DESIGN AND FABRICATION OF GOLF BALL PICKER

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Report submitted in partial fulfilment of the requirements for the award of Diploma in Mechanical Engineering

Faculty of Mechanical Engineering
UNIVERSITI MALAYSIA PAHANG

NOVEMBER 2008
SUPervisor’s Declaration

I hereby declare that I have checked this project report and in my opinion this project report is satisfactory in terms of scope and quality for the award of the Diploma in Mechanical Engineering.

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Name of Supervisor  : EN. MOHD SAZALI BIN SALLEH.
Position  : VOCATIONAL TRAINING OFFICER.
Date  : ............................
STUDENT’S DECLARATION

I hereby declare that the work in this report is my own except for quotations and summaries which have been duly acknowledged. The report has not been accepted for any degree and is not concurrently submitted for award of other degree.

Signature : ………………………..
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ID Number : MB06042
Date : ………………………....
Especially for

My beloved family
ACKNOWLEDGMENT

I would like to express my gratitude and appreciation to all those who gave me the possibility to complete this report. Special thanks is due to my supervisor En Mohd Sazali B salleh who help a lot, stimulating suggestions and encouragement helped me in all time of fabrication process and in writing this thesis. And also thanks to En Khairul Azha Bin A Jalal for his advice and suggestion.

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Many thanks go to the lecturer and to all the supervisors who have given their full effort in guiding me in achieving the goal as well as their encouragement to maintain our progress in track. My profound thanks go to all my friends who their names are not mentioned here for spending their time in helping and giving support whenever I need it in completes this project.
ABSTRACT

Basically golf ball picker is often used in golf field because it would help worker to pick up golf ball after player finished played. Introducing this design of golf ball picker directly help worker to make their job much easier and reasonable. In this project also content main part that important which is describe this design or this product would perform well. In this project also it was using valve mechanism in order to pick up ball from grass surface. The main part has been manufactured outside product so that it could be assemble easily and with this method also carry out benefit that we could get from there. Overall this project has been done and finished on schedule.
ABSTRAK

TABLE OF CONTENTS

SUPERVISOR’S DECLARATION ii
STUDENT’S DECLARATION iii
ACKNOWLEDGMENT v
ABSTRACT vi
ABSTRAK vii
TABLE OF CONTENT viii
LIST OF TABLES xi
LIST OF FIGURES xii

CHAPTER 1 INTRODUCTION

1.1 Project Synopsis 1
1.2 Problem Statement 1
1.3 Project Objective 2
1.4 Project Scope 2
1.5 Project Background 3
1.6 Project Schedule 3
1.7 Project Flow Chart 5
1.8 Project Expectation 8

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction 9
  2.1.1 Have a Ball 10
    2.1.1.1 Advantages 10
2.1.1.2 Disadvantages 10
2.1.2 Hand push ball picker 11
  2.1.2.1 Advantages 11
  2.1.2.2 Disadvantages 11
2.1.3 Single section picker 11
  2.1.3.1 Advantages 12
  2.1.3.2 Disadvantages 12
2.2 Design 12
  2.2.1 Concept A 13
  2.2.2 Concept B 13
  2.2.3 Concept C 14
  2.2.4 Final Design 15
2.3 Turret Punch Machine 16
  2.3.1 Benefit of CNC Turret Punch 17
2.4 CNC shearing machine 17
2.5 CNC Milling machine 19
2.6 Gas Metal Arc Welding (GMAW) 20
2.7 Rivet Process 22
2.8 Fastening process 22

CHAPTER 3 METHODOLOGY

3.1 Introduction 24
3.2 Concept generation and conceptualization 24
3.3 Design overview 25
3.4 Fabrication process flow chart 26
3.5 Material preparation 26
3.6 Design details 27
  3.6.1 Part 1 28
  3.6.2 Part 2 28
  3.6.3 Part 3 31
3.7 Assemble drawing 32
CHAPTER 4  DATA ANALYSIS AND DISCUSSION

