



**MEC332**

**MECHANICAL ENGINEERING DESIGN**

**FINAL YEAR PROJECT MECHANICAL DESIGN**

REPORT NAME:

**FULL REPORT**

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## 1.0 INTRODUCTION

The task given was to design and construct any mechanical product that used mechanical application, electrical or fluid power. There must have mechanical element design to select any design. The inspiration behind this design came from the festivals, wastage in malls, canteens of big company often the winter holidays involve large parties where people gather and consume a lot of canned beverages. Thus, it only makes sense that there should be an easy way to dispose of cans properly during these large social gatherings.

Recycling is wonderful way to help the environment. One device that will make our life easier, and recycling haul much more compact, is the can crusher machine. Rostrum, fan cleaner, book shelve, portable projector's table and can crusher were selected to produce mechanical design of the task given.

For selection of mechanical product, the can crusher is chose to do in design project can crushing machine are available in a number of styles, sizes and speed, with models to suit everyone from the heavy soda drinker to the recycling centre man. Thus this can crusher was created, with an user friendly and manually operated mechanism. Can crushers are primarily used to save space and recycling. Can crusher make it possible to make small stackable piles that save space. There are many designs that can crushers come in. Some of the designs are pneumatic, hydraulic, aluminium, and wood.

## **2.0 DESIGN PROBLEM DEFINITION**

### **2.1 MARKET ANALYSIS**

#### **2.1.1 General Need for Product**

A can crusher is a device used for crushing aluminium cans for easier storage in recycling bins. While most recyclers don't require you to crush cans, if you do recycle a lot, your normal bin may fill up quickly. The crusher gives you extra space by flattening either single or multiple cans [2].

The first can crusher was of course the human foot. People often stomped on cans to flatten them down either for recycling or for greater space in the garbage can. This could sometimes hurt if the foot did not come down properly on the can, so entrepreneurs eagerly sought a variety of alternatives that could be used with the hand [2].

The basic things a can crusher is functioning to crush the unusable cans. It is purposely functional for recycle industry and daily life which is to collect the can in large size. Since the can come in large size, so can crusher was developed which is a machine for one's user to use it to make it easy to use and crush the can. Thus, for the consumers that do recycle can as a business, this will be increase in mean time. The machine is easy to use at home or residents. Usually resident had collected cans and crush it at home. But with this machine, the can will crushed by hand easily and no need to give more energy.

Furthermore, with this type of simple machine design peoples tend to need it rather buy it from a big company which will cause them enormous value of money. Besides, it needs a little maintenance to it thus reduces the cost in recycle industry. The materials to make a can crusher are available to get in any hardware rather than a finest and expensive material.

### **2.1.2 Description and Estimation of Market Size**

The projects are based on what the product can contribute to the Faculty Mechanical, UiTM or society. Innovation of refrigerator in the market should help reduce several problem that ordinary refrigerator have.

Since all of us come from a local. So our main targeted market is around Pasir Gudang, Johor Bahru. By targeting this area it will help our local in increasing their rates of income. They can upgrade their recycle business by using our product. With the simplest and portable machine it make them easier to work and can crush a lot of can nearly same with the other recycler's production.

From the surveyor in hardware our estimate cost for producing this can crusher is Rm537. This business will be run by sharing cost from each of our team partner. Our market size is calculated based on the total of population in Pasir Gudang citizens. According to the Department of Statistic Malaysia, the number of population in Pasir Gudang is approximately 200,000 people. So, we estimated that 10% out 200,000 which is 20,000 people will buy our can crusher because many people still do not know the benefit in recycle can.

The community areas in Pasir Gudang may have a lot of demand of this can crusher machine because some of them still practice recycle their things to save the environment. But now days, as we can see there are many people love to drink the can drink such Coke, Pepsi and Nescafe so from that we can target our market in selling to neighbourhood area too. To ensure that our product will be able to sell in proper rate, we decided to perform a show on how our product will work at all night market or mall around the Pasir Gudang. By introducing our product to community we will able to attract our target for our product. We also plan to promote our product through social media such as Facebook, Instagram, and Twitter. As we know in these modern area, social play a big role in our target market. This opportunity can help us to sell our product efficiently. Our primary targets still stick with the recycler's production. Likewise our first priority is to help the community in increasing the relief in recycle can which also can help them learning in business.