

## ABSTRAK

### ANALISIS PRODUKSI *BACKHOE EXCAVATOR* DENGAN METODE *OVERALL EQUIPMENT EFFECTIVENESS* BERBASIS DATA CAT MINESTAR

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Industri pertambangan dituntut untuk meningkatkan efisiensi produksi, menekan biaya, dan menjaga keberlanjutan sumber daya, salah satunya melalui optimalisasi penggunaan *backhoe excavator* sebagai alat gali-muat utama. Penelitian ini dilakukan untuk menganalisis efektivitas produksi *backhoe excavator* CAT 6015B (CE5258 dan CE5260) dengan metode *overall equipment effectiveness* (OEE) model *bucket based excavating, loading, and transport* (BELT) berbasis data *real-time* dari CAT MineStar, mengingat target produksi *overburden* sebesar 258.000 BCM/bulan pada Februari 2025 di PT Cipta Kridatama tidak tercapai. Penelitian ini bertujuan untuk menilai efektivitas produksi, menerapkan data digital FMS dalam perhitungan OEE model BELT, serta mengevaluasi faktor penyebab ketidaktercapaian target produksi *overburden* tersebut.

Penelitian ini menggunakan metode kuantitatif deskriptif. Data diperoleh secara otomatis dari CAT MineStar yang merekam *breakdown time*, *idle time/non-utilization time*, *cycle time*, serta *payload*. Analisis dilakukan dengan menghitung empat komponen OEE model BELT, yaitu *availability factor*, *utilization factor*, *speed factor*, dan *bucket factor*. Hasil perhitungan kemudian dibandingkan dengan target produksi perusahaan untuk menilai tingkat efektivitas unit.

Hasil penelitian menunjukkan nilai OEE sebesar 0,34 pada unit CE5258 dan 0,38 pada unit CE5260, jauh di bawah standar 85%. Keduanya gagal mencapai target produksi dengan capaian 227.779 BCM/bulan (CE5258) dan 251.007 BCM/bulan (CE5260). Hambatan utama terletak pada tingginya *non-utilization time* akibat waktu hujan, waktu *slippery*, dan persiapan *front*; lambatnya siklus kerja; serta rendahnya tingkat pengisian *bucket*. Dengan dukungan data *real-time* dari CAT MineStar, faktor-faktor tersebut dapat dianalisis lebih akurat sehingga hasilnya dapat dijadikan dasar evaluasi kinerja produksi.

Kata kunci: *Backhoe Excavator*, CAT MineStar, OEE model BELT, Produksi

## **ABSTRACT**

### ***BACKHOE EXCAVATOR PRODUCTION ANALYSIS USING THE OVERALL EQUIPMENT EFFECTIVENESS METHOD BASED ON CAT MINESTAR DATA***

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*The mining industry is required to increase production efficiency, reduce costs, and maintain resource sustainability, one of which is through optimizing the use of backhoe excavators as the main digging-loading equipment. This study was conducted to analyze the effectiveness of CAT 6015B (CE5258 and CE5260) backhoe excavator production using the overall equipment effectiveness (OEE) method of the bucket-based excavating, loading, and transport (BELT) model based on real-time data from CAT MineStar, considering that the overburden production target of 258,000 BCM/month in February 2025 at PT Cipta Kridatama was not achieved. This study aims to assess production effectiveness, apply FMS digital data in calculating the OEE of the BELT model, and evaluate the factors causing the failure to achieve the overburden production target.*

*This study employed a descriptive quantitative method. Data was automatically obtained from CAT MineStar, which records breakdown time, idle time/non-utilization time, cycle time, and payload. The analysis was conducted by calculating the four OEE components of the BELT model: availability factor, utilization factor, speed factor, and bucket factor. The results were then compared with the company's production targets to assess the unit's effectiveness.*

*The results showed an OEE value of 0.34 for the CE5258 unit and 0.38 for the CE5260 unit, far below the 85% standard. Both failed to achieve their production targets of 227,779 BCM/month (CE5258) and 251,007 BCM/month (CE5260). The main obstacles lie in the high non-utilization time due to rainy days, slippery times, and front preparation; slow work cycles; and low bucket fill rates. With the support of real-time data from CAT MineStar, these factors can be analyzed more accurately so that the results can be used as a basis for evaluating production performance.*

*Keywords: Backhoe Excavator, CAT MineStar, OEE model BELT, Production*