

Theoretical Study and Possible Application of Blast Casting Technique in Phosphate Rock Strip Mining

Salah A. Taqieddin
Department of Civil Engineering
Jordan University of Science and Technology
Irbid- Jordan

ABSTRACT

The blast casting technique of removing overburden is an innovative technique which was successfully used in the mining of certain surface coal and quarries. This method was found to be efficient in minimizing the labor and equipment cost while accelerating mining operation with safety. This method was successfully applied to horizontal as well as to dipping coal seams. Also it was practically applied to single as well as to multiple ore bodies

In phosphate mining in Jordan, dragline is usually used for stripping off the overburden. However, the fluctuating price of phosphate rocks, the ever increasing cost of machine spare parts and the unpredictable world demand for phosphate rocks raised the question of finding an economical alternative to the dragline operation. Among the available options, the blast casting appears to be very attractive, due to the resemblance of the geology of coal and phosphate formations in one hand and the mining methods used in the extraction of these two commodities and the economy involved in their marketing in the other hand.

This paper presents an economical and technical analysis of possible use of blast casting instead of dragline in the phosphate mining operation in Jordan. The study indicates that the blast casting in Jordanian phosphate mining is feasible. The paper also discusses problems associated with the application of this technique.