DESIGN OF A HEAT PUMP SYSTEM FOR WATER HEATING

Project submitted by: CONSTANTINOU ELIAS

in part satisfaction of the award of Diploma of Technician Engineer in Mechanical Engineering of the Higher Technical Institute, Cyprus.

Project supervisor:

M. Pattichis, Senior Lecturer in Mechanical Engineering Department of HTI.

External assessor:

A.Agapiou, Managing Director of CONTRAD ENGINEERING CO LTD.

Type of project:

Individual

Group

June 1989

PROJECT NO. HIGHER TECHNICAL 1519 INSTITUTE

## <u>SUMMARY</u>

ŝ

The object of this project is to examine the possibility of using a heat pump system for domestic water heating.

First of all the theory and principles of the Heat Pump.

Basic about the operation and components of the Heat Pump system are given below and also the Heat Pump applications.

Then some other methods for domestic water heating are mentioned.

Furthermore, after calculations, the components of a Heat Pump system which is able to heat water for domestic use are selected.

Cost analysis help the comparison between the Heat Pump and a unit used in ourdays, which uses the same source of energy. The Electric Water Heater.

Comments are done on the findings and the more economic system is suggested.

## CONTENTS.

	PAGE.
INTRODUCTION	l
A BSTRA CT	3
CHAPTER 1. THERMODYNAMIC PRINCIPLES OF HEAT PUMPS	4
CHAPTER 2. APPLICATIONS OF HEAT PUMP SYSTEMS	9
<u>CHAPTER 3.</u> ALTERNATIVE METHODS FOR DOMESTIC WATER HEATING.	38
CHAPTER 4. SELECTION OF THE COMPONENTS REQUIRED FOR A HEAT PUMP IN ORDER TO BE ABLE TO HEAT WATER FOR DOMESTIC USE.	48
<u>CHAPTER 5.</u> COST ANALYSIS.	• 83