



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

“SUSU” MAKER; EXTERIOR DESIGN AND MILK POWDER DISPENSER

This report submitted in accordance with requirement of the Universiti Teknikal Malaysia Melaka (UTeM) for the Bachelor Degree of Manufacturing Engineering (Manufacturing Design) with Honours.

by

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APPROVAL

This report submitted to the Faculty of Manufacturing Engineering of UTeM as a partial fulfillment of the requirements for the degree of Bachelor of Manufacturing Engineering (Manufacturing Design) with Honours. The members of the supervisory committee are as follow:

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ABSTRACT

This report presents the study and design development of a “Susu Maker”. This project is carried out to create a new design a “Susu Maker”. This report includes 6 chapter’s starts with introduction, objective and scopes. Furthermore, this will also elaborate on the problem that happens to user. In chapter 2, it describes about the differences between coffee maker machine and water dispenser machine. Besides, the system use, operation process and the machine equipment will also being discussed. In chapter 3, it describes the process planning with flow chart together with the gantt chart and how the project will be implemented. These projects will be carried out by using methods such as Quality Function Deployment (QFD), concept scoring and rating, and survey and questionnaires. In Chapter 4, it describes about result and analysis from the method, survey and analysis from software. Chapter 5 describes about conclusion this project and lastly describes about recommendation in chapter 6.

ABSTRAK

Laporan ini merujuk kepada pelaksanaan dan merekacipta sebuah mesin pembancuh susu. Projek ini adalah dijalankan untuk membuat satu rekabentuk baru sebuah mesin pembancuh susu. Laporan ini mempunyai 3 bab dan ianya bermula dengan pengenalan, objektif dan skop. Saterusnya, ianya juga menerangkan masalah yang sering berlaku kepada pengguna. Dalam bab 2, ianya merangkan perbezaan di antara mesin pembancuh kopi dan mesin pembahagi air. Selain itu, ianya juga menerangkan mengenai penggunaan sistem, operasi yang dijalankan dan peralatan yang ada pada mesin itu. Dalam bab 3 pula, ianya menerangkan perancangan proses disamping carta aliran dan juga bagaimana projek dilaksanakan. Projek ini dijalankan dengan menggunakan kaedah Quality Function deployment (QFD), kaedah permakahan (Scoring and Rating) dan kaedah kajian soal selidik (Questionnaires). Dalam bab 4, menerangkan mengenai keputusan dan analisa daripada kaedah, kajiselidik dan analisa daripada perisian. Bab 5 ianya menerangkan mengenai kesimpulan projek ini dan yang terakhir menerangkan mengenai cadangan di dalam bab 6.

DEDICATION

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LIST OF ABBREVIATIONS

A	-	Ampere
AC	-	Alternate Current
BD	-	Block Diagram
DC	-	Direct Current
LCD	-	Liquid Crystal Display
LI	-	Lifting Index
PLC	-	Program Logical Control
PP	-	Polypropylene
PS	-	Pressure Sensors
PSM	-	Projek Sarjana Muda
RO	-	Reverse Osmosis
RULA	-	Rapid Upper Limb Assessment
RWL	-	Recommended Weight Limit
SA	-	Sensory Alarm
TEC	-	Thermo-Electric Cooling
V	-	Volt
VB	-	Vacuum Brewers
VCR	-	Vapour Cycle Refrigeration
W	-	Watt

CHAPTER 1

INTRODUCTION

This report describes the design and development project for “Susu Maker”. This chapter explains the project background, problem statement, objectives, scope and project outline.

1.1 Project Background

“Susu Maker” project is invented to solve the problems existing at home when mothers have to spend extra time when making the milk. Usually, in order to prepare milk, the mothers had to mix the hot and cold water with certain amount before accommodating with an appropriate amount of milk powder. As it will be done manually, the time taken will be longer and this can create problem especially if it needs to be done in a hurry.

Thus, “Susu Maker” is needed based on the situation according to the case of reducing time and as a proper handling to the milk-making process. The idea of this “Susu Maker” project will also embed with the function by having 2 water depositories of hot and cold water and also milk powder storage. This product design take ideas from coffee maker and water dispenser machine. Besides, the implemented system according to the water dispenser system that is using equipment such as sensors and heater.

