

**UNIVERSITI TEKNOLOGI MARA**

**DESIGN, ANALYSIS AND  
FABRICATION OF MINI  
PORTABLE KETTLE**

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## **ABSTRACT**

Portable kettle is one of the new developed product according to the home appliances requirements and market demand today. The availability of smart appliances enables detecting and characterizing appliance use in a household, quantifying the energy savings through efficient appliance use. However, since a majority households use the electric kettle inefficiently by overfilling, in order to meet energy targets, it is imperative to quantify inefficient usage and predict demand. Water is an essential supply. So, people nowadays started to implement some activities such as camping, picnic, hiking. This portable kettle will also benefit for those who have a family and even for those who are stuck in jammed. This mini portable kettle that is powered by a portable power supply may be useful depending on the situation and time especially when to get a hot water supply. This project intends to design, analysis and fabricate a mini portable kettle that consumes less power and time than the electric kettle.

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# TABLE OF CONTENTS

|   | <b>Page</b> |
|---|-------------|
| <b>CONFIRMATION BY SUPERVISOR</b>                           | <b>ii</b>   |
| <b>AUTHOR'S DECLARATION</b>                                 | <b>iii</b>  |
| <b>ABSTRACT</b>   | <b>iv</b>   |
| <b>ACKNOWLEDGEMENT</b>                                      | <b>v</b>    |
| <b>TABLE OF CONTENTS</b>                                    | <b>vi</b>   |
| <b>LIST OF TABLES</b>                                       | <b>ix</b>   |
| <b>LIST OF FIGURES</b>                                      | <b>x</b>    |
| <b>LIST OF ABBREVIATIONS</b>                                | <b>xii</b>  |
| <br>  |             |
| <b>CHAPTER ONE : INTRODUCTION</b>                           | <b>1</b>    |
| 1.1 Overview/Background of Study                            | 1           |
| 1.2 Problem Statement                                       | 1           |
| 1.3 Objectives  | 2           |
| 1.4 Scope of Project  | 2           |
| 1.5 Significance of the Project                             | 3           |
| 1.6 Expected Result   | 3           |
| <br>  |             |
| <b>CHAPTER TWO : LITERATURE REVIEW</b>                      | <b>4</b>    |
| 2.1 Information on existing products, patents and standards | 4           |
| 2.1.1 Kettle  | 4           |
| 2.1.2 Electric kettle                                       | 5           |
| 2.1.3 Thermos   | 5           |
| 2.1.4 GK320 Travel Foldable Electric Kettle                 | 6           |
| 2.1.5 Makita Cordless Coffee Maker                          | 6           |
| 2.1.6 Portable Solar Cooker Sun Kettle                      | 7           |
| 2.2 Survey from respondents about the project               | 7           |
| 2.3 Product design specification based on literature review | 13          |
| 2.3.1 Function  | 13          |
| 2.3.2 Material  | 13          |
| 2.3.3 Performance   | 14          |

# CHAPTER ONE

## INTRODUCTION

### 1.1 Overview/Background of the Project

Nowadays era is very advanced with IR 4.0 which it make more people want everything going efficiently and intelligently. An electric kettle is an electrical appliance, that has a self contained heating unit for heating water and automatically switches off when the water reaches boiling point. It is different to the stove top kettle, which is less energy efficient and takes longer to boil the same volume of water as the electric kettle [1].

Kettle are among the simplest of household appliances [2] and has the highest wattage and requires the highest current when switched on. At the very bottom of the water container, there are a coil of thick metal called as the heating element [2]. When the plug of the kettle is installed into an electric outlet, a large electric current will flows into the heating element and getting hot.

An enclosed kettle is usually much faster because it can stops heat from escaping which allows the pressure to rise faster due to the water boils. It is because saturated vapor pressure equals to the atmospheric pressure and it helps the water to boil more quickly [2]. Therefore, this project aims to get the water supply in a portable way that does not need electricity.

### 1.2 Problem Statement

Water is the most importance of life on earth. Humans, plants and animals need a lot of water to survive [3]. Water is the main source of drinking because without water, all living things would die and humans use water to live in their daily lives. For example, for cooking, bathing and so on. Without water, all human life will be affected and there will be chaos to get the water.

Water supply should be available in the cleanest way that does not contain any germs. Safe and readily available water is important for public health, whether it is used for drinking, domestic use, food production or recreational purposes. Improved water supply and sanitation and and better management of water resources, can boost