

RINGKASAN

PT. Musika Purbantara Utama (MPU) merupakan perusahaan yang bergerak pada bidang pertambangan andesit. Lokasi penelitian berada pada *Quarry* PT. Musika Purbantara Utama, Desa Cipinang, Kecamatan Rumpin, Kabupaten Bogor, Provinsi Jawa Barat. Dalam kegiatan penambangannya PT. Musika Purbantara Utama menerapkan sistem tambang terbuka dengan metode *quarry*. Kegiatan pembongkaran dilakukan menggunakan peledakan, proses pemuatan dan pengangkutan dilakukan dengan menggunakan kombinasi alat gali dan muat Excavator Caterpillar 330D2L dan alat angkut Mitsubishi Fuso 220 PS.

Lokasi penelitian dilakukan dari *front* kerja, jalan, sampai ke *hopper*. Berdasarkan hasil penelitian di lapangan, terdapat geometri jalan angkut yang tidak sesuai dengan standar diantaranya; terdapat beberapa segmen jalan angkut yang memiliki lebar jalan minimum kurang dan kemiringan jalan melebihi 8%. Selain itu, masih terdapat amblasan jalan yang melebihi dari 5cm (*high severity*). Faktor-faktor lainnya yang mempengaruhi bertambahnya konsumsi bahan bakar ialah; *percepatan*, RPM, beban kerja, dan *brake horsepower* mesin.

Analisis dilakukan untuk mengetahui pengaruh kondisi jalan angkut terhadap konsumsi bahan bakar alat angkut. Setelah dilakukan perhitungan, diketahui bahwa perbaikan *rolling resistance* dan *grade resistance* dapat mengurangi konsumsi bahan bakar alat angkut sebesar 15,98% pada setiap jam nya. Perhitungan teori konsumsi bahan bakar dilakukan menggunakan dua metode yaitu berdasarkan rimpul dan RPM. Diketahui bahwa konsumsi bahan bakar alat angkut berdasarkan perhitungan rimpul ialah 12,58 liter/jam, sedangkan berdasarkan RPM ialah 9,49liter/jam. Berdasarkan data dari perusahaan diketahui bahwa konsumsi bahan bakar aktual alat angkut ialah 12,15 liter/jam dengan produktivitas alat angkut sebesar 17,47 BCM/jam, maka diketahui rasio bahan bakar aktual alat angkut ialah 0,695 liter/BCM.

Setelah dilakukan perbaikan efisiensi kerja dan perbaikan pada geometri jalan terdiri dari pelebaran jalan angkut dan kemiringan jalan angkut $\leq 8\%$ serta amblasan jalan angkut $\leq 5\text{cm}$ atau berada pada *medium severity* akan menurunkan konsumsi bahan bakar dan meningkatkan produktivitas alat angkut. Berdasarkan perhitungan dengan rekomendasi tersebut, konsumsi bahan bakar menggunakan perhitungan rimpul yaitu; 10,57 liter/jam sedangkan rasio bahan bakar menjadi 0,273 liter/BCM.

Kata Kunci: Perbaikan efisiensi kerja, pelebaran jalan angkut, *rolling resistance*, *grade resistance*, *rpm*, produktivitas, konsumsi bahan bakar dan rasio bahan bakar.

SUMMARY

PT. Musika Purbantara Utama (MPU) is a company engaged in andesite mining. The research location is at Quarry PT. Musika Purbantara Utama, Cipinang Village, Rumpin District, Bogor Regency, West Java Province. In its mining activities, PT. Musika Purbantara Utama applies an open pit mining system with the Quarry method. Production activities are carried out using blasting, the loading and transportation process is carried out using a combination of excavating and loading tools Caterpillar 330D2L Excavator and Mitsubishi Fuso 220 PS. The research was carried out from the front mining to the Hopper. Based on the results of research in the field, there is a haul road geometry that is not in accordance with the standards including; width haul road does not match calculation the minimum road width and the road slope exceeds 8%. In addition, there are still road subsidence that exceeds 5cm (high severity). Other factors that influence the increase in fuel consumption are; acceleration, RPM, work load, and brake horsepower engine.

The analysis was conducted to determine the effect of haul road conditions on the fuel consumption of the conveyance. After calculating, it is known that the improvement of rolling resistance and grade resistance can reduce fuel consumption of conveyances by 15.98% per hour. The calculation of the theory of fuel consumption is carried out using two methods, namely based on rimpul and RPM. It is known that the fuel consumption for conveyances based on the calculation of rimpul is 12.58 liters / hour, while based on RPM is 9.49 liters / hour. Based on data from the company, it is known that the actual fuel consumption of the conveyance is 12.15 liters / hour with a conveyance productivity of 17.47 BCM / hour, so it is known that the actual fuel ratio of the conveyance is 0.695 liters / BCM.

After work efficiency improvements and improvements to the road geometry consist of widening the haul road and haul road slope of $\leq 8\%$ and haul road subsidence of $\leq 5\text{cm}$ or being on medium severity it will reduce fuel consumption and increase transport vehicle productivity. Based on calculations with these recommendations, fuel consumption uses the rimpul calculation, namely; 10.57 liters / hour while the fuel ratio becomes 0.273 liters / BCM.

Keywords: Work efficiency improvement, haul road widening, rolling resistance, grade resistance, rpm, productivity, fuel consumption and fuel ratio.