Steven A. Keim

Current Position
President

Profession
Mining Engineering

Years' Experience
10+

Education

PhD – Mining & Minerals Engineering, Virginia Polytechnic Institute & State University,
Blacksburg, VA

BS – Mining & Minerals Engineering, Virginia Polytechnic Institute & State University,
Blacksburg, VA

Professional Registrations

PE - WV

Society for Mining, Metallurgy and Exploration (SME) – Registered Member (04151568)

Awards

2014 SME J.W. Woomer Award (formerly the Young Engineers Award) - given to one recipient annually for distinguished contributions to the advancement of coal mining.

Old Timers Award, which is presented to the outstanding undergraduate mining engineering student at Virginia Tech

Summary of Experience

Dr. Keim provides engineering services for energy & mineral resource projects including geologic modelling, reserve estimation, mine planning, and financial modelling.

Significant Projects & Experience

> College-level teaching in Rock Mechanics, Ground Control and Mine Surveying
> Competent/Qualified Person for Securities and Exchange Commission (*SEC*) and Joint Ore Reserve Committee (*JORC*) compliant reporting for domestic and international projects.
> Extensive experience related to annual reporting requirements of publicly traded companies with regards to S-K1300 regulations
> Minerals Processing Expertise, including development of protocols for preparation plant efficiency studies to maximize plant yield and quality and analysis of potential upgrades/enhancements; experience in gravity-based separation processes and flotation processes; experience in novel processing technologies
> Development of risk assessment strategies, including experience in risk matrix and RISKGATE methods
> Participation in expert witness teams for various litigation cases
> Management & participation in projects pertaining to independent, third-party verification of production tonnages to ensure correct allocation of royalty payments
> Participation and management of due diligence teams for large scale deep mine and surface mine acquisitions, including operational assessments as related to attainable production enhancements and operational improvements

Specific Projects

> **China:** Evaluation of low permeable reservoirs for coalbed methane recovery as related to environmental, financial and safety factors, including development of best practices for coalbed methane recovery and modelling reservoir characteristics
> **Turkey:** Development of degasification plan in advance of mining and development of predictive modeling for gassy coal seams for Methane to Markets partnership
> **United States.** Management of United States Department of Energy (DOE) funded carbon sequestration project for injection of carbon dioxide in depleted coalbed methane wells
> **Mozambique.** Estimation of plant yield for large scale surface mine through analysis of exploration-based washability data, flotation release curves and coal sizing data, including the development of predictive model for plant yield & quality based upon slimcore data, thus eliminating the need for large diameter exploration drill holes
> **Australia.** JORC compliant reserve reporting pertaining to greenfield coal deposit, including multiple iterations of potential mine plans and mining methods and estimation of preparation plant yield and product quality