DEKA *Dynamics* Professional Development Programme

ANKARA, TURKEY
April 23 – May 10, 2019

Information Brochure

DEKA Dynamics is a provider of focused professional assistance to the international mining community, ensuring clients benefit from their expertise, in-depth knowledge and problem solving abilities, throughout the project life cycle from early stage exploration, through mine development and operations to eventual mine closure.

Our company has joined with industry leading professionals and subject matter experts (SME) to provide education and training seminars and courses to organisations involved in mining, be they mining companies, their employees, shareholders or owners, or those that support or are involved in them. Their seminars and courses are presented worldwide, with the objective of educating and teaching people relevant subject matter and best practice, transferring new techniques and concepts to mining professionals, and expanding the knowledge of the industry in general, all of which help improve mine operations, personal knowledge, mine profitability and investment opportunities.

DEKA Dynamics provides tried and tested education and training courses on-site, at regional centres or client specified locations. The training covers:

- Theoretical – Providing a solid understanding of underlying principles of the subject matter,
- Practical – Providing software agnostic training,

With a substantive range (40+) of technical courses for all types of mining that also covers non-technical people.

Our education and training sessions:

- Have been created by Industry experts
- Are run by accredited Subject Matter Experts,
- Provide fully customised training (focus on work practices & client data) and on-the-job training,
- Can form an integral part of any Employee Improvement Programme, and
- Enhance the skills, knowledge and capability of the individual for Critical Employee Selection
- May count towards CPD programmes

23/4	24/4	25/4	26/4	27/4
WORKING WITH COAL QUALITY DATA (QAQC)				

29/4	30/4	1/5	2/5	3/5
MINERAL RESOURCE ESTIMATION (Theory & Practical)				
COAL RESOURCE MODELLING AND ESTIMATION				
FUNDAMENTALS OF PIT OPTIMISATION AND MINE PLANNING				
CARBON FOOTPRINT ANALYSIS			ENVIRONMENTAL ECONOMICS	
	GRADE CONTROL AND RECONCILIATION			
MINING GEOLOGY AND MINING PRACTICES 101		OPTIMAL OPEN PIT BLASTING TECHNIQUES (HARD ROCK)		

6/5	7/5	8/5	9/5	10/5
PUBLIC REPORTING OF RESOURCES AND RESERVES				
REPORTING OF COAL RESOURCES AND RESERVES				
FUNDAMENTALS OF UNDERGROUND MINE PLANNING, OPTIMISATION AND COMPLIANCE TO PLAN PRODUCTION TOOLS				
MINE SAMPLING AND ASSAY DATA (QAQC) MANAGEMENT				
OPTIMAL OPEN PIT BLASTING TECHNIQUES (COAL)				
ENERGY MANAGEMENT				

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DEKA Dynamics

MINERAL RESOURCE ESTIMATION – 5 DAYS

As a typical resource estimation involves the construction of a geological and resource model with data from various sources, this course consists of a theoretical component, explaining basic mathematical concepts behind mineral resource estimation methods, coupled with a substantial practical component. The practical portion will take the participants through the steps necessary to produce a simple mineral resource estimate.

This course has been designed for geologists and mining engineers involved with or are interested in becoming involved with mineral resource estimation for prospect evaluation, grade control or long-term planning. The course requires a knowledge of geology and/or mine planning but does not require prior knowledge of geostatistics. Participants should have computer skills associated with geology modelling, grade control or mine planning software.

The course requires the use of Microsoft Excel. GSLIB which will be provided for practical exercises.

The course addresses:

- Introduction to modelling and its purpose.
- Role and responsibilities of the mineral resource modeller.
- Exploratory Data Analysis - Data Quality, Geology and Descriptive Statistics
- Modifying Data-Domaining, Top cutting and Compositing
- Spatial Relationships and Variography
- Estimation Methodologies (Nearest Neighbour, Inverse Distance and Linear Regression-Kriging)
- Choosing Estimation Parameters-block sizes and search neighbourhoods
- Estimation
- Validation
- Classification
- Documentation
- Workflows for various commercial software or GSLIB

WORKING WITH COAL QUALITY DATA – 5 DAYS

This course covers the numerical evaluation of coal quality data, beginning with the assessment of the raw data derived from the individual sampled ‘plies’ in each unique borehole intersection, and the compounding of these results into full seam composites. The evaluation is then extended to the elementary statistical analysis of project data sets comprising the full complement of available borehole intersections.

