

INTISARI

Tyre merupakan komponen kritis pada unit *rigid dump truck* yang berperan penting dalam kegiatan *hauling* di pertambangan batu bara serta memiliki biaya penggantian yang tinggi. Pada PT Cipta Kridatama Site Kuansing Inti Makmur, *tyre* menjadi salah satu komponen dengan frekuensi *breakdown* tertinggi dan menyumbang 15% dari total *breakdown* unit selama tahun 2024. Selain itu, tercatat 193 *tyre scrap* dengan rata-rata *lifetime* hanya mencapai 85% dari target perusahaan, sehingga diperlukan evaluasi untuk meningkatkan performa dan efisiensi penggunaan *tyre*. Penelitian ini bertujuan untuk mengevaluasi performa *tyre* pada unit Komatsu HD 465-7 selama periode Januari–Desember 2024 melalui analisis *Key Performance Indicator* (KPI) yang meliputi *Ton Kilometer Per Hour* (TKPH), *Cost Per Hour* (CPH), *Tread Utilization Rate* (TUR), dan ketercapaian *lifetime tyre*. Data yang digunakan berupa data *tyre scrap* dari 193 unit *tyre* yang terdiri dari tiga merek berbeda. Metode analisis yang digunakan meliputi diagram Pareto, *fishbone diagram*, *scatter diagram*, uji normalitas Shapiro-Wilk, dan uji korelasi Spearman. Hasil penelitian menunjukkan bahwa seluruh merek *tyre* belum mencapai target KPI yang ditetapkan. Merek A memiliki performa terbaik dengan ketercapaian *lifetime* 90% (11.736 HM), TUR 59%, margin keamanan TKPH 55%, dan efisiensi CPH 86%. Kerusakan *impact* (53%) dan *sidewall cut* (21%) menjadi jenis kerusakan yang paling dominan. Hasil uji Spearman menunjukkan bahwa *low pressure* ($r = -0,466$; $p < 0,001$) merupakan faktor yang paling berpengaruh terhadap penurunan *lifetime tyre*, sedangkan hubungan TKPH terhadap *lifetime* bersifat negatif lemah dan tidak signifikan ($r = -0,246$; $p = 0,084$). Perbaikan kondisi *hauling road* dan pengendalian tekanan angin *tyre* direkomendasikan untuk meningkatkan umur pakai dan performa *tyre*.

Kata Kunci: *Tyre Performance*, *TKPH*, *Cost Per Hour*, *Rigid Dump Truck*, *Tyre Lifetime*.

ABSTRACT

Tyres are a critical component of rigid dump trucks, playing a vital role in coal mining hauling operations while representing a significant replacement cost. At PT Cipta Kridatama's Kuansing Inti Makmur site, tyres ranked among the components with the highest breakdown frequency, contributing 15% of total unit breakdowns throughout 2024. Furthermore, 195 tyre scraps were recorded with an average lifetime reaching only 85% of the company's target, necessitating an evaluation to improve tyre performance and operational efficiency. This study aims to evaluate tyre performance on Komatsu HD 465-7 units during the period of January–December 2024 through an analysis of Key Performance Indicators (KPIs), encompassing Ton Kilometer Per Hour (TKPH), Cost Per Hour (CPH), Tread Utilization Rate (TUR), and tyre lifetime achievement. The data used consisted of tyre scrap records from 193 tyre units comprising three different brands. The analytical methods employed included Pareto diagrams, fishbone diagrams, scatter diagrams, the Shapiro-Wilk normality test, and Spearman correlation analysis. The results indicate that none of the tyre brands achieved the established KPI targets. Brand A demonstrated the best overall performance, with a lifetime achievement of 90% (11,736 HM), a TUR of 59%, a TKPH safety margin of 55%, and a CPH efficiency of 86%. Impact damage (53%) and sidewall cuts (21%) were identified as the most dominant types of failure. The Spearman test results revealed that low tyre pressure ($r = -0.466$; $p < 0.001$) was the most influential factor in reducing tyre lifetime, while the relationship between TKPH and lifetime was weak and negative, yet not statistically significant ($r = -0.246$; $p = 0.084$). Improvements to hauling road conditions and tyre pressure monitoring are recommended to extend tyre service life and enhance overall tyre performance.

Keywords: Tyre Performance, TKPH, Cost Per Hour, Rigid Dump Truck, Tyre Lifetime