

UNIVERSITI TEKNOLOGI MARA

**HEAT TRANSFER ANALYSIS OF
DIFFERENT COOLING MEDIUM ON
A CONDENSER OF
REFRIGERATION SYSTEM**

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ABSTRACT

A condenser is a cooling device that induces condensation to high-pressure refrigerants by ventilating the heat of the high-temperature refrigerant while maintaining its pressure. The application of the cooling medium in it is crucial as it will result in the effectiveness of the condenser. Coolant fluid is one of the most functional cooling mediums to be used. This research is an analysis performed to improve the heat transfer features and cooling rates of the device including coolants, the same coolant with two different concentrations, and mass flow rates. The working fluids used are water as Coolant A and Deions Premixed Long-Life Coolant a usual coolant commonly found in the auto car care market. Several modifications have been made on the Deions coolant, which is regarding its concentration and mass flow rate. There are two concentrations of the coolant, Coolant B with 10% and C with 12.5%, and its mass flow rate ranging from 0.5 l/s to 4.0 l/s. The initial temperature of each coolant at the inlet is constant at 26°C. During the experiments, each coolant flows in the piping system, passing through the condenser that carries out the dissipation of the unwanted heat before flowing out of the pipe. Both temperatures of the coolant before and after passing through the condenser were measured with the thermocouple provided. Based on the findings of the study, the Deions Premixed Long-Life Coolant with a higher concentration and mass flow rates is the expected coolant to be the most effective compared to the others. Hence, the objectives of this study were able to be fulfilled successfully.

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	3
1.4 Scope of Work	3
1.5 Significance of Study	4
CHAPTER TWO: LITERATURE REVIEW	5
2.1 Thermodynamics	5
2.1.1 Refrigeration System	6
2.2 Condenser	7
2.2.1 Type of Condensers	7
2.2.2 Cooling Medium	9
2.3 Performance Analysis of the Condenser	10
2.3.1 Different Types of the Coolant	11
2.3.2 Concentration of the Coolant	11
2.3.3 Mass Flow Rate of the Coolant	12
2.4 Conclusion	13

CHAPTER THREE: METHODOLOGY	15
3.1 Introduction	15
3.2 Experimental Details and Designs	15
3.3 Samples Preparations and Modifications	18
3.4 Data Collection Method and Management	20
3.4.1 Literature review	21
3.4.2 Preparation of samples	21
3.4.3 Choosing the parameters for the experiments	21
3.4.4 Running the experiments	21
3.4.5 Data collection and analysis	23
3.4.6 Discussion and conclusions	25
3.5 Gantt Chart	25
CHAPTER FOUR: RESULTS AND DISCUSSION	28
4.1 Introduction	28
4.2 Analysis of Data and Results	28
CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS	35
5.1 Conclusions	35
5.2 Recommendations	35
REFERENCES	36
APPENDICES	39