

HTI

MECHANICAL ENGINEERING COURSE

DIPLOMA PROJECT

DESIGN OF AN AIR CONDITIONING
SYSTEM FOR A BUILDING

M/985

KALOGIROU ANTONIS

2004

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HIGHER TECHNICAL INSTITUTE	PROJECT NO 3529
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DESIGN OF AN AIR CONDITIONING SYSTEM FOR A BUILDING

by

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Project report submitted

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of the Higher Technical Institute

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**This project is dedicated
to my parents**

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SUMMARY

The aim of this project is to design an air conditioning system for a building. The building is a block of office in Nicosia.

Architectural drawings of the building were provided. Design conditions were supplied while, ambient condition were base collected from the Meteorological Services.

Energy conservation and noise level were considered as major factor 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 and the selection of the equipment. Finally The 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

Although Air Conditioning in the past was considered to be a luxury item, nowadays is thought to be necessity. In fact many modern processes products would not have been existed or preserved without precise control of environmental conditions.

Therefore many homes, offices and industrial structures are now being designed with a means of controlling the indoor environment throughout the year. These means are called Air Conditioning.

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 air circulation as required by occupants, a process or product in a space.

There are several different ways of classifying air conditioning systems, which are:

1. Classification as to major function
 - Comfort Air-Conditioning system
 - Industrial Air-Conditioning system

2. Classification as to season of the year

- Winter Air-Conditioning system
- Summer Air-Conditioning system
- Year round Air-Conditioning system

3. Classification as to equipment arrangement

- Central station system
- Unitary or "Packaged" system
- Combination systems

The shortage of energy and escalating energy costs on one Hand, and the noise pollution on the other, have caused re-examination of initial comfort conditions and placed more emphasis on the proper design and simulation of thermal environmental system.

The above considerations have led to the estimation of energy variables as accurately as possible, so that the design of the Air Conditioning system to be employed would have the lowest possible energy consumption