

# RESUME - ANDREW SHERLIKER BAMBER

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## QUALIFICATIONS & AWARDS

Mining Law (SA Mines Health and Safety Act) 1996  
Registered Professional Engineer (ECSA) 1999  
Certificate in Precious Metals Processing – 2003  
Certificate in Acid Rock Drainage – 2004  
Certificate in Rock Mechanics - 2005

Member, Canadian Institute of Mining and Metallurgy  
Member, South African Institute of Mechanical Engineers  
Winner – Graduate Research Prize, CIM AGM 2008  
Winner - IMM Douglas Hays Research Medal, 2009  
Registered Professional Engineer (APEGBC) 2010

Andrew is a qualified Professional Engineer with over 20 years' experience in mining and minerals processing in Southern Africa, Canada, South America and Asia. He has extensive experience in process and process equipment design, plant design, operations and management, project management, as well as extensive involvement in mining both at the research and consulting level, with specializations in advanced process technologies and mining innovation. He has worked as a Consulting Engineer on numerous pre-feasibility and feasibility studies and has contributed as lead engineer in the completion of 4 major capital projects on time and under budget. He has been involved in the founding and operation of several companies including SD&E (1999), BC Mining Research Ltd. (2005), and more recently was founder and CEO of MineSense Technologies Ltd, an emerging mining technology company focused on the development and marketing of sensor-based grade control, ore routing and sorting technologies to large scale base- and precious metal mines. His strengths are drive, commitment, initiative, motivation, with good communication and organizational abilities. Andrew's interests include literature, music, mountain biking, skiing, sailing and soccer.

## EDUCATION

1993	B.Sc. (Hons) Mechanical Engineering, University of Cape Town
2004	M.A.Sc. Mineral Process Engineering, University of British Columbia
2008	Ph.D. Mining Engineering, University of British Columbia: "Integrated Mining, Pre-concentration and Waste Disposal Systems for the Increased Sustainability of Hard Rock Mining"

## EMPLOYMENT

1989-1990	<b>Learner Metallurgist</b> – Randfontein Estates Gold Mine; Rustenburg Plats Base Metal Refinery
1995-1996	<b>Junior Engineer</b> , Hartebeestfontein Gold Mine. Engineer-in-Training, reporting to Training Manager. Trained in Mechanical & Electrical maintenance and mobile equipment maintenance. Additional training in Administration, Utilities, Surface Gold Plant. Promoted to Underground Mechanical and Electrical Foreman 1996.
1996-1998	<b>Project Engineer</b> , Anglovaal Mining Limited. Project Engineer reporting to Chief Consulting Mechanical and Electrical Engineer, responsible for design, project planning, construction and commissioning of a US\$10M sintered alumina facility at Nyala Minerals in Richards Bay.
1998-1999	<b>Operations Manager</b> , Nyala Minerals. Upon commissioning of the Nyala Alumina plant, I was retained as the Operations Manager reporting to the Managing Director and responsible for a workforce of 39.
1999 -2001	<b>Senior Project Engineer</b> - Associated Manganese Mines of SA. Client's Engineer on Feasibility, Design, Construction and Commissioning of US\$30M Dwarsrivier Chrome Mine, including open pit, 3000 tpd beneficiation plant, tailings dam, HT power and surface infrastructure. Working within a multidisciplinary team of 6, reporting to Senior Project Manager, Ferrous Metals.
2001-2003	<b>Senior Project Engineer</b> , Dowding Reynard & Associates. Lead Engineer for Feasibility, Design and Construction of US\$35M Mimoso Platinum Phase III expansion (Zimbabwe), responsible for a project team of 40 and a construction team of 500. Scope of delivery included 4100 tpd surface plant, 88kV HT powerline and substation, 20km access road and tailings dam.
2003-2008	<b>Research Associate</b> , University of British Columbia Mining Engineering Department. During this period the focus of my research was on the development, testing and evaluation of ore pre-concentration and reject disposal systems for companies such as INCO (now Vale), Xstrata (now Glencore) and Placer Dome (now Barrick). Completed Ph.D. in 2008
2005-2010	<b>Principal Consultant</b> , BC Mining Research Ltd. Co-founder and principal consultant for BC Mining Research Ltd, I was responsible for research relating to metallurgical process and process technology development, including novel ore pre-concentration and solid waste disposal systems for Placer Dome, Barrick, Vale and Xstrata, and process consulting in comminution (ball mills, rod

mills, high pressure grinding rolls and high speed stirred mills) and beneficiation (gravity concentration, sensor-based sorting, flotation and leaching).

