

MINING AND MINERAL PROCESSING OPTIMISATION

"Enhance process efficiency to increase value of mining business through expert optimisation principles and methods"

11th & 12th August 2011 (Thursday-Friday)
Johannesburg, South Africa

GROUP DISCOUNT!
Save up to
USD200
off the regular price!



Gerald Whittle

BEcon, Grad Dip Fin, FCPA, AusIMM

Managing Director
Whittle Consulting Pty Ltd, Australia

GAIN CUTTING-EDGE INSIGHTS ON:

- * Releasing value through better planning decisions
- * Discover the key to 5% - 35% increase in enterprise value(NPV)
- * Explore latest developments in optimisation for the mining industry
- * Integrating mining and process optimisation
- * Planning and optimization in uncertain metal markets
- * Designing an effective planning process

Discover 10 proven optimization mechanisms which are credited with increasing value of mining enterprise (NPV) by **5% - 35% or more!**

All participants are required to bring a hand-held calculator to this course



ABOUT YOUR EXPERT TRAINER:

Gerald has more than 30 years experience in business planning and analysis in a range of industries both Australian and international. As Managing Director of Whittle Consulting, Gerald handles program/project management /co-ordination, optimisation strategies and model design, business analysis and management reporting and presentations.

Some of his major clients include:

Rio Tinto
Kumba Resources
BHP Billiton
Xstrata
Aluminum Corporation of China Limited

Gerald has presented numerous international courses in business optimisation for the mining industry.

Official Media Partners:



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MINING AND MINERAL PROCESSING OPTIMISATION

Maximise Value of Your Mining Businesses by 5% - 35% or more!

The combined effect of market volatility and uncertainty about future commodity prices is posing higher risk to mining businesses across globe. In such times, knowing to unlock existing value by maximising resource and reserves through strategic mine planning is essential. There is little chance that a mining company is operating optimally, if no significant adjustments were made to its mining and processing plans during the last six months. Hence, it is essential for mining companies to discover next generation methods of optimum planning and explore models of mining processes in the optimisation of mining operations to stay ahead in today's competitive environment.

SALVO's Mining and Mineral Processing Optimisation course will give participants a comprehensive briefing on the latest developments in mining and mineral processing optimisation, most importantly the combination of the two in the business planning process in the context of uncertain future metal prices. These methodologies are credited with increasing the value of mining businesses by 5% - 35% or more. Through a series of detailed case studies, participants will experience and understand how this can be achieved and be able to assess the applicability to their own businesses.

Attend this unrivaled course to find an optimal, near-optimal, long-term schedule for your mining complex!

WHO SHOULD ATTEND?

The course is designed for mining and mineral processing executives, senior managers, technical staffs and consultants – anyone who makes decisions that affect the mining and mineral processing value chain. It is suitable for senior managers who wish to understand the drivers of value in their business and identify existing opportunities for enhancing performance and for technical staff who wish to apply these techniques in their work.

Targeted job roles are as follows:

- | | |
|---|------------------------------|
| * Mining Managers | * Process Engineers |
| * Mining Engineers | * Resource Managers/Analysts |
| * Mining Analysts | * Ore Resource Managers |
| * Financial Managers | * Mine Planners |
| * Commercial Managers | * Plant Managers |
| * Strategic Planners | * Metallurgists |
| * Geologists | |
| * Project managers and other mining professionals involved in feasibility studies, development or operations. | |

OUTCOME OF THE WORKSHOP

By the end of this intensive two day course, you will take back to your organisation a different approach in mining and mineral processing operations in a manner that maximises investment return and an impeccable understanding of the drivers of value in your business for enhancing performance. Your optimisation expert for this course shall demonstrate methodologies which are credited with increasing the value of mining businesses by 5% - 35% and more!



