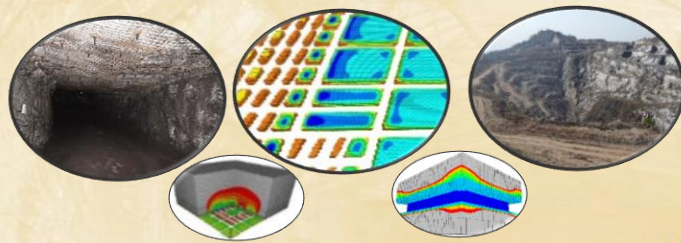


Information Brochure

*International Workshop
on*

**Modern Ground-Control and Numerical-
Modelling Techniques for Underground
and Surface Excavations
(MGNT-USE)**

**February 5-9, 2024
Venue: NIT Rourkela**



Organised by



SME
NIT ROURKELA

**Department of Mining Engineering &
SME NIT Rourkela Student Chapter
National Institute of Technology Rourkela**

(An Institute of National Importance under Ministry Education, Govt. of India)

India, 769008

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Background

India is the fastest growing population and has attained a mark of a most populated nation in the world in the month of June 2023. Energy demand is increasing day by day for development of infrastructures and livelihood of the people. Mass production technologies are being introduced in underground and surface mines to meet energy demand of the nation. Continuous miner is gradually deploying in Indian coalfields under the mass production scheme since last twenty years. Recently, longwall mining in few mines under the scheme also provided appreciable production and productivity. Large void is created in underground mine quickly under the scheme followed by considerable strata movement in active mining zone specially during secondary mining operation. Further, surface miner including deep hole blasting in different geo-mining conditions is being in practice in opencast mining. It also influences over the stability of the open pit mines at large scale. Furthermore, mining operation gradually shifting towards higher depth of cover where stress control design is utmost required for safe recovery of coal. Numerical simulation study is found to be versatile for improvement in problem definitions, enriching conceptual idea for strata mechanics involved during different mining methods. A number of ground control techniques including application of numerical modelling for safe underground and surface excavations are found to be significant and rational for mining industry.

Department of Mining Engineering of National Institute of Technology Rourkela (NITR) is extensively involved in different R&D and industry sponsored projects since 1979 and have considerable contributions to the mining industries in the area of design of underground structures, open pit slope including ground control. NITR trained more than 300 strata control engineers as per the requirements of 10th Conference of safety held in November, 2007 for establishment of Strata Control Cell since 2008. More than 20 Short Term Courses, Training Programs, Technology exchange programs were conducted at NITR as well as at the field such as WCL, MCL, SCCL, SECL, HZL etc. The department is also working with different reputed international academic and research institutions in the area of applied rock mechanics and mining methods. Attempted successful adoption of the mass production technology in different mines of Indian coalfields involved good understanding of the rock mass behaviour through laboratory testing, field investigations and study on simulated models. These attempts have resulted in derivations of important design norms/relationships to improve practical mining conditions of the underground and surface excavations. On the basis of these

investigations, conducted for different site conditions to match the underground structures and pit/dump slope with the existing rock mass and stress conditions. This programme aims to impart executives of the mining industries, academic, research, etc. about rock mechanics approaches for suitable design of underground/surface structures using results of field and numerical simulation studies to improve safety, conservation, production and productivity in Indian geo-mining conditions.

Contents

This programme will cover:

- Application of Continuous Miner (CM) at higher depth of cover in Indian Coalfields: Opportunity and Challenges
- Strata Control and Monitoring Plan (SCAMP) during different stages of mining operations.
- Trigger Action Response Plan (TARP) for safe recovery of coal during different form of mining activities.
- Challenges and mitigation in roadways weak formation during longwall mining at higher depth of cover.
- Application of numerical simulation study in ground control and design of underground structures and open pit.
- Design of underground structures including pillar, fender and rib/snook.
- Development of ground control techniques for conventional semi-mechanised to mechanised mode of mining operation.
- Mass production technology for underground coal mining.
- Strata mechanics implications with different line of extraction during pillar extraction.
- Extraction of thick seam (up to 6 m using continuous miner technology).
- Role of high capacity, pre-tensioned, stiff and resin grouted bolts as roof support; especially at the goaf edge.
- Cable truss support system- An introduction to Indian Coalfields.
- Ground control issues during mining at higher stress conditions and under difficult roof strata with stress management.
- Case studies of retrieval of trapped CM in goaf during caving of strong and weak roof strata.
- Rock mechanics challenges for mechanised extraction of existing developed coal seams from Indian coalfields.
- Impact of multi-seam mining and its mitigation.
- Design of non-effective width of panel under important surface features.

