

UNIVERSITI TEKNOLOGI MARA

**DESIGN, ANALYSIS AND
FABRICATION OF STREET
SWEEPER MACHINE**

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ABSTRACT

A clean environment is a dream for every humankind. It is because we are the one that live in this world. Thus, it is our responsibility to keep it clean and safe for us, also for the next generation. Cleaning is a strenuous activity, and there is a need to develop techniques for appraising new products in a systematic manner. The problems that we face nowadays is cleaning process could take times. The fact that people still use the traditional method, which is sweeping, and it is undeniable a slow process even though it is an effective way to clean. Clearly that our technology is still way behind from other developing country. So, the objective of this project is to fabricate an efficient cleaning machine, with minimum effort used, that can improve the cleaning work-rate. Thus, can save a lot of time. The methodologies that I am using for this project are planning, analysis, design and fabricate. Project's planning is very important to make sure that progress is according to the plan. Next, Engineering analysis is applied using SOLIDWORKS 2021 Software to find the stress, displacement, and strain on the critical parts with the help of visual representation. Design of the project is using Morphological Chart, Pugh Chart Analysis and SOLIDWORKS 2021 for detail drawing of the parts, assembly and exploded drawing for the machine. Lastly, fabrication process by applying the cutting, grinding, drilling, metal joining and finishing process to get the best outcome. By applying all the fabrication process, this product is able to be functioning well and the mechanism works. Therefore, this is a good and a very eye-opening innovation in the cleaning and sanitizing industry.

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CHAPTER ONE

INTRODUCTION

1.1 Background of Study

In this modern world, cleanliness is one of the most important aspects that we should take serious about especially in this pandemic situation, and obviously different location and terrain needs different method and way to clean. There are many types of cleaning for examples wet method, dry method and terminal method[1]. Recently, automatic floor cleaning machine is becoming a trend since it is easy and convenient to use but it is just for personal use at home since the price is quite expensive. However, to see an automatic cleaning machine on the road or by the roadside is quite difficult since there are lot of obstacles such as weather and traffic that could limit its function. So, it is still irrelevant to deploy an automatic cleaning machine out into our surrounding. Hence, my project is to design, and fabricate a manually operated street sweeper machine where it has a simple operational mechanism, which can be handled by a person, and the most important part is easy to be use.

1.2 Problem Statement

People sweeps the roadside or an open field that full of dry leaves could take a lot of time. They might probably be dehydrated since they work under the hot weather for a long time. Besides, not everyone has their free time the whole day to sweep the roadside or a field, thus they need a machine that can work quicker with the least amount of effort.

Sweeping the floor using old method like using broom has low cleaning rate. It is a slow process and just small area can be covered at one time. In addition, distraction like wind cannot be avoided since it is a natural phenomenon. This innovation is really a problem solver for people where cleaning process can be so convenient and simple since the operation mechanism is easy to use.