MINING AND MINERAL PROCESSING OPTIMISATION

MORE ABOUT YOUR EXPERT COURSE LEADER

Gerald Whittle is Managing Director of Whittle Consulting Pty Ltd, who specialises in unlocking hidden value through the modeling and optimisation of complex mining and mineral processing operations. Combining business planning techniques with advanced mathematics and specialised programming, supported by the application of proprietary optimisation software developed by Jeff Whittle, Whittle Consulting is recognised as a leading strategic advisor to resource organisations.

Gerald has more than 30 years experience in business planning and analysis in a range of industries both Australian and international. His main interest lies in Global Optimisation of mining business, especially complex portfolios involving multiple mines, alternative processing paths and multiple products.

With previous experience in financial management and business planning in manufacturing and transportation, Gerald has held positions of Finance Controller, Finance Director and Change Manager in large multinationals prior to entering the mining field in 1999.

As Managing Director of Whittle Consulting, Gerald handles programme /project management/co-ordination, optimisation strategies and model design, business analysis and management reporting and presentations. He has undertaken major optimisation studies for a number of world-class mining and mineral processing companies involving a range of commodities and issues. Gerald holds a BEcon from Monash University and a Grad Dip Fin. He is also Fellow of CPA Australia & and member of The Australasian Institute of Mining and Metallurgy.

Significant assignments undertaken include:

- Goldfields Tarkwa, St.Ives and Cerro Corona (Gold), Ghana/Australia/Peru
- Barrick Cerro Casale (Gold/Copper), Chile
- African Rainbow Minerals Assmang (Manganese), South Africa
- Vale Inco Sudbury (Nickel), Canada
- Anglo Gold Ashanti Navachab and Iduapreim (Gold), Namibia, Ghana
- Anglo Platinum Mogalakwena (Platinum), South Africa
- Mimosa Mining Company (Platinum), Zimbabwe
- Xstrata Coal Division (Coal), Queensland Australia
- Goro (Nickel), New Caledonia
- Pt Inco (Nickel), Indonesia
- Newcrest Cadia Valley (Gold), NSW Australia
- Kumba Resources (Iron Ore), South Africa
- Lihir (Gold), New Guinea
- Mundaro Mining (Gold), China
- Minara Resources (Nickel), WA Australia
- OM Holdings (Manganese), NT Australia
- PT Adaro (Coal), Indonesia
- BHP Billiton (Nickel), Philippines
- Saracen (Gold), WA Australia
- Societe Le Nickel (Nickel), New Caledonia
- Arafura Nolans (Rare Earths), NT Australia/ South Africa
- Xstrata (Zinc/Lead), Queensland, Australia
- Newcrest Mining Limited (Nickel), New Caledonia
- Aluminum Corporation of China Limited (Aurukun Bauxite), Queensland, Australia

Other major clients of Gerald Whittle include Rio Tinto, Newmont Mining Corporation, Portman Iron Ore Limited, and Wesfarmers Premier Coal.

MINING AND MINERAL PROCESSING OPTIMISATION

Day One: Thursday, 11th August 2011

Course Outline: Adding 5% - 35% or More to Company Value – The Significance of Optimisation in the Planning Process

8:00 Coffee and Registration

8:25 Opening Remarks

8.30 1. INTRODUCTION

- Introductions/Objectives/Agenda
- The “Money Mining” concept
- Why is it important?
- Group discussion: pros and cons of NPV

● Case Study:

Open Pit Case Study: Introduction

10:00 Coffee Break

10.15 2. OPTIMISATION MECHANISMS Steps 1 – 5

Base Case life of mine plan

1. Pit optimisation: Lerchs-Grossman
2. Phase/pushback selection
3. Mine schedule
4. Cut-off grade
5. Stockpiles

12:00 Lunch

12.45 3. OPTIMISATION MECHANISMS Steps 6 - 10

6. Simultaneous optimisation
 7. Process plant calibration
 8. Product specification
 9. Logistics
 10. Capital scaling
- Summary of NPV “Waterfall” graph
 - Implications

14:30 Coffee Break

COURSE CERTIFICATE

This course is normally accredited through the SAIMM with 2 CPD points. A Certificate of Completion to all attendees completing minimum of 90% of the total tuition hours of the course.