The statistical analysis includes simple data validation techniques designed to highlight data errors and anomalous results in both the physical and the quality attributes of the coal deposit. It also provides valid average values and ranges for these physical and quality data. The numerical work utilises standard Microsoft Excel software.

The statistical analysis is facilitated by the generation of a project-specific database which is also designed to be compatible with ‘user-friendly’ modelling packages such as ‘Surfer or MINEX’, which can then be utilised to produce both physical and quality models of the coal deposit.

The preliminary investigation of the washability characteristics of the coal are also covered in this course.

The course addresses:

- Derivation of Seam Quality Composites from Raw Assay Data
- Database Layout
- Data Validation
- Estimation of Average Physical and Quality Parameters
- Coal Quality Reporting

ADVANCED MINERAL RESOURCE ESTIMATION – 5 DAYS

Although this course follows on from our Mineral Resource Estimation course, providing delegates with the opportunity to enhance their estimation techniques, delegates who are already competent in Resource Estimation can attend this next level course in to the use of geostatistics and apply them to their own data sets under the guidance of our Subject Matter Expert.

This course involves both theory and practical aspects, with a revision of the processes involved. This practical-based course requires delegates to bring their own laptops and, at the delegates discretion, data set which can be used during the course. Delegates will be familiar with GSLIB software, which will be used for the practical work.

The course addresses:

- Review of the geostatistics processes
- What and when is a process necessary
- Application of:
  - Multiple Indicator Kriging (MIK),
  - Sequential Gaussian Simulation (SGS) and
  - Sequential Indicator Simulation (SIS)
- Conditional Simulation
- Scenario testing through Conditional Simulation
- What’s new?

COAL RESOURCE MODELLING AND ESTIMATION – 5 DAYS

Providing theory and practical applications, delegates learn how to generate models and estimate the Resource.

The first part of the course teaches delegates how to utilise a quality coal database to generate 2D and 3D physical coal deposit models and to model trends in the quality attributes of the coal. These models are produced using modelling software. Many modelling algorithms are investigated and the various advantages and disadvantages of each are evaluated during the course.

The second part of the course utilises these models to calculate resource areas and volumes as a prelude to the estimation of resource tonnages and provision of their resource classification.

The course ultimately provides delegates with a basic guide to compiling the Competent Person's reports (CPR's), acceptable to JORC, NI 43-101 and SAMREC standards.

The course addresses:

- Deposit Modelling Methods
- Theoretical Geological Losses
- Physical Resource Modelling
- Coal Quality Modelling
- Resource Calculations and Resource Estimation

FUNDAMENTALS OF PIT OPTIMISATION & MINE PLANNING - 4 DAYS

Using practical exercises, this course presents basic open pit planning and contracts management considerations,

Mine planners ensure value maximisation through decisions on mine design, scheduling alternatives, ore definition, ore access, equipment selection, and ore and waste removal sequences and continually apply forward-looking exercises based on the updated geological model and modifying factors.

This course is designed to assist mine managers, planners, production engineers and other mineral industry professionals to have a better understanding of open pit mine planning and design processes. The course covers the key elements of mine planning premised on mineral resource to mineral reserve conversion process.

Following the above, the optimisation section of the course is designed to inform and inspire business leaders, mine managers, mine planners and mineral asset advisers about the use of the latest optimization concepts and strategies. Optimisation techniques can be used to enhance the value of the business by maximizing value associated with the flow of ore through the different elements of the value chain.

Optimisation commences with the identification of key value drivers and risks based on the available project or operations data such as geological data, geotechnical data, metallurgical test-work data, drill and blast requirements to meet process requirements, logistics and potential constraints. The key challenge is to simultaneously optimise elements of the value chain rather than to optimise component parts in isolation from the remainder of the elements. Mine to mill optimisation is therefore based on building an integrated geological, mining and processing model that allows optimization of variables along the value chain.

