

5-Day Residential Professional Development Programme

"Operations Management in Mines"

**Mines Safety, Drilling & Blasting, Environment Management,
Maintenance Practices & Condition Monitoring, Smart Mining**

For Executives of

NMDC Limited

06-10 January 2025

In

Engineering Staff College of India, Hyderabad



Mining Division

Engineering Staff College of India

An Autonomous Organ of The Institution of Engineers (India)
Hyderabad

Centre for Promotion of Professional Excellence

Introduction

Mining of mineral resources can spur economic development and create new wealth. It is a well-known fact that from energy, construction, agriculture to communications, transportation, national defense, at home, work or play, we all use or require minerals and metals every day. Tailored solutions and applications know-how that improves operational safety and sustainability whilst increasing efficiency in resource recovery is the need of the mining industry.

Mine Safety:

Safety shall always be of utmost priority in the mining industry which has a reputation for being a potentially risky profession, with safety & health challenges that are varied and often quite serious and therefore it is important for mining organizations to have protection system in place accordingly. A well-defined safety policy is to be framed to ensure safety. Being aware of the working environment is the first step to preventing injury or illness in the workplace. All operations, systems and processes are to be meticulously planned and designed with due regards to safety, conservation, sustainable development and clean environment. Safety Management Plan is a structured process composed of well-defined systems that emphasis continuous improvement in work quality, health, welfare and productivity of work force engaged through setting up of improved safety standards and their effective implementation, administration & periodic monitoring.

Drilling & Blasting:

Drilling & Blasting is still the most popular and predominant rock excavation technique in mining & infrastructure projects even today, either to break ore/mineral or waste rock or for any tunneling in civil infrastructure development. The engineering of drilling & blasting operations needs clearly defined objectives, materials, skilled techniques, necessary theoretical understanding of the rock properties, explosive-rock interaction and fragmentation mechanism. It is an important, complex, and safety-critical part of any project and should be carried out in such a manner that the desired degree of fragmentation commensurate to the loading or excavation machines deployed is achieved with reduced costs and unwanted side effects such as misfires, blasting fumes, fly rocks, noise, air & ground vibration, air-blast, oversized boulders, side-tear, back-break or formation of toe.

Environment Management

Nevertheless, mining is considered a destructive process and a potential for causing negative environmental effects and irrevocably shaping the social dynamics. Climate change and environmental challenges are actual and a global phenomenon. Scientific mining is to maximize recovery of natural resources on the premise of the harmonized geology and ecological environment and to achieve sustainable mining with safety, high efficiency, economy and social harmony.

Mechanization & Technology

Mechanization & Technology Development in Mines plays an important role to improve safety, productivity profitability and sustainability. Condition monitoring and predictive maintenance are instrumental for the effective operation of Heavy Earth-Moving Machines & other machinery in mining. These practices serve several primary objectives crucial for the efficiency and reliability which aims to minimize unplanned downtime by proactively identifying potential issues, ensuring that HEMM remains operational during critical tasks. Additionally, they seek to extend the equipment's operational lifespan, thereby maximizing return on investment and reducing the need for frequent replacements. Safety is a paramount concern, and these practices play a significant role in identifying and rectifying safety-critical issues, reducing the risk of accidents and injuries.

Course Coverage

- Basics of rock geology related to drilling and blasting applications
- Fundamentals and optimization of rock blasting
- Control Blasting Techniques
- Health risks associated with dust, noise, vibration, ultra violet exposure, musculoskeletal disorders, thermal stress, and chemical hazard.
- Main causes of accidents, analysis & measures for prevention
- Formulation & Monitoring of Safety Management Plan
- Key aspects of Electrical Safety,
- Relevant Legislations & Statute
- Introduction to Environmental Laws and Policies in India
- Pollution of Land, Water, Air and Control Measures.
- Social Impact Assessment
- Application of Geographic Information System (GIS), Remote Sensing Techniques
- Safety aspects of HEMM & Importance of Maintenance
- Traditional Maintenance Methods, Visual Inspections
- Just-in-Time Maintenance
- Total Productive Maintenance
- Condition Monitoring
- Trends in Technology- Application of OITDS, IoT, Unmanned Aerial Vehicle & Drones, AL, ML
- Principles of Integrated Management System-ISO: 9001, 14001, 31000, 45001, 51000

Methodology

- Lectures / Presentations
- Interactive Sessions
- Case Studies, Onsite experiences.

