

Higher Technical Institute
MECHANICAL ENGINEERING COURSE
DIPLOMA PROJECT

DESIGN OF A CENTRAL HEATING AND
HOT WATER SUPPLY SYSTEM
FOR A BUILDING

By
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M/317

JUNE 1998

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HIGHER TECHNICAL INSTITUTE	PROJECT NO. 2903
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DESIGN OF A CENTRAL HEATING
HOT WATER SUPPLY SYSTEM
FOR A BUILDING

Project Report
submitted to

the Department of Mechanical Engineering
of the Higher Technical Institute

Nicosia Cyprus

in partial fulfillment of the requirement for the diploma of

TECHNICIAN ENGINEER

in

MECHANICAL ENGINEERING

Design by

YIAPATOS TASOS

JUNE 1998

This project is dedicated to my parents
who have offered me so much
and to my
ever memorable friend
LOIZOS KALLENOS

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ACKNOWLEDGEMENTS

I would like to express my appreciation to my project supervisor, Mr Th. Symeou, for his valuable assistance and guidance in executing this project.

Tasos Yiapatos
3rd year Mechanical

SUMMARY

The objective of this project is to design a Central heating and Hot water supply system for a building consisting of four floors.

The architectural drawings have supplied by J +A Philipou, the architect and civil engineering.

It must be mentioned that each floor consist of three flats. The ground floor consists of two shops and the parking place for the owners.

The whole work is devided in to six Chapters.

The first chapter is about the estimation of the heat requirement of the building.

The second chapter is about the system of space heating as the third is about the pipe sizing and arrangement of the pipes for central hating system.

Fourth chapter involves the hot and cold water supply system and the fifth involves the sizing and selection from various catalogues the equipment which are going to be used in this project.

Finally, the sixth chapter includes the cost analysis which is made for the whole design.

INTRODUCTION

The principal objective of the environmental engineer designing the services of an occupied space should be to enable the occupant of that space to pursue their normal activities in comfort.

In any subjective assessment of the whole environment, thermal, acoustic and visual actors all play a part.

So the purpose of a heating system is to produce and maintain comfortable conditions in the space concerned when the outside temperature has dropped below the comfort level.

In this project the heating system which is designed should create excellent thermal comfort conditions at the internal space of all flats and shops. To achieve this, a lot of factors should be taken into consideration, like:

- (1) The building construction - optimum wall thickness materials used.
- (2) Inside and outside temperatures
- (3) Building exposure (sheltered, normal severe)
- (4) Air changes, (infiltration losses)
- (5) Orientation etc

By an accurate calculation of all heat losses and also by selecting the most appropriate equipments the design will succeed.

The space heating (in this project) is selected to be achieved by central system with common heat source. (central heating system).

Central heating system which results from the combination of a boiler and burner, is circulated through a system of pipes and heat emitting appliances, thus heating the space where an appliance is present. Also the system is consisted of fittings, elbows, valves, unions, manifolds expansion fan, water circulators and etc. All these are cased, equipment and they are form a central heating system.

In addition to the above system, a hot water supply system will be introduced

Finally a good designer is the one who:

- (1) Design a system which is able to maintain the desired internal consitions
- (2) Manage to reduce the total cost as low as possible

To achieve these two Basic requirements, the major factor in the design of the system should be the conservation of energy.