

MEC 332

MECHANICAL ENGINEERING DESIGN

FINAL YEAR PROJECT

TITILE:

EZY CAN CRUSHER

SUPERVISOR'S NAME: SIR HAZRIEL FAIZAL PAHRORAJI

LECTURER'S NAME: SIR MUHAMAD FARIS SYAFIQ BIN KHALID

CLASS/GROUP : J4EM1105H/H4

NO.	NAME	STUDENT ID
1.	MUHAMMAD NA'IM ZULFAQAR BIN ASMADI AHMAD	2018420882
2.	MUHAMMAD WAFIQ BIN ROSLI	2018422314
3.	NUR AIREEN NABILAH BINTI ABD RAHMAN	2018229984
4.	NUR AZIMAH BINTI MOKHTAR	2018235906
5.	ZAHIRUL HAZMI BIN ZAHIR HUSSEIN	2018422654

ACKNOWLEDGEMENT

In the name of Allah, the Most Gracious and Most Merciful. First and foremost, praises thanks to Allah, the Lord of the worlds, and the sequel is for those who keep their duty unto Him, further, there will be no hostility except against wrongdoers. Blessings and solutions are upon the most honourable Prophet and Messenger, His family all His disciples, and those who follow them in goodness until the Day of Judgement, and we offer our expression of gratitude to Allah, due to His favour and charity, so, we have got finished putting this on ink final year project report.

A big thanks to our parents for the encouragement, enthusiasm, and invaluable assistance to us. Without all this, we would not be able to complete this project properly. Besides, special gratitude to our supervisor, Sir Hazriel Faizal Pahroraji, whose contribution to stimulating suggestions and encouragement, helped us to coordinate our project especially in inscribing this report.

Furthermore, we would also like to acknowledge with much appreciation Sir Muhamad Faris Syafiq Bin Khalid who teaches and guides us during this subject together with the project in detail. To not forget, Dr. Siti Khadijah binti Alias gave us her opinions, ideas, and pieces of information regarding this project so as to assist us to prepare to put in writing this final year project report.

In addition, a special thanks goes to our teammate, Mr. Muhammad Na'im Zulfaqar bin Asmadi Ahmad, Miss Nur Aireen Nabilah binti Abd Rahman, Miss Nur Azimah binti Mokhtar, and Mr. Zahirul Hazmi bin Zahir Hussein, who helped one another to assemble the parts and gave suggestions for this project. Last but not least, many thanks go to the head of the team, Mr. Muhammad Wafiq bin Rosli who has invested his full effort in guiding the team.

Finally, we must appreciate the guidance given by our friends directly and indirectly throughout the making of this project. We also apologize to all or any other unnamed who helped us in various ways to complete this project and hope this project can help gain more knowledge about design.

ABSTRACT

A Can Crusher model that operates manually has been created successfully by using SolidWorks. This prototype is done with the help of mechanical equations which are shaft, torque, shear force, bending moment, and others. This machine requires the user to use their leg to start moving the operation of crushing cans. This machine is also different in equipment used from the current model.

This machine was created to increase the quality of fresh air in the surroundings. By using this machine, the number of cans that are thrown without being smashed properly can be reduced. Thus, the aim of this project to save the environment is achieved. As mentioned before, users need to apply force to the pedal by using their energy which is their leg. The force will then distributed to the handle of the pedal and the crank will move with the help of a chain. Lastly, the can will be crushed into the storage. The machine is affordable as it does not require any automated device such as a motor. Using leg helps human to boost energy to instead of doing a heavy exercise.

TABLE OF CONTENT

	ITE	M	PAGES
	ACF	i	
	ABS	ii	
	TAB	BLE OF CONTENT	iii
	LIST	vi	
	LIST	viii	
1.0	INT		
	1.1	Overview of the Project	1
	1.2	Design Objective	2
	1.3	Scope of Project	3
	1.4	Significance of the Project	4
	1.5	Project Planning	7
2.0	PRO		
	2.1	Problem Statement	8
	2.2	Problem/Need Identification	9
	2.3	Customer Requirement	12
	2.4	Product Design Specification	15
	2.4	1.1 Physics of Artifact	17
3.0	LIT	ERATURE REVIEW	18

	4.0	Concept Generation	20		
	4.0	0.1 Morphological Analysis	21		
	4.0	0.2 Concept Design	23		
	4.1	Concept Evaluation	33		
5.0	EMBODIMENT OF DESIGN				
	5.1	Layout Design	36		
	5.1.1	Configuration Design	37		
	5.1.2	Product Architecture	41		
	5.2	Engineering Calculation	43		
	5.3	Engineering Analysis	49		
6.0	DETAIL DESIGN				
	6.1	Finalized Design	53		
	6.2	Part/Machine Drawing	54		
	6.3	Assembly Drawing / Exploded View	79		
	6.4	BOM	83		
	6.5	Cost Analysis	87		