14.45 4. ASSET PORTFOLIO OPTIMISATION

- Multiple pit operations
- Mixed pit and underground mines
- Multiple/alternative processing streams
- Multiple/alternative products
- A complex mine logistics example
- Lessons learnt from optimising these cases
- Managing the optimisation process

15:30 5. RISK AND UNCERTAINTY Step 11

- Sources of uncertainty
- Modelling and measuring the impact of uncertainty
- Managing in changing circumstances
- Optimising with uncertainty
- Managing the Monte Carlo process
- Implications for the planning process

16:15 DISCUSSION/QUESTIONS

16.30 End of Day 1

Testimonials on previous workshops:

“It was an event that was well managed, all encompassing and presented in a clear and comprehensive manner. It was just fantastic!!”

Senior Geologist - Konkola Copper Mines

“It’s most enlightening. My perspective of the whole optimisation concept has been completely altered. Thanks Gerald.”

Mine Planning Engineer - Lumwana Mining Company

“A very good course. It is well blended in addressing integration of mining and mineral processing optimisation.”

Plant Manager - Debswana Jwaneng

“This event allowed me to gauge where we are as a company in terms of Business/Strategic Planning. From this event, I will be able to identify gaps that we will work on in our next planning cycles”

Chief Mine Planner - AngloGold Ashanti

MINING AND MINERAL PROCESSING OPTIMISATION

Day Two: Friday, 12th August 2011

Course Outline: Optimisation Mechanics

8:00 Coffee

8:30 **Comments/observations from day 1**

9:00

● Case Study:

6. UNDERGROUND CASE STUDY

- Grade tonnage curves
- Stope design criteria
- Mine scheduling
- Cut-off grade strategies
- Maximising value
- Implications

10:00 Coffee Break

10.15 **7. COSTING MODELLING**

- Types of cost accounting
- Fixed/variable/capital costs
- Activity Based Costing
- Attributable/period/capital costs
- Identifying period/time/fixed costs
- Frontline/support/backline activities
- Identifying activity cost drivers
- Sustaining capital
- Group exercise

12:00 Lunch

12:45 **8. CONSTRAINTS AND BOTTLENECKS**

- The production line
- Impact of bottlenecks – Theory of Constraints
- Mining case study
- Implication 1: Defining limits
- Implication 2: Treatment of period costs
- Implication 3: Grade control methodology

● Case Study:

Case Study

14:30 Coffee Break

14.45

● Case Study:

9. OTHER CASES

- Other commodities
- Pits versus underground
- Effect of changes in metal prices

15.15 **10. DEVELOPING A “MONEY MINING” CAPABILITY**

- Technical barriers – data, software
- Organisational barriers
- The ideal planning process
- Implementation strategies
- Change management
- Personal action plan

16.15 **Closing**

- Summary
- Possible next steps
- Feedback questionnaire
- Certificates

16:30 End of Course 12th August 2011

WHY NOT BRING THIS TRAINING INTERNALLY?

This training can be customised into an In-house training programme just for your organisation. To find out more, please contact Gale at:
Tel: +65 6293 8355 or
Email: internaltraining@salvoglobal.com

COURSE CUSTOMISATION TO YOUR PRIORITIES

Pre-Course Questionnaires will be issued to delegates immediately upon registration for them to address their specific needs and concerns. The trainer will discuss these needs at the workshop.



