Rock Breakage and Excavation

Drilling

873182
Computer-controlled automated jumbo drilling robot manipulator
Ho, C Y; Jianchi, Y
Int J Min Geol Engng V4, N4, Dec 1986, P303-318

This programme involves the study of the technique of using a micro-computer to control a rock drilling machine. The motion of an existing jumbo machine has been successfully analysed. The kinematic control equations are established for any given geometrical configuration. The computer software has been written to demonstrate their feasibility. Hardware requirements are discussed.

873183
Blasthole drills
Pearse, G
Min Mag Dec 1986, P588-599

Drilling holes for blasting overburden or rock is an important activity in mining and quarrying. The many types of drill rig, their performance and appropriate areas of application are listed. Microprocessor based systems to monitor and analyse drilling performance and aid selection of the most suitable equipment are described.

873184
Swedish drilling and blasting practice. Technical note
Geddes, P J
Trans Inst Min Metall (Sect A Min Ind) V95, Oct 1986, PA204-A207

Swedish mineral production generally comes from underground operations. To maintain economic competitiveness, an active development program is undertaken. Current progress of in-the-hole hammer drilling at the Luossavaara research mine is described. A practical blasthole surveying method to minimise hole deviation has been developed, and the savings attainable by accurate drilling in large scale sublevel caving are illustrated. Production longhole drilling, blasting and initiation practices are reported.

873185
Combination blind or reaming drill for raise construction
Friant, J E; Anderson, A; Short, S N
Proc of the 1985 Rapid Excavation and Tunneling Conference, New York, 16-20 June 1985 V2, P956-973. Publ New York: AIME, 1985

The design considerations for the new combination machine, capable of constructing raises to a mining level below, or blind raising upward from a single set up position are described. Field data from early trials are given and the overall market and potential are briefly examined.

873186
Route to more efficient blind shaft drilling?
Pigott, C P
Proc of the 1985 Rapid Excavation and Tunneling Conference, New York, 16-20 June 1985 V2, P974-991. Publ New York: AIME, 1985

A variety of existing techniques and equipment is described which when combined together permit faster and cheaper drilling of shafts in soft to medium strengh formations. Drilling fluid circulation, methods of hole stabilisation and bit design, including the advantages of flat bottomed and conical bits, shrouds and skirts, tungsten carbide, long tooth and disc cutters, are considered. The principles of rock chip transportation and bottom hole cleaning are described together with a new and very efficient fluid circulation system which was invented by the author.

873187
State of the art of big hole drilling
Richardson, P
Proc of the 1985 Rapid Excavation and Tunneling Conference, New York, 16-20 June 1985 V2, P992-1002. Publ New York: AIME, 1985

Several projects completed during the period from 1976 to 1984 which have been carried out utilizing big hole drilling concepts are reviewed. The projects discussed are from various industries, to demonstrate the extent to which big hole drilling methods are being used and the current state of development. Projects planned for the future where big hole drilling methods are the only technology being considered are discussed, as is an overview of the most recently completed heavy oil recovery project.

Blasting

873188
Aquarium test as a method to determine the performance of commercial explosives
Persson, A; Smedberg, U; Ogawa, T
Swedish Detonic Research Foundation report DS 1986:3, 41P

The performance of non-ideal explosives was determined by photographing the gas expansion behind the detonation front and analysing the gas expansion using a two dimensional computer code. The work done is calculated from the expansion isentrope. An open camera technique using a short duration light source (argon flash bomb) was developed to replace expensive high speed photography, and was used to make instantaneous photographs of detonating charges of Comp. B and ANFO explosives immersed in water. Results indicate that the aquarium test forms a good base for the evaluation of commercial explosives.

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Machine excavation

873189
Review of rock drillability and boreability assessment methods
Howarth, D F
Trans Inst Min Metall (Sect A Min Ind) V95, Oct 1986, PA191-A202

Tunnel boring machine and roadheader boring rates can be predicted from a combination of machine, intact rock and rock mass parameters. Evaluation of borability prediction methods shows one low cost method compares favourably