Level of Participation

Practicing Underground and Surface Mining Professionals along with Rock/Mining/Civil Engineers, Geo-Technical Researchers, Mine Managers, Geologists, Safety Officers and other Responsible Executives for Strata Control and Support Design in mass production scheme. The programme would also be useful to Mine Planners, Consultants and Academicians.

How to send nomination

Please send the names of your nominees with their designations and addresses, e-mail address along with sponsorship certificate to the Course Co-ordinator preferably before 31.01.2024.

Accommodation

Limited accommodation is available at NIT Rourkela guest house and shall be booked on prior request on payment basis. Alternatively, there are Luxury hotels available in the city. However, the accommodation in the campus is considered convenient.

Sponsorship

Sponsorship opportunities for industries are available under three categories.

- **Platinum Sponsor:** Sponsorship fees is Rs. 5.00 Lacs (5 free participants)
 - **Gold Sponsor:** Sponsorship fees is Rs. 3.00 Lacs (3 free participants)
 - **Silver Sponsor:** Sponsorship fees is Rs. 1.00 Lacs (1 free participants)
- *GST @18% shall be applicable as per Govt. of India Rules.

Registration Fee

Registration fee for the workshop is Rs.25000/person (Rupees Twenty-five Thousand only) for the participants from the industry. Rs.10000/person (Rupees Ten Thousand only) for the faculty from the academic institute. Rs.2000/person (Rupees Two Thousand only) for the student/research scholar. \$100 (USD One Hundred only) for international participants. **The registration fee does not include boarding, lodging, transportation and GST (18%) charges. NIT Rourkela is exempted from Income Tax and while sending the course fee, no TDS should be deducted.** Payment may be made online or by DD on following bank Details.

Branch name: SBI, NIT Campus, Rourkela
IFSC code: SBIN002109
Account Name: CONTINUING EDUCATION NIT ROURKELA
Account Number: 10138951784
MICR No: 76 9002 007 SWIFT Code: SBININBB137

Course structures and speaker

The workshop will be organised in offline mode, however, dual mode (offline/online) facility will be provided to International participants only. The course will consist of lectures and laboratory visits. The course will be primarily offered by faculty members of NIT Rourkela. Experts from foreign academic and research institutions like University of Wollongong, Australia, Czech Academy of Sciences, Czech Republic, GIG Poland. Expert form IITs, CSIR-CIMFR, NIRM and practicing Engineers from various mining industries may be invited to share their latest research findings with the participants. Each session will be followed by interactive Question & Answer session.

About NIT Rourkela

NIT Rourkela is one of the premier national academic and research institute and is funded by the Government of India.



Government of India has elevated the Regional Engineering College, Rourkela to a deemed university under the name of National Institute of Technology, Rourkela. The main objective of the Institute is to produce quality Engineers and Scientists in Graduate and Post-Graduate levels in various branches of Engineering and Science. The Institute is managed by the Board of Governors of National Institute of Technology Rourkela Society and vested with significant degree of administrative and financial autonomy. The campus of the Institute consisting of the academic buildings, halls of residence and staff colony is situated at the eastern end of Rourkela steel city, near Sector-1 over an area of 262 hectares of land provided by the Government of Orissa. It is a residential campus offering accommodation to faculty, staff and students. The campus has all the amenities for developing personal, social and academic skills of the student community. NIT Rourkela was ranked 601-800 in the world by the Times Higher Education World University Rankings (Engineering) of 2023 and 59th in Southern Asia University Ranking. In India, it is ranked 16th in Engineering Category by the National Institutional Ranking Framework (NIRF) in 2023.

About Department of Mining Engineering

Established in the year of 1979, the Department of Mining Engineering has grown over the years as one of the pioneer

mining education centres in the country. It has played a pivotal role in introducing the modern mining engineering curriculum in



India. The department offers undergraduate, postgraduate, and doctoral courses in mining engineering. The department is actively involved in research activities in the areas of rock mechanics involved during underground and surface mining, ground control and instrumentation, continuous miner based mechanised workings, longwall mining, mining at higher depth of cover, spontaneous heating of coal and mine fire, mining machinery, underground and surface environment, coalbed methane, mine safety and reliability, remote sensing and GIS, mine closure planning and relevant computer applications. The department is also involved in research activity to determine the in-situ stresses and management of the stresses at higher depth of cover in collaboration with Institute of Geonics, Czech Academy of Sciences, Czech Republic.

Patron

Prof. K. Umamaheshwar Rao
Director, NIT Rourkela

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Sponsorship Certificate (Format)

Dr./Mr./Ms..... is an employee of institute/organization and his/her application is hereby sponsored. The applicant will be permitted to attend the International Workshop on Modern Ground-Control and Numerical-Modelling Techniques for Underground and Surface Excavations at NIT Rourkela during 5-9 February, 2024.

Signature with Date & Seal of
Sponsoring Authority