

Projects & Technical Papers



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About METS Engineering

OUR EXPERTISE

Mineral Processing
Hydrometallurgy
Pyrometallurgy
Testwork & Management
Plans
Engineering Studies
Optimisation
Project Capital Reduction
Product Innovation
Specialist Services
+ More

GLOBAL INDEPENDENT CONSULTANT

Since 1985
Australia
Africa
Asia
Europe
Middle East
North America
South America

ALL COMMODITIES

Alumina
Copper
Garnet
Gold/Silver
Graphite
Iron Ore
Kaolin
Lead/Zinc
Lithium
Mineral Sands
+ More

30+ YEARS EXPERIENCE

Domestic and
International Projects
All Industries
Investigation, Studying,
Execution and Verification
of Projects
Locally owned & operated
40+ Training Courses
We share our knowledge
with the industry

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Commodities



Alumina



Copper



Gold



Graphite



Haematite



Iron Ore



Lead/Zinc



Lithium



Magnetite



Manganese



Mineral Sands



Nickel



Phosphates



Rare Earths



Uranium



Vanadium

What differentiates METS from other firms is our unique combination of specialised services combined with a nearly 30 years proven track record of delivering successful projects to our clients. By combining innovation and integrating the skills and experience of our engineering staff, our METS team bring greater efficiencies and service know-how to all client projects. We work as one dedicated team and as a result, projects are planned, managed and completed on time and to budget with few surprises. As a single point of contact for engineering deliverables, we accept total responsibility and efficiency in controlling costs at every phase.

Our vast range of services offered by the METS team over the last 30 years can take our clients commodities from the ground, through processing and to global markets.

Global Project Experience



Copper

Aditya Birla - Nifty Operations - Cathode Prediction Project Optimisation

Aditya Birla - Nifty Operations - Site Restart Estimate

Barrick (Australia Pacific) Ltd - JabalSayid Project - Testwork

Birla Nifty Pty Ltd - Nifty Operations - Heap Washing Evaluation

Blackthorn Resources - Kitumba Project - Scoping Study

Citadel Resources - JabalSayid Project - Pre-Feasibility Study

Genesis Minerals Ltd - Merceditas Project - Metallurgical Testwork

Jutt Holdings - Evelyn Project - Metallurgical Testwork

National Iranian Copper Co - Sungun Project - Concentrator Plant Expansion

Sandfire Resources NL - DeGrussa Copper Oxide Project - Heap Leach Study

Snowden Mining Consultants - CopperCo Lady Annie Project - Heap Leach Review

Snowden Mining Consultants - Matrix Metals Project Morpheus - Project Valuation

Snowden Mining Consultants - PhuBia Project - ITE Review

Xstrata Copper - Ernest Henry - Training

Zambezi Resources - Cheowa Project - Client Representative

Zambezi Resources - Cheowa Project - Metallurgical Testwork

Zambezi Resources - Kangaluwi Project - Metallurgical Consulting & Testwork

Copper (Copper/Gold)

Anglo Australian Resources NL - Koongie Park Project - Metallurgical Testwork

Aztec Resources - Golden Grove - Project Development

Baobab Resources PLC - Mundonguara Project - Sighter Testwork

Bougainville Copper - Metallurgist

Copper Resources Corporation - Haib Project - Development Study

Copper Resources Corporation - Haib Project - Study Review & Analysis

Copper Resources Corporation - Hinoba Project - Beneficiation Testwork

Copper Resources Corporation - Hinoba Project - Process Design Study

Copper Resources Corporation - Minière Musoshi Kinsenda Project - Detailed Design

Copper Resources Corporation - MMK Project - Bankable Feasibility Study, Deeper Ore Metallurgy, Feed Project, Feasibility Study, and Copper Concentrates Process Options Study

Copper Resources Corporation - MMK Project - Electric Arc Furnace Optimisation

Copper Resources Corporation - St. Ives SAG Mill - Due Diligence

Crimson Ant - Lohan Tailings Rehab Project - Feasibility Study

Croesus Mining NL - Project Alcatraz - Due Diligence

Emerson Resources - Tennant Creek Project - Conceptual Study

Global Project Experience

Copper (Copper/Gold)

Emmerson Resources - Tennant Creek Projects - Scoping Study
Giants Reef Mining - Tennant Creek Project - Due Diligence
Golder Associates - Due Diligence
Independent Engineers - Mirador Project - Due Diligence
Independent Engineers - La Paloma Project - Metallurgical Testwork
Marengo Mining Ltd - Testwork Program Audit
Matrix Metals Ltd - Leichhardt Operations - Mt Cuthbert Assessment
National Iranian Copper Co - Sarcheshmeh Project - Electrical & Automation Engineering
National Iranian Copper Co - Sarcheshmeh Project- Plant Audit and Recommissioning
Newmont Mining Corp - Gindalby Minjar Project - Risk Analysis
Snowden Mining Consultants - Chelopech Project - Due Diligence
Ted Mein & Associates - Marian Deposit - Metallurgical Testwork
Ted Mein & Associates - Queen River Tailings Project - Metallurgical Testwork
Universal Resources Ltd - Roseby Project - Metallurgical Consulting
Universal Resources Ltd - Roseby Project - Metallurgical Development
Universal Resources Ltd - Roseby Project - Copper Heap Leach Due Diligence



