

## ABSTRAK

### ANALISIS EFEKTIVITAS KERJA ALAT SOLO DRILL DENGAN METODE OMEE PADA TAMBANG BAWAH TANAH DMLZ PT FREEPORT INDONESIA

Oleh  
Irgiva Samosir  
NIM: 112210063  
(Program Studi Sarjana Teknik Pertambangan)

PT Freeport Indonesia merupakan salah satu perusahaan pertambangan tembaga terbesar di dunia. Deep Mill Level Zone (DMLZ) merupakan salah satu area penambangan yang beroperasi menggunakan metode tambang bawah tanah *block caving*. Dalam metode ini, kegiatan pengeboran lubang ledak dilakukan menggunakan alat Solo Drill. Pada bulan Februari 2025, ketercapaian produksi pengeboran hanya sebesar 77,9% dari target yang telah ditetapkan.

Penelitian dilakukan menggunakan pendekatan kuantitatif-deskriptif untuk menganalisis efektivitas kerja alat Solo Drill dengan metode *Overall Mining Equipment Effectiveness* (OMEE), sebuah metrik komprehensif yang diadaptasi dari OEE untuk industri pertambangan. Parameter yang diukur dalam analisis efektivitas kerja adalah Ketersediaan Teknis (*Technical Availability*, At), Ketersediaan Mekanis (*Mechanical Availability*, Am), Utilisasi (*Utilization*, U), dan Indeks Produktivitas (*Productivity Index*, Pi).

Hasil analisis menunjukkan bahwa nilai efektivitas kerja pada seluruh unit Solo Drill berada pada rentang 10,15% hingga 39,76%. Produktivitas aktual Solo Drill berada pada rentang 19,85 m/jam hingga 22,20 m/jam, dengan rata-rata 21,45 m/jam. Indeks produktivitas (Pi) lima dari delapan unit berada di atas 100%, menunjukkan sebagian besar unit beroperasi dengan produktivitas di atas rata-rata. Tingkat ketersediaan teknis (At) dan ketersediaan mekanis (Am) sebagian besar unit berada di atas standar minimum 90% dan 85%. Namun, nilai utilisasi (U) seluruh unit berada pada rentang 11% hingga 46%, berada di bawah standar minimum 65%. Rendahnya utilisasi alat menjadi penyebab utama rendahnya efektivitas OMEE, meskipun kondisi teknis dan mekanis alat terjaga, ketidakefektifan dalam pemanfaatan waktu kerja menyebabkan sejumlah unit gagal dalam mencapai target produksi.

**Kata kunci:** efektivitas kerja, *overall mining equipment effectiveness*, ketersediaan, utilisasi, produktivitas.

## **ABSTRACT**

### **ANALYSIS OF SOLO DRILL EFFECTIVENESS BASED ON OMEE METHOD IN DMLZ UNDERGROUND MINE, PT FREEPORT INDONESIA.**

By  
Irgiva Samosir  
NIM: 112210063  
(Mining Engineering Undergraduated Program)

*PT Freeport Indonesia is one of the largest copper mining companies in the world. The Deep Mill Level Zone (DMLZ) is a mining area that operates using the underground block caving method. In this method, blast hole drilling activities are conducted using a Solo Drill machine. In February 2025, drilling production reached only 77.9% of the set target.*

*This research was conducted using a quantitative-descriptive approach to analyze the work effectiveness of the Solo Drill using the Overall Mining Equipment Effectiveness (OMEE) method, a comprehensive metric adapted from OEE for the mining industry. The parameters measured in the work effectiveness analysis were Technical Availability (At), Mechanical Availability (Am), Utilization (U), and Productivity Index (Pi).*

*The analysis results showed that the work effectiveness value for all Solo Drill units was in the range of 10.15% to 39.76%. The actual productivity of the Solo Drill was in the range of 19.85 m/hour to 22.20 m/hour, with an average of 21.45 m/hour. The Productivity Index (Pi) of five out of eight units was above 100%, indicating that most units operated with above-average productivity. The Technical Availability (At) and Mechanical Availability (Am) rates for most units were above the minimum standards of 90% and 85%, respectively. However, the utilization (U) values for all units were in the range of 11% to 46%, which is below the minimum standard of 65%. The low utilization of the equipment was the main cause of the low OMEE effectiveness. Although the technical and mechanical conditions of the equipment were well-maintained, the suboptimal use of working time resulted in a number of units failing to meet production targets.*

**Keywords:** work effectiveness, overall mining equipment effectiveness, availability, utilization, productivity.