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Application of the Heat Pump for Year Round Air Conditioning

Ronald R. Bowman

Indiana University - Purdue University Fort Wayne

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REPORT ON

APPLICATION OF THE HEAT PUMP FOR YEAR ROUND AIR CONDITIONING

DATE: April 28, 1972

BY: Ronald R. Bowman, Mechanical Engineering Technology student

APPROVED BY: Assistant Professor C. J. Quinn

COURSE: Mechanical Engineering Technology, MET 497, Senior Design

TABLE OF CONTENTS

I.	Letter of Transmittal	ii
II.	Table of Contents	iii
III.	Abstract	iv
IV.	Body	1
	A. History and background of the heat pump system	1
	B. The theoretical heat pump cycle	3
	C. The design project undertaken	6
	1. Size of the heat pump	7
	2. Water or air sink - source	9
	3. The type of refrigerant	11
	4. A compressor to do the job	16
	5. Selecting the evaporator and condenser	18
	a. The refrigerant-to-water coil	19
	b. The refrigerant-to-air coil	20
	6. The forced air blower system	22
	7. The refrigerant drier	23
	8. The heat pump piping	24
	9. The thermostat controlling device	25
	D. The combining of individual components	26
V.	Conclusions	27
VI.	Appendix A - List of References	31
VII.	Appendix B - Figures	32
VIII.	Appendix C - Calculations	42
IX.	Appendix D - Advantages of the heat pump	48

ABSTRACT

The heat pump is a heating and cooling system that could be quite valuable. This machine has the capacity to replace all residential heating systems with a very efficient, small, package heating and cooling unit. The fuel shortages are gently pressing the energy situation and tremendous expenditures are being invested to help alleviate a possible energy crisis.

The heat pump is a product of theoretical thermodynamics that has been around for some 200 years. Not until the last thirty years has the heat pump been considered as a method for reliable heating and cooling.

The project was undertaken to design the components to make up a complete residential heating and cooling unit. The project began with an estimation of 84,000 Btu/hr cool load. A value of 40% of this cool load was taken as the heat load.

Water was selected as the sink - source and R-22 was selected as the refrigerant. Other components: the compressor, the heat exchange equipment, and the fan blower system was then designed. Next the drier and piping was chosen. The thermostat controls concluded the design of this heat pump system.

The conclusions explain how the system will next receive a complete cost analysis and then a redesign to lower the high costs. A layout will then be made if the project to that time still remains both physically and economically feasible.