

ABSTRAK

M. KAFSYATIUS AL KAHFI SITORUS, NIM: 5203250030, Analisis Struktur Baja *Gallery Conveyor* Kapasitas 2500 TPH Studi Kasus: Tambang Batubara PT. Graha Panca Karsa, Kalimantan Timur, Skripsi Prodi S1 Teknik Sipil, Fakultas Teknik, Universitas Negeri Medan, 2025.

Perkembangan produksi batubara di Indonesia meningkat dari tahun ke tahun. PT Graha Panca Karsa sebuah perusahaan tambang batubara meningkatkan target produksinya yang mengakibatkan perlunya peningkatan kapasitas conveyor. Pada penelitian ini dilakukan analisa khusus pada bagian galeri conveyor untuk memastikan keamanan struktur galeri tersebut. Penelitian ini bertujuan untuk mendapatkan besaran batang – batang yang dapat menahan beban conveyor kapasitas 2500 TPH. Lokasi penelitian berada di Kampung Tukul, Kecamatan Tering, Kutai barat, Kalimantan timur.

Dilakukan analisa pembebanan dengan desain pembebanan 2500 TPH dengan menghitung pembebanan yang terjadi seperti beban mati, beban mati tambahan, beban hidup, beban angin, dan beban gempa. Selanjutnya dilakukan analisa struktural menggunakan perangkat lunak SAP 2000 untuk menganalisa struktur baja galeri conveyor tersebut. Analisa perkuatan pada batang – batang yang mengalami kegagalan akan diperbaiki dengan meningkatkan dimensi profil batang tersebut.

Setelah dilakuakn analisis pada struktur Gallery Conveyor pada beban desain 2500 TPH terjadi potensi mengalami kegagalan pada 23 batang yang mengalami status *overstress*. Maka dari itu, dilakukanlah peningkatan dimensi pada batang – batang yang mengalami kegagalan, seperti 19 batang kolom dan 4 batang penampang bawah yang ditingkatkan kapasitasnya dengan hasil perbaikan struktur menunjukkan hasil *analysis & design sections check* batang memiliki rasio <1 yang berarti aman.

Kata Kunci: *Gallery Conveyor*; Struktur Baja, Tambang Batubara

ABSTRACT

M. KAFSYATIUS AL KAHFI SITORUS, NIM: 5203250030, Analysis of Gallery Conveyor Steel Structure with a Capacity of 2500 TPH Case Study: Coal Mine of PT. Graha Panca Karsa, East Kalimantan, Thesis of Civil Engineering Study Program, Faculty of Engineering, State University of Medan, 2025.

The development of coal production in Indonesia has been increasing year by year. PT Graha Panca Karsa, a coal mining company, increased its production targets, which required an increase in the conveyor capacity. In this study, a special analysis of the conveyor gallery section was carried out to ensure the safety of the gallery structure. The aim of this study is to determine the size of the bars that can withstand the load of a conveyor belt with a capacity of 2500 TPH. The research site is in Tukul Village, Tering District, West Kutai, East Kalimantan.

The load analysis was carried out with a load design of 2500 TPH by calculating the loads that will occur such as dead load, additional dead load, live load, wind load and earthquake load. In addition, a structural analysis was carried out using SAP 2000 software to analyze the steel structure of the conveyor gallery. The reinforcement analysis of the defective bars is improved by increasing the profile dimensions of the bars.

After conducting an analysis of the conveyor structure at a design load of 2500 TPH, it was found that 23 bars subjected to overstress had a possibility of failure. Therefore, the dimensions of the defective bars were increased, such as 19 support bars and 4 bars with a smaller cross section, whose capacity was increased. The results of the structural repairs showed that the results of the analysis and design section test of the bars had a ratio of <1 , which means that they were safe.

Keywords: Coal Mine, Gallery Conveyor, Steel Structure

