HIGHER TECHNICAL INSTITUTE

MECHANICAL ENGINEERING DEPARTMENT

DIPLOMA PROJECT

DESIGN OF AN AIR CONDITIONING SYSTEM FOR A BLOCK OF OFFICES

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DESIGN OF AN AIR CONDITIONING SYSTEM FOR A BLOCK OF OFFICES

by

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Project Report

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Finally I would like to thank MRS ANNA MARIA PAVLOU Mechanical Engineer, for the advise and information she offered me for the selection of the system and information concerning the whole project.

This project is dedicated
to my parents

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POCKET WITH DRAWINGS

GROUND FLOOR - Air Conditioning System and Piping Layout

FIRST FLOOR - Air Conditioning System and Piping Layout

SECOND FLOOR - Air Conditioning System and Piping Layout

GROUND FLOOR - Duct layout

FIRST FLOOR - Duct Layout

SECOND FLOOR - Duct Layout

ROOF PLANT - Schematic circuit for Piping

SUMMARY

The aim of this project is to design An Air Conditioning System for a Block of Offices. The building chosen is the CYTA ACROPOLIS building in Nicosia.

Architectural drawing for the building were provided Design Conditions were supplied, while ambient condition were based on data collected from the Meteorological Service.

Energy conservation considered as a major factor in the design of the System.

The thermal load of the building for heating and cooling were calculated using the "CARRIER" program.

A complete set of detailed mechanical drawings is being provided in which the location of all air conditioning equipment including pipe sizing, duct sizing and controls, are illustrated.

INTRODUCTION

Air conditioning has its beginnings with mechanical refrigeration in the late 1900's, but entered customer acceptance about 20 years ago and nowadays is undoubtedly a customer demand.

Nowadays the word "COMFORT" is very much favoured in everybody's talk.

When dealing with comfort conditions we mean a specific temperature, humidity, velocity and cleaningness of air in a space that it is of our interest and we require the above parameters to be at a certain level. Comfort conditions can be achieved with a complete Air-Conditioning System.

Air Conditioning Systems can be classified as:

a. Comfort air conditioning systems
b. Industrial air conditioning systems

A second classification of Air Conditioning System is with respect to the season of the year. These are:

a. Winter air conditioning systems
b. Summer air conditioning systems
c. Year round air conditioning systems

A third classification exists with respect to equipment

arrangement:

a. Central station systems
b. Unitary systems
c. Combination systems

The aim of this project is to design an Air Conditioning System for block of offices to achieve prespecified comfort conditions by taking into consideration safety, reliability, efficiency and cost limitations. Also energy conservation is to be considered as a major factor in the design of the system.

With reference to the above systems classification and specific factors that must be taken into consideration, the following system was selected:

a. With reference to the first classification comfort air conditioning system was selected.
b According to the second classification a year round air conditioning system was chosen.
c. For the third classification unitary system was selected. The system selected is the new VRV (Variable Refrigerator Volume) system and an Air Handling Unit with DX coil to complete the system of the building.