COLD ROOM DESIGN

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A thesis submitted in partial fulfillment of the requirement for the awards of Bachelor Engineering (Hons.) in Mechanical

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OCTOBER 2004

ACKNOWLEDGEMENT

In the name of Allah Most Benevolent and Most Merciful

Praise to Allah S.W.T we have completed this project. I am grateful to many individuals for their assistance in the completion of this project.

Firstly, I would like to convey my utmost sincere appreciation to my project advisor, P.M. Ir Hj Mohd Shif Bin Ismail for being very supportive and for his guidance, advice, comment, assistance and patience upon the completion of this project.

Many thanks to, an outsider from MARDI (Malaysian Agriculture Research And Development Institute) and FAMA (Federal Agriculture Marketing Authority of Malaysia) of giving some guideline and allowed me visiting their cold room. I'm also very gratefully acknowledged to Dr Mohd Salleh Punan and Mr.Amir Hamzah Mohd Ali of their guidance on how the cold room that really meaning full and operated including its function to control the temperature for agriculture application. It could not have been done without the help and assistance of them.

My remarkable thankfulness to many people especially to my family and classmates for their support. To those who had given their cooperation directly or indirectly to the successfulness of this project, I to thank you for all your help.

October 2004 Rashdan bin Awang@Abdullah

ABSTRACT

In this thesis, chapter 1 addresses the introduction to the project. It deals with the energy efficiency and energy analysis. Apart from that, the objectives of this project are described as well as the scope of project. Chapter 2 includes the methodology of the project. Chapter 3 introduces the important of proper storage in order to maintain the freshness of product. The theory of refrigeration cycle is presented in chapter 4. All the theories are based on the thermodynamics and heat transfer point of view. Chapter 5 and will describe the refrigeration load calculation. Chapter 6, 7 and 8 will describe three major parts in basic refrigeration cycle which is evaporator, compressor and condenser respectively. The reason of selecting the Ammonia as working fluid in this thesis will explain in chapter 9. The analysis of existing cold room in FAMA is described in chapter 10. The discussion, conclusion and recommendation are imparted in chapter 11, 12 and 13 respectively.

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

1.0 Introduction

Industrial refrigeration systems can be found in applications ranging from ice making to food processing and preservation to industrial chemical processes. These systems typically consist of many different components; each component may be produced by a different manufacturer. Often times, the optimum control of an individual piece of equipment results in sub-optimal system performance due to unforeseen interactions between the different system components. It is important to identify and monitor key parameters of the system, such as power consumption, room temperature and cooling load capacity, in order to optimize the performance.

Cold room or cold storage is the most common application of refrigeration. One of the applications is for the food preservation in order to maintain it freshness. The conditions that maintained inside the storage space depends on the nature of the product stored. Here the strict control of temperature is required where temperature is the factor for maintaining the storage life. Any small changes of temperatures will destroy the quality of food especially fruit. Other factors such as processing methods, packing material and