

Dealing with uncertainties on mining equipment fleet planning and usage

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ABSTRACT

At the mining industry, there are several uncertainties that may affect the mobile mining equipment fleet sizing and usage, such as commodity supply and demand, which impacts the mineral price, environmental licenses to allow operations and strategic decisions made by the own mining company. Due to that, it may happen to acquire a mobile mining equipment for a specific site and before it finishes the entire life cycle forecasted, the machine gets idle on that operation and a decision must be made regarding this matter. On large mining companies with several sites, equipment transfer provides a good solution to solve this issue and at the same time it provides operational flexibility and allows to use the equipment until the initially planned working hours. This article presents a method to compare technically and financially whether it's more feasible to transfer an used equipment or to buy a new one. In other words, we will compare a new machine versus an used one in terms of safety, Net Present Cost considering both capital expenditures and operational expenditures, technological obsolescence, risks, equipment maintenance reliability and lead times. Although it's not the main purpose of the paper, it will also be briefly discussed the importance of having a considerable amount of backup equipment to handle low likelihood and high consequence risks that may materialize. This backup equipment portfolio is particularly important to avoid loss of sales and profits in case the production plan changes and it demands further equipment than initially planned to cope with the forecasted production.