

**REDESIGN OF GROWTH-PROMOTING SUPPLEMENT
BLOCK MOLDING MACHINE TO INCREASE PRODUCTION
CAPACITY IN MINEFEEDS FODDER COMPANY**

FINAL PROJECT REPORT

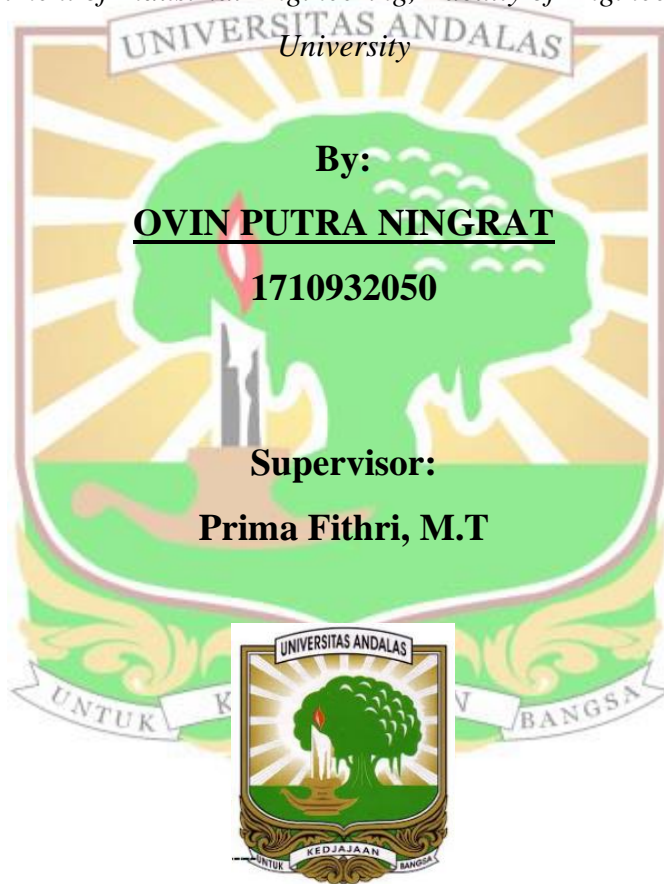


**DEPARTMENT OF INDUSTRIAL ENGINEERING
FACULTY OF ENGINEERING
UNIVERSITAS ANDALAS
PADANG
2022**

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BLOCK MOLDING MACHINE TO INCREASE PRODUCTION
CAPACITY IN MINEFEEDS FODDER COMPANY**

FINAL PROJECT REPORT

*Proposal Submitted as a Fulfillment of Requirements for Final Project Research
at the Department of Industrial Engineering, Faculty of Engineering, Andalas*



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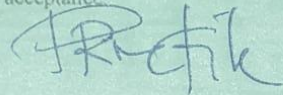
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**DEPARTMENT OF INDUSTRIAL ENGINEERING
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2022**

APPROVAL PAGE

The final project entitled "Redesign of Growth-Promoting Supplement Block Molding Machine to Increase Production Capacity in Minefeeds Fodder Company" prepared and submitted by Ovin Putra Ningrat in partial fulfillment of the requirements for the degree of **Bachelor of Engineering** (Major in Industrial Engineering), has been examined and hereby recommended for approval and acceptance.



Date: August 2022

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26/08/2022

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ABSTRACT

Cattle are the primary food commodities that increase in line with the increase in population. Of course, animal feed and other supporting foods must also support the high demand for cattle. MineFeeds answers the need for supporting food with its superior product, Growth Promoting Supplement (GPS). Based on initial observations, the production activities at MineFeeds are carried out with 20 blocks per batch. Where the mixing workstation only operates at 55% of full capacity, when the Mixing workstation works at its 100% capacity, it could reach 35 blocks per operation. The bottlenecks occurred due to the molding stage's long cycle time with a workload of 150%. Therefore, this research was conducted to redesign the molding machine that meets the optimal capacity.

In completing this research, a rational method approach is used, where there are seven steps in completing the method. The steps start with identifying and defining the improved machine. Then clarify design objectives and sub-objectives with the relationship between objectives, establish the function and limitations of the machine's new design, determine accurate performance specifications and performance required of the machine design, then be conducted to set the machine's engineering characteristics target. The next step is to generate a complete range of alternative design solutions and compare the utility values of alternative designs on the performance against weighted objectives basis where the customer needs, and scoring is based on Quality Function Deployment (QFD).

Based on the evaluation result, the machine increased molding machine productivity by 260% more than the current production. The daily production increased from 40 GPS Block per day with two batch production to 105 GPS Block per day with three batch production.

Keywords: Machine redesign, Machine Capacity, Bottleneck, Rational Method, Quality Function Deployment.

ABSTRAK

Sapi sebagai salah satu komoditas pangan utama setiap tahun meningkat seiring dengan peningkatan jumlah penduduk. Tentu saja, pakan ternak dan makanan pendukung lainnya juga harus mendukung tingginya permintaan ternak. MineFeeds menjawab kebutuhan pangan penunjang dengan produk unggulannya, Growth Promoting Supplement (GPS). Berdasarkan pengamatan awal, produksi di MineFeeds memiliki kapasitas produksi 20 buah per batch dimana mixing workstation hanya beroperasi dengan 55% dari kapasitas maksimal sebanyak 35 blok per operasi. Ketika mesin mixing bekerja dengan kapasitas 100% terjadi Bottleneck pada tahap pencetakan karena waktu siklus mesin yang lama dengan beban kerja 150%. Oleh karena itu, penelitian ini dilakukan untuk mendesain ulang mesin moulding untuk memenuhi kapasitas optimal.

Dalam menyelesaikan penelitian ini digunakan pendekatan metode rasional, dimana ada tujuh langkah dalam menyelesaikan metode tersebut. Langkah-langkahnya dimulai dengan mengidentifikasi dan mendefinisikan mesin yang akan ditingkatkan. Kemudian memperjelas tujuan dan sub-tujuan desain dengan menilai hubungan antara tujuan, kemudian menetapkan fungsi dan batasan mesin desain baru, selanjutnya menentukan spesifikasi kinerja dan kinerja yang dibutuhkan dari desain mesin, kemudian menetapkan target karakteristik teknik mesin. Langkah selanjutnya adalah menghasilkan rangkaian lengkap solusi desain alternatif dan dilanjutkan dengan membandingkan nilai utilitas desain alternatif berdasarkan kinerja terhadap tujuan tertimbang. Dimana kebutuhan dan penilaian pelanggan didasarkan pada Quality Function Deployment (QFD).

Berdasarkan hasil evaluasi, mesin tersebut meningkatkan produktivitas mesin moulding sebesar 260% lebih tinggi dari produksi saat ini. Produksi harian meningkat dari 40 GPS Block per hari dengan dua batch produksi menjadi 105 GPS Block per hari dengan tiga batch produksi.

Kata Kunci: Perancangan ulang alat, Kapasitas Alat, Bottleneck, Metoda Rational, Quality Function Deployment.