Engineering Staff College of India

Mining Division

3-Day Continuing Professional Development Programme

Emerging Trends in Drilling & Blasting Operations In Mining & Civil Engineering Projects

5 – 7 June 2024

Mining Division

Engineering Staff College of India

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

Centre for Promotion of Professional Excellence

Introduction

Automation and Digitization solutions have the potential to improve productivity while enhancing workers' safety and addressing any social challenges.

Drilling & Blasting is still the most popular and predominant rock excavation technique in mining, civil projects even today, either to break ore/mineral or waste rock or for any civil infrastructure development. Thus, blasting technology is evolving continuously. The engineering of drilling & blasting operations needs clearly defined objectives, materials, skilled techniques, and understanding of the rock properties, explosive-rock interaction and fragmentation mechanism. It is important to achieve the desired degree of fragmentation commensurate to the excavation machines deployed and thus to reduce 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.

Objectives

This programme is formulated to enable executives to understand good Drilling & Blasting Practices

- Fulfill the need to address some vital aspects of drilling & blasting which continues to be a long felt desire in the mining & civil projects.
- Understand the process of fragmentation, various techniques, design methods and applications including environmental aspects.
- Identify & mitigate related risks in blasting
- Incorporate best practices
- Integrate social, environmental, health, safety, security challenges to provide better solutions.
- Reduce the potential for accidents

Course Coverage

- Basics of rock geology related to drilling and blasting applications
- Fundamentals and optimization of rock blasting
- Smart Drilling & Blasting, use of electronic detonators
- Control Blasting Techniques
- Software for design, analysis and assessment of blasting performance
- Application of IoT, Unmanned Aerial Vehicle & Drones in blasting

Benefits to Participants

- Safe blasting procedures.
- Evaluation and optimization of blast performance and production improvement.
- Efficient blast design depending on site conditions and specifications.
- Keep away the dangerous practices.
- Management of fly –rocks, vibration levels and other hazards associated with blasting operations
- Rules, regulations, and other statutory restrictions.
- Environmental effects and techniques of measuring and alleviation of the undesirable side effects
- Update on the latest state of technology and software in explosives and blasting.

Methodology

- Lectures / presentations
- Interactive sessions
- Case studies, sharing of onsite experiences.

Resource Persons

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

Target Participants

This programme would be useful to engineers, executives, managers, blasting personnel, contractors etc. in the field of mining engineering, civil engineering, geology, geo-physics.

Programme Dates & Timings

Dates : 5 – 7 June 2024

Timings : 10.00 am to 5.30 pm each day

Course Fee

- **Residential : INR 24,000/-* (Rupees Twenty Four thousand only)** per participant for Indians and **320 USD** for foreigners, which includes course kit, course material, twin-sharing/single AC accommodation, breakfast, lunch, dinner, tea and snacks during the actual days of training programme.
- **Non-Residential : INR 21,000/-* (Rupees Twenty One thousand only)** per participant for Indians and **280 USD** for foreigners, which includes course kit, course material, lunch, tea and snacks during the actual days of training programme.
- **Online : INR 15,000/-* (Rupees Fifteen thousand only)** per participant for Indians and **175 USD** for foreigners which includes course material.

* 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).

- *Special concession of 10% in course fees to organization for 5 or more nominations and attendance.*
- ESCI provides complimentary boarding & lodging for the participants a day prior to the commencement of training programme and a day after the conclusion of the programme (check in & check out at 12:00 noon respectively).
- Overstay charges will be charged as per ESCI norms.
- Family accommodation shall be provided on payment basis
- Spouses may be allowed to stay along with the delegates with prior intimation and on additional payment of nominal charges as per ESCI norms.

Programme fee is to be paid in favour of "**THE IE(I) – ENGINEERING STAFF COLLEGE OF INDIA"** in the form of Cheque / Demand Draft (DD) 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, our Invoice reference and programme title.

Registration

To register, please send your nominations by providing name, designation, contact address, email address, mobile no, telephone and fax number of the participant along with the details of mode of payment of fee, addressed to: mining@escihyd.org. After registration participants can have access to ESCI LMS platform for digital learning.

Certification

A Certificate of participation will be awarded to each participant on conclusion of the programme.

Profile of Resource Persons

Dr. P Balamadeswaran graduated in Mining Engineering (B.E) from the College of Engineering Guindy, Anna University, Chennai in 1991. He holds 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. After a short stint in a MNC located in Indonesia, he joined M/s. Dempo & Co (P) Limited, Goa in 2006. Since December 2007, he is associated with 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 'Co-opted Member' in the State Expert Appraisal Committee' in Tamil Nadu for the period of 2016-2018.