4.1 Introduction 35
4.2 Product specification 35
  4.2.1 Material 36
  4.2.2 Dimension 36
  4.2.3 Fabrication method 36
  4.2.4 Overall weight 36
4.3 Testing parameter and data result 36
4.4 Product analysis 37
  4.4.1 Valve part 38
  4.4.2 Analysis valve report 39
    4.4.2.1 Stress result 39
    4.4.2.2 Displacement result 41
    4.4.2.3 Deformation result 41
    4.4.2.4 Analysis report 42
4.5 Conclusion 43

CHAPTER 5  CONCLUSION AND RECOMMENDATION

5.1 Summary 44
5.2 Recommendation 45
5.3 Suggestion for future work 45

REFERENCE 46

APPENDICES 47
A  Part 1 Dimension 47
B  Part 2 Dimension 48
C  Part 3 Dimension 49
D  Holder Part Dimension 50
E  Acrylic Cover Dimension 51
F  Product Features 52
LIST OF TABLES

<table>
<thead>
<tr>
<th>Table No.</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1.1</td>
<td>Gantt chart</td>
<td>3</td>
</tr>
<tr>
<td>Table 3.1</td>
<td>Pugh concept selection</td>
<td>25</td>
</tr>
<tr>
<td>Table 4.1</td>
<td>Testing process table</td>
<td>36</td>
</tr>
<tr>
<td>Table 4.2</td>
<td>Analysis report</td>
<td>42</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure No:</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1.1: Project Flow Chart</td>
<td>7</td>
</tr>
<tr>
<td>Figure 2.1: Have a Ball</td>
<td>10</td>
</tr>
<tr>
<td>Figure 2.2: Hand Push Ball Pickers</td>
<td>11</td>
</tr>
<tr>
<td>Figure 2.3: Single section picker</td>
<td>11</td>
</tr>
<tr>
<td>Figure 2.4: Design 1</td>
<td>13</td>
</tr>
<tr>
<td>Figure 2.5: Design 2</td>
<td>13</td>
</tr>
<tr>
<td>Figure 2.6: Design 3</td>
<td>14</td>
</tr>
<tr>
<td>Figure 2.7: Final design</td>
<td>15</td>
</tr>
<tr>
<td>Figure 2.8: Turret punch machine</td>
<td>16</td>
</tr>
<tr>
<td>Figure 2.9: CNC shearing machine</td>
<td>17</td>
</tr>
<tr>
<td>Figure 2.10: Shearing process features</td>
<td>18</td>
</tr>
<tr>
<td>Figure 2.11: CNC milling process</td>
<td>19</td>
</tr>
<tr>
<td>Figure 2.12: Torch Handle, Molded phenolic dielectric, shielding gas nozzle</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Contact tip, Nozzle output</td>
</tr>
<tr>
<td>Figure 2.13: Rivet equipment</td>
<td>22</td>
</tr>
<tr>
<td>Figure 3.1: Fabrication process flow chart</td>
<td>26</td>
</tr>
<tr>
<td>Figure 3.2: Material preparation and selection</td>
<td>27</td>
</tr>
<tr>
<td>Figure 3.3: Material preparation and selection</td>
<td>27</td>
</tr>
<tr>
<td>Figure 3.4: Cutting PVC pipe</td>
<td>28</td>
</tr>
<tr>
<td>Figure 3.5: Part 1 drawing</td>
<td>28</td>
</tr>
<tr>
<td>Figure 3.6: Shearing process</td>
<td>29</td>
</tr>
<tr>
<td>Figure 3.7: Milling process</td>
<td>29</td>
</tr>
<tr>
<td>Figure 3.8: Rivet process</td>
<td>30</td>
</tr>
<tr>
<td>Figure 3.9: Part 2 drawing</td>
<td>30</td>
</tr>
<tr>
<td>Figure 3.10: Welding process</td>
<td>31</td>
</tr>
<tr>
<td>Figure 3.11: Cutting of raw material for valve mechanism</td>
<td>31</td>
</tr>
<tr>
<td>Figure 3.12: Part 3 drawing</td>
<td>32</td>
</tr>
</tbody>
</table>
Figure 3.13: Assemble drawing 33
Figure 4.1: Valve part under load 10N 38
Figure 4.2: Restraint 38
Figure 4.3: Part1-COSMOSXpressStudy-Stress 39
Figure 4.4: Stress-strain curve 40
Figure 4.5: Displacement result 41
Figure 4.6: COSMOSXpressStudy-Deformation 42
CHAPTER 1

