

Flushing the Blast hole

Coal is a readily combustible black or brownish black sedimentary rock. Its predominant use has always been for producing heat energy. It is extracted from the ground by mining, either underground or in open pits.

Coal is mined either by underground mining or by surface mining, which occurs by removing the covering rocks and debris, known as 'overburden'. The amount of overburden that would need to be removed to access coal generally determines whether underground or surface mining will be used.



Coal ore mining is preceded by blasthole drilling for opening and loosening of the rock mass. Rock is drilled to open blastholes, where the explosive charges will be placed for blasting. Blasthole drilling is carried out primarily by down-the-hole (DTH) hammer method.

In the blasthole drilling with DTH hammer, piston energy from the hammer is transmitted directly to drill bit giving greater performance. The driving fluid is compressed air that is supplied through a tube which makes the hammer run. Compressed air is the main form of drive for mining machinery. Flush cuttings are carried out with the exhaust air of the hammer through the holes in the drill bit. When compressed air escapes from the bit at the bottom of the hole it immediately occupies the space between the cuttings. There it expands and lifts the cuttings from the bottom. Also, compressed air keeps expanding throughout the depth of the hole, and the drag forces increase the velocity of cuttings.

It follows that the compressors employed in this work need to deliver high performance over extended periods, reliable and economical running being absolutely critical. As a general rule, drilling at higher volume & pressure increases drilling rates, resulting in greater hole depths. Elgi makes a range of diesel-powered screw air compressors for the different combinations of bore diameter and depth that are encountered.



Hundreds of Elgi compressors are in this application worldwide. More recently, Explosive Consultation & AP, one of the largest drilling contractors in Indonesia, has commissioned Elgi's portable compressors at Tenggara and Batulucun coal mines in Indonesia. The fleet of Crawler drills is equipped with nine Elgi compressors powering 4½" DTH hammers for pilot hole drilling. Rated with a flow output of 750 cfm at 250 psig, the compressors meet the high pressure air requirement of this application.



The customer was looking for faster penetration and deeper holes in coal mines. These demanding requirements were easily met by the Elgi compressors, with tests showing penetration rates of 3m/min. A series of holes, measuring 12m deep, are drilled at 1m intervals in just 3 minutes and blasted later. The two-stage high pressure compressors have allowed the customer to drill faster and increased productivity and profitability.

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