"It was great to hear that mining companies, service providers and finance are well aligned at the Renewables and Mining Summit - there is proven technology and an appetite to implement."
Terry Brace, Energy Leader, **Teck Resources**

RENEWABLES & MINING SUMMIT

Johannesburg, June 23-24, 2014

Hear from 20+ African mines exploring renewables including:

Wouter Ferreira
Water & Energy Engineer
Engineering Field Services
AngloGold Ashanti

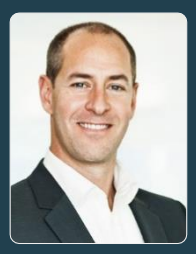
Stan Pillay
Group Manager Climate Change & Energy
Anglo American

Stanley Maphalala
Chairman
REVINSAMB Mineral Mining Holding

Duncan Stevens
Vice President, Group Sustainable Development
Gold Fields

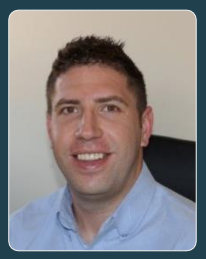
Gerhard van den Berg
Group Energy Engineer
Anglo Platinum

Antonio Jones
Project Manager
ArcelorMittal South Africa



Rollie Armstong
Director
Cronimet Power Solutions

Marius Herselman
Group Electrical Engineer
African Rainbow Minerals



Coenraad Pretorius
Energy Engineer
Anglo American

Learn from renewables experts delivering mining solutions including:

Rentia van Tonder
Head of Renewable Energy Power and Infrastructure
Standard Bank

Omar Vajeth
Vice president Global Business Development and Commercial
Sembcorp

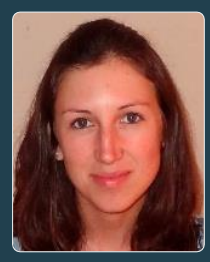
Darren Hollander
CEO,
SolarPower Africa

Mike Levington
Director
Kabi Solar

Jasandra Nyker
CEO
BioTherm Energy

Sean Thomas
Managing Director
Bio2watt

Andrea Orzan
Director Business Development Africa
SunEdison



Lydia Cape-Ducluzeau
Environmental Assessment Practitioner
Council for Scientific and Industrial Research

Dee Fischer
Chief Director for the Integrated Environmental Management Support
National Department of Environmental Affairs

Understand the scope and size of the opportunities:

- Hear directly from energy buyers from African mines about their challenges
- Learn how renewables can be part of the solution for remote and grid-tied facilities
- In-depth energy case studies from mining leaders assessing renewable opportunities
- Expert insight on how to make these projects work for mines and project developers
- Get the very latest updates in hybrid, micro-grid and energy storage solutions
- Plus renewables as part of mine reclamation plans

Lead Sponsor

SIEMENS

Main Sponsor

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REGISTER AT : www.energyandmines.com/africa

EMAIL: sam.likely@energyandmines.com OR CALL +1 613 627 2787 ext. 3

Gain market intelligence of energy contract opportunities in African mines

Energy has become a major cost and concern for mining operations across Africa. Grid-connected mines are dealing with intermittency and steep tariff escalations, particularly in South Africa where electricity prices are rising 8% or more a year and grid capacity is constrained. For remote mines, the high cost of diesel is forcing operations to focus on reducing fuel consumption and look to alternatives like renewables to meet this aim.

Built on the success of the inaugural Renewable Energy and Mining Summit which welcomed over 250 attendees to Toronto last September, this Johannesburg Summit will bring together mining energy decision-makers from across Africa with renewable energy experts to discuss solutions to meet mining's energy dilemma.

KEY TOPICS TO BE EXPLORED IN JOHANNESBURG:

- Building the business case and financing models for these projects
- Detailed case studies from mines exploring renewables at remote and grid-tied sites
- Understanding how renewables can drive real cost savings and operational efficiencies for mines
- The latest updates on cutting edge technologies including hybrid solutions and energy storage

Bringing two sectors together for the first time to network and explore business opportunities.

The Summit is designed to offer benefits to both the mining and renewables sectors. Through dedicated networking sessions over the two days, representatives from mining and renewables will have a chance to connect and understand the potential for partnering on projects across the continent.

We look forward to welcoming you in June.

