

TABLE OF CONTENTS

CHAPTER	TITLE	PAGE
	DECLARATION	ii
	DEDICATION	iii
	ACKNOWLEDGEMENT	iv
	ABSTRACT	v
	ABSTRAK	vi
	LIST OF TABLES	x
	LIST OF FIGURES	xii
	LIST OF ABBREVIATIONS	xiii
	LIST OF APPENDICES	xiv
1.0	INTRODUCTION	1
	1.1 Project Background.....	1
	1.2 Product Description.....	2
	1.3 Product Objective.....	3
	1.4 Problem Statement	3
	1.5 Scope Of Work.....	3
2.0	LITERATURE REVIEW	5
	2.1 The Needs of Systematic Design	5

2.2	Curry Puff and Its Making Process	6
2.3	Concept Development Phase	9
2.4	Concept Generation.....	11
2.4.1	Pattern Search.....	11
3.0	RESEARCH METHODOLOGY.....	15
3.1	Research Planning.....	17
3.2	Concept Development.....	20
3.2.1	Proposed Design.....	20
3.3	Identifying Customer Needs	22
3.4	Product Specification	24
3.5	List of Metrics	26
3.6	Product Concept.....	30
3.7	Concept Screening	33
3.8	Concept Scoring	37
3.9	Set Final Specifications	39
4.0	RESULT & DISCUSSION.....	41
4.1	Detail Design.....	41
4.2	Design Analysis	49
4.3	Material & Process Selection.....	61
4.4	Estimating the Cost of Components.....	71
4.5	Detail Drawing.....	73
4.6	Bill of Materials	74
4.7	Schematic Diagram	76
4.8	Product's Design Specification	78

5.0	CONCLUSION.....	81
	RECOMMENDATION	83
	REFERENCES.....	84

LIST OF TABLES

TABLE NO.	TITLE	PAGE
Table 3.1	Customer statement and interpreted needs	23
Table 3.2	Customer need for curry puff making machine and their relative importance	25
Table 3.3	List of metrics for curry puff making machine	27
Table 3.4	The needs-metrics matrix.	28
Table 3.5	Design Screening Matrix	35
Table 3.6	Design Scoring Matrix	38
Table 3.7	Set final specification	40
Table 4.1	Main structure of curry puff making machine.....	42
Table 4.2	Curry puff mould.....	43
Table 4.3	Linear motor	44
Table 4.4	Switch button.....	45
Table 4.5	Emergency switch button	45
Table 4.6	Push button switch.....	46
Table 4.7	Motor and motor drive.....	47
Table 4.8	Controller or frequency inverter	48
Table 4.9	L angle bracket	62
Table 4.10	Clamp plate.....	63
Table 4.11	Side Plate 1	64

Table 4.12	Side Plate 2	65
Table 4.13	Mounting Plate	66
Table 4.14	Front panel support.....	67
Table 4.15	Side panel	68
Table 4.16	Shaft.....	68
Table 4.17	Slide mounting plate.....	69
Table 4.18	Shim plate.....	70
Table 4.19	Bill of Material for curry puff machine	74
Table 4.20	Product Design Specification for Curry Puff Machine	79

LIST OF FIGURES

Figure 1.1	Overview of a typical curry puff making process	4
Figure 2.1	Basic methodology of curry puff making.....	7
Figure 2.2	Manual process of curry puff making	8
Figure 2.3	(a) Continuous dough feeder (b) Dough extruding feeder	13
Figure 2.4	(a) Apparatus for producing corrugated pasta sheet (b) Dumpling making machine.....	14
Figure 3.1	Project methodology of design and development of curry puff making machine.....	16
Figure 3.2	Schedule plan for project 1	18
Figure 3.3	Schedule plan for project 2.....	19
Figure 3.4	Flow of curry puff making machine processes.....	21
Figure 4.1	Stress analysis.....	52
Figure 4.2	Displacement analysis	53
Figure 4.3	L Angle-Study 1-Stress-Stress1	56
Figure 4.4	L Angle-Study 1-Displacement-Displacement1.....	56
Figure 4.5	Slide mounting plate -Study 1-Stress-Stress1	60
Figure 4.6	Slide mounting plate-Study 1-Displacement-Displacement1	60
Figure 4.7	Schematic diagram of curry puff making machine	77

LIST OF ABBREVIATIONS

ABS	Acrylonitrile butadiene styrene
BOM	Bill of material
FEA	Finite Element Analysis
PDS	Product Design Specification
PBT	Polybutylene Terephthalate
SMI	Small and medium industry

LIST OF APPENDICES

APPENDIX	TITTLE	PAGE
A-1	Linear Guide	87
A-2	Hexagon socket head cap screw	88
A-3	Stainless steel socket head cap screw	89
	Parallel keys	
A-4	Flanged nuts	90
	Hexagon socket flat head cap screw	
A-5	Spur gear : Pressure Angle 20° Module 0.8	91
	Screw plug	
A-6	Screw plug	92
A-7	Stepping motor	93
A-8	Driver dimension	94
A-9	Controller	95
A-10	Rack gears: Pressure Angle 20° L Dimension	96
	Fixed/L Dimension Specified Type	
B-1	Curry Puff Machine Assembly Drawing	97
B-2	Curry puff mould drawing	98

APPENDIX	TITTLE	PAGE
B-3	L angle bracket	99
B-4	Clamp plate	100
B-5	Bar clamp 1 & 2 Shaft	101
B-6	Side plate 1	102
B-7	Mounting plate	103
B-8	Front panel	104
B-9	Front panel support	105
B-10	Shim plate	106
B-11	Side mounting plate	107