

ENERGY AUDIT IN A MULTI-STOREY
BUILDING

by

Christoforos G. Hadjigeorghiou

Project Report
Submitted to
the Department of Mechanical Engineering
of the Higher Technical Institute
Nicosia Cyprus
in partial fulfillment of the requirements
of the diploma of

TECHNICIAN ENGINEER

in

MECHANICAL ENGINEERING

June 1990

M/506

-I-

HIGHER TECHNICAL INSTITUTE	PROJECT NO 1686
----------------------------------	--------------------

ENERGY AUDIT IN A MULTI-STOREY BUILDING

M/506

SUMMARY

This project is concerned with an Energy audit of the Kennedy hotel. The hotel under examination is a three star, 84 room hotel, located in the middle of Nicosia.

The Importance of Energy conservation and for an energy audit is conducted and described in Chapter 1 and 2.

The description and energy distribution of the hotel which is divided into Electrical, Liquid Oil and L.P.G., are described in Chapter 3 and 4.

Finally Chapter 5 and 6, are dealing with energy conservation proposals and a cost appraisal of these energy conservation proposals.

TABLE OF CONTENTS

Abstact		
Introduction		v
Chapter 1:	THE IMPORTANCE OF ENERGY CONSERVATION	1
1.1	Introduction	2
1.2	Energy Consumption and reserves	3
1.3	The need to conserve energy	7
Chapter 2:	ENERGY AUDIT	10
2.1	Introduction	11
2.2	Classification	11
2.3	General Audit Programme	11
2.3.1	Records of Consumption	11
2.3.2	Maintenance	12
2.3.3	Electricity	13
2.3.4	Environment	13
Chapter 3:	DESCRIPTION OF THE HOTEL	15
3.1	Introduction	16
3.2	General Characteristics	16
Chapter 4:	ENERGY DISTRIBUTION	18
4.1	Introduction	19
4.2	Forms of Energy	19
4.2.1	Electricity	19
4.2.2	Liquid Oil	20
4.2.3	L.P.G.	20
4.3	Energy using processes	20
4.3.1	Air Conditioning	20
4.3.2	Hot water supply	21

4.3.3	Refrigeration	21
4.3.4	Catering Equipment	21
4.3.5	Auxilliary Equipment	22
4.3.6	Lighting	22
4.4	Energy Bill	23
Chapter 5:	ENERGY CONSERVATION PROPOSALS	37
5.1	Introduction	38
5.2	Electricity	38
5.2.1	Lighting	38
5.2.2	Space Cooling and Heating	39
5.2.3	Ripul Control System	39
5.2.4	Key Fob Control System	40
5.3	Liquid Oil	42
5.4	L.P.G.	43
Chapter 6:	COST APPRAISAL OF THE ENERGY CONSERVATION PROPOSALS	45
6.1	Introduction	46
6.2	Lighting	46
6.3	Space Cooling and Space Heating	47
6.4	L.P.G.	48
6.5	Key Fob	48
	CONCLUSION	50
	REFERENCES	52
	APPENDIX I	53
	APPENDIX II	63
	APPENDIX III	68