Adrienne Baker
Director
Energy and Mines

Top 3 reasons mining executives should attend:

1. Hear how other mines are exploring renewables as part of the solution for driving down costs and securing energy supply
2. Answer critical questions around the financing, timelines, operation and cost-savings of these projects
3. Learn about the latest technologies that are increasing the reliability and efficiency of renewables

Top 3 reasons renewables and energy solutions experts should attend:

1. Meet face-to-face with the mining executives heading energy decisions across Africa
2. Gain a real understanding of how mines make energy decisions and how to deliver customized solutions
3. Walk away with real knowledge on the size and scope of the business opportunity with African mines

> The Renewables and Mining Summit inToronto was a timely and excellent event, especially the business networking. There are many challenges ahead but the conference provided a milestone for the required discussions. The convergence of mining companies, developers, vendors and others at this event was valuable.
>
> - Sunil Kumar, Director, Energy Strategy, **Kinross Gold**

Renewables and Mining Agenda and Report

All attendees will take home real market intelligence with a copy of the Renewables Mining Agenda and Report which will feature interviews with market leaders in renewables integration for grid-tied and remote mines in Africa. Understand what the main drivers are for considering alternative energy and the internal metrics mines use to measure and weigh their energy options.

This is a must-have for mining executives and energy experts looking to gain an edge on the very latest thinking behind energy options for mines and how renewables fits. Some sponsorship options include a Thought-Leadership Interview which is published in the report and through the Energy and Mines network in the weeks prior to the event. For information, contact: adrienne.baker@energyandmines.com

ENERGYANDMINES

FOR INFORMATION ON SPONSORSHIP AND EXHIBITION:
EMAIL: **adrienne.baker@energyandmines.com** OR CALL +1 613 627 2787

"The quality of attendees as well as the content of the Renewables and Mining Summit was exceptional," - Adrienne Downey, Enercon Canada

DAY 1: MONDAY, JUNE 23, 2014

08.30 **Coffee and Registration**

08.55 **Chair's Opening Remarks**
Adrienne Baker, Director, Energy and Mines

09.00 **Welcome Keynote**
The Business Case for Renewables Integration

Session 1: Why Mines are Exploring Renewables

09.20 **Mining Industry Leaders**
This opening session will bring together energy decision-makers from African mines to discuss how they are addressing their energy challenges and assessing the options for renewables as part of the solution towards securing cost-effective and reliable energy for their operations.

PANEL DISCUSSION

- What are mines currently doing to address energy challenges?
- How do renewables fit with energy goals?
- What are the main challenges for incorporating renewables into a mine's energy supply?
- At what point does self-generation begin to make economic sense?
- What sort of business model would you like to see renewable energy projects follow?
- What do you need from renewables to help solve your energy challenges?

Chair: Chris Matthews, New Business Manager, **Mainstream Renewable Power**
Wouter Ferreira, Water & Energy Engineer, Engineering Field Services**, AngloGold Ashanti**
Stan Pillay, Group Manager Climate Change & Energy, **Anglo American**
Stanley Maphalala, Chairman, **REVINSAMB Mineral Mining Holding (Pty) Ltd**
Marius Herselman, Group Electrical Engineer, **African Rainbow Minerals**

10:10 **Networking Break**

Session 2: Bridging the Finance Gap

Structuring the Deal: Financing Considerations & Options

With the life of a mine often projected to be shorter than the payback period for a renewable energy project, financing these projects is a key consideration for both mines and project developers. This session will look at options for structuring deals that create value and security for both mines and project developers.

10.50 **Overcoming Financing Hurdles for Solar PV**

CASE STUDY

- Understanding the financial stumbling blocks that a mine grapples with
- Assessing off-balance sheet vs. on balance sheet financing for a solar farm
- Securing financing which fits within a mine's risk tolerance and preferred structure

Gerhard Wernecke, Energy and Asset Manager, **Lonmin**

11.15 **How to Make these Deals Work for Mines and Project Developers**
This panel will bring together leading investors in renewable energy projects to discuss how they would assess projects where the offtaker is a mine and to share their views on how to structure these deals to the benefit of both mines and developers.

PANEL DISCUSSION

- How would investors analyse risk for renewables projects where the offtaker is a mine?
- What goes into assessing the creditworthiness of the mine?
- Analyzing the pros and cons of off-balance sheet vs. on-balance sheet financing
- What makes these projects bankable?
- What guarantees need to be in place for mines and developers if the operation shuts down?
- Is it possible to amortize the cost of a PV plant or wind farm over a shorter period of time?
- How does instability of the rand affect financing costs?

