

DESIGN OF AN AIR CONDITION SYSTEM

FOR A BUILDING

by

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Project Report

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**This project is dedicated
to my parents and especially
to my aunt Androulla Matzila**

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SUMMARY

The aim of this project is to design an Air Conditioning System for a building. The building chosen is a shopping center in Nicosia.

Architectural drawings of the building were provided. Design conditions were supplied while, ambient conditions were based on data collected from the Meteorological Services.

Energy conservation and noise level were considered as major factors in the design of the system. The thermal load of the building for heating and cooling were calculated using the "CARRIER" program.

The project is divided in three parts. Part A deals with the calculation of the cooling and heating loads. Part B deals with the selection of the system, the pipework, and the selection of equipment while Part C deals with the maintenance of the system and the cost analysis.

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

INTRODUCTION

Air conditioning has its beginning with mechanical refrigeration in the late 1900's. It was only 20 years ago that entered customer's acceptance. In the past it was considered to be a luxury item but nowadays is thought to be a necessity. .

Therefore almost every building is now designed with means of controlling the indoor environment throughout the year. These means are called Air Conditioning. The science of air-conditioning may be defined as that of supplying and maintaining a desirable internal atmospheric condition.

A desirable atmospheric condition aims to the comfort of the occupants. Comfort conditions imply a specific temperature, humidity, velocity and cleanness of air in the space, and can be achieved with a complete Air Conditioning System.

Historically air - conditioning has implied cooling or otherwise improving the indoor environment during the warm months of the year. Nowadays, air conditioning refers to year round automatic control of temperature, moisture content, cleanliness, air quality and circulation as required by occupants.

Air Conditioning Systems can be classified:

As to major function

- i. Comfort air conditioning systems.
- ii. Industrial air conditioning systems.

As to season of the year

- i. Winter air - conditioning systems.
- ii. Summer air - conditioning systems.

iii. Year - round air - conditioning systems.

As to equipment arrangement

- i. Central station systems.
- ii. Unitary or "Packaged" systems.
- iii. Combination systems.

The aim of this project is to design an Air Conditioning system for a building by taking into consideration the energy conservation and the noise level.

According to the above classifications the following system was selected: A comfort air - conditioning system.

A year round air - conditioning system.

A unitary system.

The system selected is the 4-way blow ceiling mounted cassette.