M. Benzaazoua and M. Aubertin, Université du Québec en Abitibi-Témiscamingue, Canada	
Evaluating the benefits of paste fill using advanced schedule optimisation techniques	175
B.M. Maybee, S. Hall and A. Tousignant, MIRARCO – Mining Innovation, Laurentian University, Canada	
Monitoring barricade performance in a cemented paste backfill operation	185
B.D. Thompson, W.F. Bawden and M.W. Grabinsky, University of Toronto, Canada; K. Karaoglu, Çayeli Bakır İşletmeleri A.S., Turkey	
Hydraulic response in cemented paste backfill during and after hydration	199
M. Witteman and P. Simms, Carleton University, Canada	
Paste backfill design case study – Efemçukuru project	209
J.M. Treinen and R. Cooke, Paterson & Cooke Ltd, USA; D. Sutherland, Eldorado Gold, Canada	
Design of the paste backfill recipe for the Pinos Altos Mine, Mexico – influence of tailings clay mineral fraction on strength and rheology	217
S. Ouellet and F. Brunet, Agnico-Eagle Mines, Canada	

SURFACE DEPOSITION

Keynote Address

Potential environmental benefits of surface paste disposal.....	231
R. Verburg, Golder Associates Inc., USA	
The validity of laboratory flume data for predicting beach slopes of thickened tailings deposits	241
A.B. Fourie, The University of Western Australia, Australia; S.K.Y. Gawu, Kwame-Nkrumah University of Science and Technology, Ghana	
Comparison of beaching slopes from two centrally discharging tailings storage facilities.....	255
P.C. Addis and E.J. Cunningham, Golder Associates Africa (Pty) Ltd, South Africa	
Investigation of near-surface exchange processes in reactive paste tailings.....	265
V. Martin and M. Aubertin, École Polytechnique de Montréal, Canada; M. Benzaazoua, Université du Québec en Abitibi-Témiscamingue, Canada; G. Zhan, Barrick Gold Corporation, USA	
Solute mass transport and atmospheric drying of high-density gold tailings.....	279
A. Dunmola and P. Simms, Department of Civil and Environmental Engineering, Carleton University, Canada	

FLOW DESIGN AND RHEOLOGY

Generic modelling of desiccation for cyclic deposition of thickened tailings to maximise density and to minimise oxidation	293
P. Simms, A. Dunmola and R. Bryan, Department of Civil and Environmental Engineering, Carleton University, Canada; B. Fisseha, Golder Associates Ltd., Canada	
Fittings losses in paste flow design	303
P.T. Slatter, RMIT University, Australia; V.G. Fester, Cape Peninsula University of Technology, South Africa	
Improved dewatering characteristics of uranium tailings through controlled neutralisation for paste disposal.....	311
N. Kuyucak, P. Primeau, M. Labelle and F. Palkovits, Golder Paste Technology Ltd., Canada	
Experimental study on unclassified tailings – water quenched slag paste-filled technology in Huize Mine.....	319
H-J. Wang, A-X. Wu, H-Z. Jiao and B. Zhou, University of Science and Technology Beijing, China; J. Chen, X-W. Ji, J-R. Huang and X-G. Huang, Chihong Zn and Ge Co. Ltd, China	
Electrokinetic belt press dewatering of kimberlite tailings – case study of a full scale field trial.....	329
J. Lamont-Black and C.J.F.P. Jones, Electrokinetic Limited, UK; A.B. Fourie, The University of Western Australia, Australia; L. Krüger, DebTech, South Africa	

THICKENING

Keynote Address

Key issues related to behaviour of binders in cemented paste backfilling.....	345
M. Benzaazoua, O. Peyronnard, T. Belem, A. Stephant, and G. Dublet, Université du Québec en AT, Canada; E. Fried, SNC Lavallin, Canada	
Transforming paste thickener technology	365
C. Loan and I.M. Arbuthnot, Outotec Pty Ltd, Australia	
Shear effects in thickening	375
S.P. Usher, R. Spehar and P.J. Scales, Department of Chemical and Biomolecular Engineering, University of Melbourne, Australia	
Energy induced rheology reduction of flocculated thickened tailings – pipeline system design methodology.....	385
J.M. Treinen and R. Cooke, Paterson & Cooke Ltd, USA; C. Salinas, Paterson & Cooke Consulting Engineers (Pty) Ltd, Chile	
‘Out of pipe’ dewatering of thickened tailings during deposition	393
S. Mizani, P. Simms and L. He, Department of Civil and Environmental Engineering, Carleton University, Canada	
Advantages of bolted tank construction for paste thickeners	403
J.W. Rosart, Outotec Pty Ltd, Australia	
High density paste thickener in Siberia.....	411
P. Lake, PasteThick Associates, USA; M.E. Boris, Thrane Teknikk ZAO, Russia; T. Gollaher, WesTech Engineering, USA	

OIL SANDS APPLICATIONS

Keynote Address

Oil sands tailings – technology developments and regulations	423
<i>R.H. Houlihan and M.H. Mian, Energy Resources Conservation Board, Canada; E.R. Lord, Canada</i>	
Paste and thickened tailings technology and its applicability in oil sand tailings management	437
<i>X.S. Yuan and R. Lahaie, Syncrude Canada Ltd, Canada</i>	
Tailings philosophies – to segregate or not to segregate	451
<i>P.S. Wells, Suncor Energy Inc., Canada</i>	
A novel waste water cleanup, fines sequestration and consolidation technology for oil sands applications	459
<i>D. Soane, W. Ware, R. Mahoney and P. Kincaid, Soane Energy LLC, USA</i>	

POSTERS

An experimental study on the mechanical properties of cemented rock-tailings fill.....	469
<i>L. Guo, X. Yang and L. Xie, Beijing General Research Institute of Mining and Metallurgy, China</i>	
Design intent to reality – commissioning of the Aguas Tenidas paste backfill plant, Spain	479
<i>S. Wilson, Golder Paste Technology (Europe) Ltd, UK; R. Brown, Golder Paste Technology Ltd., Canada; F. Carnero, Minas de Aguas Tenidas SA, Spain; S. Castro, Tejerina Golder Associates Global Ibérica S.L.U., Spain</i>	
Green liquor dregs for the amendment of tailings.....	487
<i>C. Maurice, M. Mäkitalo, L. Villain and B. Öhlander, Department of Chemical Engineering and Geosciences, Luleå University of Technology, Sweden</i>	
A new testing procedure to assess shrinkage of paste tailings.....	495
<i>F. Saleh-Mbemba, M. Aubertin and L. Li, Ecole Polytechnique de Montréal, Canada; M. Mbonimpa, Université du Québec en Abitibi Témiscamingue, Canada</i>	
‘Free’ water from thickened tailings	505
<i>P.B. Solseng and R.W. Wuolo, Barr Engineering Co., USA</i>	
Pumping power station ash as a high concentration slurry.....	515
<i>T.F. Bunn, M.G. Jones and C.A. Wheeler, Centre for Bulk Solids and Particulate Technologies and TUNRA Bulk Solids, The University of Newcastle, Australia</i>	
Rheology in the minerals industry – glossary of terms	531
Author Index	535