Copper (Copper/Lead/Zinc)

Anglo Australian Resources NL - Sandiago
Bass Metals - Panorama Project - Due Diligence

Copper (Copper/Cobalt/ Zinc/Gold)

Vulcan Resources - Kylahti Copper / Cobalt Project - Due Diligence

Zinc (Zinc/Copper)

Bass Metals - Hellyer Flotation Plant - Que River Ore Trial
Independent Engineers - Dairi Project - Due Diligence
Independent Engineers - Kazak Project - Due Diligence
Newmont Australia - Elura Zinc Project
Snowden Mining Consultants - Confidential Bank - Rapu Rapu Project - Due Diligence
Snowden Mining Consultants - Lady Loretta Project - CAPEX & OPEX
Zinc Corporation - Broken Hill - Plant Metallurgist

Global Project Experience



Lead/Zinc

- Aztec Resources** - Golden Grove Project - Commissioning
- Bass Metals** - Hellyer Project - Plant Valuation
- Bass Metals** - Beltana Project - Due Diligence
- Bass Metals** - Hellyer Project - Treatment Study
- Brittania Lead Refinery** - Plant Metallurgist
- Magellan Metals Pty Ltd** - Reagents Facility - Bagging Options Study
- Magellan Metals Pty Ltd** - Reagents Facility - Engineering Design & Purchase Reagent System
- Pasminco** - Lead/Zinc Smelter Plant Metallurgist
- Snowden Group** - Hellyer Mill - Due Diligence
- TNG Ltd** - Manbarrum Project - Scoping Study
- Trafford Resources Ltd** - Telephone Dam - Sighter Testwork
- Western Metals** - Parys Mountain Base Metals Project - Metallurgical Consulting

Gold/Lead/Zinc

- Independent Engineers** - East Santa Cruz Project - Core Scoping Study

Gold

- ABM Resources NL** - Buccaneer Gold Project - Testwork
- Acil Tasman Pty Ltd** - Kimberley Study - Tanami Regional Minerals Study
- Agincourt Resources Ltd** - Andhorinhas Project - Due Diligence
- Agincourt Resources Ltd** - Andorinhas Project - Due Diligence
- Agnew Gold** - Electrowinning Consulting Advice
- Allied Gold Ltd** - Simberi Project - Cyanide Mitigation Desktop Study
- Amlib United Minerals** - Kokoya Gold Project - Pre-Feasibility Study Review
- Anglo Australian Resources NL** - Mandilla Project - Toll Milling
- Apex Minerals NL** - Wiluna Gold Mine - Consultancy & Audit
- Aphrodite Gold** - Aphrodite Gold Project - Scoping Study, Feasibility Study Scope of Work & Testwork Management
- Aphrodite Gold** - Chameleon Project - Sighter Testwork
- Archipelago Resources** - Minahasa Project - Power Station Acquisition and Relocation Project
- Archipelago Resources** - Mt Muro Project - Financial Modelling, Scoping Studies & Plant Evaluation
- Archipelago Resources** - Mt Todd Project - Equipment Evaluation
- Archipelago Resources** - TokaTindung Project - El Tambo Plant Relocation, Metallurgical Consulting, Feasibility Study & Plant Valuation & Tender for URGM Plant Relocation

Global Project Experience

Gold

Ashburton Minerals LTD - Maluku Gold Project - Processing Review
Barrick (Australia Pacific) Ltd - Plutonic Gold Mine - Simulation
Barrick Gold Corporation - Lawlers Project - Plant Throughput Study
Bass Metals - Henty Project - Due Diligence
Bass Metals - Mt Charter Project - Polymetallic Deposit Preliminary Testwork
Beacon Minerals Ltd - Barlee Gold Project - Testwork
Central China Goldfields - Rakyon Project - Due Diligence
Commonwealth Bank of Australia - Mercator Project - Due Diligence
Crew Gold Corporation - Lefa Corridor Project - Plant Commissioning
Croesus Mining - Norseman Operation - Metallurgical Review
Croesus Mining - Ravenswood Project - Due Diligence
Croesus Mining - Sons Of Gwalia Southern Cross Project
Croesus Mining Ltd - Central Norseman Project - Due Diligence
CSA Australia - Indonesian Gold Mine - Due Diligence
CSA Global - RMC Gold Scoping Study
Eclipse Resources - Dizon Tailings Project - Study Review
Elekdra Diamonds NL - Coyote Project - Metallurgical Evaluation
GBM Minerals Engineering Consultants - Centamin Sakurai Project - Testwork Review
GBS Gold - Geocoat Project - Plant Design
GBS Gold - Pine Creek Project - Metallurgical Consulting
GBS Gold - Terra Gold Mining - Pre-Feasibility Study
GBS Gold - Toms Gully Project - Metallurgical Review
GHG Mining - Mt Tymn & Ringwood - Metallurgical Review
Giants Reef Mining - Chariot Project
Glencoe Gold - Pilbara Gold Project
Gold Road Resources Ltd - Yamarna Gold Project - Scoping Study
Golder Associates - Golder Gold Project - Due Diligence
Golder Associates - Hassai Gold Project - Due Diligence
Golder Associates - Macedonian Gold Project - Scoping Study
Goudhurst Pty Ltd - Project Met Syama Gold Mine - Pre-Feasibility Study
Goudhurst Pty Ltd - Project Met Syama Gold Mine - Specialist Services
Greater Pacific Gold Ltd - Union Reefs Gold Mine - Plant Valuation
Grosvenor Gold - Fortnum Gold Plant - Capacity Simulation and Testwork