Dr. Karra Ram Chandar graduated in Mining Engineering from Kothagudem School of Mines- Kakatiya University, obtained M.Tech in Rock Mechanics from IIT-BHU, Ph.D in Rock Blasting from NITK-Surathkal and Post-Doctoral Fellowship from University of Illinois at Chicago- USA. He also holds MBA in degree in HR.

He is presently serving in Dept. of Mining Engineering in NITK. He is involved in 7 R&D projects and 95 Industry sponsored consultancy projects, published 90 research papers in National/International Journals/Conferences. He is the recipient of "SRG IT Award- 2008-09" from Mining Engineers' Association of India, "Outstanding Young Person Award -2011" from Junior Chamber International. "ISTE- SGSITS" National Award -2012 for the best research work done by Young Teachers of Engineering Colleges in India, "IE-India Young Engineer Award-2012", "MEAI- Smt. Kiran Devi Singhal Memorial Award- 2014", "National Design Award- 2017 in Mining Engineering' for Outstanding Contribution in the field of Engineering Design by National Design Research Forum (NDRF) of Institution of Engineers, "Engineering Gold Medal-2018' from MGMI for outstanding contribution in earth sciences. He is a fellow of Institution of Engineers and life member of more than 10 professional societies like ISRM, MGMI, ISTE, MEAI, etc. He visited many universities/ countries for research interaction, presentation of research paper viz. South Dakota School of Mines- USA, Southern Illinois University-USA, Arizona State University- USA, University of Illinois at Chicago- USA, Monash University- Australia, Kagoshima University- Japan, Institute of Petroleum- Abu Dhabi, Monash University – Malaysia. University of Hong Kong.

Dr. H. Sarvothaman functioned in different scientific capacities in 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 (2004—ISBN 81-87680-13-X); 2. Disaster Management: Engineering & Environmental Aspects (2013—ISBN 81-87680-30-X); 3. Environment Science—Issues & Solutions (2017—ISBN81-87680-33-4).4. Disasters and Hazards: Risk Reduction, Mitigation and Management (2021—ISBN 81-87680-34-2). These books are used as textbooks 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).

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.

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 24 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. Sanjeev Kumar Sinha, Dy. General Manager (Mining-RP), NMDC Ltd.

He did his B.E (Mining) from Nagpur University and PhD in Mining Engineering from IIT (ISM) Dhanbad India, 1st Class Manager's Certificate of Competency (Restricted), RQP certificate holder, MBA (HR) from IGNOU, Trained in the use of SURPAC/Mine Shed/Whittle

He has 24 Years of Experience in Iron Ore Mining in planning and operation, drilling & blasting, production, and development in a large opencast mine. His research work in "Planning Strategies for Enhancing Mine Life vis-a-vis NPV for a Heterogeneous Iron Ore Deposit" relates to today's growing shortage of minerals and increasing large investment in Mining. As a Blasting Engineer he played a vital role in establishing use of SME Explosive in NMDC and as a Planning Engineer established use of Mine Planning Software Surpac, Mine Shed and Whittle in NMDC Ltd. He was also associated with Asia only Mechanized Diamond Mine in Panna of NMDC Ltd. He developed "License to Operate Software" for tracking legal compliance & also associated implementation of ERP in NMDC Ltd and NACRI to develop Indian Mineral Industry Code (IMIC) as per CRIRSCO guidelines and for digitization of NMDC Mines and instrumental in implementation of Fleet Management System and ERP Modules at **NMDC Mines.**

He authored the many technical papers and a few are: Explosives Vendor Rating System for Iron Ore Mine, Control of Fly Rock, CSR in Mining Industry & its Importance in Global Mining Scenario, Use of Modern Software in Long Term Planning of Open Cast Mine, Beneficiation Potential of Waste Dump In Iron Ore Mine" Presented at MEAI 2013 at Nagpur, Application of Geostatistics in fine Tuning of Iron Ore Resource Modelling, Application of Geostatistics in fine Tuning of Iron Ore Resource Modelling

Dr N Sri Chandrahas did B.Tech from GIET and M.Tech from IIT (ISM) and obtained II Class Manager's Certificate of Competency (Unrestricted) and pursuing his PhD. He has 8 years of teaching experience and 3 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.

Mr T. Srinivas, Dy. General Manager, Singareni Collieries Company Limited.

He has 38 years of experience in Mining and worked as blasting in-charge in a large opencast coal mining project with lot of challenges like underground workings, mine fires and surrounded by villages.

Govt. of Telangana utilized his services in Cheemakurthi recovery operations in Galaxy Granite Blasting. He is a rescue trained person and participated in two International Mines Rescue Competitions held in China in the year 2006 and secured second international prize in First Aid and first international prize in trauma management in the year 2010.

Presently he is working as Dy. General Manager in SCCL.

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.

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