

CONTENTS

Chapter		Page
Particulars		No
	LIST OF ABBREVIATIONS	I-II
	LIST OF FIGURES	III-IV
CHAPTER-1	INTRODUCTION	1
	1.1 Introduction	1
	1.2 Literature Survey	4
	1.3 Problem Formation	8
	1.4 Objective Of The Project	8
	1.5 Organization Of Project	9
CHAPTER-2	SYSTEM CONFIGURATION	10
	2.1 Introduction	10
	2.1 Distributed Generation	10
	2.11 Cogeneration	12
	2.12 Solar power	13
	2.13 Wind power	13
	2.14 Hydro power	14
	2.15 Waste-to-energy	14
	2.16 Energy storage	14
	2.16.1 Grid energy storage	14
	2.16.2 PV storage	15
	2.16.3 Vehicle-to-grid	15
	2.16.4 Flywheels	15
	2.2 Total Harmonic Distortion	15
	2.21 Definitions and examples	16
	2.22 Measurement	18

2.3 Phase locked loop (PLL)	19
2.3.1 Phase Detector	19
2.3.2 Exclusive OR Phase Detector	20
2.3.3 Exclusive-OR Phase Detector	20
2.3.4 Edge Triggered Phase Detector	21
2.3.5 Monolithic Phase Detectors	21
2.3.6 Low Pass Filter (LPF)	21
2.3.7 Voltage Controlled Oscillator(VCO)	21
2.3.8 PLL working	22
2.4 EKF	24
2.5 Boost Converter	25
2.6 Solar power generation	27
2.6.1 Principles of Solar Electricity	27
2.6.2 Application of Solar Electricity	28
2.6.3 Stand Alone or Off Grid Solar Power Station	29
2.6.4 Grid Tie Solar Power Station	30
2.6.5 Grid Tie with Power Backup Solar Power Generation	32
2.6.6 Grid Fallback Solar Power Generation	32
2.7 System configuration	33
CHAPTER-3 CONTROL APPROACH	35
A. EKF Scheme for Load Currents Processing	35
B. Assigning Load Current Weights	39
C. DC Link Voltage Regulation and PV Feed-Forward Compensation	40
D. Fault Ride-Through Control	41

	E. Generation of Inverter Gating Pulses	44
CHAPTER-4	FUZZY LOGIC CONTROLLER	46
	4.1. Fuzzy Logic System	46
	4.2. Fuzzy Logic Basic Operations	47
	4.3. Fuzzification Method	48
	4.4. Rule Matrix	49
	4.5. Inference Mechanisms	50
	4.6. Defuzzification Mechanisms	51
CHAPTER-5	SIMULATION RESULTS	53
	A. Simulation results using pi controller	53
	B. Simulation results using anfis controller	57
	CONCLUSION	60
	REFERENCES	61