

Table of Contents

	Deduction	I
	Acknowledgment	II
	Abstract	III
	مستخلص	IV
	Chapter one Introduction	
1.1	Introduction	1
1.2	Project Overview	1
1.3	Objectives	1
1.4	Methodology and tools	2
1.5	Thesis Layout	2
	Chapter Two Fuzzy Logic Control	
2.1	Introduction	3
2.2	Definition of Fuzzy Set	3
2.3	The Basic Operation on Fuzzy Set	4
2.3.1	Equality	4
2.3.2	Inclusion	5
2.3.3	Proper Sub Set	5
2.3.4	Complementation	5
2.3.5	Intersection	5
2.3.6	Union	5
2.3.7	Difference	5
2.4	Basic Concept of Classical Logic	7
2.4.1	Negation	8
2.4.2	Conjunction	8
2.4.3	Disjunction	8
2.4.4	Implication (Conditional Proposition)	8
2.4.5	Equivalence (Bi-Conditional Proposition)	8
2.5	Fuzzy Logic Term	9
2.5.1	Fuzzy	9
2.5.2	Fuzzy Set	10
2.5.3	Fuzzy Variable	10
2.5.4	Linguistic Variable	10
2.5.5	Fuzzy algorithm	11
2.5.6	Membership Function	11
2.5.7	Inference Mechanism	13
2.5.7.1	Mamidani's strategy	13

2.5.7.2	Larson's strategy	14
2.5.7.3	Tsukamoto's strategy	14
2.5.7.4	Takagi & Surgeon's strategy	15
2.5.8	Digital Fuzzification	15
2.5.9	Deffuzification	17
2.5.9.1	Center of Area (COA) Method	17
2.5.9.2	Center of Gravity (COG) Method	17
2.5.9.3	Height Deffuzzification (HD)	18
2.5.9.4	Center of Largest Area (COLA)	18
2.5.9.5	Mean of Maxima (MOM)	19
2.6	Fuzzy logic concepts	19
2.7	Fuzzy Logic Applications	20
2.8	Fuzzy Controllers Design Approaches	22
2.9	Steps to Appling Fuzzy Control	23
	Chapter Three Design Procedure	
3.1	Introduction	25
3.2	Fuzzy Logic Control Design Procedure	27
3.3	Control a logarithm	36
	Chapter Four Simulation & Results	
4.1	Introduction	43
4.2	Absorption Chilled Dynamic Model	43
4.3	Simulation of non-linear System	47
4.4	Fuzzy controller Arrays & Sub-routine	49
4.5	Tuning Via Universe of Discourse	56
4.5.1	Input scaling	57
4.5.2	Output scaling	57
4.6	Tuning Via Membership Function	57
4.7	Non-linear Surface of Fuzzy Controller	58
	Chapter Five Conclusion & Comment	
5.1	Conclusion	59
5.2	Suggestion for future work	60
	References	
	Appendix	