Course Fee for 5 -Days

- **Residential: INR 30,000/-** (Rupees thirty thousand only) per participant which includes soft copy of course material, course kit, twin-sharing/single AC accommodation, breakfast, lunch, dinner, tea and snacks during the actual days of training programme.

Goods and Service Tax @ 18% is to be paid extra over and above the programme fee. **PAN Card No AAATT3439Q; GST No. 36AAATT3439Q1ZV. H.S. No. 999293** (Under commercial training or coaching services – clause 65(105) (ZZC) of Finance act – 1994).

- ESCI provides complimentary boarding & lodging to participants a day prior to the commencement of training programme and a day after the conclusion of the programme. The check in & check out at 12:00 noon respectively.
- *Spouses may be allowed to stay along with the delegates with prior intimation and on additional payment of Rs 1500 per day.*

Programme fee is to be paid in favour of “**THE I.E.(I) – ENGINEERING STAFF COLLEGE OF INDIA**” in the form of cheque payable at Hyderabad. Alternatively the payment may be made by **Electronic Fund Transfer (EFT)** to ESCI –**SB A/c No. 33705165550 with State Bank of India, Manikonda Branch, Door No.2-30/1, Indira Nagar, Gachibowli, Hyderabad – 500032, our NEFT/RTGS/IFSC Code No. SBIN0011076 – MICR No. 500002107.** *While using EFT method of payment, please ensure to communicate your company name, contact details, our invoice reference and programme title.*

Resource Persons

The resource persons consist of experts from the Industry, Research Establishments, Academia and Consultants besides in-house faculty from ESCI.

Certification

A '**Certificate of Participation**' will be awarded to each participant on conclusion of the programme.

Profile of Expert Faculty



Dr. P Balamadeswaran graduated in Mining Engineering (B.E) from the College of Engineering Guindy, Anna University, Chennai in 1991 and M. Tech in Opencast Mining and Ph.D. in Mining Engineering with special reference to 'Investigation of Blast Design Parameters on Rock Fragmentation and Ground Vibrations in Opencast Mines' obtained from the Indian Institute of Technology (ISM), Dhanbad. He is also a holder of First-Class Manager's Certificate of Competency (Metal-Restricted) and a Recognized Qualified Person (RQP). He worked in Hindustan Copper Limited, Malanjkhand, Madhya Pradesh for seven years and as Area Sales Manager in Tamil Nadu Industrial Explosives Limited.,an MNC located in Indonesia, M/s. Dempo & Co (P) Limited, Goa.He njoined the Department of Mining Engineering, Anna University, Chennai and presently working as Assistant Professor. His areas of specializations are Rock Blasting Engineering, Slope Stability in Surface Mines, Surface Mine Planning & Design. He has presented and published more than 90 Technical & Research papers in the Journals, National and International Seminars. He received the prestigious 'Distinguished Mining Engineer' award for the year of 2018 from the 'Institution of Engineers (India)'. He is presently the National Council Member of Mining Engineer's Association of India (MEAI) and also served as a Member' in the State Expert Appraisal Committee' in Tamil Nadu



Mr. G Gopinath is a Mining Engineer and he is pursuing his Ph.D. from Indian School of Mines, Dhanbad, India. He is well versed with opencast and underground blasting operations and has acquired expertise in the area of controlled blasting. He is having about 26 years field experience in opencast and construction industries. Currently he is working as Senior Scientist in National Institute of Rock Mechanics, India. He has authored 20 papers and 100 research and industry sponsored reports as principal and co-investigator. As a professional he visited Australia, Bhutan, Sweden and Finland.



