

Optimizing Mineral Extraction at Vastan Lignite Mine – GIPCL

This article is a summary of a paper presented at the Asian User's meeting in Udaipur, India in November 2000.

- Sunil Nakra, DGM (Mines)
- N. Amarnath, Manager (Mines)
- G. Satyanarayana, Asst. Manager (Mines)



Detailed planning is a prerequisite to the extraction of mineral at least cost and optimum quality and today, computers & software play a vital role in this planning and in monitoring the extraction. The data generated over many years of operation is used in modeling the deposit and in regular updating of these models, allowing a swift reaction to changes in the various operating parameters. This article shows the advantages of a near real-time planning process, which is achieved using Datamine Software.

GIPCL's Vastan Lignite Mine uses Datamine both for mine planning & operations monitoring. Operational mine planning relies on factors like control over slope angles, minimizing overburden removal, and ensuring consistent exposure of Lignite. Over-stripping results in a huge cost burden and under-stripping may lead to inconsistency of supplies.

Information enhancement

Before the start of mining the operator prepares a Mine Plan & Mine Project Report. The mining scheme set out in this Mine Plan is based on data generated by initial exploratory drilling on a relatively wide grid. Although it would provide better detail, a smaller grid interval at the pre mining stage would result in high exploration costs with a consequent increase in project costs. Normally a conscious decision is taken to postpone detailed exploration until extraction has started (pre-production drilling) when such expenditure can be more easily supported.

Graduate Training Opportunities at our Indian Office

With the fast growth in the IT industry in India, the most sought after jobs for fresh graduates are in the field of Information Technology. Numerous organizations have emerged as a result of this demand to train the aspiring graduates in various fields related to Information Technology. However, there is no organization providing practical

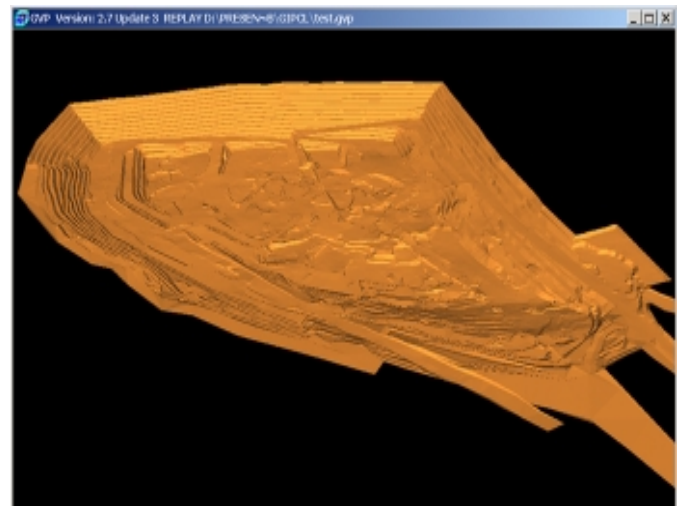
experience in the field of Sales & Marketing of specialized software solutions for mining. The Indian Branch of Datamine International, located in New Delhi, has started offering work experience to fresh graduates from a Geology or Mine Planning background in the field of Sales & Marketing of software for the mineral industry. This experience covers the entire process from learning the software, to the execution of

market plans for the promotion of the software and involvement with software sales. This on-the-job training will give graduates the much desired industry experience required to enhance their career prospects in their own field of expertise. The graduates are recruited from educational institutes using Datamine as a part of their curriculum and are appointed to the position of Sales Trainee.

Mine Planning – a dynamic process

Mine Planning attains a dynamic state once mining has started. In order to make the mine planning really meaningful it has to accommodate the many variations which only show themselves after extraction has started. At Vastan Mine, Datamine is used for this medium term planning and the various steps involved include the planning of development drilling, updating of the geological model, estimation of revised lignite reserves, present exposure of lignite quality and face advance planning.

Pre-production drilling data is used for updating the mining loss model in Datamine. The aim is to refine estimates of reserves released by planned overburden removal. The regular updating of lignite reserves helps in planning the mining operations most economically. Simultaneously, the quality parameters of the lignite are regularly updated. More accurate prediction of parameters like, CV, ash, volatile matter etc. is thus achieved, and this results in more efficient control on the power station operation.



Advantages

With more accurate estimates of lignite exposure, the mining plan can be adjusted to meet the lignite production requirement. The following advantages are thus achieved:

- Improved bench planning of the mine means more cost effective extraction.
- The quantity of overburden to be removed is more accurately estimated.
- Detailed planning of expenditure for overburden removal, etc. is possible
- A three-dimensional view simplifies incorporation of alternatives and thus facilitates management decisions.