

TABLE OF CONTENTS

		Page
SUPERVISOR’S DECLARATION		ii
STUDENT’S DECLARATION		iii
DEDICATION		iv
ACKNOWLEDGEMENTS		v
ABSTRACT		vi
ABSTRAK		vii
TABLE OF CONTENTS		viii
LIST OF TABLES		x
LIST OF FIGURES		xi
LIST OF ABBREVIATION		xiii
CHAPTER 1	INTRODUCTION	
1.1	Research Background	1
1.2	Problem Statement	2
1.3	Significance of study	2
1.4	Research Objective	2
1.5	Research Scope	2
1.6	Process Flow Chart	3
CHAPTER 2	LITERATURE REVIEW	
2.1	Introduction	4
2.2	Greenhouse Gas (GHG)	4
2.3	Leachate	4
2.4	Land Filling	5
2.5	Incineration	6
2.6	3R (Reduce, Reuse, Recycle)	8

CHAPTER 3 METHODOLOGY

3.1	Introduction	10
3.2	Landfill Visits	10
	3.2.1 Rompin Sanitary Landfill	11
	3.2.2 Tioman Island Incineration	14
	3.2.3 Plasma Gasification	14

CHAPTER 4 RESULT AND DISCUSSION

4.1	Municipal Solid Waste Management In Malaysia	16
	4.1.1 Open Dumping	16
	4.1.2 Sanitary landfill	18
	4.1.3 Incinerator	20
4.2	Result Discussion	21
4.3	Municipal Solid Waste Management in other Countries	24
	4.3.1 Incineration	24
	4.3.2 Production of Biogas from Agricultural Waste	27
	4.3.3 Plasma Gasification	29
	4.3.4 Tetra Pak	31

CHAPTER 5 RECOMMENDATION AND CONCLUSION

5.1	Conclusion	33
5.2	Recommendation	36

REFERENCES	41
-------------------	----

APPENDICES

A1	Gantt Chart FYP 1	44
A2	Gantt Chart FYP 2	45

LIST OF TABLE

Table No.	Title	Page
1.1	Flow chart of research	3

LIST OF FIGURES

Figure No.	Title	Page
2.1	Top covered sanitary landfill	6
2.2	Hierarchy of municipal solid waste	9
3.1	Open dumping MSW in Pekan Pahang	10
3.2	Leachate and methane had produced in landfill	11
3.3	Sanitary landfill under construction	12
3.4	Leachate treatment ponds	12
3.5	Methane collection drain pipe	12
3.6	Methane gas drain from the old MSW landfill	13
3.7	Leachate duct and pre- container	13
3.8	Rotary - kiln incineration	14
3.9	Plasma gasification process	15
4.1	Tonnage in Pekan landfill 2010	16
4.2	Tonnage in Pekan landfill 2011	17
4.3	Tonnage in Pekan landfill 2012	17
4.4	Tonnage in Rompin landfill 2010	18
4.5	Tonnage in Rompin landfill 2011	19
4.6	Tonnage in Rompin landfill 2012	19
4.7	Estimation collection of solid waste in 22 April until 28 April 2013 at Pulau Tioman	20
4.8	Estimation collection of solid waste in 7 May until 13 May 2013 at Pulau Tioman	20
4.9	Counter flow system inside the rotary kiln incinerator	22
4.10	The incineration with rotary kiln system	23
4.11	The leachate treatment in incineration centre Pulau Tioman	24
4.12	Composition solid waste in Singapore in 2000	25
4.13	Comparison disposal solid waste by landfill and incineration in Singapore	27
4.14	Renewable energy from bio base in Thailand	28
4.15	Number of biogas plant in Thailand	29
4.16	Municipal solid waste generation in Madhya Pradesh	31
5.1	Emission of methane	35
5.2	Equivalent carbon dioxide reduction	35
5.3	Location of Tanjong Agas oil and gas complex	37
5.4	Main entrance of Tanjong Agas oil and gas complex	37
5.5	Model of children exposure with municipal solid waste practice	38
5.6	Recycle bins location	39
5.7	Solid waste chamber to implement recycle centre	40

5.8	3R campaign in high education institution	40
6.1	Gantt Chart FYP 1	44
6.2	Gantt Chart FYP 1	45

LIST OF ABBREVIATIONS

MSW	Municipal solid waste
Q	Total emission of methane
WSW _T	Total solid waste generated
WSW _F	Fraction of solid waste disposed to landfill
MCF	Methane correction factor
DOC	Degradable organic carbon (fraction)
DOC _F	Dissimilated organic fraction (i.e. fraction converted to landfill gases)
F	Fraction of CH ₄ in landfill gas
R	Recovered CH ₄
OX	Oxidation factor