Dr N Sri Chandrahas did B.Technology from GIET and M.Tech and PhD from IIT (ISM) and obtained II Class Manager's Certificate of Competency (Unrestricted) He has 10 years of teaching experience and 5 research publications to his credit and his research interests are Drilling and Blasting, Mine Environmental Engineering including software applications. He conducted blasting studies deploying drones. Presently he is working as a consultant in GTS-CK Birla Group, Hyderabad.



Ms. Sirisha Indukuri is a sociologist with over fourteen years of work experience that combines research and practice in the field of sustainable development in India. She has worked at N R Management Consultants India Pvt Ltd, The Energy and Resources Institute, and has been commissioned as a consultant and fellow by the Ministry of Rural Development-Government of India, Delhi University-UN Women and others. She has taught post-graduate students and imparted training to public sector trainee and in-service officers on environmental policy, conservation and development, social impact assessment, among other themes. The thematic areas of her work include natural resource management, climate change, livelihoods, where she focuses on the governance, institutional, community and gender dimensions. On-the-ground, she has worked with a range of stakeholders, from local communities to policy and decision makers to civil society actors and private players.



Dr. Hari Sarvothaman functioned in different scientific capacities in the Geological Survey of India in many places of India before retiring as Deputy Director-General. He conducted Geological Mapping and Mineral Exploration for tungsten, graphite and limestone, besides other research activities of GSI.

He authored 4 (four) books. 1. WATER: Resource Augmentation, Management & Policies; 2. Disaster Management: Engineering & Environmental Aspects 3. Environment Science—Issues & Solutions.4. Disasters and Hazards: Risk Reduction, Mitigation and Management. These books are used as text books in Universities, libraries and references.

He was Editor of the monthly Mining Engineers' Journal during 2013-17 and functioned as Secretary-General of Mining Engineers' Association of India in 2017-18. He was Convener of an International Geological Correlation Programmes (IGCP510) for four years, and also organized several national seminars.

Currently, he is (i) Visiting Faculty in the Earth Science Department of University of

Hyderabad; (ii) Member, Training Quality Improvement in Centres for Agrarian Studies (CAS) and Natural Resources Management (CNRM), NIRD&PR, Hyderabad; (iii) Guest Faculty in GSI Training Institute, Hyderabad and Badruka College, Hyderabad; and (vi) Treasurer, Vivekananda Educational Centre, an NGO managing Vivekananda Public School for the economically and socially downtrodden students.



Dr N Srinivasa Rao

Scientist - M Sc (Physics) Osmania University. Ph.D (Remote Sensing), JNTU - Hyderabad
Research Interests- Remote Sensing. Ocean Colour, WebGIS, Open Source GIS with 18 Years of Research Experience in Remote Sensing Application (Land ,Ocean & Atmospheric)
He guided 60 Academic Projects, Resource Person to Universities, Academic Institutes & Research Organizations.



Mr V Lakshmi Narayana graduated in Mining Engineering from University of Jodhpur, Rajasthan. He obtained ME (OCM), MCA, M.Sc.in Yoga (2010, Annamalai University), PGD in Materials Management (1987) and Diploma in Naturopathy. He is holder of First Class Manager's Certificate in Coal and Metal. He is a Fellow, Institution of Engineers (2009) and life member of the Mining Engineers' Association of India (1997). He is the holder of Medallion in First-Aid and was active Rescue Trained Person. He is a recipient of "Eminent Mining Engineer" award from IEI in 2014. The Indian Mining & Engineering Journal gave Life Time Achievement Award to him in recognition of outstanding contribution to Indian Mining Industry in 2017

He worked in SCCL and resigned as Colliery Manager and later joined DGMS as Dy. Director in 1990 and superannuated as Dy. Director General in 2017.He authored no. of articles on Mining Legislation, Safety Management System, Blasting, Mine Environment, Opencast Mining, Zero Harm Status, Thick Seam Mining, Slope Stability, Accident Control etc., and presented in National & International Seminars. He conducted many interactive workshops on Safety Management Plan and Safe Operating Procedures at various mining areas, He worked as part-time lecturer in Govt. Engineering College, Bilaspur and College of Agriculture Engineering & Technology, Udaipur. He visited Australia in 1998 and USA in 2008 and undergone specialized training in Safety Management System, Longwall Mining and Continuous Miner Technology.He is founder president of Yoga Professionals Association, Hyderabad.



