

LIST OF CONTENTS

Chapter	Page
I INTRODUCTION.....	1
Introduction.....	1
Purpose of the Study.....	4
Scope of the Study.....	4
Benefit of the Study.....	4
II THEORITICAL LITERATURE REVIEW.....	5
Solar Radiation.....	5
Solar Absorbtion Cooling System.....	18
Heat Gain and Cooling Load.....	22
III METHODOLOGY.....	29
Description.....	29
Experiments.....	42
IV RESULT AND DISCUSSION.....	45
The result LPG consumption and Diffuse fraction in September.....	46
The result LPG consumption and Diffuse fraction in October.....	51
The result LPG consumption and Diffuse fraction in November.....	55
The result LPG consumption and Diffuse fraction in December.....	58
The result LPG consumption and Diffuse fraction in January.....	63
V CONCLUTION AND SUGGESTION.....	68

LIST OF CONTENTS (CONT.)

Chapter	Page
REFERENCES.....	70
APPENDIX.....	73
APPENDIX A.....	74
APPENDIX B.....	80
BIOGAPHY.....	86



LIST OF TABLES

Table		Page
1	The effect of the earth's tilt and rotation about the sun	7
2	Radiation intensity for various weather conditions	9
3	Radiation intensity for various weather conditions	18
4	Components of the solar cooling system at SERT.....	30
5	Total cooling load for design sizing SACS at SERT.....	33
6	Total radiation for design sizing SACS at SERT	34
7	Energy from Solar collector for design sizing SACS at SERT	35
8	Energy from auxiliary heat (LPG) for design sizing SACS at SERT.....	36
9	Material of room condition.....	37
10	Total shell area of the Testing building at SERT	39
11	External wall area of the Testing building at SERT on direction.....	41
12	Sources contribute internal cooling loads, when 6 officer	42
13	The average of collected data from September to December.....	45
14	The averages of data collected in September 2006.	46
15	Energy output from solar collector field and LPG consumption on 7 Sep 2006	47
16	The averages of data collected in October 2005.	51
17	Energy output from solar collector field and LPG consumption on 20 Oct 2005.....	52
18	The averages of data collected in November 2005 and 2006	55
19	Energy output from solar collector field and LPG consumption on 4 Nov2005	56
20	The averages of data collected in December 2006	59
21	Energy output from solar collector field on 6 December 2006.....	60
22	The averages of data collected in January 2006 and 2007	63

LIST OF TABLES (CONT.)

Table	Page
23	Energy output from solar collector field on 10 Jan 2007 64
24	Profile Angle for Testing Building at SERT (Latitude 16.78°) 75



LIST OF FIGURES

Figure		Page
1	Energy demand of EGAT	2
2	Attitude of the collector field.....	3
3	Shading of the building	4
4	The effect of the earth's tilt and rotation about the sun.....	6
5	The equation of time E in minutes, as a function of time of year	8
6	Latitude, hour angle and sun's declination.....	10
7	Solar Declination.....	10
8	The solar altitude, zenith angle and azimuth angle	11
9	Surface solar azimuth ψ , surface azimuth γ and angle of tilt β for an arbitrary tilted surface	12
10	Shading of window set back from the plane of a building surface	15
11	LiBr absorption chiller schematic. The compressor in a standard compressive refrigeration system has been replaced with a generator and absorber that perform the same function but do so with heat in stead of mechanical power.....	19
12	The solar cooling system in Testing Building.....	20
13	The solar thermal term.....	20
14	Water fired cooling and heating system for cooling operation.....	22
15	Relation of heat gain to cooling load.....	23
16	Steady-state one dimensional heat conduction through a composite wall.....	25
17	Components of the solar cooling system at SERT	29
18	Measurement points of the solar cooling system at SERT	30
19	TESTING Building of SERT,NU.....	37
20	Flow diagram for finding the optimize and auxiliary heat demand of the SACS at SERT	44

LIST OF FIGURES (CONT.)

Figure	Page
21 Energy supply by Solar collector between collected data on 7 Sep 2006 and designed data in September	48
22 Energy supply by Solar collector between collected data on 7 Sep 2006 and designed data in September	49
23 The auxiliary heat consumption between collected data on 7 Sep 2006 and designed data in September	50
24 Energy supply by solar collector between collected data on 20 Oct 2005 and designed data in October	52
25 Energy supply by Solar collector between collected data on 20 October 2005 and designed data in October	53
26 The auxiliary heat consumption between collected data on 20 October 2005 and designed data in October	54
27 Energy supply by solar collector between collected data on 4 Nov 2006 and designed data in November	56
28 Energy supply by solar collector between collected data on 4 November 2005 and designed data in November	57
29 The auxiliary heat consumption between collected data on 4 November 2006 and designed data in November	58
30 Energy supply by solar collector between collected data on 6 Dec 2006 and designed data in December	61
31 Energy supply by solar collector between collected data on 6 December 2006 and designed data in December	61
32 The auxiliary heat consumption between collected data on 6 December 2006 and designed data in December	62

LIST OF FIGURES (CONT.)

Figure	Page
33 Energy supply by Solar collector between collected data on 10 Jan 2007 and designed data in January	65
34 Energy supply by Solar collector between collected data on 10 Jan 2007 and designed data in January	66
35 The auxiliary heat consumption between collected data on 10 Jan 2007 and designed data in January	66
36 Diffuse radiation (H_d/H) and LPG consumption	67
37 Profile angle at the shadow of roof project the bottom frame of window for external wall in 30o to 150o from south	79
38 General specification of solar collector.....	81
39 Performance and quality specification of solar collector.....	81
40 Specification of Absorption chiller.....	82
41 Control and Monitoring of Solar Cooling System	82
42 Solar Cooling System	83
43 Energy Heat backup.....	83
44 Energy supply ratio: Solar collector/Auxiliary energy between 7.00am – 17.00 pm	84
45 LPG tank calculation between 7.00am – 17.00 pm	85