Global Project Experience



Gold

- Guinor Gold Corporation** - Lefa Corridor Project - Operating & Commissioning Manuals
- Harbour Lights Mining** - Haib Project - Bacterial Leach Pilot
- Higginsville Mining Ltd** - Greenfields Mill - Gold Losses
- Homestake Gold of Australia** - Mineral Processing Course
- Independent Engineers** - Emerson Project - Due Diligence
- Independent Engineers** - Maud Creek Project - Metallurgical Testwork
- Independent Engineers** - Raub Tailings Project - Metallurgical Consulting
- Independent Engineers** - Simberi Allied Gold Project - Operating Manuals & Metallurgical Consulting
- Independent Engineers** - Tanjianshan Project - Due Diligence
- Investec Bank (Australia) Ltd** - Crescent Gold - Girth Gear Expert Advice
- Investec-Mercator Project** - Due Diligence
- Kalgoorlie Consolidated Gold Mines** - Fimiston Project - Phase 2 Commissioning
- Kenor Norway** - Fayalala Project - Beneficiation Metallurgical Testwork
- Kenor Norway** - Kelian Project - Plant Audit
- Kenor Norway** - Kori Kollo Project - Plant Assessment
- Kenor Norway** - Lefa Corridor Project - Beneficiation & HPGR Testwork
- Kenor Norway** - Lero Gold Project - Client Representative for Metallurgical Matters
- La Mancha Resources** - Frogs Leg Project - Underground Metallurgical Testwork
- Lloyd George Mining** - Metallurgical Accounting Review
- Macquarie Bank** - Las Lagunas Project - Due Diligence
- Macquarie Bank** - Mungari Gold Project - Due Diligence
- Manhattan Gold** - Metallurgical Consulting
- Materials Insight** - Granny Smith Mine - Mill Replacement
- Medusa Mining Ltd** - Co-O Project - Technical Review
- Medusa Mining Ltd** - Philsaga Project - Due Diligence
- Medusa Mining Ltd** - Saugon Project - Plant Valuation
- Mercator Gold** - BlueBird Project - Due Diligence
- Midas Resources** - Sons Of Gwalia Red October Project - Due Diligence
- Mines & Resources Australia** - Kundana Plant - Purchase & Relocation
- Mines & Resources Australia Pty Ltd** - White Foil Project - Ore Treatment
- Mines and Resources Australia** - Mungari Project - Pre-Feasibility Study
- Mines and Resources Australia** - White Foil Project - Testwork Study Toll Milling
- Mining Project Investors** - Metallurgical Accounting
- Monarch Gold** - Davyhurst Project - Plant Audit & Special Mineral Processing Course

