

TABLE OF CONTENTS

INTELLECTUAL PROPERTY STATEMENT FORM	iii
ABSTRACT	iv
ABSTRAKSI	v
PREFACE	vii
TABLE OF CONTENTS	ix
LIST OF FIGURE	xiii
LIST OF TABLE	xv
LIST OF ABBREVIATIONS	xvii
LIST OF SYMBOL.....	xviii
TERMINOLOGY	xix
LIST OF APPENDIX	
CHAPTER I INTRODUCTION	1
I.1 Background	1
I.2 Problem Formulation	4
I.3 Research Objective	4
I.4 Limitation Problem	4
I.5 Research Benefit	5
I.6 Writing Systematics	6
CHAPTER II LITERATURE REVIEW	8
II.1 Design Process	8
II.2 Conceptual design	8
II.3 Engineering design process.....	9
II.4 Incineration	9
II.5 Solid waste incinerators	10
II.7 SOLAIR Incinerator.....	11
II.26 Advantages of SOLAIR	11
II.7 Flow Process of SOLAIR incinerator	13
II.8 Product architecture	14
II.8.1 Components	15
II.8.2 Interfaces.....	15
II.8.3 Function	15
II.10 A typology of product architectures.....	16

II.9.1	Integral	16
II.9.2	Functions shared by physical elements	16
II.9.3	Modular	17
II.9.4	Types of modular architectures	17
	a) Slot	17
	b) Bus	17
	c) Sectional	18
II.9.5	Interface coupling	18
II.10	Product Architecture affects	19
II.9.1	Product change	19
II.9.2	Change within the life of particular artifact	19
II.9.3	Product performance	21
II.9.4	Local performance characteristics and modular architectures	21
II.9.5	Global performance characteristics and integral architectures	22
II.10	Modularity and Integrality	22
II.11	Modular product and Modularity	23
II.11.1	A modular product	23
II.11.2	Modularity	23
II.11	Modularization with Contact & Channel Model (C&CM)	24
II.11.1	The Contact & Channel-Approach (C&C-A)	24
II.11.2	Contact and Channel (C & CM) Model	24
II.12	Modularization	26
II.13	Modularization with C&CM Model	27
II.13.1	Function classification	27
II.14	Modularization approach	28
II.15	Evaluation of the matrix elements and degree of modularity	29
II.14.2	Searching the maximal degree of modularity	31
II.15	Integration Analysis Methodology	32
	1. Decomposition	32
	2. Element Interactions	33
	3. Clustering the element into chunks	35
II.16	Building and Creating a DSM	35
II.17	DSM-based Modular decomposition	36
II.17.1	DSM Form	36
II.17.2	Parallel configuration	37
II.17.3	Sequential configuration	37
II.17.4	Coupled system	37
II.18	Numerical DSM	37
II.19	Element Classification	38
II.20	Design structure matrix (DSM)	39
II.20.1	Advantages of DSM	40

II.21	Dependency matrix	40
II.22	DSM Taxonomy.....	41
II.22.1	Component-Based DSM	42
II.22.2	Team-Based or Organization DSM.....	42
II.22.3	Activity-Based or Schedule DSM.....	42
II.22.4	Parameter-Based (or Low-Level Schedule) DSM	43
II.23	DSM Calculation	43
II.24	DSM Cluster Calculation	43
II.24.1	Module division base on DSM clustering.....	44
II.25	The cluster identification (CI) algorithm	45
II.26	Failure Mode and Effect Analysis (FMEA).....	46
II.26	Reason For Selecting the Method	47
II.26.1	Using C&CM Approach	47
II.26.2	C&CM Model	47
II.26.3	Modularization	48
II.26.4	Failure Mode and Effect Analysis (FMEA).....	49
II.26.5	Integration analysis	49
Bab III	RESEARCH METHODOLOGY	50
III.1	Conceptual Model	50
III.2	Problem Solving Systematics	52
III.2.1	Preliminary	53
1.	Preliminary Study	53
2.	Field Study	53
3.	Limitation Problem	54
III.2.2	Step of Processing and Collecting Data.....	55
1.	Primary Data	55
2.	Secondary data	55
CHAPTER IV	DATA COLLECTING AND PROCESSING	57
IV.1	Data Collecting	57
	Identification system existing	57
IV.1.1	Components function	59
IV.1.2	Flowchart of Incinerator SOLAIR	61
CHAPTER V	ANALYSIS	62
V.1	Failure mode and Effect Analysis	65
V.2	Integration Analysis of Product Decomposition	65
	STEP 1 : Decompose the system into elements.....	66
	STEP 2 : Document the interactions between elements	69
	STEP 3: CLUSTER THE ELEMENTS INTO CHUNKS.....	84
	Applying the DSM to system decomposition and integration using Component based-DSM.....	84

V.2.1	CLUSTERING NEGATIVE (Detrimental) Interactions.....	91
V.2.2	Out-Of-Chunk Interactions	92
V.2.3	ANALYSIS OF CLUSTERING FINAL CHUNKS.....	94
V.1	Modularization method using C&CM approach.....	96
CHAPTER VI CONCLUSSION		103
SUGGESTION		105
REFERENCE.....		106