

UNIVERSITI TEKNOLOGI MARA

**DEVELOPMENT OF AUTOMATIC
CAT SAND FILTER**

MUHAMMAD HAZIQ BIN MOHD ZAMAN

Dissertation submitted in partial fulfillment
of the requirements for the degree of
Diploma
(Mechanical Engineering)

College of Engineering

ABSTRACT

This project introduces a cool prototype designed to make life easier for pet shops or people with lots of pets. It's like a helpful tool that brings joy because it makes cleaning the cat sandbox much quicker and more enjoyable. It is spending less time cleaning and more time having fun with your pets that is the exciting experience this product aims to provide. For pet owners, especially those with many cats, this prototype can be a real game changer. It's all about making things simpler and more efficient. Instead of spending a long time cleaning up, this product gets the job done faster, giving pet owners more time to enjoy precious moments with their pets. It is like having a handy helper that takes care of the cleaning part, leaving more time for the fun stuff. And for pet shops, where there are many pets to look after, this prototype is a lifesaver. It is designed to make the cleaning process a breeze, saving time and effort for the workers. So, the experience of using this product isn't just practical but it is also a bit like bringing a touch of joy to the daily routine of taking care of pets.

ACKNOWLEDGEMENT

Firstly, I wish to thank God for allowing me to embark on my diploma and for completing this long and challenging journey successfully. My gratitude and thanks go to my supervisor, Norhisyam bin Jenal for his cooperation in helping to make this project a success.

Finally, this dissertation is dedicated to my father and mother for their vision and determination to educate me. This piece of victory is dedicated to both of you. Alhamdulillah.

TABLE OF CONTENTS

	Page
CONFIRMATION BY SUPERVISOR	ii
AUTHOR'S DECLARATION	iii
ABSTRACT	iv
ACKNOWLEDGEMENT	v
TABLE OF CONTENTS	vi
LIST OF TABLES	viii
LIST OF FIGURES	ix
LIST OF ABBREVIATIONS	x
CHAPTER ONE: INTRODUCTION	1
1.1 Background of Study	1
1.2 Problem Statement	1
1.3 Objectives	2
1.4 Scope of Study	2
1.5 Significance of Study	3
CHAPTER TWO: LITERATURE REVIEW	4
2.1 Benchmarking/Comparison with Available Products	4
2.2 Review of Related Manufacturing Process	6
2.3 Patent and Intellectual Properties	9
2.4 Summary of Literature	14
CHAPTER THREE: METHODOLOGY	15
3.1 Overall Process Flow	15
3.2 Detail Drawing	17
3.3 Engineering Calculation and Analysis	19
3.4 Bill of Materials and Costing	22
3.5 Fabrication Process	25
3.6 Functionality of Prototype	30

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

My main idea for this project is to make a sand filter to ease people who have pets to clean their pet sand. I proceeded to make this project because many people who have pets do not have time to clean their pet sand. This is because many people are too busy to clean their pet's sand or feel tired after coming back from work. This will help people who are tired or don't have time to clean their pet sand will clean their pet sand more easily. The condition is medium size and stationery. This will make it easy for the owner to carry the sand filter and not take so much place.

I propose to do this project because current sand filters need more human working energy to clean the sand. This sand filter in the market does not have much variety. Sand filters in the market mostly use manual filtering. This project is in high demand because many people have pets in their houses. The size of the current sand filter is too small and people need to filter many times to clean the sand.

This proposed product has an automatic filtering machine and is easy to carry. This product is portable and useful for owners to bring the sand filter anywhere. This sand filter utilizes an electrical supply to separate the sentiment and the sand.

1.2 Problem Statement

Regular cleaning and maintenance of pet sand filters is essential to ensure pet hygiene. However, cleaning sand filters can be a time-consuming and messy job. Simplifying the cleaning process with new sorting systems or other cleaning methods can help eliminate this problem and make maintenance easier for pet owners Pet sand filters should inside provide good drainage while maintaining smooth flow. Achieving a balance between effective filtration and pressure reduction or flow limitation is important. Additionally, ensuring that the filter does not clog quickly and continues to work for a long time is key to solving the problem My main idea for this project is to make a sand filter to make it easier for people who have pets to wash their pet sand. I