MINING SERIES

MINING AND MINERAL PROCESSING OPTIMISATION

Register Now!**Fax: +65 6336 3779****Contact : Gale Ong****Tel : +65 6293 8355****Email : gale@salvoglobal.com**

Company : _____

Address : _____

Tel : _____

Fax : _____

Name : _____

Designation : _____

Tel : _____

Email : _____

Name : _____

Designation : _____

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Name : _____

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Authorisation (Registration is not valid without Authorisation)

Name : _____

Designation : _____

Sign : _____

Date : _____

Terms and Conditions**Payment Terms:** Full payment is required within five (5) working days on receipt of invoice or before the event date, whichever is earlier. Salvo reserves the right to refuse admission if payment is not received as stated.**Transfer:** Transfer to future event or to another person is allowed upon written notification from an authorized personnel of client company. For transfer to future event, client shall receive a credit for the amount that the client has paid, which is valid for one year to be used for any future Salvo event. Transfer to future event confirmed less than two (2) weeks prior to the event will be subjected to a 5% administrative fee.**Cancellation:** Registration carries a 50% cancellation liability immediately after a signed sales registration contract has been received by Salvo. Salvo has to be notified of the cancellation in writing and respond with a written acknowledgement for the cancellation to be valid. Cancellation confirmed less than six (6) weeks prior to the event is non-refundable and the full fee is payable. By signing this contract, the client agrees that in case of dispute or cancellation of this contract that Salvo will not be able to mitigate its losses for any less than 50% of the total contract value. If, for any reason, Salvo decides to cancel or postpone this event, Salvo is not responsible for covering airfare, hotel, or other travel costs incurred by clients. The fee will not be refunded, but can be credited to a future event.**No Show:** No show does not constitute transfer or cancellation and the full fee is payable.**Changes:** Salvo reserves the right to change event dates, location or omit event features, or merge the event with another event, as it deems necessary without penalty and in such situations no refunds, part refunds or alternative offers shall be made. In the event that Salvo cancels the event permanently for any reason whatsoever, (including, but not limited to any force majeure occurrence) the client shall receive a credit that the client has paid to such permanently cancelled event, valid for up to one year to be used at another Salvo event. No refunds, part refunds or alternative offers shall be made.**Tax:** Registration fees exclude tax. For client outside Singapore, the sum payable is as the listed fees, exclusive of tax. To this sum shall be added either Singapore's Goods and Services Tax (GST) for Singapore-based client or any other local tax or withholding tax from client's country of origin, if any.**Governing law:** This Agreement shall be governed and construed in accordance with the law of Singapore and the parties submit to the exclusive jurisdiction of the Singaporean Courts in Singapore. However Salvo only is entitled to waive this right and submit to the jurisdiction of the courts in which the client is located.**Indemnity:** Should for any reason outside the control of Salvo, the venue or speaker(s) change, or the event be cancelled due to an act of terrorism, extreme weather conditions or industrial action, Salvo shall endeavour to reschedule but the client hereby indemnifies and holds Salvo harmless from and against any and all costs, damages and expenses, including attorneys fees, which are incurred by the clientDate: 11th – 12th August 2011

Venue: Johannesburg, South Africa

Investment per Delegate:

2-Day Training USD2,695

Group of 3 or more delegates

(from the same company), fee per delegate is

2-Day Training USD2,495

SALVO PTE LTD100 Beach Road
Shaw Tower
#32-04/07
Singapore 189702**PAYMENT METHOD**

(Payment is required within 5 working days on receipt of invoice)

Bank TransferSalvo Global Pte. Ltd.
HSBC Singapore / Singapore
Account number: 260-575832-178 USD
Swift Code: HSBCSGSG**Credit Card**Please debit my: ☐ VISA ☐ MasterCard ☐ Amex
Card Holder's Name: _____

Card Number: _____

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VISA REQUIREMENTSRequirements for entry into South Africa differ from country to country and are subject to change. To make enquiries about South African visas, and to check whether or not you require a visa, visit the visa information page at the South Africa's Department of Home Affairs website: http://www.home-affairs.gov.za/visa_detail.asp. Visa Processing may take 10 days. So, book early to avoid any disappointment!