INTRODUCTION

1.1 PROJECT SYNOPSIS

This project contains of designing and fabrication of golf ball picker. There have many differences between this golf ball picker with current design in market place. In this project we have to develop and improving it performance as well so that there has no doubt about the design and concept. This design much more portable because it easy to carry together when playing golf and more user friendly. In this project, it needs lot of skills and information and also knowledge such as Computer Aided Design software (AutoCAD), Solidworks 2005 software, using Turret Machine Trumatic 2020R FMC (punching machine), CNC Shearing Machine, CNC Milling machine, welding process and fastening process. This design obviously would help worker or player and the most important thing is get improving their activities much better. So, this design would through many processes before it get into prototype term in order to achieve the objective and off course customer need.

1.2 PROJECT PROBLEM STATEMENT

Nowadays the current method to pick up golf ball picker using machine and hand on only. Then the current methods are troublesome and difficult because it make user feel not suitable as well. Beside that current design would make user body posture not suitable and also make worker much more tired to pick the ball in case in big
quantity. Then material used in current design difficult to get compare this design which is more material availability because it using sheet metal in difference thickness and using PVC pipe.

1.3 PROJECT OBJECTIVES

Actually purpose of this project is to practice student to figure out problem using application using research and absolutely improving student skill and knowledge. This project also could train student as well before facing a real situation about producing product and then make student more independent in searching and expanding the experience and knowledge. So, objective of this project are;

i. To design and fabricate the golf ball picker for use in work that needed to pick up golf ball.
ii. To develop a golf ball picker in order to achieve the product on customer/worker need.
iii. To modified the mechanism of current product and try improving its functionality.

1.4 PROJECT SCOPE

In order to finish this project require precise scope of work and proper plan need to be followed because this project must through various process before it would be produce. Beside that this project title is new idea which is come from literature review about it articles and current design in market and then the most important is a as the knowledge isn’t entirely covered in classes or lab. So it give us advantages to learn new process to produce this product and absolutely we could find lot of advantages neither we are realized or not. These are scope of work in this project,

Literature review about the design from any possible resource
i. Design the model of golf ball picker.
ii. Fabricate the design using material that been selected

iii. Test the design in demonstration

1.5 PROJECT BACKGROUND

Golf is a sport in which a player, using many types of clubs including a driver, a putter, and irons, hits a ball into each hole on a golf course in the lowest possible number of strokes. The minimum allowed diameter of a golf ball is 42.67 mm and its mass may not exceed 45.93g. The golf ball picker is functioning to pick the ball and can store until full before it get throw out. Now a days a current design and concept much advanced and there are also has troublesome method anyway. Then the design where has been choose should more ergonomics and if possible should minimum cost and one more things in material term. So the golf ball picker which is using valve system has been designed after through some of industrial design processes.

1.6 PROJECT SCHEDULE

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<tr>
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Table 1.1: Gantt chart

According the gantt chart table 1.1, this project started at week 2 begun with literature review until week 4. Literature review is a way to study back past concept and
current design and find out all information and related information about golf ball picker using many way such as from internet, journal, and book and classmate opinion. With this it seems that we have foundation to start project because we have some knowledge about it.

Then, the processes continued with preliminary designing and designing process. In this task golf ball picker is sketch into three type of design. This task begins at week 4 and done with final conceptualization in 4 week. All the sketching and design would be bringing into next process which is conceptualization decision. After determine desired design, the design is draw using Solidworks software. This task finished on week 7.

After through preliminary designing, the project continued with material preparation process. It process took two week from week 6 and week 9 in order to decide the proper material that used in this project. Material suitability is very important in designing product because it would describe product properties as well whether it toughness or brittleness.

Then after material arrival the fabrication process began at week 8. The fabrication process using manufacturing process such as welding and rivet until week 11. After done with fabrication the analysis and testing about product took place at week 11 also. The result from testing process is figure out.