The two-day Mine-to-Mill Optimisation course focuses on the optimisation levers available to mine planners and operations management to enhance the base plan. The workshop will also assist management and shareholders who are not mining and mineral processing technical experts to be able to assess if optimal mineral asset shareholder value has been considered.

The last part of this course provides delegates with the fundamentals behind compiling and managing mining contracts, with focus on; different contract types and their structure; the tendering process; the principles of contract negotiation; management and dispute resolution.

The course highlights the challenges relating to:

- When, what and how to optimize
- Level of confidence of ore body knowledge
- Real time operations information
- The importance of the mine design and operating information to achieving the company's strategy
- Learn about the integration of mining and process value chain to support the company objectives with particular emphasis on run of mine product size
- To highlight that traditional silo approaches to optimization destroy shareholder value
- How optimization along the mining and process value streams enhances shareholder value
- To highlight the mine design principles that increase the value of the base plan
- Optimization principles to be considered in an operating mine with particular emphasis on grade management, fragmentation of the run of mine and impact on the milling optimization
- A set of toolbox tick list that must be considered by mineral asset investors when evaluating greenfield or brownfield mineral assets
- Optimization techniques that support a sustained long-term production profile
- Highlighting the adage that "The Ore Body Dictates"

FUNDAMENTALS OF UNDERGROUND MINE PLANNING, OPTIMISATION, AND COMPLIANCE TO PLAN PRODUCTION TOOLS – 5 DAYS

Mine planners ensure value maximization through decisions on mining method, mine design, scheduling alternatives, ore definition, ore access, equipment selection, and ore and waste removal sequences and the continual application of forward-looking exercises based on the updated geological model and modifying factors.

Using practical exercises, this course is designed to assist mine managers and planners, production engineers and other mineral industry professionals gain a better understanding of underground mine planning, design processes and optimization, and the value of implementing robust production controls to ensure compliance to plan. The course covers the key elements of mine planning and optimization and the importance of implementing strict and robust production controls to ensure compliance to plan. It also includes a section on the fundamentals of mineral resource to mineral reserve conversion process.

The optimization section of the course is designed to inform and educate business managers, mine managers, mine planners and mineral asset advisers about the use of the latest optimization tools and strategies available in the industry. Optimization commences with the identification of key value drivers, bottle necks and risks based on a specific project or operations data such as geological data, geotechnical data, metallurgical test-work data, drill and blast requirements to meet process requirements, logistics and potential constraints.

The key challenge is to simultaneously optimize elements of the value chain rather than to optimize component parts in isolation from the remainder of the elements. Mine to mill optimization is therefore based on building an integrated geological, mining and processing mathematical model that will allow optimization of key variables along the value chain. The two-day Mine-to-Mill Optimization course focuses on the optimization tools available to mine planners and operations management to enhance the base plan.

The final component of this course provides delegates with the key fundamentals to develop and implement robust production "compliance to plan" tools to assist supervisors and management analyse and implement corrective measures pro-actively. This includes a detailed breakdown of the Life of Mine Plan into various time frames and windows to assist with identify all mining activities impacting the plan.

People who should attend this course are:

- Mine Planners
- Mine Planning Engineers
- Senior Mining Engineers
- Mine Planning Superintendents
- Mine Planning Managers
- Geologists
- Chief Geologists
- Geology Managers
- Mineral Resource Managers
- Technical Serv. Superintendents
- Technical Serv. Mangers
- Geotechnical Engineers
- Mine Superintendents
- Mine Managers
- Mining Analysts

MINE SAMPLING AND ASSAY DATA QUALITY (QAQC) MANAGEMENT – 4 DAYS

Access to sampling and assay data of the highest integrity is key to evaluating and exploiting mineral resources and reserves. The resource and reserve define the asset and companies rely on the quality and accuracy of the data used in processes, such as, resource and reserve estimates, classification of ore and waste, reconciliation of production to plan and mineral beneficiation. Poorly defined procedures and actions have tremendous consequences.