Global Project Experience

Gold

Mount Magnet South NL - Kirkalocka Project - Feasibility Study
Mungari East Joint Venture - Frogs Leg Project - Pre-Feasibility Study
N M Rothschild and Sons Ltd - Crescent Gold Laverton Project - Due Diligence
Navigator Resources Ltd - Leonora Project - Pre-Feasibility Study
Newcrest Mining Ltd - Telfer Gold Mine - Specialist Services
Newmont Mining Corp - Jundee Plant - Training
Newmont Mining Corporation - Waihi Project - Scoping Study
Nex Metals Explorations Ltd - Kookynie Gold Project - Orient Well Dump Leach
Norton Gold Fields - Paddington Gold Mine - Specialist Services/Labour Hire, Optimisation & Plant Audit
Octagonal Resources - Maldon Mill - Audit
Outotec - Turkish Gold Project - Testwork and Scoping Study
Pacrim Energy - Redcliffe Project - Metallurgical Testwork
Paddington Gold Mine - Optimisation
Quartzite - Georgia Project - Heap Leach Technical Audit & Annual Metallurgical Accounts Audit
Quartzite - Heap Leaching Operations Project - In Process Determination/Audit
Quartzite Ltd - Madneulli Tailings Project - Scoping Study
Ramelius Resources Ltd - Mt Magnet - Consultancy & Specialist Services/Labour Hire
Reed Resources - Comet Vale Project - Toll Milling Supervision
Regis Resources - Moolart Well - Testwork & Engineering Data
RM Capital - Cyanide Leach Tests
RMB Resources - Carosue Dam Project - Plant Valuation
RMG Copper Ltd - Quartzite - Audit
Saracen Mineral Holdings - Carosue Dam - Operational Audit
Saudi Arabian Gold Project - Feasibility Study
Sino Mining - Jianchaling Project - Site Visit
Snowden - Baomahun Gold Project - Metallurgical Consulting
Snowden - Mirah Project - Technical Review
Snowden - Rawas Project - Heap Leach, CIP & Merrill Crowe
Snowden Mining Consultants - Baomahun Project - Pre-Feasibility Study
Snowden Mining Consultants - Golden Pride Syama Ravenswood - Desktop Study



Global Project Experience



Gold

- Snowden Mining Consultants** - Jardim do Ouro Project - Serabi Mining
- Snowden Mining Consultants** - Meekatharra Project - Competent Persons Report
- Snowden Mining Consultants** - Mirah Project - Review
- Snowden Mining Consultants** - Project Daughter - Due Diligence
- Snowden Mining Consultants** - View Gold - Metallurgical Opinion
- Snowden Mining Consultants** - Way Linggo Project - Due Diligence
- Snowden Mining Consultants** - Westonia Project
- Sons of Gwalia** - Carosue Dam Operations - Metallurgical Accounting Audit
- Sons of Gwalia** - Receiver Manager Duties
- Southern Cross Goldfields** - Marda Gold Project - Simulation
- Southern Cross Goldfields** - Dulcie Heap Leach Project - Testwork
- SRK Consulting** - Masbate Gold Project - Due Diligence
- SRK Consulting** - Project Blackbird - Metallurgical Consulting
- St Barbara Mines** - Gwalia Process Plant - P&ID Checks, Risk Assessment & Operating Manuals
- St Barbara Mines** - Marvel Loch Project - Plant Audit
- St Barbara Mines NL** - Tasiast Project - Metallurgical Consulting
- Sumatra Copper Gold** - Rawas Project - Higher Throughput Scoping Study & Pre-Feasibility Study
- Titan Resources NL** - Kinross Gold Norseman Project - Acquisition Due Diligence
- Trafford Resources Ltd** - Weesnanna Gold Project - Scoping Study
- Troy Resources** - Project Hadrian - Due Diligence
- Troy Resources** - West Omai Gold Project - Consulting
- Troy Resources NL** - Andorhinas Project - LagoaSeca Testwork
- Troy Resources NL** - AntenaSul Project - Metallurgical Testwork
- Troy Resources NL** - Bell Chambers Project - Metallurgical Testwork
- Troy Resources NL** - Casposo Mill - Simulation
- Troy Resources NL** - Cornishman Ore Treatment - Consulting Advice
- Troy Resources NL** - Goias Velho Project - Testwork & Flowsheets
- Troy Resources NL** - Lord Henry & Lord Nelson Burdekin - Heap Leach Viability Project
- Troy Resources NL** - Metallurgical Accounting
- Troy Resources NL** - Mill Throughput Calculations
- Troy Resources NL** - Mina Sertao Project - Process Optimisation & Metallurgical Testwork
- Troy Resources NL** - Paulsens Project
- Troy Resources NL** - Resin-In-Pulp Technology - Expert Advice

Global Project Experience

Gold

Troy Resources NL - Sandstone Project - Crushing Plant Audit, Metallurgical Audit & Crushing Plant Capacity Improvement

Troy Resources NL - Ultra Fine Grinding - Expert Advice

Troy Resources NL - Xupe Project - Metallurgical Testwork

Vatukoula Gold Mines - Definitive Study

Vector Resources - Gwendolyn Gold Project - Feasibility Study and Testwork

View Resources - Bronzewing Project - Plant Valuation

View Resources - Bronzewing Project - Re Commissioning

View Resources - Ortiz Project - Due Diligence



Iron (Hematite, Magnetite, Iron Sands)

