DRILLING AND BLASTING TECHNOLOGY

PROF. KAUSHIK DEY
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INTENDED AUDIENCE : Mining engineering, Civil Engineering, Geology

INDUSTRIES APPLICABLE TO : All Mining Companies (CIL, HZL, TataSteel, HCL, Cement Companies etc.), Civil sectors carrying tunneling (L&T, HCC, Afcons, NHPC etc)

COURSE OUTLINE :
Drilling and Blasting is the most popular and predominant rock excavation technique. The main advantage of this technique is that it can be universally applicable if it is designed suitably. This course will cover the basics of Rock geology related to drilling application, the fundamentals of drilling and blasting process during rock excavation in surface and sub-surface excavation and also its engineering as well as economic feasibility.

ABOUT INSTRUCTOR :
Prof. Kaushik Dey is an Assistant Professor, Department of Mining Engineering Indian Institute of Technology, Kharagpur, India. He has obtained B.E. (Mining), M. Tech (Opencast Mining) and Ph.D.
(Mining) prior to work in the field of Tunneling and Mining sector for few years. Prior to join I. I. T. Kharagpur, Dr. Kaushik Dey was an Assistant Professor in Department of Mining Engineering at National Institute of Technology, Rourkela and at Indian School of Mines, Dhanbad. His research area includes excavation of rock by blasting or by mechanical cutting, mining operations, surface mining, whole body vibration etc. He has published around thirty five research papers in different journals apart from many others presented in the national/international conferences.

COURSE PLAN :

Week 1: Rock Geology, Mechanism of Rock Drilling and Drillability
Week 2: Drilling Machines, Selection of Rock Drill and its accessories
Week 3: Special Drilling Method and economics of drilling
Week 4: Explosives and accessories
Week 5: Explosive properties and explosive-rock interaction
Week 6: Rock blasting methods and designs
Week 7: Super alloys: Alloy design, Microstructure and Properties
Week 8: Safety, Environmental impact and economics of rock blasting
Week 9: Special blasting techniques – 1: Techniques of boulder blasting, Deck charging techniques, Consideration of rockmass conditions for surface and underground blasting
Week 10: Special blasting techniques – 2 : Controlled blasting techniques, Cast blasting techniques, Hot hole blasting techniques, Underwater blasting, Demolition blasting
Week 11: Blast induced ground vibration and structural damages : Basics of vibration and blast vibration, Measurement of blast vibration and analysis, Vibration predictors, Structural damage and ground vibration
Week 12: Safety in rock blasting and tutorials : Safety essentials in blasting process, SOP and SWP, Environmental impacts, gasses and noise, Tutorial for surface and underground rock blasting