



**BUSITEMA
UNIVERSITY**
Pursuing Excellence

**FACULTY OF ENGINEERING.
DEPARTMENT OF MINING ENGINEERING.
FINAL YEAR PROJECT REPORT.**

**DESIGN AND FABRICATION OF A CRUSHER FOR ARTISANALS AND SMALL-
SCALE MINERS (ASM).**

A CASE OF KABINGO ARTISANALS AND SMALL-SCALE MINERS.

By

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ABSTRACT

Artisanal small-scale mining (ASM) is a significant source of income for many communities around the world. However, the process of crushing and processing ore can be hazardous and inefficient. This project aimed to design and fabricate a jaw crusher that can crush 37.5 kg of rocks with an efficiency of 83.55% for ASM operations.

The design of the jaw crusher was based on the principle of compression, where the rock is crushed between two plates. The crusher was designed with a feed size of 15.2 cm, product size of 2.5 cm, and a reduction ratio of 6.08. The crusher components, including the frame, jaws, and toggle plate, were selected and fabricated using steel and other durable materials.

The fabrication process involved cutting, drilling, and assembling the various components. The crusher was assembled and tested to ensure optimal performance. The testing process involved crushing rocks of different sizes and shapes to evaluate the crusher's efficiency and productivity.

The results showed that the crusher achieved an efficiency of 83.55% based on the reduction ratio and product size. The crusher was able to crush 37.5 kg of rocks per hour, making it suitable for ASM operations. The crusher's simple and robust design makes it easy to maintain and operate, reducing downtime and increasing productivity.

The design and fabrication of this jaw crusher demonstrates the potential for innovative and efficient solutions for ASM operations. The crusher's efficiency and productivity make it a viable option for small-scale miners, improving their livelihoods and reducing the environmental impact of their operations.

Overall, this project highlights the importance of innovative design and fabrication in improving the efficiency and productivity of ASM operations. The crusher's simple and robust design makes it a suitable option for small-scale miners, and its efficiency and productivity make it a viable alternative to traditional crushing methods.

DECLARATION

I **CHEROTICH SILAS** hereby declare that this project report was written by me and has not been utilized for any award by any individual in any learning institution.

Signature 

Date... 21/Nov/2024

APPROVAL

This report was written and submitted by **CHEROTICH SILAS**, a fourth-year student at Busitema University, with registration number **BU/UG/2019/0019**.

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DEDICATION

I dedicate this report to my Parents CHEBOSEI ALFRED, CHEBET PATRICIA, AND CHEKWURUI BETTY, my siblings CHEMUTAI HARRIET, CHEKWEMBOI HAGGAI, CHEMUTAI ASHA, AND CHEPTOEK GODFREY and finally my beloved Friend CHEROP JOY for their support materially and financially instilled into me, which attributes I have cherished with firmness, MAY GOD BLESS YOU ALL.

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