A&M Minerals - Malobog Iron Sands Project - Testwork

Accent Resources - Magnetite Range - Pre-Feasibility Study & Due Diligence

Atlas Iron - Iron Ore Due Diligence

BehreDolbear Australia - Argyle Project - Due Diligence

BehreDolbear Australia - Fortescue Metals Project - Due Diligence

BehreDolbear Australia - Mt Gibson Project - Due Diligence

BehreDolbear Australia - Talling Peak - Process Review

BlueCrest Capital Management - Fortnum Gold Plant - Scoping Study

Brazilian Metals Group Ltd - Gema Verde Group - Scoping Study

BrightStar Resources - Maude Creek Gold Project - Due Diligence

Cape Lambert Iron Ore Pty Ltd - Cape Lambert Project - Metallurgical Testwork

CP Mining Management - Mineralogy Magnetite Project

Eagle Bay Resources NL - PNG Iron Sands Project

Eastern Iron Ltd - Hawkwood Magnetite Project - Metallurgical Testwork

FMG - Funding Due Diligence

Goldman Sachs - Iron Ore Review

Haggarty Nominees - Ore Sample Assay

Ironclad Mining Ltd - Wilcherry Hill - Feasibility Study Review

Iron Road - Central Eyre Iron Project - PFS

Iron Road Ltd - Gawler Iron Project - Testwork

Jackson MacDonald - BHP - Expert Witness

Logicamms - Brazilian Iron Ore Project - Testwork and Pre-Feasibility Study Review

Global Project Experience



Iron (Hematite, Magnetite, Iron Sands)

- Macarthur Minerals** - Ularring Hematite Project - Beneficiation Testwork Management
- Melrose Gold Mines Ltd** - Metallurgical Testwork
- Metaliko Resources** - Anthill Project - Sighter Testwork
- Mindax** - Mt Forrest - Two Day Workshop
- Minotaur** - Mutooroo Iron Ore Project
- Navigator Resources** - Cummins Range REO Project
- Norseman Gold** - Lady Miller Magnetite Project - Sighter Testwork
- Northern Star Resources** - Mount Olympus - Metallurgical Testwork
- NSL** - Indian Iron ore Project - Testwork
- Portman Mining** - Magnetite Study
- POSCO** - Roy Hill Project - Consulting
- Rio Tinto** - Mt Tom Price - Metallurgical Work
- Rio Tinto** - Paraburdoo - Metallurgical Work
- Rio Tinto Iron Ore** - Fugitive Dust Investigation
- Rio Tinto Iron Ore** - Hope Downs Project - Feasibility Study
- Royal Resources** - Warrieder Project - Preliminary Metallurgical Assessment
- Scandinavian Recourses** - Kiruna Project - Testwork
- Shree Minerals** - Hematite - DSO Testwork
- Snowden Group** - Project Rocket - Due Diligence
- Snowden Mining Consultants** - TTR Iron Sands - Desk Top Review
- SRK Consulting** - Mt Gibson Project - Due Diligence
- Talisman Mining** - Wonmunna Project - Metallurgical Testwork
- TTR** - NZ Iron Sands-Scoping Study
- Venus Metals** - Yalgoo Iron Ore Project - Testwork & Scoping Study
- Viking Ashanti Ltd** - Akoase Gold Deposit - Sighter Testwork
- Western Desert Resources** - Roper Bar Iron Ore Project - Metallurgical Review
- Wright Prospecting** - Audit
- Zenith Minerals** - Mt Alexander Magnetite Project - Due Diligence

Vanadium (Titanium, Molybdenum)

- Apollo Management Ltd** - Windimurra Vanadium Project - Due Diligence
- Atlantic Ltd** - Windimurra Vanadium Project - Plant Audit
- BehreDolbear Australia** - Finland Vanadium Project - Pre-Feasibility Study
- China Vanadium Project** - Metallurgical Consulting
- Intermin Resources Ltd** - Molybdenum and Vanadium Extraction Literature Search

Global Project Experience

Vanadium (Vanadium/Titanium, Molybdenum)

Reed Resources - Barrambie Project - Bankable Feasibility Study Scope of Work, Atmospheric Leach & Recovery Vanadium, Optimisation Testwork & Oxalate Supply

Reed Resources Ltd - HPAL TIMAG Concentrate - Metallurgical Testwork

TNG Ltd - Mount Peake Project - Testwork & Pre-Feasibility Study, Feasibility Study & Scoping Study

Vanadium Australia Pty Ltd - Plant Beneficiation Study



Mineral Sands (Garnet, Titanium Dioxide/Chem)