- 2006-2012 **Mining Consultant**, Golder Associates Global Mining Group. Since 2006 I have been a senior metallurgical consultant and Qualified Person for Golder Associates Global Mining Group, consulting on NI-43-101 technical reports, preliminary assessments, pre-feasibility studies, as well as conducting due diligence studies and mine audits in *inter alia* copper, nickel, tungsten, lead-zinc and precious metals projects around the world.
- 2009 - 2017 **Founder & CEO, MineSense Technologies Ltd** – since 2009 I have been involved in the development and commercialization of sensor-based grade control and ore routing systems at MineSense Technologies. My focus areas are corporate development, business development, technology and application development relating to sensor-based grade control, ore routing and bulk ore sorting systems in nickel, copper, gold, iron ore and other commodities.
- 2017 - **Bara Consulting** – Recently joined as Principal responsible for developing the North America business.

### **Project List:**

Specific projects and initiatives I have been involved in over the period include:

- 1997 - ZCCM: Due Diligence for privatization of Zambian Consolidated Copper Mines (with Noranda, Phelps Dodge & Avmin)
- 1997 - AVMIN: Refurbishment and installation of 2mØ x 6mEGL Vecor Tube Grinding Mill
- 1999 - Associated Manganese Mines of South Africa: Group Enterprise Resource Planning System Study
- 1999 - Associated Manganese, Feralloys Chrome Division: 54MVA DC Furnace Feasibility Study
- 2000 - Kroondal Platinum (Aquarius): 'K2' UG2 Platinum 200 ktpm Expansion Feasibility Study
- 2000 - Kroondal Platinum (Aquarius): 200ktpm Marikana Platinum Open Pit Feasibility Study
- 2001 - Tshikondeni Coal Mine Due Diligence ( for Kumba Resources, South Africa)
- 2001 - ZIMASCO: Refurbishment & installation of two 4.6mØ x 6mEGL Morgardshammer Mills
- 2003 - Zimplats: Ngezi Platinum Mine 150 000 tpm Phase II Expansion Study
- 2002/2003 – Xstrata Coal: Wits Consolidated 100000tpm production expansion
- 2005/2006 – UNIDO: Small Scale Gold Mining Consultant, Zimbabwe, Tanzania and Sudan - GEF/UNDP Global Mercury Project
- 2006 – Oriel Resources: Technical Consultant, Voskhod Chrome Project, Kazakhstan
- 2008-2012 – Annual Mine Due Diligence and Resource Audit, Goldfields Cerro Corona Gold Mine, Peru
- 2007 – University of British Columbia: Design and Installation of 50tph HPGR at the Centre for Mineral Processing, Vancouver, B.C.
- 2008 – Angel Mining 'Black Angel Pb-Zn Mine Greenland' Feasibility Study
- 2009 – Heemskirk Consolidated Minerals: Vibrating rod mill design audit and mill/circuit re-design,
- 2010 – Basileus Capital: Feasibility study for Commercialization of Minatuar® Gold Refining Process
- 2011 – MineSense Technologies: Design, manufacture and piloting of a 10tph High Speed X-ray Fluorescence Sorting System for Nickel Laterite Ores
- 2012 – Anfield Nickel: Design, Preliminary Assessment and Pre-feasibility study for 3.9 Mtpa nickel laterite sorting plant
- 2012 – Canadian Arrow Mines: Design, manufacture and piloting of a 60tph High Frequency EM Sorting System for Nickel-Copper Ores
- 2012 – Xstrata Nickel: Study for the application of pre-concentration at Xstrata Raglan and Nickel Rim South Mines including pre-sorting and flotation impact study.
- 2013 – Almaden Minerals: resource estimate and pre-feasibility study for the Ixtaca skarn-hosted epithermal Gold-Silver deposit in Mexico
- 2013 – BHP Chile: scoping study for the impact of shovel-based mineral classification at Minera Spence
- 2015 – MineSense Technologies: Design, manufacture and piloting of a 5000tph Shovel-based X-ray Fluorescence Sorting System