There has a two part of presentation about this project. First, presentation about progress of this project at week 8 and final presentation at week 14 after done fabricate. In this task we need to explain to panel about what we have done such as project objective, literature review and methodology of this project.

After that continued back with thesis writing began at week 9 until week at last this semester. The thesis writing takes about seven week to complete including all information about this entire project. In this thesis also include literature review,
methodology and result from this project Thesis writing started together with fabrication process and all the task is scheduled to be done about fourteen weeks overall.

1.7 PROJECT FLOW CHART

From the flow diagram on figure 3.1, this project started with discussion with supervisor about title after got from lecturer. This discussion covering project overview supervisor and throw out opinion that related about title and supervisor instruct to proposed a certain design and concept before go up to next step.

Then go to literature review about the title. The most important in these manner is a determined the project scope, objective and project planning so that we could easy get a clear overview. Then study and gather information related to the design and these entire task been done through study from internet, journal and other source.

After gather and collect all related information and obtain new idea and knowledge about the title, the project would continue with the design process. In this stage, the knowledge and idea should throw out in sketching process. After several design sketched, the best design would be choose among previous design so that we could carry on designing process. Then the selected design would be transfer to engineering drawing using SolidWork software in order to improve it capability and for analysis process.

After that material preparation which is has been confirm initially. Purpose of this process is a to determine the suitable and strength material follow the product and design requirement. This process covering purchased material, measuring material and cutting off based on requirement. Here, this process is important because the material would determine whether our product in way to failure or otherwise.

After all the drawing and material preparation done the next process is a fabrication process. This process based on dimension has been determined from
drawing. During this process, all the manufacturing process which is suitable could be used such as drilling process using CNC Machine, welding process and cutting material using CNC shearing machine.

After all process above done on schedule without any problem such as product malfunction or product brittleness, all material for report writing is gathered. The report writing process covering and including all manners from week 2 until finished. This process also included the presentation for final presentation of the project.
Discuss with supervisor about the project

Literature review
Find all data, information

Designing and Sketching
Sketch 3 designs and choose the best design

Material Preparation
Decide the suitable material, cutting off

Fabrication
Use all necessary manufacturing process such as CNC Milling

Thesis Writing
This for draft and thesis where both must be done and submit

End

Figure 1.1 Project Flow Chart
1.8   Project Expectation

i. At the end of this project student must learn and know a lot as possible manufacturing process and how to fabricate it

ii. This project would perform well and get to achieve it objective

iii. This design and it idea of function will enter current market in order to improving it functionality
CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

Today golf ball picker demand a level of quality from their range equipment that most balls retrieves don’t match up to. Golf Ball Picker is a tool based on mechanical mechanism to perform it. Beside that electrical concept is often used in this product where would help worker to pick up the ball on land surface. Current design now shown the golf ball picker are design and created in big size which is could pick much ball absolutely and using lot of component even it material and perform in multi function.

Now a day the design of ball picker has been developed time to time depend on current market and customer demand. Mostly golf ball picker now has been through improvement by manufacturer but not at all. Newly engineering tires on each end of drum combined with pillow bearings provide added reinforcement that greatly maximizes strength and maneuverability.

Then now the basket or place to store the ball has totally new basket design features a locking clip that secure hopper to frame to added durability where could hold more than 350 ball and is the largest ball capacity of any lightweight ball picker. After that now a day the new mechanism which is newly design composite disc. The industry’s strongest composite disc combines the best the strength and flexibility to endure the toughness picking conditions.
Study about the current design is important in order to determine what the product function really are and find out how it perform and getting out it advantages for each and then compare with other product that been review already. In this process, I decided to study about three current designs in market now in order to gain information that could help me created my new design as well.

2.1.1 Have-A-Ball

![Figure 2.1: Have a Ball](image)

2.1.1.1 Advantages

i. Have-A Ball is the ultimate combination of simple design

ii. High tech materials.

iii. This innovative golf ball picker save time because pick a lot of ball

iv. Effectively picks up golf balls in tall grass and sand traps.

2.1.1.2 Disadvantages

i. Material cost

ii. Easy to damage because can perform in tall grass and sand traps