Archipelago Resources - Vietnam Mineral Sands Project - Scoping Study

GMA Garnet Pty Ltd - New Garnet Application Project

Hansung Elcomtec Co Ltd - Sembiru Mineral Sands Project

McRae Clough - Indonesian Mineral Sands Project

Millenium Inorganic Chemicals - Fume Shed Scrubber Upgrade

Olympia Resources - Garnet Project

R Coles and Associates - Sand Grinding Project

Tiwest - Chandala - Operating Manuals



Nickel

Breakaway Resources - Andrews Project

Breakaway Resources Ltd - The Horn Project - Metallurgical Characteristics

Consolidated Minerals - Due Diligence

Fox Resources - Radio Hill Plant

Halcyon Resources - Halcyon Project - Heap Leach Study

Heron Resources - Metallurgical Support

Independent Engineers - Honeymoon Well - Due Diligence

Independent Engineers - Thundelarra - Feasibility Study Expert Witness

LionOre - Black Swan Nickel, Emily Ann Project & Honeymoon Well

McRae Clough - Laterite Project - Scoping Study

OM Group - Cawse Project - Contract Metallurgist

Poseidon Nickel - Windarra Project - Heap Leach Support

Preston Resources - Marlborough Project - Due Diligence

Rusina Mining NL - Acoje Project - Ferronickel Study

Sally Malay Mining - Nickel Project - Performance Guarantee

Vulcan Resources - Kuhmo Project Finland

Global Project Experience



Nickel

- Snowden Mining Consultants** - Black Swan Nickel Project
- Snowden Mining Consultants** - Ferronickel Serbia - Competent Persons Report
- Snowden Mining Consultants** - Ferronickel Macedonia - Competent Persons Report
- Thundelarra Exploration** - Copernicus Project - Feasibility Study
- Titan Resources NL** - Armstrong Nickel Project
- Vulcan Resources** - Kuhmo Project - Scoping Study
- YTC Resources** - Nickel Project - Due Diligence
- Zambezi Resources** - Mitaba River Project

Rare Earths (Tantalite, Niobium)

- Aus American Mining** - La Paz REE Project - Scoping Study
- Aztec Exploration** - Brockman Niobium, Tantalum RE Project
- Aztec Resources** - Mt Weld Rare Earths - Metallurgical Analysis
- Hastings Resources PTY LTD** - Hastings Rare Metal Project - Testwork
- Pella Energy** - Ak Terek Project

Uranium

- African Investments Group Congo SA** - Uranium Phosphate Project
- AMC Consultants** - Uranium Consulting
- Contact Uranium Ltd** - Kamushan Project
- Cominco S.A** - Hinda Uranium Project - Metallurgical Testwork
- Encounter Resources** - Hillview Project - Testwork
- Energy Ventures** - Aurora Uranium Project - Scoping Study
- Extract Resources** - Husab Project
- Jackson Gold** - Rio Colorado Project - Polymetallic Study
- Reliance Industries Ltd** - Uranium Processing Advice
- Rio Tinto** - Kintyre
- UranLtd** - Grants Ridge Project - Mine Water Issues
- Uranex NL** - Manyoni Project - Testwork Planning & Management
- Uranex NL** - Thatcher Soak Project - Testwork Management
- Wild Horse Energy** - Messek Hills Uranium Project

Manganese

- Energia Minerals Ltd** - Carley Bore ISL Project - Bottle Roll Leach Test
- Golder Associates Pty Ltd** - Bootu Creek Project - Due Diligence & Metallurgical Acc
- Golder Associates Pty Ltd** - OM Manganese - Commonwealth Bank Funding Advice
- Spitfire Resources Ltd** - WoodieWoodie Project - Testwork Management

Global Project Experience

Alumina

Alcoa - B30 Project

Norton White - Expert Witness

Worsley Alumina - Collie Operations - Efficiency Upgrade

Others

Bauxite

- **Australian Bauxite Ltd** - Metallurgical Testwork
- **Snowden Group** - West Kalimantan Bauxite Project - Metallurgical Testwork Review

Cement

- **Lafarge** - Crushing Plant Expansion

Chromite

- **Archipelago Resources** - Co Dinh Project - Metallurgical Testwork

Graphite

- **Eagle Bay Resources**
- **UleyGraphite Resources**
- **Castle Minerals** - Testwork
- **TNG Ltd** - Testwork

Kaolin

- **WA Kaolin Ltd** - Gabbin Kaolin Project

K₂SO₄

- **Rewards Minerals Ltd** - Potassium Sulphate Schematic Diagram

Lithium

- **Altura Mining** - Pilgangoora Lithium Project - Feasibility Study
- **AlturaMining** - Altura Spodumene Project - Sighter Testwork
- **Golder Associates** - Due Diligence
- **Project Daughter** - Greenbushes - Due Diligence

Phosphates

- **Maaden Phosphate Company** - Specialist Services & Testwork
- **Cominco S.A.** - Hinda Uranium Phosphate Project - Metallurgical Testwork

Platinum

- **Niplats** - Speewah Project
- **Thundelara Exploration Ltd** - East Kimberley Platinum Project

Potash

- **Strata Minerals** - Potash Gulf of Carpentaria - Due Diligence
- **Rio Tinto** - Kaolin Project - Pilot Plant

