UNIVERSITI TEKNOLOGI MARA

DESIGN, ANALYSIS AND FABRICATION OF 3D PRINTER SQUANDER RECYCLE

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ABSTRACT

When it comes to the topic about the increasing environmental concerns and the rise of additive manufacturing, plastic is one of the topics that always be the main idea. 3D printer which is one of the machines that most of the people used specifically in this industry is among the issue that can be related with this issue [6]. Managing 3D printer waste. This project is proposing the design and development of a 3D printer waste recycle shredder. Turn the waste into small so that it can be manage for subsequent melting and reprocessing. The main objective is to create a efficient shredder machine that can handle various types of 3D printer materials. The involvement in this project is designing the shredder mechanical components, selecting suitable material and assembling the machine. By use of optimization and testing, the aim is to ensure the shredder operates effectively and safely. The expected outcome is a functional prototype that demonstrates efficient shredding of 3D printer waste and in the same time contributing to environmental sustainability in innovative production.

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CHAPTER ONE
INTRODUCTION

1.1 Background of Study

With the development of innovation, 3D printing has become an innovative apparatus in various areas, including industry, healthcare, education, and the arts[4]. It has become a significant part of modern development due to its fast improvement speed and precision in creating complicated designs. Despite its advantages, 3D printing poses critical challenges to the environment, especially concerning the taking care of plastic waste[5]. Back structures, additional fabric, and failed prints as often as possible were wasted, contributing to plastic pollution.

This matter must be looked into. Each wasted print may be a waste of materials, labour, and money used in its generation. Creating sustainable arrangements that fit our dedication to responsible engineering and ensuring the environment is crucial for us as a community of innovators[10]. The objective of this project is to construct a machine that can efficiently reuse 3D printer waste to move closer to that objective.

This project focuses on making a shredder specifically designed to break down 3D printer waste into little pieces suitable for melting and reprocessing[8]. The inspiration for this project stems from the desire to contribute to a circular economy where materials are continually repurposed rather than disposed of. The impression of 3D printing can be reduced by transforming this waste into a resource. At the same time, advance more sustainable practices within the industry[7].

Creating a shredder machine involves understanding the properties of different 3D printing materials, designing strong mechanical components, and ensuring user safety. The challenge lies not fair within the specialised perspectives but also in making the solution accessible and easy to use[6]. By undertaking this project, we are addressing a technical issue and supporting a move towards more dependable and economical fabricating practices.

In summary, developing a 3D printer waste shredder machine is an endeavour to combine mechanical innovation with natural awareness. It reflects our commitment to understanding real-world issues and our belief in the power of design to positively