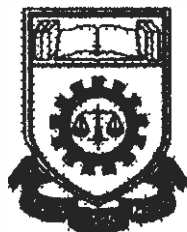


**RESEARCH AND INVESTIGATION
ON GENERAL PURPOSE INDUCTION HEATER**

**This is presented in partial fulfilment for the award of the
Advanced Diploma in Electrical Engineering of
INSTITUT TEKNOLOGI MARA**



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JUNE 1995**

ACKNOWLEDGEMENT

I would like to convey my sincere thanks to the following persons involved either directly or indirectly in this project;

- 1) Dr. Nabil Mahmoud Abdul Kadir, my project advisor who has been very patient in supervising, guiding, and encouraging me throughout the whole duration of the project.
- 2) En. Ahmad Maliki Bin Omar, who has given information and helping me to understand my work.
- 3) Dr.Syed Abdul Kadir Al-Junid, who has kindly spent time correcting me and giving me confidence throughout the whole duration of my studies.
- 4) En.Abdul Malik, a student from the school of Art and Design who has scarificed his precious time in helping me design the proposed future induction rice cooker.
- 5) En.Hamdani Hassan and my coursemates in sharing their thoughts and contribution in the understanding of this project.

I would also like to express my gratitude to my husband and children for their caring and support.

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ABSTRACT

Basically, this project involves in the study of the technology used in general induction cookers and to modify it into a purposed-built rice cooker. The general cooker that was understudied is the Cimatron type CM 168 cheerful cooker made in Taiwan. With the development of a suitable low cost power inverter, induction heaters look to become widely used for domestic cooking. It has many advantages over current cooking devices. It is safe, efficient, clean with fast response and able to provide very cheap closed loop control pan temperature. Induction heaters usually use coils instead of the heaters as in conventional rice cookers. The result for this is lower consumption of power for the former when compared to the latter. It is therefore economical. This thesis has contributed to an understanding of the working of the commercially produced induction cooker in order to succeed in designing a prototype for an induction cooker.

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1.0 Introduction

In a standard electric or gas cooking range, a significant amount of heat escapes to the surroundings, thus resulting in poor thermal efficiency. This can be avoided by means of induction cooking. Induction heaters can heat metal cooking vessel directly due to eddy current loss. The high frequency current in an exciting coil produces a varying magnetic field. The alternating magnetic field causes eddy currents to flow in its iron base which heat up the pan as shown in figure 1. The advancement in power electronics caused the high frequency power source to be cheap and of small size. The induction frequency is selected based on the application. A low frequency such as the utility frequency (50 Hz in Malaysia) may be used for induction melting of large workpieces. High frequencies of up to a few hundred kilohertz are used for forging, soldering, hardening, and annealing.

A good induction heating power source must provide the following facilities:

- a) Low cost and high output power.
- b) Very high efficiency to minimise both size and cost of the cooking equipment.
- c) Wide range of power control without much change in the operating frequency.
- d) Capability to run under a wide range of loading conditions.
- e) Very low levels of harmonic currents drawn from the main supply.
- f) Low levels of RFI.