Salt

- **Onslow Salt Pty Ltd** - Onslow Salt Project

Sulphur

- **WMC** - Metallurgical Consulting

Talc

- **WMC** - Talc Operations Beneficiation

Tungsten

- **Hazelwood Resources** - Cooke's Creek Project

Zeolites

- **Quantum Filtration Media** - Zeolite Project

Zircon

- **Astron Limited** - Zircon Project - Due Diligence



Recent Technical Papers

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Date	Conference	Title
2020	ALTA 2020, Perth WA	Analysis of The Bald Hill Lithium Project Failure
2020	ALTA 2020, Perth WA	Copper Nickel Separation Challenges and Flowsheet Development
2020	AusIMM Lithium 2020, Perth WA	Processing Options for Lithium Hydroxide
2020	COM 2020, Toronto ON	Lessons Learned from New Hardrock Lithium Projects
2020	COM 2020, Toronto ON	Producing High Purity Alumina and Potash from Feldspar
2020	COM 2020, Toronto ON	A Western Australian Gold Mine Powered by Wind, Solar, Battery and a Gas Microgrid.
2020	Mineral Sands 2020, Perth WA	Critical Aspects of Due Diligence for Battery Minerals Projects Seeking Funding
2019	ALTA 2019, Perth WA	Producing Ferronickel as a Process Alternative fo Nickel Laterite Processing
2019	ALTA 2019, Perth WA	Technical Options for Processing a Lithium Clay Ore and Achieving High Purity Lithium Carbonate
2019	ALTA 2019, Perth WA	Technology Options for Development of a Remote Large Low Grade Copper Deposit
2019	ALTA 2019, Perth WA	Technology Options for Processing a Gold Ore with Variable Refractory Characteristics
2019	AusIMM Lithium 2019, Perth WA	The Flotation of Lithium Minerals from Hard Rock Deposits from Laboratory Testwork to Commissioning
2019	Battery Minerals 2019, Perth WA	Critical Aspects of Due Diligence for Battery Minerals Projects Seeking Funding
2019	CIM 2019, Perth WA	Challenges of Beneficiating Low Grade Iron Ores
2019	CIM 2019, Perth WA	Lead Zinc Separation Issues in a Polymetallic Ore
2019	CIM 2019, Perth WA	The Challenges of Tailings Processing
2019	COM 2019, Perth WA	Technology Options and Innovation for Copper Heap Leaching
2019	COM 2019, Perth WA	Options for Removing Arsenic and Talc from a Copper Concentrate
2019	Informa Lithium & Battery 2019	Critical Issues with the Beneficiations of Lithium Minerals from Hard Rock Deposits
2019	Informa Minerals Sands, WA	Recent Strategic Advances with Mineral Sands Beneficiations
2019	Iron Ore 2019, Perth WA	Will Titaniferous Magnetite be a Significant New Source of Titanium Pigment (TiO ₂)
2019	World Gold, Perth WA	Flowsheet Development of a Refractory Gold Ore to Minimise Arsenic Issues in the Environment
2019	World Gold, Perth WA	The Bottle Creek Gold Project Revisted
2019	World Gold, Perth WA	Flowsheet Options for Processing Copper & Gold Copper Ores
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2013	AusIMM International Uranium Conference, Darwin, NT.	Critical Issues with Developing Uranium Projects with Current Low Uranium Prices
2013	ALTA 2013, Perth, WA.	Current Challenges with Processing of Uranium Ores
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2012	COM 2012, Niagara Falls Canada.	Critical Aspects of Low Grade Ore Beneficiation
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2012	IIR Iron Ore Project Development & Logistics Conference 2012, Perth WA.	Latest Developments Transporting An Ore Through a Pipeline