Rentia van Tonder, Head of Renewable Energy, Power and Infrastructure, **Standard Bank**
Omar Vajeth, Vice president, Global Business Development and Commercial, **Sembcorp**

Jan Henri Dewulf, Senior Investment Officer, **IFC Infraventures, sub-Saharan Africa**
Jurie Swart, Infrastructural, Developmental and Environmental Assets**, Old Mutual Investment Group**

12.10 Networking Lunch sponsored by

SIEMENS

Session 3: Grid-Tied Solutions

Securing Affordable and Reliable Energy for Grid-Tied Mines

Grid-connected mines are under increasing pressure to secure reliable energy at stable prices. Particularly in South Africa where rapidly increasing electricity tariffs combined with grid capacity constraints are pushing mines to consider alternatives like renewables in combination with energy efficiency measures. This session will explore recent case studies from grid-tied operations that have incorporated renewables and will be followed by a discussion on how to accelerate renewable energy solutions for these mines.

13.30 **Evaluating Renewables for Gold Fields' Global Operations**
Gold Fields is committed to ongoing viability assessments to investigate replacing carbon-intensive sources of energy with renewable energy and lower carbon alternatives. To meet this goal, the gold leader has performed assessments of the feasibility of renewables at various operations.

JOINT CASE STUDY

- An understanding of Gold Fields' corporate energy and carbon goals with regards to renewables
- Methodologies used for the assessment of the feasibility of renewables at its operations
- An overview of the opportunities and barriers of incorporating renewables at mine sites.

Duncan Stevens, Vice President, Group Sustainable Development, **Gold Fields**
Martin Sprott, Principal, **A.T. Kearney**

13.55 **Renewables as Part of the Solution Towards Secure and Affordable Energy**
ArcellorMittal is actively seeking new solutions for ensuring the reliability and affordability of energy for its South African operations.

CASE STUDY

- Insight on the capital constraints and consistent energy needs of this mine's operations
- Lessons learned from the permitting and implementation process of a small wind farm
- Partnership opportunities for leasing land to PV project developers

Antonio Jones, Project Manager, **ArcelorMittal South Africa**

Session 4: Mining Renewables Case Studies

14.15 **Investing in Groundmount PV to Power Mining Facilities**
Anglo American is building a 240 kWp grid-connected, ground-mounted PV system to provide electricity to the central administration offices at its Kriel colliery, in Mpumalanga.

JOINT CASE STUDY

- Hear about the internal decision-making process this mine underwent to approve this project
- How does solar fit with the company's overall climate and energy strategy?
- Details on financing, implementation and operational considerations

Coenraad Pretorius, Energy Engineer, **Anglo American**
Darren Hollander, CEO, **SolarPower Africa**

14.40 **Exploring Biomass and PV for Grid-Tied Operations**
Anglo Platinum is currently reviewing options for a biomass power station to help power its South African operations. The company has also reviewed options for solar PV in an effort to address constraints on the local utility and electricity tariff increases.

CASE STUDY

- Understanding how Anglo Platinum's renewable energy strategy fits with efficiency measures – when does self-generation become a priority?
- Details on the economic and regulatory hurdles for renewables including PV and biodiesel

Gerhard van den Berg, Group Energy Engineer, **Anglo Platinum**

15.10 Networking Break

Session 5: Navigating Licensing, Permitting and Approvals

Licensing, Connecting and Implementing Renewables for Grid-Tied Operations

While the mining sector is clearly interested in the opportunities for incorporating renewables into their energy supply, there are questions around the timelines and processes for getting these projects online. There are several unique technological and permitting considerations when trying to do a project near a mine, for instance. This session will offer the latest updates on licensing, connecting, permitting and constructing these projects for grid-tied operations in South Africa.

15.40 **Addressing Mining's Energy Challenge and Connecting Renewables**
This presentation will offer insight from Eskom on the potential for connecting renewable energy projects for grid-tied mines in South Africa.

16.00 **Licensing and Approval Requirements**
Insight on the regulatory requirements and timelines for licensing private power purchase agreements for these projects

16.25 **Connecting, Permitting and Implementing Renewables for Grid-Tied Mines**
This panel will bring together experts in renewable energy project development, permitting and implementation to discuss the practical and technical considerations for adding renewables to grid-tied mine sites.

PANEL DISCUSSION

- How does a project involving a private PPA for a mine differ from a government-backed PPA?
- Insight from renewables experts on the connection process for renewables
- Have developers explored wheeling agreements for sites where the renewable resource is not adjacent to the mine?
- What are some of the permitting challenges when developing projects on mine sites?
- What timelines should mines expect for having these projects come online – wind, solar, biomass etc.?
- What guarantees would an IPP look for from these deals in terms of protection if the mine is not using the power?

