

H.T.I.

MECHANICAL ENGINEERING COURSE

DIPLOMA PROJECT

DESIGN OF AN AIR CONDITIONING
SYSTEM FOR A BUILDING

M/966

KARAMOUZIS ANGELOS

2003

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FOR A BUILDING**

by

Angelos Karamouzis

Project Report

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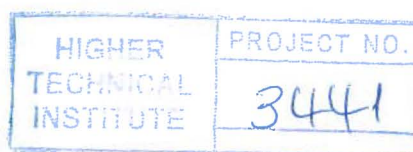
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SUMMARY

The aim of this project is to design an Air Conditioning System for a building. The building is a theatre of a school in Paphos.

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 "HEVACOMP" program.

The project is divided into three parts. Part A deals with the calculation of the cooling and heating loads. Part B deals with the selection of the system, the diffusers and grilles, the ductwork and the selection of the equipment and finally, Part C which deals with the maintenance of the system and the cost analysis.

Finally, a complete set of mechanical drawings is being provided in which the location of all air conditioning equipment are illustrated.

INTRODUCTION

In 1906, Mr. Cramer, an engineer, from North Carolina-USA, used the term “Air Conditioning” for the first time. By 1911, Air Conditioning had become a branch of engineering. Twenty years later, Air Conditioning could be found in cars, homes, train e.t.c.

By 1965 10% of the buildings were air conditioned. By 1995, more than 75% of the buildings were air conditioned and in some portions of the south, 90% of buildings have comfort atmospheric conditions.

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 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.

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 central station system

The system selected is the All-air central system.