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Date	Conference	Title
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2012	ALTA 2012, Perth WA.	Processing of Gold Copper and Copper Gold Ores with Flowsheet Development and Strategies
2012	SME Annual Meeting 2012, Seattle USA.	Water Management Issues with Processing Magnetite Ores
2011	Conference of Metallurgists 2011, Montreal Canada.	In situ Leaching of Gold Deposits
2011	AusIMM Metplant Conference 2011, Perth, WA.	Sensible Cost Cutting for Resource Projects
2011	AusIMM Iron Ore Conference 2011, Perth, WA.	The Central Eyre Iron Ore Project- Process Selection and Design
2011	AusIMM Metplant Conference 2011, Perth, WA.	The Casposo Gold-Silver Project- Process Selection and Design
2011	Wet & Sticky Ore Conference 2011, Perth, WA	Clay, A Mineral Processing Nightmare
2011	ALTA 2011, Perth WA	The Merrill Crowe Process vs. Carbon in Pulp-Process Selection
2011	Valmin 2011, Brisbane QLD	Metallurgical Errors - Where Things Went Wrong
2010	Mining Magazine Congress 2010	Advances in Gold Process Recovery From Complex Ores
2010	COM, Vancouver Canada.	The Challenges Ahead for Mineral Processing & Resource Projects
2010	COM, Vancouver Canada.	Feasibility Studies Truths and Half Truths
2010	AusIMM Gravity Gold Conference, Ballarat Vic.	Selection Sizing and Developing the Optimum Gravity Gold Circuit for Your Project
2010	AusIMM Gravity Gold Conference, Ballarat Vic.	Minimum Industry Goldroom Security Standards
2010	AusIMM International Uranium Conference, Adelaide SA.	Uranium Metallurgical Development Considerations for In Situ Leach Process Plants
2010	Precious Metals Conference, Falmouth UK.	Process Plant Design Considerations for High Silver Gold Ores
2010	AusIMM Sampling Conference, Perth WA.	The Marvel Loch Crusher Product Sampling System
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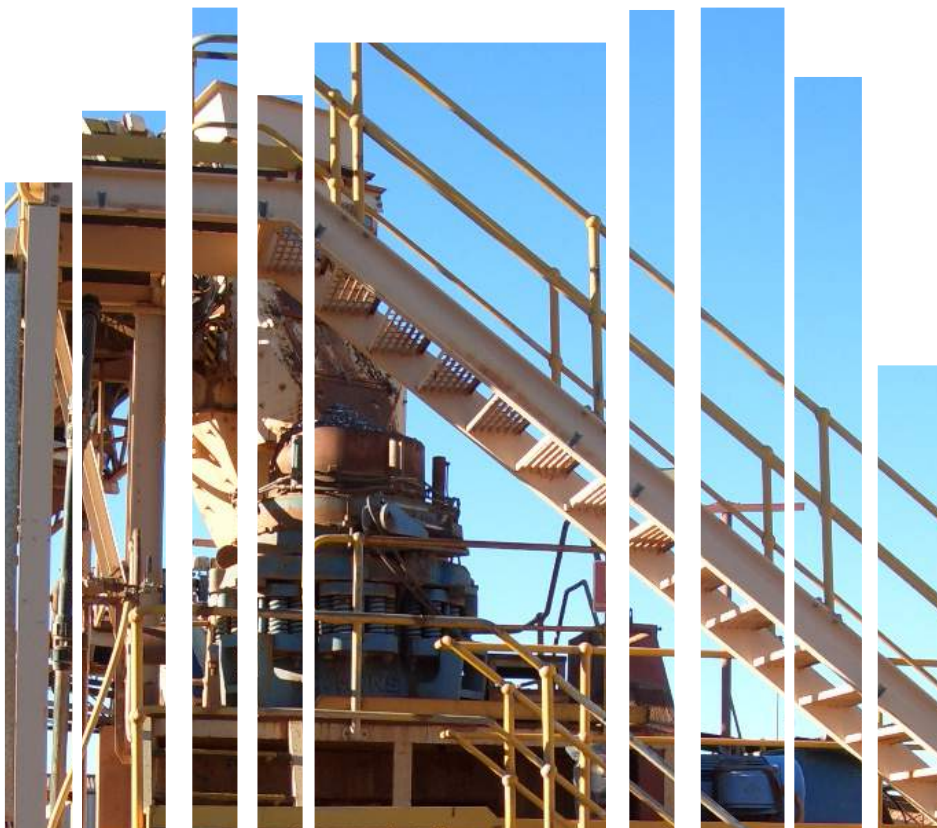
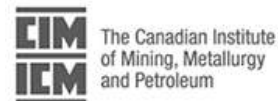
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Date	Conference	Title
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2009	AusIMM Uranium Conference, Darwin NT.	Keys To Testing Uranium Ores & Trends In Flowsheet Development & Innovations
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2009	Mining The Mid West, Perth WA.	Iron Ore Characteristics-The Implications For Processing
2008	ACG Tailings Seminar, Perth WA.	Dealing With The Realities of Decreasing Water Availability For The Resources Sector
2008	IQPC Crushing & Grinding Conference, Perth WA.	Trends With Selection & Sizing of Cone Crushers - What is Available In The Marketplace
2008	Perth Mining Expo, Perth WA.	Critical Aspects of Metallurgical Testwork
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2008	Australian Uranium Conference, Perth WA.	Uranium Mineralogy and the Specific Impact on the Process Flowsheet
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2008	AMEC National Mining Congress, Perth WA.	Levels of Feasibility Study for the Exploration Market
2008	Mining In The Mid West, WA.	Reviewing the Application of Beneficiation Techniques to Iron Ores
2007	Mining 2007, Brisbane Qld.	Metallurgical Testing & Flowsheet Development
2007	Australian Nickel Conference, Perth WA.	Comparative Leaching Technologies
2005	Conference of Metallurgists, Calgary Canada.	Frog's Leg Gold Project - A Non-traditional Approach to Development
2005	AusIMM Centenary of Flotation, Brisbane QLD.	Separation of Pyrite and Arsenopyrite in a Gold Sulphide Concentrate
2004	AusIMM METPLANT, Perth WA.	The Mina Sertão Gold Project - From Drill Core to Production
2002	Symposium - Treatment of Complex Gold Ores, Leura NSW.	Paulsens Gold Project - What Panel Beating & Metallurgy Have In Common
2001	MINEX, Perth WA.	Transportable Plants In Mineral Processing

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