Mike Levington, Director, **Kabi Solar**
Jasandra Nyker, CEO, **BioTherm Energy**
Sean Thomas, Managing Director, **Bio2watt**
Andrea Orzan, Director Business Development Africa, **SunEdison**
Karen Jodas, Director, **Savannah Environmental**

17.20 **Drinks Welcome**
Chris Matthews, New Business Manager, **Mainstream Renewable Power**

17.25 **Networking Drinks sponsored by**

MAINSTREAM RENEWABLE POWER

18.30 **Close of Day One**

"I must say that the Renewables and Mining Summit in Toronto was without a doubt the best I have ever seen in its field." - **Gerhard Wernecke**, Energy and Asset Manager, **Lonmin**

DAY 2: TUESDAY, JUNE 24, 2014

8.00 BREAKFAST ROUNDTABLE

The Role of Fuel Cells in Securing Clean, Affordable Energy for Mines

Platinum-based hydrogen fuel cells will play a significant role in solving mining's energy dilemma. And as the demand for this battery technology grows, so will the business opportunities for South Africa's largest platinum producers to supply the market. In this session, we will hear from platinum mining leaders to get their views on the application of fuel cells for mining operations.

Session 6: Solutions for Remote Operations

Renewables as Part of the Energy Solution for Remote Mines

Energy accounts for around 30% of the operating cost of a mine relying on diesel-fired generators. When you add in the price variability and transportation challenges of diesel, it's clear why mines are seeking to reduce their reliability on this fuel source and integrate renewables. This session will examine how mines are assessing the potential for integrating renewables at remote operations.

9.00 CASE STUDY

Operational Insights and Fuel-Savings from a Diesel-PV Hybrid

Get the latest updates on how the 1 MW off-grid solar PV facility for Cronimet's South African chromium ore operations in Limpopo Province has been operating in its first year.

- What are the savings in terms of diesel use from one year of operations?
- Lessons learned during the operational phase – particular challenges to overcome
- Ideas on how to increase diesel displacement and drive further operational efficiencies

Rollie Armstong, Director, **Cronimet Power Solutions**

9.20 PANEL DISCUSSION

Assessing Renewable Energy Options for Remote Sites

This panel will bring together mining energy decision-makers from remote operations across Africa to discuss how they are assessing the options for incorporating renewables as part of fuel-savings goals.

- How are mines addressing fuel cost concerns at remote sites?
- How have mining operations explored options for renewables integration?
- What are the particular concerns around incorporating renewables sources with diesel gensets?
- What assurances do mines need around the intermittent nature of renewables and the ability to supply consistent power for remote operations?
- What would win the business case for adding renewables at these sites?
- How do mining energy leaders see the demand for renewables from the mining sector evolving in the next 3-5 years?

Armel Florent Djeunang, Continuous Improvement Specialist**, IAMGOLD Corporation**
Rollie Armstong, Director, **Cronimet Power Solutions**
Stanley Segula, Chief Operating Officer, **Zimplats Holdings**
Nic Schoeman, General Manager Technical Services**, African Barrick Gold**

10.10 Networking Break

Session 7: The Diesel-Hybrid Business Case

Technological Advances in Diesel-Hybrid Solutions for Mining Operations

This session will offer the latest updates on the technological advances of hybrid solutions to ensure consistent, cost-effective.

power for remote mining operations . It will offer insight from recent hybrid projects for the mining sector and answer key questions around the performance and affordability of these remote systems.

10.50 CASE STUDY

Understanding the Performance Capabilities of Diesel-Hybrid Systems for Mines

This case study will provide details on how a remote hybrid-system can match the power needs of mining allowing for firm, consistent power 24/7. It will also examine how these solutions are helping mines meet fuel-savings, operational efficiency and carbon reduction goals.

A Representative, **Siemens AG**

11.10 PANEL DISCUSSION

The Evolution of Diesel-Hybrid Solutions

- How are genset providers and hybrid experts working to create solutions for remote mines?
- How are diesel-hybrids evolving to match the energy needs of mines with cost-effective solutions?
- What technological advantages are increasing the operational efficiency and performance of hybrids?
- What are some recent examples of diesel-hybrids for mines or other remote industrial users?
- Key criteria that mining energy decision-makers need to consider when assessing hybrid options
- Measuring the economics - what should mines expect in terms of the level penetration of renewables on the system and the resulting fuel-cost savings?

