

H.T.I.
MECHANICAL ENGINEERING COURSE

DIPLOMA PROJECT

**DESIGN OF A CENTRAL HEATING AND
HOT WATER SUPPLY SYSTEM FOR A SCHOOL**

M/679

ZACHARIAS PAPAZACHARIOU

JUNE 1994

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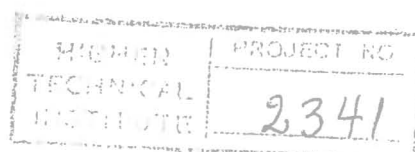
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by

ZACHARIAS PAPAZACHARIOU

PROJECT REPORT

SUBMITTED TO

**THE DEPARTMENT OF MECHANICAL ENGINEERING
OF THE HIGHER TECHNICAL INSTITUTE**

NICOSIA CYPRUS

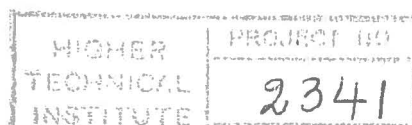
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**FOR THE DIPLOMA OF
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IN

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This project is dedicated to my parents
who have offered me so much

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SUMMARY

The purpose of this project is to design a central heating and hot water supply system, for a school consisting of four sections. The three sections consist of two floors and the other one, another floor.

The name of the school is "10th Primary School of Paphos" and is located in Paphos. The architectural drawings have been supplied by the mechanical department of the Ministry of Education.

Basically this project is divided into six chapters. The first chapter is about the estimation of the heat requirements of the school, the second chapter involves the system of the space heating, whereas the third chapter describes the system for the hot water supply services.

Furthermore, the fourth chapter includes the sizing of the plant equipments, and the fifth involves their selection from various catalogues and other technical specification of the plant equipments.

Finally in the last chapter, chapter six, the cost analysis of the whole design is described.

PAPAZACHARIOU ZACHARIAS

DESIGN OF A CENTRAL HEATING
AND HOT WATER SUPPLY FOR A SCHOOL

INTRODUCTION

The control of indoor climate is an important industry in Cyprus and throughout the world generally. Only in a few favored areas of the earth's temperate zones can people live comfortably and work effectively the year round without some form of winter heating.

The science and practice of creating a controlled climate, that is, conditions that are conducive to human comfort is called air condition. The term air conditioning is sometimes misunderstood or misused. Often only cooling is implied when air conditioning is mentioned. However in practice to provide complete air conditioning a system must accomplish all the following: HEATING, HUMIDIFICATION, DEHUMIDIFICATION, COOLING, VENTILATION, FILTERING, and CIRCULATION.

The heating system to be designed in this project should create thermal comfort conditions at the internal space for all classes and offices. To achieve this, the heat requirements of all rooms must be determined so as to be able to select the appropriate equipment that will satisfy these requirements.

The system chosen to be used in this project is the central heating. This system will required a boiler and a burner that will consume gas oil fuel in order to heat up the water.

Two plantrooms used in this project because of the large distance between the four sections. The one plantroom is used for section B & C and the other for the section A & D.

The heat emmiting units will be radiators placed at each space to be heated, and they will be connected with the boiler by means of pipes, of different diameters.

The other system which is to be designed is the hot water supply for there are rooms which need hot water (canteen, private sanatorium and class of catering).

There are two methods for hot water supply, the central and the local method. In this project because there are only few points which need hot water supply, the second method (local) is used.