

ABSTRACT

The mining sector is currently one of the main sectors driving the economy in Indonesia. However, the role and sustainability of the coal mining industry is very vulnerable to the volatility of commodity prices and global economic developments. The coal mining industry is currently facing challenges related to the policy of export restrictions and the decline in the reference coal price. To be able to compete, companies are required to increase productivity and efficiency. Optimization of machine productivity is the main factor to minimize costs.

PT Bukit Asam Tbk is one of the state-owned companies engaged in the mining industry located in South Sumatra. This research focuses on the mining location in Pit 2 West Banko. The overburden stripping activity in Pit 2 consists of 3 mining fleets. There are 21 units of the Belaz 75135 dump truck and 3 units of the Shovel Komatsu PC 3000E-6 excavator. The plan or target for overburden production in the fourth quarter was recorded at 3,480,000 BCM, while the realization was only 2,859,794 BCM or only achieved 82.18 percent. The production target is not achieved because the excavators often experience idle, which can be reviewed through the actual match factor value.

This study uses the match factor method and linear programming method which aims to minimize overburden production costs by determining the optimal number of dump trucks. Based on the calculation results, both based on the match factor method and linear programming, it is necessary to add 5 units of dump trucks with different distributions. This results in both the amount of production and production costs being different. Based on the Match Factor method, the total production that can be achieved in the fourth quarter is 4,194,256 BCM with a cost of Rp 6,483 per BCM. Meanwhile, based on the linear programming method, the amount of production that can be achieved is 4,214,835 BCM for at Rp 6,462 per BCM.

Keywords— [Cost Optimization, Productivity, Overburden, Match Factor, Linear Programming]