Mr P Kumar graduated in B.Tech.(Mechanical) from NIT, Calicut , Kerala, M.Tech (IC Engines and Gas Turbines) from NIT, Warangal, Telangana, MBA (Marketing) from IGNOU, he is FIE and SMIIE - Sr. Member in Indian Institute of Industrial Engineering.

He has years of experience in Opencast Projects in fields of erection, commissioning, maintenance of various models and capacities of HEMM, TPM. He also worked as Executive Director in Radials International (Michelin OTR Tyres) for 6 yrs taking care of business, tyre maintenance and repair services at various projects in India.

Mr G L Kanta Rao Graduated in B-Tech in Electrical Engineering, from JNTU, Kakinada in the year 1980-81. As a practicing Engineer, worked in Hindustan Zinc Limited, Sargipali Mines, Orissa, for about 12 ½ years and rose to the position of Manager (Elect) providing support to engineering, technical and other varied aspects to an underground semi-mechanized lead mine deploying SDL, winders, crushers and rock breakers, locomotives etc. Thereafter, joined DGMS initially as Deputy Director of Mines safety (Elect) in 1995 and superannuated as Deputy Director General of Mines Safety during in 2018 after a meritorious service of 23 years involved in statutory inspections and accident enquiries in coal, non-coal and oil mines across different parts of India.



Presently, he is conducting technical safety audits of mines of HINDALCO (Orissa), JSW (Orissa) and HZL, Rajasthan as and when services are sought for.

As a nominated member on "HIGH LEVEL EXPERT COMMITTEE ON SAFETY" of coal mines under Ministry of Coal, Govt. of India he is extending required advisory services and guidance in respect of safety to different identified mines under Ministry of Coal, Government of India. Some of the recommendations are Root cause analysis, as part of SMP, for accidents, internal and external safety audits by professionally trained and accredited trainers as envisaged in SMP and under consideration by MoC, Government of India.



Mohammed Abdul Khuddus did his BE (Mining) from Osmania University (Gold Medalist, 1982). He later pursued his Masters in Electrical Engineering & Computer Science from University of Illinois, Chicago, USA. He worked for AT&T Bell Labs, USA, Motorola, Lucent, Copart in senior executive position for 2 decades.

He is a Telecom & IT Professional with 25 years of experience in software product development, network operations, sales, and business development with a variety of international assignments (USA, Gulf, India), in Wireless and Wireline Telecom Industry, IT & SW Industry.He is currently a consultant for the Digital PMO, Cabot Corp., USA.



Mr T Mahesh Kumar graduated in Mining Engineering from College of Engineering (Osmania University) and did masters in Industrial Engineering from NITIE (Mumbai). Later he worked with Tata Steel, Sonata Software & Cap Gemini before founding Minematics Solutions in 2018. He has 3 decades of experience in both operations and technology consulting. His expertise lies in using technology to optimize operations and increase efficiency. Currently, at Minematics, helping mining, construction and manufacturing companies to gain visibility of operations, identify bottlenecks and improve efficiency through the use of technologies such as IoT, Analytics & Data Science.



Dr. G Karthik did B.Tech and M.Tech from Jawaharlal Nehru Technological University, Hyderabad & Ph.D. from NIT Rourkela during 2013-18. He has published various Technical papers in 20 International and 8 National Journals, 12 International Conferences and 24 National Conferences. Published one Patent. Research areas include Landslides, Slope Stability, Internet of Things, Wireless Sensor Networks, and Soft-Computing. He was conferred with Young Scientist-2019 organized by International Association of Research and Development Organization and Homi J Babha Award 2020 by Eudoxia Research Centre. He is working as an Associate Professor, R&D Coordinator, and DQAC Member in the Electronics and Communication Department at Stanley College of Engineering and Technology for Women, Hyderabad since June 2019. He is a member in various professional bodies such as UACEE, IAENG, IDES, IFERP, IETA and ASR and as an editorial board member in various international Journals