1.2 Problem Statements

Based on the study and research, ‘Susu Maker’ is hard to make by using human energy. Below are the problem statements for the development of “Susu Maker”:

1.2.1 List of the Problem Statement

- i. Difficult to bring to anywhere
- ii. Use more energy to make
- iii. Too many things
- iv. Difficult to for maintenances
- v. Easy to broken

1.2.2 List of the Problem Solving

- i. Material used has along life time product
- ii. Used suitable material to make the product light.
- iii. Easy to bring.
- iv. Useful product.

1.3 Objective of Project

Project objectives are very important as a guideline to the aims of the product purpose. It based on the problem statement that occurs to find the better solution of the problems. Below are the objectives for the development of “Susu Maker”:

- i. To design product- easy for maintenance
- ii. To design product that is easy to use and portable
- iii. To reduce energy and time when making a milk

1.4 Scope of Project

The scope of this project will cover the method and theory review, mainly on function and condition aspects. Below are the scope projects for the development of “Susu Maker”:

- i. Literature review to find the best example for “Susu maker” project.
- ii. To study the methodology used to design a “Susu Maker”
- iii. To study and source for the parts or component that need to be used
- iv. To design a "Susu Maker" is used for children 13 years and above and only using milk powder.
- v. To design a “Susu Maker” semi-automatic machine.

1.5 Project Outline

Chapter 1 describes the introduction of the project, problem statement, objective and scope of the study. Problem statement is necessary to produce the ‘Susu Maker’.

Chapter 2 explains literature review related to the study which includes description on comparison in conceptual design, material and some useful information that relates with the study.

Chapter 3 defines the methodology in designing of “Susu Maker” and brief explanation of each process.

Chapter 4 describes the results and analysis obtained in this project.

Chapter 5 describes the discussion of “Susu Maker” project and brief explanation of each process, method and part design.

Chapter 6 is a conclusion of “Susu Maker” project.

1.6 Flow Process of the Project

The research process flow charts have been built to describe the plan of the study. The flow chart (see Figure 1.1) is the general flow chart for the whole project. All the activities made up the whole project report are shown in this flow chart.

