UNIVERSITI TEKNOLOGI MARA

SAND SIEVING MACHINE

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ABSTRACT

The sand sieving machine project aims to design, analysis and fabricate an automated solution to efficiently separate fine sand particles from larger aggregates. Traditional manual sieving methods, while cost-effective, are labour-intensive, inconsistent, and often result in physical strain and health risks for workers. Key features of the automated sand sieving machine include a durable and precisely engineered sieve mesh, an efficient vibratory or rotary sieving mechanism, and a robust frame designed to handle large volumes of sand. The machine's automated operation ensures uniform particle size distribution, minimizes contamination, and significantly reduces the time labour required for sieving. The expected result of the project include increased productivity, improved quality of sieved sand, enhanced worker safety, and reduced labour costs. The machine is designed to be energy efficient and easy to maintain, supporting sustainable construction practices. Additionally, the use of high-quality sieved sand will enhance the structural integrity and finish of construction materials, contributing to better overall project outcomes.

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CHAPTER ONE
INTRODUCTION

1.1 Background of Study

Nowadays, many countries have built many constructions and skyscraper especially in Dubai, Malaysia, and Japan. To develop a building obviously need a material. Commonly material that been used is bricks, cement, sand, concrete, and reinforcement. Sand serves as an essential material in various construction project, including housing, roadways, railways, irrigation systems, dams, bridges, and other infrastructure endeavours. With the ongoing trend of urbanization, the demand for sand as a construction material continues to rise steadily[1]

Sand is primarily sourced from various natural locations such as beaches, rivers, dunes, mountains, deserts, sand pits, and quarries. Typically extracted in its raw state, it often contains foreign materials. As we know the sand mixture with variety other component such as dirt and metal. Therefore, before utilization, it undergoes screening processes to eliminate undesirable particles and stones[1].

Sieving has remained a necessary operation used to reduce lumps into fine particles(undersize) after making the lumps pass through a screen[2]Before the invention of a sand sieving machine, people were sieving sand manually by using shovel and not perfectly sieved[3]. Sand filter machines has been developed but were quite expensive back then. Sand filter machine has a function that can sieve or filter sand and stone that mixed.

1.2 Problem Statement

One of the main problems that leads to this project is filtering sand usually done manually especially in contraction. Current sand filtering method relay heavily on manual labour, which it needs more energy that requires physical efforts and time-consuming as it takes more time to separate the sand from unneeded particle. As a worker they must continuously lift, shake, and maneuver heavy sieve filled sand.