Bhaskarudu Peddakotla

Diploma in Automobile Engineering Industry with 40 years of experience in Product Support / Aftermarket Support, Customer Engagement, Service Excellence, Inventory Management, Facility Development – Component, Machine Rebuild, Service Contracts Execution – Effective execution of AMC, PMA, MARC and other customer specific tailor-made service contracts

He has 16 years of experience as General Manager in GMMCO Limited (Caterpillar Dealer), 1.5 years as Vice President in Vijay Engineering (Volvo Construction Equipment Dealer), and 19 years in Major Cement Industries. Presently working as freelance consultant in “Condition Monitoring and Predictive Maintenance” of mining and construction machines.



Prof. Srinivasulu Tadisetty, Retired Professor and Dean, FOET from Kakatiya University, Warangal, He has obtained M. Tech from IIT (ISM) Dhanbad, and Ph.D. from Kyushu University, Japan and worked as research scholar for 2 years at IIT Kharagpur before leaving to Japan on International JSPS Fellowship by Govt. of Japan and DST, Govt. of India and also completed proficiency specialized courses and diplomas from IISc Bangalore, CEDTI Gorakhpur, India Japan Patent Association (IPAA), CDAC Hyderabad, and NRDC New Delhi. He has more than 3 decades of experience in Research, Industry and Teaching, He has worked as a senior Scientist at NIRM KGF and knowledgeable in the area of mine mechanization and automation includes Real Times Systems, Internet of Coal Mining (IOCM), Artificial Intelligence (AI/ML), autonomous electronic drives, smart wireless sensors, Smart systems, and also successfully completed several industry sponsored research projects.



Dr. Prashanth Ragam is an Assistant Professor in the Department of Electronics and Communication Engineering at Kakatiya Institute of Technology and Science (KITS) Warangal (KITSW). He obtained his B. Tech in Electronics and Communication Engineering (ECE) from JNTU Hyderabad in 2009. He received his Masters of Technology from JNTU Hyderabad in 2012. He did research on Design of IoT system for monitoring of blast-induced ground vibration in opencast mines and received PhD at NIT Rourkela in 2020. He received Best Young Scientist Award in 2021 from Novel Research Academy for his Ph.D. work. His teaching and research interests include Internet of Things and Machine Learning Applications. He has focused in design of IoT systems, LoRa WAN Technology, Machine Learning Applications for Data Prediction.

Course Director



Er K J Amarnath a Gold Medalist, in BE (Mining Engineering) from College of Engineering, Osmania University, Hyderabad. He retired as Chief General Manager from The Singareni Collieries Company Ltd. (A Government Company) after rendering a meritorious service of about 38 years in various capacities in Underground and Opencast Technology in Planning & Operations, Human Resource Development, Business Development, Education, Safety, Corporate Planning and Projects. Further, he was Director in NSGPVL, A Joint Venture Company of NTPC Ltd, A Central Government PSU and The Singareni Collieries Company Ltd, A Government Company.

He visited the United Kingdom, Spain, United States of America & Australia during his service which enhanced his capabilities in terms of Technical, Managerial & Business Skills. He is also a holder of First Class Manager's Certificate of Competency issued by The Director General of

Mines Safety, Ministry of Labour, Government of India.

He is a Fellow of Institution of Engineers (FIE) and Life Member of Institution of Engineers, MEAI (Mining Engineers' Association of India), vice-chairman MGMI(Mining, Geology, Metallurgical Association of India),Hyderabad Chapter and vice-president of Alumni of Mining Engineers' Association (Osmania University)

Presently he is working as Senior Faculty-Head, Mining Division, Engineering Staff College of India, Hyderabad.

Mining Division

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(An ISO 9001:2015, ISO 14001:2015, ISO 45001:2018, ISO 50001:2018 &

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