

RINGKASAN

PT. Makmur Lestari Primatama (MLP) merupakan perusahaan pertambangan yang bergerak sebagai pemilik izin usaha pertambangan (owner). Lokasi penelitian berada pada *pit* Denver *site* Molore, Kecamatan Langgikima, Kabupaten Konawe Utara, Provinsi Sulawesi Tenggara. PT. Makmur Lestari Primatama dalam melakukan proses penambangannya menerapkan sistem tambang terbuka dengan metode *open pit*. Kegiatan pengangkutan *ore* dilakukan menggunakan kombinasi alat gali dan muat Excavator Sany SY365H dan alat angkut DT Hino FM 260 JD.

Lokasi penelitian dibedakan menjadi dua dengan tempat satu *front* kerja, tetapi jalan saat bermuatan dan tidak bermuatan berbeda. 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%. Faktor-faktor lainnya yang mempengaruhi bertambahnya konsumsi bahan bakar ialah; *percepatan*, RPM, beban kerja, dan *brake horsepower* mesin. Permasalahan yang muncul ialah konsumsi dan/atau rasio bahan bakar melebihi standar perusahaan, tercatat data pada bulan April 2021 konsumsi dan rasio bahan bakar alat angkut mencapai 10,975 liter/jam dan 0,287 liter/ton dari standarnya yaitu 9,5 liter/jam dan 0,25 liter/ton.

Analisis dilakukan untuk mengetahui pengaruh kondisi jalan angkut terhadap konsumsi bahan bakar alat angkut. Setelah dilakukan perhitungan, diketahui bahwa setiap penambahan 1% *rolling resistance* maka konsumsi bahan bakar akan bertambah sebesar 0,774 liter/jam, sedangkan setiap penambahan 1% *grade resistance* maka konsumsi bahan bakar akan bertambah sebesar 0,192 liter/jam. Perhitungan teori konsumsi bahan bakar dilakukan menggunakan dua metode yaitu berdasarkan rimpul dan RPM. Diketahui bahwa konsumsi bahan bakar berdasarkan perhitungan rimpul ialah 15,603 liter/jam, sedangkan berdasarkan RPM ialah 16,010 liter/jam.

Setelah dilakukan perbaikan pada geometri jalan terdiri dari penambahan *quary* pada beberapa segmen jalan dan kemiringan jalan angkut $\leq 8\%$ akan menurunkan konsumsi bahan bakar dan produktivitas bertambah. Berdasarkan perhitungan dengan rekomendasi tersebut, konsumsi bahan bakar menggunakan perhitungan rimpul yaitu; 14,877 liter/jam, sedangkan rasio bahan bakar turun menjadi 0,242 liter/ton.

SUMMARY

PT. Makmur Lestari Primatama (MLP) is a mining company that operates as the owner of a mining business license (owner). The research location is in the pit Denver site Molore, Langgikima District, North Konawe Regency, Southeast Sulawesi Province. PT. Makmur Lestari Primatama in its mining process applies an open pit mining system using the stripe mine method. The ore transportation activities are carried out using a combination of the Sany SY365H Excavator and DT Hino FM 260 JD excavators.

The research locations were divided into two with one working front, but the roads when loaded and unloaded were different. Based on the results of research in the field, there are haul road geometries that are not in accordance with standards including; There are several haul road segments that have a minimum road width of less and a road slope of more than 8%. Other factors that affect the increase in fuel consumption are; acceleration, RPM, workload, and engine brake horsepower. The problem that arises is that the consumption and/or fuel ratio exceeds company standards, recorded data in April 2021 that the consumption and fuel ratio of transportation equipment reached 10,975 liters/hour and 0,287 liters/ton from the standard 9.5 liters/hour and 0,25 liters/ton.

The analysis was carried out to determine the effect of the haul road conditions on the fuel consumption of the conveyance. After calculating, it is known that for each addition of 1% rolling resistance, fuel consumption will increase by 0,774 liters/hour, while for each addition of 1% grade resistance, fuel consumption will increase by 0,192 liters/hour. The calculation of fuel consumption theory is done using two methods, namely based on the rimpull and RPM. It is known that the fuel consumption on two haul roads based on the calculation of the rimpull is 15,603 liters/hour, while based on the RPM is 16,010 liters/hour.

After making improvements to the road geometry consisting of adding quarries to several road segments and the slope of the haul road 8% will reduce fuel consumption and increase productivity. Based on calculations with these recommendations, fuel consumption using rimpul calculations, namely; 14,877 liters/hour, while the fuel ratio drops to 0,242 liters/ton.