

INTISARI

Efektivitas operasional alat berat sektor pertambangan sangat krusial dalam menjaga stabilitas target produksi *hauling material overburden*. Tingginya frekuensi *breakdown* dapat meningkatkan *downtime* yang berpotensi menurunkan nilai *physical availability* (PA). Penelitian ini bertujuan untuk menghitung dan menganalisis nilai *availability*, *performance*, dan *quality* pada unit *dump truck* Komatsu HD785-7, mengidentifikasi *losses breakdown* dominan menggunakan Diagram Pareto, serta merumuskan strategi *maintenance* yang adaptif bagi perusahaan. Metode yang digunakan adalah studi literatur dengan kombinasi kuantitatif melalui perhitungan matematis dan observasi lapangan, dengan memanfaatkan data operasional dari sistem SAP.

Hasil perhitungan matematis menunjukkan efektivitas operasional tiga dari empat unit berada di atas standar *world class* ($\geq 85\%$), dengan rincian nilai OEE unit DT4362 sebesar 88,34%, DT4363 sebesar 89,26%, dan DT4366 sebesar 87,15%. Sementara itu, unit DT4368 tetap menunjukkan performa optimal meskipun periode analisisnya terbatas hingga Mei 2025 sesuai kontrak FMC (*Full Maintenance Contract*). Seluruh unit mencatatkan nilai *quality* 100% tanpa adanya produk cacat dalam proses *hauling*. Melalui analisis Diagram Pareto, ditemukan bahwa *losses breakdown* paling dominan disebabkan oleh kerusakan elektrik. Hasil observasi menunjukkan adanya *alternator malfunction* akibat kabel terputus, kabel terkelupas pada rangkaian R alternator dan relay baterai M, serta klem yang longgar. Tindak lanjut perbaikan telah berhasil dilakukan melalui isolasi khusus, penyambungan standar, dan pemasangan penjepit (*clamp*) standar. Kesimpulan dari penelitian ini menegaskan bahwa efektivitas operasional *dump truck* di PT United Tractors *site* Bendili, Kalimantan Timur secara umum tergolong sangat baik, serta menghasilkan rumusan strategi operasional yang mengintegrasikan ketelitian *preventive maintenance* khusus sektor elektrik, terutama inspeksi berkala pada isolasi kabel alternator dan kekencangan klem sebagai langkah mitigasi risiko kegagalan unit di masa mendatang.

Kata Kunci: OEE, *Dump Truck*, *Breakdown Losses*, Diagram Pareto

ABSTRACT

The operational effectiveness of heavy equipment in the mining sector is crucial for maintaining the stability of production targets for overburden hauling. A high frequency of breakdowns can increase downtime, which has the potential to lower the physical availability (PA) rate. This study aims to calculate and analyze the availability, performance, and quality metrics for the Komatsu HD785-7 dump truck, identify the dominant breakdown losses using a Pareto chart, and formulate an adaptive maintenance strategy for the company. The methods used include a literature review combined with quantitative analysis through mathematical calculations and field observations, utilizing operational data from the SAP system.

Mathematical calculations show that the operational effectiveness of three out of four units exceeds the world-class standard ($\geq 85\%$), with the OEE values for unit DT4362 at 88.34%, DT4363 at 89.26%, and DT4366 at 87.15%. Meanwhile, unit DT4368 continues to demonstrate optimal performance, although the analysis period is limited to May 2025 in accordance with the FMC (Full Maintenance Contract). All units recorded a quality score of 100% with no defective products during the hauling process. Through analysis of the Pareto chart, it was found that the most significant cause of losses breakdown was electrical damage. Observations revealed alternator malfunctions caused by broken wires, frayed wires in the alternator's R circuit and the battery relay M, as well as loose clamps. Repairs were successfully carried out using specialized insulation, standard wire splices, and standard clamps. The conclusions of this study confirm that the operational effectiveness of dump trucks at PT United Tractors' Bendili site in Kalimantan Timur is generally very good, and lead to the formulation of operational strategies that incorporate thorough preventive maintenance, specifically for the electrical system, particularly periodic inspections of alternator cable insulation and the tightness of clamps, as a measure to mitigate the risk of future unit failures.

Keywords: *OEE, Dump Truck, Breakdown Losses, Pareto Chart*