

RINGKASAN

Kegiatan pengolahan batu andesit di pabrik peremuk PT. Holcim Beton Pasuruan yang terletak di Desa Jeladri, Kecamatan Winongan, Kabupaten Pasuruan, Provinsi Jawa Timur. Terdiri dari tiga tahap, yaitu *primary crushing*, *secondary crushing*, dan *tertiary crushing*. Target produksi batu split andesit pada tahun 2012 sebesar 450.000 ton/tahun dengan produk akhir terdiri dari 4 macam ukuran, yaitu (-28 +14)mm sebesar $\geq 40\%$, (-14 +10)mm sebesar $\geq 20\%$, (-10 +5)mm sebesar $\leq 20\%$ dan -5mm (abu batu) sebesar $\leq 20\%$ dengan toleransi 5%. PT. Holcim Beton Pasuruan ingin meningkatkan produk ukuran (-14 +10)mm yang saat ini tinggi permintaan dan mengurangi jumlah abu batu yang kurang diminati konsumen. Oleh karena itu perlu dilakukan kajian terhadap masing-masing alat pada pabrik peremuk, apakah dengan alat yang ada mampu menghasilkan persentase distribusi yang direncanakan atau alat yang ada tidak mampu menghasilkan distribusi yang direncanakan.

Penelitian ini bertujuan untuk meningkatkan produk ukuran (-14 +10)mm yang saat ini hanya 13,04% dan mengurangi tingginya jumlah produksi abu batu yang jauh melebihi target produksi sebesar 33,17%.

Hasil penelitian di lapangan didapatkan total umpan dari tambang 216 ton/jam dengan perincian 13,75 ton/jam pengotor dan 202,25 ton/jam produk akhir. Adapun perincian produk akhir ukuran (-28 +14)mm 37,37%, (-14 +10)mm 13,04%, (-10 +5)mm 16,42% dan -5mm 33,17%. Sehingga diperlukan upaya perbaikan terhadap alat peremuk agar distribusinya dapat tercapai.

Ada tiga upaya alternatif perbaikan secara teoritis dengan cara memperkecil ukuran *close side setting (css) gyratory crusher* dari 42mm menjadi 32mm, kapasitas design 206,18 ton/jam dan efektifitas 98,08%. Adapun *css impact crusher* dari 20mm diperbesar sebagai kombinasi alternatif yaitu:

- a) Alternatif I *css* 40mm, kapasitas design 164,25 ton/jam dan efektifitas 40,69%. Perincian produk akhir (-28 +14)mm 45,12%, (-14 +10)mm 14,94%, (-10 +5)mm 17,28% dan -5mm 22,66%.
- b) Alternatif II *css* 30mm, kapasitas design 153 ton/jam dan efektifitas 43,68%. Perincian produk akhir (-28 +14)mm 43,37%, (-14 +10)mm 15,08%, (-10 +5)mm 17,34% dan -5mm 23,21%.
- c) Alternatif III *css* 25mm, kapasitas design 147,37 ton/jam dan efektifitas 45,35%. Perincian produk akhir (-28 +14)mm 43,44%, (-14 +10)mm 15,28%, (-10 +5)mm 17,27% dan -5mm 24,01%.

Hasil akhir ketiga alternatif di atas didapatkan dari pembacaan grafik hasil peremuk dari setiap alat, kemudian dikalikan nilai efisiensi screen setiap deck. Disarankan menggunakan alternatif III karena distribusi produk akhir yang dihasilkan paling mendekati target distribusi yang direncanakan.

ABSTRACT

The processing activities of andesite in PT. Holcim Beton Pasuruan crusher factory where located in Jeladri village, Desa Jeladri, Kecamatan Winongan, Kabupaten Pasuruan, Jawa Timur Province. There were three steps of processing activities which are Primary Crushing, Secondary Chrusing, and Tertiary Crushing. The productive target of andesite split in 2012 was 450.000 tonnes/year with the final production consist of 4 measurements which are $(-28+14)\text{mm} \geq 40\%$, $(-14+10)\text{mm} \geq 20\%$, $(-10+5)\text{mm} \leq 20\%$ and -5mm (stone ashes) $\leq 20\%$ by tolerance 5%. PT. Holcim Beton Pasuruan would like to improve its production by the measurement $(-14+10)\text{mm}$ in which at the moment had huge demand and decreased the stone ashes that are not demanded by the consumers. Thus, we need to analyze toward each tools at the crusher company whether the existance tools would be able to reach distribution percentage that had been planned or the existence tools would not be able to reach the planned distribution.

This research's purposes is to improve the products measurement $(-14 + 10)\text{mm}$ in which at the moment only 13,04% and reduced the amount of the stone ashes production that over the target of production around 33,17%.

The result of this research in the field had found that the total feed from the mine was 216 tph with the specification 13,75 tph tailing and 202,25 tph for the final products. The final specification measurement was $(-28+14)\text{mm}$, 37,37%, $(-14+10)\text{mm}$ 13,04%, $(-10+5)\text{mm}$, 16,42% and -5mm 33,17%.

There were three alternative efforts for the theoritical improvemnets by minimizing the close side setting (CSS) gyratory crusher measurement from 42mm up to 32mm, the design capacity 206,18 tonnes/hour and the effectivity reached 98,08%. In addition toward the CSS impact crusher from 20mm maximize as alternative combination, such as:

- a) Alternative I, CSS 40mm, design capacity 164,25 tonnes/hour and the effectivity 40,69%. Final products specifications $(-28+14)\text{mm}$ 45,12%, $(-14+10)\text{mm}$ 14,94%, $(-10 +5)\text{mm}$ 17,28% and -5mm 22,66%.
- b) Alterbative II, CSS 30mm, design capacity 153 tonnes/hour and the effectivity 43,68%. Final products specification $(-28 +14)\text{mm}$ 43,37%, $(-14 +10)\text{mm}$ 15,08%, $(-10 +5)\text{mm}$ 17,34% and -5mm 23,21%
- c) Alternative III, CSS 25mm, design capacity 147,37 tonnes/hour and the effectivity 45,35%. Final products specification $(-28 +14)\text{mm}$ 43,44%, $(-14 +10)\text{mm}$ 15,28%, $(-10 +5)\text{mm}$ 17,27% dan -5mm 24,01%.

The final result from the three alternatives above. It had found from the graphic observation of the tools crushers, then it multiply with the screen efficiency score in every deck. It is suggested to use the alternative III because the final product distribution that had been produced was the closest to the planned distribution target.