

UNIVERSITI TEKNOLOGI MARA

**DESIGN AND FABRICATION OF
SOLAR BOX COOKER**

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ABSTRACT

Mechanical engineering students in semester 5 were tasked with developing a product that helps in the solving of a common problem. The fundamental concept is to solve a widespread problem, which is using clean, renewable, and readily available solar energy as fuel. The goal of this project is to design and build a working solar cooker and apply thermal energy storage. The proposal outlines the primary phases in manufacturing a product, which include doing research, conducting a literature study, creating a concept design to be visualised in 3D rendering software, and fabricating the product. As a consequence of the completion of this proposal, the ability to build a good proposal for manufacturing an engineering design should improve, which will help in the future professional environment of the engineering world.

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TABLE OF CONTENTS

	Page
CONFIRMATION BY SUPERVISOR	ii
AUTHOR'S DECLARATION	iii
ABSTRACT	iv
ACKNOWLEDGEMENT	v
TABLE OF CONTENTS	vi
LIST OF TABLES	viii
LIST OF FIGURES	ix
LIST OF ABBREVIATIONS	x
CHAPTER ONE : INTRODUCTION	1
1.1 Background of Study	1
1.2 Problem Statement	2
1.3 Objectives	2
1.4 Scope of Work	3
1.5 Significance of Study	3
CHAPTER TWO : LITERATURE REVIEW	4
2.1 Introduction	4
2.2 History and Patents of Solar Box Cooker	4
2.3 Product Design Specification	6
CHAPTER THREE : METHODOLOGY	7
3.1 Concept Design	7
3.2 Concept Design Sketch	9
3.2.1 Pugh chart	12
3.3 Selected and finalized design	15
3.4 Engineering calculation	18
3.5 Engineering analysis	20
3.6 Cost Calculation	22

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

A solar box cooker is a device that cooks food using solar energy. Pasteurization and sterilisation are two important processes that solar cookers enable. There are many different types of solar cookers in the world, and researchers and manufacturers are constantly improving them. As a result, classifying solar cookers is a difficult task. However, the majority of solar cookers nowadays may be divided into three categories: solar panel cookers, solar box cookers, and solar parabolic cookers [1].

A solar box oven, sometimes known as a solar box cooker, is a device that runs on sunlight. They do not even require any fuel and are completely able to operate. Solar cookers are a type of outdoor cooking that are commonly used in situations when saving fuel is necessary or the fire risk is high [2]. Common solar cookers simply rely on solar radiation, which is an unstable variable due to the effects of unpredictable weather, keeping the oven from operating always at ideal. To solve this problem, a solar box cooker with thermal energy storage will be developed, with the idea that it would be able to maintain heat distribution in the box cooker even if radiation from the sun falls suddenly.

It is also shared the same target with other inventors to bring more other convenience for the seller. In order to create solar box with a bigger quantity, there are several difficulties that the seller had to face. Certain differences on the variety of their design as well as its functionality, we will go through into details about the fabrication and improvement of solar box cooker including the planning and analysis performance from the collected data.