To assist mine personnel maintain the integrity of the data, a robust QAQC system is a "must have" in any sampling/assaying programme and minimising the errors and faults that may occur throughout the stages of the assay process that eventuate in an assay value is essential.

Developed for geologists, mining engineers and metallurgists involved in maintaining and analysing sampling and quality control systems in mineral projects/operating mines, this part of the course provides participants with an overview of sampling techniques, analytical methods used in the field or laboratory and quality control systems. The intent is to help the participants understand the systems they work with.

The courses addresses:

Sampling and Analytical Methods

- Precision, accuracy & bias
- Sampling Errors
- Sample collection
- Sample description
- Sub-sampling & splitting
- Laboratory Analytical Methods and Limits of Detection
- Bulk Density determination

Quality Control Systems

- Quality Control Concepts
- Use of Standard Reference Materials as control points
- Duplicates, Replicates and Referee Samples
- Statistics and Control Charts
- Setting up an appropriate Quality Control programme.
- Reconciliation of assay results with sample descriptions
- Commercial software vs Excel spreadsheets

MINE GRADE CONTROL AND RECONCILIATION – 4 DAYS

The Grade Control part of the course combines participants understanding methodologies to be used, with practical exercises based on best practice in grade control techniques to minimise misclassification of ore and waste. The course covers: sampling for grade control models, a survey of currently used estimation methods, ore definition and ore boundary control and information management options. The course will also look at why the grade control model and resource model are different.

Mine reconciliation is not accounting! The objective of mining reconciliation is not to get two sets of numbers to balance, which is often seen as an end in itself, by those focused on factors, but rather to help identify and understand the discrepancies that occur throughout the reconciliation process in order to assess and improve the processes involved.

This course presents participants with reconciliation as a quality control and oreflow management tool. The course introduces the mining value chain, measurement points along the chain, reconciliation between points in the value chain and between periods in the Life-of-Mine. Exercises provide examples of calculations in the reconciliation process.

The course addresses:

Grade Control Techniques & Modelling

- The grade control process
- Mapping and logging
- Survey control
- Grade control sampling and quality control systems
- Trenching, core, RC samples and blasthole samples
- Assaying and Bulk density
- Grade control modelling
- Costs and cut-off grades
- Selectivity and Ore / waste definition
- Dig plans
- Mark outs
- Blast movement
- Stockpile management
- Procedures and database management

Mine Reconciliation

- Mining value chain
- Reconciliation as a quality control tool.
- Ore flows, risk assessment, sampling
- Measurement points in the value chain, standard reconciliation nomenclature
- Point to Point Reconciliation, geology, mine, plant, transport - data and calculations
- Period on Period Reconciliation - data and calculations
- Reconciliation systems and software tools for data management and analysis.

MINING GEOLOGY AND MINING PRACTICES - 2 DAYS

There are many people involved or associated with the mining industry who have not worked on a mine site and do not necessarily understand the mining processes. This two-day course highlights the underlying geology that provides mineral wealth to be exploited and is followed by an insight into the different facets of mining needed to make a viable ore deposit a success.

In the Geology section, delegates will be able to experience collecting samples and identifying sampling errors. Through the visual aids, delegates can experience the mining activity and machinery involved.

In the geology section, delegates are provided with:

- An introduction to the main rock types (igneous, metamorphic and sedimentary)
- How the structure of the earth provides us with the minerals we mine
- The identification of iron ore, gold, nickel, base metals and bauxite deposits and more
- An overview of the formation of coal, oil and gas deposits
- An overview of drilling and sample methods
- The application of resource estimation to quantify a mineral deposit

The Mining session provides delegates with an overview of the mining cycle for open pit and underground mines, from feasibility studies to mine closure. The iterative planning process is discussed, and delegates will be able to see that a mine continually plans and plans. Audio Visual aids provide visualisation of the mining process, incorporating open-pit and various underground mining operations.

Delegates will leave the course with a better understanding of mining.

