National Institute of Technology Rourkela

Registration Seminar

Seminar Title	: A study of roof-pillar interaction for development of suitable mining method for extraction of coal seam at higher depth using continuous miner
Speaker	: Birendra Kumar Thakur (Rollno : 921mn5003)
Supervisor	: Dr. Sahendra Ram
Venue	: Seminar Hall (Department of Mining Engineering)
Date and Time	: 13 Jan 2025 (4:30PM)
Abstract	: Bord and Pillar Mining Method (BPMM) using continuous miner (CM) technology is found to be satisfactorily for extraction of coal up to 300 m depth of cover under easy to difficult caveable overlying strata in India. The CM technology is also deployed at depth exceeding 300 m in few mines (Churcha RO underground mine of SECL, VK-7, VKP Mine, and Shantikhani of SCCL) where strata mechanics issues affects the performance of underground structures, production including loss of coal. At these higher depths, redistribution of *in-situ* stresses caused coal bumps, fracturing/spalling of coal pillars/fender/snooks, which affect the efficiency of the BPMM and safety. Around 122.71 billion tons of coal is available at 300-600 m depth of cover in different coalfields of India, which warrant suitable technology and methodology for safe and efficient extraction to fulfil the current and future energy demand of the country. The CM technology is deployed up to 600 m depth successfully in Australia for extraction of coal with alternate method than BPMM and longwall mining. Indian coalfields contain unique geo-mining conditions and having own statutory guidelines, where difficult to adopt foreign design directly. To optimize coal recovery and ensure safe mining at the higher depths, a comprehensive strata mechanics study is required to design different underground structures including stress management techniques for development of novel mining method considering the geo-mining details of Indian coalfields and statutory guidelines. Detailed numerical modelling/laboratory and field studies are required to assess the behaviour of underground structures including host strata under influence of induced stresses at different stages of mining operations at the higher depths in order to paving the way for safer and more efficient coal recovery in deeper and more challenging conditions.