RINGKASAN

Penelitian dilakukan di PT Asmin Bara Bronang pada area *Washing Plant* yang memiliki dua *Run Of Mine* (ROM) *Stockpile*. Tujuan dilakukannya penelitian ini untuk mengevaluasi terjadinya swabakar pada timbunan batubara ROM 2 *stockpile*, mengidentifikasi faktor-faktor yang mempengaruhi terjadinya swabakar, serta membuat rumusan strategi pencegahan terjadinya swabakar. Penimbunan batubara di *Run Of Mine* (ROM) di departemen *washing plant* rentan mengalami swabakar akibat pemanasan spontan pada batubara dengan kadar air tinggi. Hal ini sering terjadi karena manajemen *stockpile* yang kurang baik sehingga menyebabkan kerugian perusahaan dari segi kualitas, volume batubara, dan biaya penanganan tambahan. Penelitian ini mengevaluasi manajemen *stockpile* di ROM 2 untuk mencegah swabakar dengan menggunakan data primer (suhu harian, dimensi timbunan, arah angin, kondisi area) dan data sekunder (curah hujan, peta topografi, data *inventory*) serta analisis kuantitatif dengan SPSS. Analisa dilakukan dengan membandingkan laju kenaikan suhu pada dua timbunan batubara dengan ketinggian dan volume yang berbeda.

Berdasarkan hasil penelitian bulan Maret 2024, terjadi ketidakseimbangan antara batubara yang ditimbun (*material in*) sebesar 4.233,340 ton dan batubara yang dibongkar (*material out*) sebesar 1.224,68 ton dengan total *Inventory* sebesar 36.465,81 ton. Timbunan batubara ROM 2 *stockpile* memiliki ketinggian ± 8 m dengan *angle of repose* 43°, kapasitas serta umur timbunan batubara melebihi durasi penyimpanan 30 hari (1-3 bulan) tanpa dilakukan pemadatan secara rutin serta sering didapati terjadinya swabakar di area tersebut. Perkiraan terjadinya *self-heating* pada ketinggian tersebut terjadi pada hari ke 26 dengan suhu rata-rata harian selama 10 hari 43,57°C.

Berdasarkan permasalahan tersebut menunjukkan bahwa faktor penyebab swabakar antara lain sistem manajemen penimbunan dan pembongkaran FIFO (*First In First Out*) yang kurang optimal, durasi timbunan batubara yang lama (1-3 bulan), dan ketinggian timbunan yang melebihi 6 m. Kemudian dilakukan perbaikan dimensi timbunan pada ROM 2 *stockpile* dengan *angle of repose* ≤ 38° dan tinggi maksimum timbunan batubara 6 m dengan kapasitas setelah perbaikan mengalami kenaikan sebesar 41,5% menjadi 45.610,99 ton, penerapan manajemen penimbunan dan pembongkaran FIFO, pemantauan suhu rutin, dan pemadatan timbunan batubara secara berkala.

SUMMARY

The research was conducted at PT Asmin Bara Bronang in the Washing Plant area which has two Run of Mine (ROM) Stockpile. The purpose of this study is to evaluate the occurrence of self-combustion in the ROM 2 stockpile coal deposits, identify factors that affect the occurrence of self-burning, and formulate strategies to prevent self-burning. Coal stockpiling in the Run of Mine (ROM) in the washing plant department is prone to self-combustion due to spontaneous heating of coal with high moisture content. This often happens due to poor stockpile management, causing company losses in terms of quality, coal volume, and additional handling costs. This study evaluated stockpile management in ROM 2 to prevent self-burn using primary data (daily temperature, stockpile dimensions, wind direction, area conditions) and secondary data (rainfall, topographic maps, inventory data) as well as quantitative analysis with SPSS. The analysis was carried out by comparing the rate of temperature rise in two coal piles with different heights and volumes.

Based on the results of the March 2024 research, there was an imbalance between 4.233,340 tons of stored coal (material in) and unloaded coal (material out) of 1.224,68 tons with a total inventory of 36.465,81 tons. The ROM 2 stockpile coal pile has a height of ± 8 m with an angle of repose of 43°, the capacity and life of the coal pile exceed the storage duration of 30 days (1-3 months) without compaction routinely and there is often self-combustion in the area. The estimated occurrence of self-heating at this altitude occurred on the 26th day with a daily average temperature for 10 days of 43,57°C.

Based on these problems, it is shown that the factors that cause self-combustion include a less than optimal FIFO (First In First Out) stockpile management system, a long coal stockpile duration (1-3 months), and a stockpile height that exceeds 6 m. Then improvements were made to the dimensions of the stockpile in ROM 2 stockpile with an angle of repose ≤ 38° and a maximum height of 6 m of coal stockpile with a capacity after repair increased by 41.5% to 45.610,99 tons, the application of FIFO stockpile and unloading management, routine temperature monitoring, and periodic compaction of coal stockpiles.