

Planning for Large Mining Operations

Presently in India, there is a general trend towards large scale opencast operations, both in the coal as well as in the metalliferous sectors. By the year 2000 A.D., open pit mining is expected to contribute as much as 60 per cent of the total projected coal output of 400 Mt. The present day size of 10 Mt of coal (total operations being 40 Mt) with stripping ratio of 4 cum. per ton of coal and up to a projected depth of 300 m or so, is likely to be exceeded substantially with passage of time. Problems related to project formulation, planning, financing, implementation and management of such gigantic projects will have to be sorted out.

Search For Appropriate Technology

India is also looking for latest technologies for:

- (a) A highly productive and efficient technology for underground mining of coal seams of thickness 2.0-3.5m.
- (b) Underground mining of thick virgin seams (5.0-10.0 m) and multi-seams.
- (c) Underground mining of thick developed seams (5.0-10.0 m).
- (d) Underground mining of seams overlain by massive hard sand-stone strata susceptible to bumps.
- (e) Productive and efficient system for modernising the prevalent bord and pillar system of underground mining for the extraction of 2.0 to 5.0 m thick seams.
- (f) Efficient methods of opencast mining for increasing production and also search for systems reducing consumption of diesel.
- (g) Adoption of technologies alternative to mining.

Mechanised Longwall Faces

Development of this technology is considered to be a necessity for mining of deeper deposits with adverse strata conditions. This technology is also expected to achieve improved safety, conservation, production and economy. Though this has proved its success world over and is being applied quite extensively, its application in India has not achieved results and has met with several problems. It has taken a relatively long time to resolve these problems and now the technology has reached an acceptable level where it can be adopted on a wider scale. This method, in view of high capital cost and increased cost of production, can also be applied to a very limited thickness range of the coal seam and in areas where the same is free from geological disturbances.

The chock/chock shield supports up to a 360 ton capacity and has been found to be inadequate to deal with the Indian strata condition. Investigations carried out in the Chinakuri Mine (Bihar) have indicated that the capacity of support required for the longwall mining in this colliery is not available in the manufacturing range the world over. Similarly, the Indian coal seams are quite hard and tough and require high power shearer machine to cut the coal. The shearer power of less than 200 KW is considered to be inadequate. The optimal power for the shearer in Indian conditions should be between 300 - 450 KW depending upon the seam hardness and thickness. The country is currently producing only 1.5 million tonne of