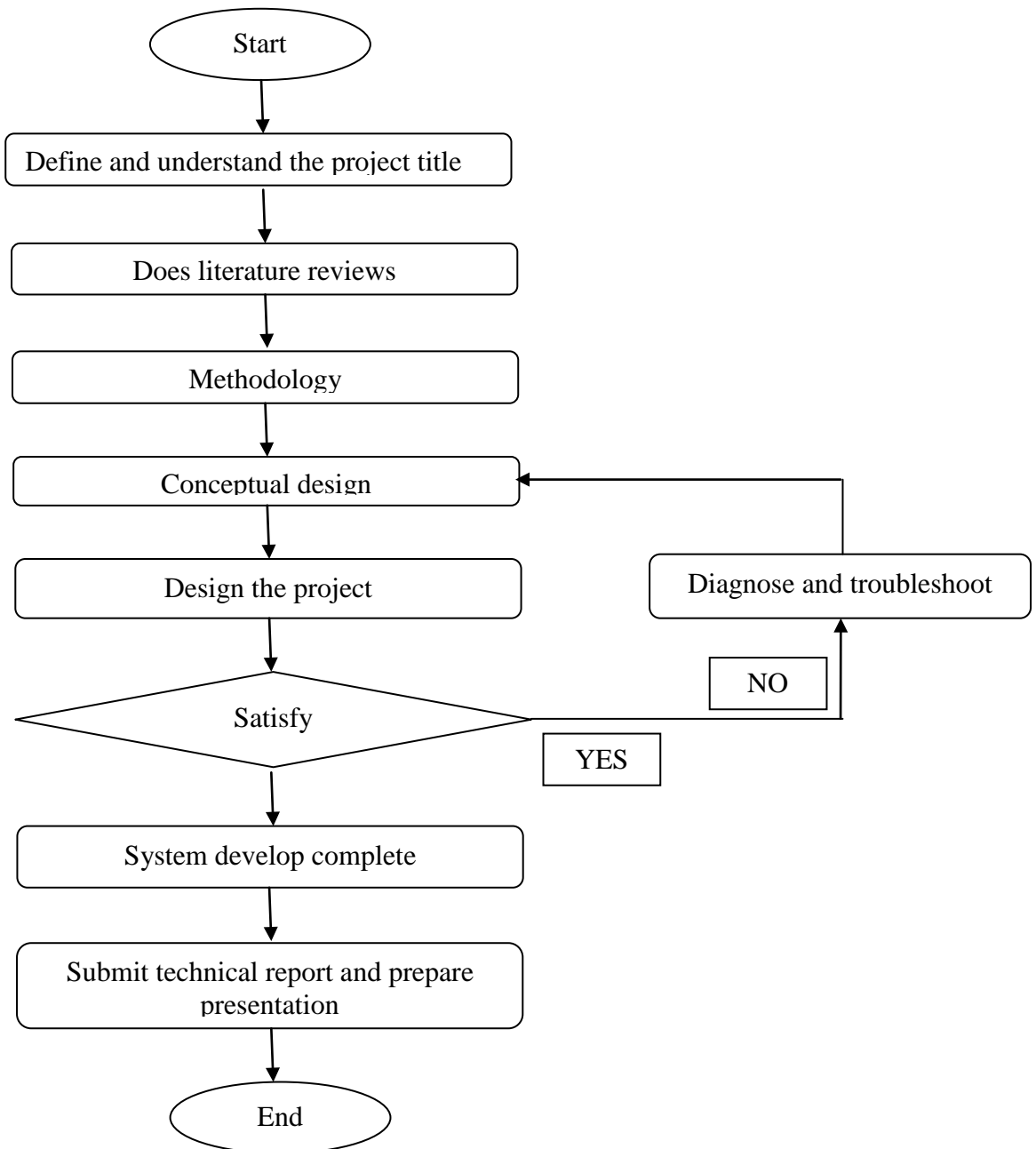


Figure 1.1: Process Flow of the project

CHAPTER 2

LITERATURE REVIEW

Basically this chapter will reveal the knowledge pertaining this field of project in which is gained through a lot of resources such as reference book, papers, journal, articles, conferences articles and documentations regarding applications and research work.

This shows how the theory and the concept have been implemented in order to solve project problem. The theory understanding is crucial as guidance to start any project. The result of the project cannot be assessed if it's not compared to the theory.

2.1 Comparison

2.1.1 Coffee Maker

Edward Bramah (see Figure 2.1) began his career in tea in 1950 on a tea plantation in Malawi. He was trained as a tea taster, but sensing that coffee was due for a revival, he left for Kenya and Tanzania to work for a coffee brokerage company.

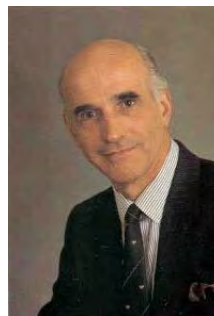


Figure 2.1: Edward Bramah [1]

In 1968 he started designing coffee machines and in 1975 started the Coffilta Coffee Machine Company. In recent years he has designed and introduced the automatic filter machine bearing the same name.

When Edward Bramah assembled his comprehensive collection of coffee makers and machines, he discovered that published material on their origin and identity was non-existent. Years of painstaking research have uncovered a wealth of information not only on the many enchanting pots, devices and machines which can be found, unrecognized in the corners of antique shops, but also the gallery of craftsmen and eccentrics who invented them.

His wife, Joan, has collaborated with him in creating COFFEE MAKERS. "She once worked in a television company", he says, "and while I understand coffee making, she is better with words. Without her, this book would certainly never have been written".



Figure 2.2: Classical Coffee Maker

Coffee maker are machines to facilitate the user to make coffee. This machine is divided into 3 control system that is controlled automatically, semi-automatic and manually.[1]