You will learn about:

- The life of a mine from exploration through to mine closure
- Open Pit and Underground mining
- Pre-feasibility and feasibility studies
- Mine planning; optimisation, scheduling, cut-off grades
- Mine Planning activities
- Capital and Operating Costs
- Mine closure and rehabilitation

PUBLIC REPORTING OF MINERAL RESOURCES AND MINERAL RESERVES – 5 DAYS

Public Reporting of Mineral Resource and Mineral Reserves is a requirement for most mining companies either as part of a listing on a stock exchange, reporting to governments and other stakeholders or for raising of funding. To allow for transparent reporting and comparison between companies, stock exchanges, regulatory agencies and financial institutions require technical information to be presented in a specific format. This course is intended to help the technical specialists involved in Public Reporting, meet the formatting requirements for these reports. The course offers guidelines on appropriate reporting to the level of project/company development and how to comment on the quality of technical information and risk factors.

This course provides a short history of and context to the regulations (JORC, 43-101, SAMREC) along with the primary reference materials used in the reporting of Mineral Resources and Mineral Reserves. It includes exercises in reviewing reports and press releases, writing portions of a report, filling out Table 1 (JORC or SAMREC) and guidelines on personal responsibility and professional ethics.

The course addresses:

- History and Principles of Public Reporting of Mineral Resources and Mineral Reserves.
- Competent Person's and Lead Competent Person's Responsibilities.
- Structure of the most commonly used reporting codes (JORC, 43-101, SAMREC or other CRIRSCO aligned codes).
- SEC, Form 20 F and Industry Guide 7.
- Technical Reports, Press Releases, Websites and other forms of Public Reporting.
- Reporting of Exploration Results.
- Reporting of Mineral Resources without Mineral Reserves.
- Reporting of Mineral Resources and Mineral Reserves.
- Updates of technical reports/press releases and follow-on (additional Studies) reports.
- Formatting of Figures.
- Table 1 (JORC/SAMREC)
- Writing Styles and Terminology,
- Competent Person's Statements and Certificates

COAL RESOURCE AND RESERVE REPORTING (JORC, NI43-101, SAMREC) – 5 DAYS

Reporting of Coal Resources and Coal Reserves entails the preparation of summary technical reports that comply with various company and regulatory requirements. The principles of reporting are transparency and materiality of the methodologies and information in the reports, and competency of the individuals undertaking the evaluations and reporting. Amongst the regulatory and company requirements is the appointment of Competent Person's to take professional (and legal) responsibility for the format and content of the reports.

The Competent Person must meet specific levels of technical expertise in coal geology and coal exploration, and ability to make judgements, and to comment on the quality of technical work. The Competent Person must also be able assess at a reasonable level the materiality of any factors likely to the company's financial performance. Finally, the Competent Person must be able to produce a report in the required formats.

This course is designed to provide the participants with a short history of and context to the regulations relating to coal exploration and coal mining, and to present the primary reference materials used in the reporting of Coal Resources and Coal Reserves. This course helps technical specialists involved in reporting, to meet the formatting requirements for these reports, and offers guidelines on how to comment on the quality of technical information and risk factors.

Learning the requirements for content and formatting of these reports is based on memorizing basic rules, collecting and learning how to use a set of appropriate reference documents and adopting behaviours and attitudes aligned with independent thinking, personal responsibility and professional ethics.

The list of examples used to demonstrate acceptable reporting formats addresses areas of greatest concern, where practice is difficult and/or poorly complied with.

Course Content

- Resource Codes (JORC, NI43-101, SAMREC)
- Understanding the Requirements of the SANS 10320 Document
- Project Evaluation and CPR Preparation

ENVIRONMENTAL ECONOMICS - 2 DAYS

Environmental economics is the study of environmental consumption, wastage and depletion through economics. In this discipline, the value of natural resources, and typical techno-economic concerns, such as market failure, externality, or valuation, are applied to environmental topics.

Exploiting natural resources is a necessary part of life and needed for growth and the advancement of society. Therefore, topics such as the balance between the least amount of usage and the greatest societal benefit are studied. Environmental economists combine the two fields, encouraging economic and societal advancement without forgetting the effect they may be having on the environment. In just two days, you will receive an exposure to the economics of the environment as a sub-discipline of economics focusing on the inter-relationships between the environment and the economy.

