

**DESIGN OF AN AIR CONDITIONING SYSTEM**  
**FOR HOTEL APARTMENTS**

Project Report Submitted by

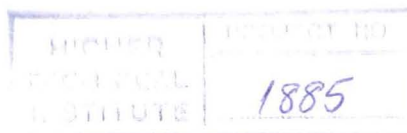
**PANAYIOTOU PANAYIOTIS**

in part satisfaction of the condition for  
the award of the Diploma of Technician Engineer  
in Mechanical Engineering of the  
Higher Technical Institute, Cyprus

Project supervisor : Mr. T. Simeou,  
Lecturer in  
Mechanical Engineering  
H.T.I

Type of Project : Individual

June 1991



P R O J E C T

SUMMARY

The objective of this project was the design of an air conditioning system for hotel apartments.

Economics and energy conservation were taken to be of major importance in the selection and operation of the system.

The project was divided into three parts.

Appendixes and references can be found at the last part of the project

\* \* \* \* \*

SUMMARY

INTRODUCTION

P A R T A

CHAPTER 1:	THERMAL TRANSMITTANCE "U - VALUE"	PAGE
1.1	INTRODUCTION	6
1.2.1.1	EXTERNAL WALLS	7
1.2.1.2	PARTITION WALLS	8
1.2.2	ROOFS	9
1.2.3	FLOORS	10
1.2.4	WINDOWS	11
1.2.5	SUMMARY OF "U - VALUES"	12
CHAPTER 2:	DESIGN CONDITIONS	14
2.1	DESIGN CONDITIONS	14
CHAPTER 3:	COOLING AND HEATING LOAD ESTIMATION	16
3.1	INTRODUCTION	16
3.2	COOLING LOAD CALCULATIONS	17-18
3.3	HEATING LOAD CALCULATIONS	19
CHAPTER 4:	THE CARIER PROGRAM FOR COOLING LOAD CALCULATIONS - INFORMATION AND ASSUMPTIONS	
4.1	INTRODUCTION	21
4.2	INFORMATION AND ASSUMPTIONS	21
4.2.1	EXTERIOR WALL INFORMATION	21
4.2.2	ROOF INFORMATION	21
4.2.3	GLASS INFORMATION	21
4.2.4	SHADING INFORMATION	21-22
4.2.5	INTERNAL LOADS	22
4.2.6	PARTITIONS CEILINGS AND FLOORS	22

P A R T B

CHAPTER 5:	SYSTEM SELECTION	
5.1	SYSTEM SELECTION	24
CHAPTER 6:	EQUIPMENT & PIPE SIZING - APPROPRIATE MACHINERY SELECTION	
6.1	INTRODUCTION	26
6.2	FAN COIL UNITS	27
6.2.1	GENERAL INFORMATION	27
6.2.2	FAN COIL UNITS SELECTION	28
6.3	WATER CHILLER	31
6.4	WATER PIPEWORK - PIPE SIZING	32
6.5	PUMP SIZING	38
6.6	BOILER	40
6.7	BURNER	42

6.8	FUEL OIL TANK	43
6.9	BOILER FLUE	44
6.10	EXPANSION TANK	45

P A R T C

CHAPTER 7: MAINTENANCE

7.1	INTRODUCTION	47
7.2	FAN COIL UNITS	48
7.3	CHILLER	49
7.4	BOILER BURNER	51
7.5	PUMPS	52

CHAPTER 8: ESTIMATED COST ANALYSIS 54

8.1	ESTIMATED COST ANALYSIS	54
-----	-------------------------	----

CONCLUSIONS

APPENDIX "A"

APPENDIX "B"

REFERENCES