A Representative, **Siemens AG**
A Representative, **Mainstream Renewable Power**

12.00 Networking Lunch

Session 8: Energy Storage and Micro-Grids in Mines

The Application of Energy Storage and Micro-Grid Technologies for Mining

This session will look at where the technologies for remote micro-grids have evolved both in terms of the economics and the performance of these systems. How can these innovative solutions play a role in meeting the energy and fuel-transportation challenges for remote mining operations across Africa?

13.00 CASE STUDY

Designing and Implementing Remote Micro-Grids for Mining Operations

This presentation will detail the particular considerations for designing and implementing micro-grids for remote mining operations.

13.20 PANEL DISCUSSION

Understanding Energy Storage and Micro-Grid Options – What are the Best Solutions for Mines?

This panel will bring together experts in energy storage and micro-grid solutions to discuss the particular challenges and opportunities of using these technologies for remote mines.

- Operational experience from micro-grid projects for large industrial users – how are these technologies performing over time?
- What are the main barriers for remote mines looking to implement micro-grid technologies?
- What is the process for developing site-specific micro-grid solutions that allow for the highest penetration of renewables?
- What are the latest technological advances in integrating and balancing renewables for remote power systems?
- Insight on the latest advances in energy storage and how these can be applied to remote micro-grids for the mining sector – are these affordable and reliable?
- How can micro-grids ensure firm, consistent power when renewables aren't available?
- What are the best options for smoothing the transition from one fuel source to another?

14.10 Networking Break

Session 9: Renewables and Reclamation

Investing in Renewables as Part of Mine Reclamation Plans

Another top concern for the mining industry is developing effective mine closure plans. In some cases, these plans can run into the hundreds of millions and mines are beginning to look for alternative means for recouping some of that cost. Investing in renewable energy assets to remediate and rehabilitate a mine is one way to keep it a productive asset. This session will feature case study from mines that have incorporated renewables into mine closure and rehabilitation plans and look at the benefits and challenges of renewables for mine reclamation.

14. 40 CASE STUDY

Incorporating Renewables into Mine Rehabilitation Strategies

PPC Limited is investing in renewables to power its operations but also as a central part of mine reclamation plans. In partnership with Innowind, the company built the first wind farm at an operating quarry in South Africa and is exploring the benefits of renewables in mine reclamation.

- What are the opportunities for using already remediated open cast mining sites for renewable energy production?
- Insight on the financial and social benefits of investing in these assets

Egmont Otterman, Group Energy Manager, **PPC Limited**

15. 00

Developing Renewables Assets as Part of Restoration Initiatives

- Hear how renewables offer a unique restoration option for areas affected by mining operations
- What are the particular technical and permitting considerations when developing projects on vacant mine sites?
- Understand the benefits of renewables in providing sustainable job creation

15. 20 PANEL DISCUSSION

Analysing the Benefits of Renewables on Vacant Mine Sites

- Where and when does it make sense for mines to consider renewables as part of reclamation plans?
- What are some of the logistical challenges for developing projects on vacant mine site?
- What are some of the permitting issues when building a project on land that is zoned for mining?
- What additional benefits including job creation for the surrounding community should be considered?

Lydia Cape-Ducluzeau, Environmental Assessment Practitioner, **Council for Scientific and Industrial Research**
Dee Fischer, Chief Director for the Integrated Environmental Management Support, **National Department of Environmental Affairs**
Egmont Otterman, Group Energy Manager, **PPC Limited**

16. 10 Conference Close

RENEWABLES & MINING SUMMIT

Johannesburg, June 23-24, 2014

Sponsorship and exhibition opportunities

The combination of high-level attendees with an intimate conference and exhibition provides a great opportunity for direct interaction with key industry figures from mining and renewables. The Summit is an efficient, and cost-effective way to meet the right people face-to- face and create new business relationships.

BUILD YOUR PROFILE WITH THE MINING AND RENEWABLES SECTORS

- ✓ Position your company as a thought-leader with potential mining clients
- ✓ Build your brand awareness and profile with this critical audience
- ✓ Generate new leads and build relationships with key decision-makers
- ✓ Understand the real scope and size of this opportunity
- ✓ Save time and travel costs by condensing your meetings and networking over two days

Benefit from launch and early bird discounts

Delegate Pass, Launch Price	**until April 30th**	US$ 1095.00
Delegate Pass, Early Bird	May 1st - May 30th	US$ 1295.00
Delegate Pass, Event Price	after May 30th	US$ 1495.00
Video Pass	full video coverage available 7 days after event	US$ 495.00

Delegate passes include access to all listed sessions, lunches, networking and functions. The video pass provides access to video recordings from all the presentations and discussions as well as electronic copies of the presentations.

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