Basic concepts in economic theory are first introduced, and this is progressed to property rights and how markets behave and the failure to achieve economically efficient allocations thus resulting in environmental pollution and degradation. The approaches that are available for environmental valuation are explored. An example is presented on the integration of environmental economics into a typical mining or industrial projects.

Environmental policy making and the concept of sustainable development are examined through the instruments of environmental policy, from command-and-control methods to economic or incentive-based mechanisms.

The fundamental link and quantitative balance of these resource extremes, namely mineral and environmental, is presented based on the circular flow model, and through case studies of market failures and full/social costs of transactions (private costs and external/environmental costs).

The theory and practise of the benefit-cost analysis is presented based on a typical mining project, from demand and willingness-to-pay perspectives, damage and abatement costing, and economic efficiency for mining activity problems.

What are the course outline and its contents?

- The Basics of Economics
  - Economy of the Environment and Sustainability
  - Effective governance
- Environmental economics techniques
  - Environmental economics fundamentals
  - Valuation (project appraisal)
  - Market failure
  - Value of risks to environment
  - Corporate environment economics
- Environmentally extended input-output analysis
  - Business case for environment economics
  - Policy instruments
- Environmental policy and resource use
- Trade and international environmental issues
- International environmental problems

ENERGY MANAGEMENT - 3 DAYS

Effective energy management requires a comprehensive understanding of technical, economic and regulatory aspects. Through planning and the operational awareness of energy-related activities and production processes, the formulation of an energy management practices can result in resource conservation, energy cost savings and the organisational contribution to environmental protection and climate action.

This three-day course presents the dimensions of energy management and its relevance to mining, manufacturing and industrial activities. A comprehensive and active energy management system targets known and revealed challenges, and sets the pathways for ratified energy policies, continuous improvement and realistic and achievable goals and.

The basics and lessons learnt in energy recommendations for utilities (power, water, gas), lighting basics and illumination system improvements, electric motors, operational and production scheduling, maintenance programs and project commissioning will be discussed through qualitative and quantitative examples.

What are the course outline and its contents?

- Life cycle costing of energy supply, demand and consumption
    - When, where and how is energy utilised
- Understanding energy costs for energy purchasing, accounting and benchmarking
    - Energy and electricity rate structures
- Electrical systems and electric energy management
- Economic analysis and life cycle costing
- Conducting an energy audit based on Energy Management Systems (ISO 50001), associated energy codes, standards and protocols
- Compiling compliant audit reports
- Introduction into industrial and commercial energy for multiple activities
    - Lighting basics and lighting system improvements
    - Electric motors and industrial systems
    - Thermal energy storage
    - Boilers and thermal systems improvement
    - Waste heat, co-generation, CHP systems
    - Renewable energy sources
    - Maintenance programs and building commissioning
    - Building automation and control systems
    - M&V and alternative financing
    - Green buildings and LEED
- Framing an effective staff awareness campaign

Why would I choose this course?

- Understanding of the concept of energy audits and energy management for engineers, managers, and staff in procurement, facilities management, finance, CSR and sustainability
- Estimating the energy demand, consumption, utilisation to assess the viability of projects and operations and determining the strengths, weakness, opportunities and threats in projects and operations for your business case by
    - Eliminating energy wastage (energy conservation)
    - Maximising energy efficiency
    - Building a case for energy optimisation
        - Six capitals framework in energy-based activities
        - Appropriateness of energy renewables
- Develop skills to understand real-world energy-related challenges through case studies and practical exercises to develop your own management solutions
- A comprehensive course manual
- Speed networking

CARBON FOOTPRINT ANALYSIS - 2 DAYS

Industries and companies are realising the need to evaluate business risks and strategies for a low carbon future. By assessing their energy consumption, they are able to review their impact on the environment and on climate change.

This two-day course teaches organisational GHG accounting in accordance with the Greenhouse Gas Protocol and the ISO 14064 standard. This standard provides the requirements and guidance for companies and other organizations to quantify and publicly report an inventory of GHG emissions and removals associated with a products and activities.

The Carbon Accounting Methodology and practical exercises are explained and practiced. The compilation of the carbon inventory methods are discussed with the perspective of public reporting and social costs. The course also provides an overview of the different types of Carbon Markets (mandatory and voluntary) and the Trading Mechanisms (command-and-control and market approaches).

The latest available information on (specified) country and the global contribution to carbon emissions and the national and international policies and frameworks for carbon taxation, based on carbon emission targets are presented.

What are the course outline and its contents?

- Understanding the concepts and reasons for organisational GHG accounting
    - Greenhouse Gas effect and climate change
    - Greenhouse Gas Protocol and the ISO 14064 standard
    - Greenhouse gases and emissions sources
    - Steps for a Carbon Footprint Assessment
- Classifying emissions sources
- Data collection and tools to overcome information shortfalls
- Setting a baseline and boundaries
- GHG calculations
- Data assessment and data quality control
- Importance of validation and verification
- Compiling a compliant report for disclosure
- Develop and conduct a practical Carbon Footprint Assessment for an organisation
- Carbon monitoring, reductions and offsetting
- Sell the carbon footprint to your management or customer
- Understanding the Clean Development Mechanism (CDM)
- Unpacking the categories of carbon instruments
- Identifying carbon markets and what is involved for carbon trading

Why would I choose this course?

- An understanding of fundamentals, including key energy and GHG accounting terminology
- Understand the energy utilisation to assess the viability of projects and operations
- Appreciate the technical, financial and commercial drivers in energy-based activities
- Recognise the risk and value of organisational GHG accounting in operations for your project or business
- Develop skills to understand real-world energy-related challenges through case studies and practical exercises to develop your own assessments
- A comprehensive course manual
- Speed networking

OPTIMAL OPEN PIT BLASTING TECHNIQUES (METAL OR COAL OPERATIONS) - 3 DAYS

There are many people involved or associated with the mining/quarrying industry who have not worked on a mine site and do not necessarily understand the mining processes. This two-day course highlights the underlying geology that provides mineral wealth to be exploited and is followed by an insight into the different facets of mining needed to make a viable ore deposit a success.

This course introduces mine personnel involved in the blasting process to the latest techniques and methods. The course will focus on Blast Optimisation thereby, ensuring downstream benefits through improved drilling and blasting operations. The course focuses on the generic details of blasting products with no particular emphasis on specific manufacturers and their products, thereby ensuring impartiality.

Opportunities will be given for delegates to introduce the course attendees to their individual technical challenges at their mine site for discussion, with a collective review of their existing blasting techniques and procedures part of the course.

Who should attend:

- Experienced Shotfirers and Blasters
- Drill and Blast Supervisors
- Senior Mining Personnel
- Geologists
- Drill and Blast Engineers
- Procurement Personnel
- Geotechnical Engineers
- Mine Superintendents

And anyone seeking more in-depth knowledge of blasting techniques and outcomes

The course will cover the following:

Understanding the Basics

- Understanding your Current designs
- Major factors influencing blast efficiency
- Rock fragmentation by blasting
- Three keys to improving explosive performance
- Geological effects on blast performance
- Defining blast performance goals and developing designs
- Selecting the best explosive for site conditions
- History of Explosive Initiation Systems
- Initiation Systems
- Drilling your Blastholes
- Geological Considerations
- Fragmentation Optimization
- Vibration Control
- Air Blast from blasting Operations
- Slope Stability

Taking it to the next level

- Ore Loss/Dilution Prevention
- Controlling Muckpile Displacement
- Purpose of Sequential Detonation
- Selecting the Point of Initiation
- Timing Configuration Refinement
- Developing timing configurations to match the site conditions
- Slope Protection
- Controlling over-break
- Advantages of Various Timing Configurations

Assessing the Outcomes

- Measuring and Optimising fragmentation
- Implementing field procedures to achieve consistent blast performance
- Quantifying blast performance with key performance indicators
- Defining the downstream effects of blast performance
- Refining the blast designs to achieve the lowest overall cost

PLEASE NOTE THAT ALTHOUGH THERE IS ONLY ONE COURSE DESCRIPTION, THE COURSES ARE CONFIGURED TO SUIT THE SPECIFIC TYPE OF MINING OPERATION AND DIFFER IN CONTENT