### TABLE OF CONTENTS

	age
ACKNOWI EDGEMENTS	;;;
ABSTRACT (THAI)	iv
ABSTRACT (FNGLISH)	vi
LIST OF TABLES	x
LIST OF FIGURES	xi
LIST OF SYMBOLS	XV
CHAPTER 1 Introduction	1
1.1 An Overview of Voltage Sag	
1.2 Power Quality Disturbances	2
1.2.1 Classification	$\overline{2}$
1.3 Literature review	24
1.4 Scope of This Thesis	6
1.5 Outline of This Thesis	6
HAPTER 2 Voltage Sag Compensations	7
2.1 Introduction	7
2.2 Voltage Sag Compensation Technologies	7
2.2.1 Uninterruptible Power Supplies (UPS)	7
2.2.2 Dynamic Voltage Restorer (DVR)	7
2.2.3 Distribution Static Compensator (D-STATCOM)	8
2.2.4 Static transfer switch (STS)	9
2.2.5 Multi-tapped transformer	9
2.2.6 AC-AC converter with series transformer	10
2.3 Energy Storage Technologies	10
2.3.1 Batteries	10
2.3.2 Capacitors	11
2.3.3 Flywheels	11
2.3.4 Fuel cells	11
2.3.5 Superconducting Magnetic Energy Storage (SMES)	12
2.4 Conclusions	12
HAPTER 3 Voltage Sag Detections	14
3.1 Introduction	14
3.2 Synchronously Rotating Reference Frame-Based Voltage Sag	
Detections	15
3.2.1 Conventional Synchronously Rotating Reference	
Frame-Based Voltage Sag Detection	15
3.2.2 Modified Synchronously Rotating Reference Frame-	16
Dased voltage Sag Delection	10

6.1 Conclusions	68
<b>CHAPTER 6</b> Conclusions and Further Research	68
5.6 Conclusions	
5.5.3.2 Load compensation	64
5.5.3.1 Back-to-back conver	ter operation 61
5.5.3 Experimental results	61
5.5.2.2 Load compensation	57
5.5.2.1 Back-to-back conver	ter operation 53
5.5.2 Simulation results	52
5.5 Simulation and experimentation	on setup 51
5.4.5 PI controller gains	50
5.4.4 DC-link capacitor (C)	50
5.4.3 DC-link voltage (Vdc)	50
5.4.2 Inverter output filter $(L_f, C_f)$	49
5.4.2 Investor extent filter $(L - C)$	$(L_s)$ 49
5.4 Design chienta 5.4.1 DWM rectifier input inductor	(I) $10$
5.3.3 Voltage sag detection method	48
5.3.2 Control strategy of inverter	48
5.3.1 Control strategy of PWM rect	fier 47
5.3 Control Method	47
5.2 Principles of Operation	45
5.1 Introduction	45
Converters	45
CHAPTER 5 Proposed Voltage Sag Compensator Usin	g Back-to-Back
4.4 Conclusion	
4.5.2 Case of nonlinear load	44
4.3.1 Case of linear load (inductive	load) 41
4.3 Simulation results	41
4.2 Static transfer switch	36
4.1 Introduction	36
CHAPTER 4 Static Transfer Switch	36
3.5 Conclusions	33
and CSRRF-based Voltage Sa	g Detections 33
3.4.4 A Comparison between Propo	sed IMSRRF-based
3.4.3 Effect of Unbalance Phase Vo	ltage Sag 31
3.4.2 Symmetrical Voltage Sag Cas	es 27
3.4.1 Asymmetrical Voltage Sag Ca	ses 23
3.4 Results and Discussions	22
Reference Frame-Based Voltage Sag D	etection 17
3.3 Proposed Improved Modified Synchron	ously Rotating



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# Table

LIST OF TABLES			
Table		Page	
1.1	Table 1.1 Categories and typical characteristics of power system		
	electromagnetic phenomena	3	
2.1	Summary of voltage sag compensation technologies	12	
2.2	Conclusion of energy storage technologies	13	
3.1	Parameters of voltage detection system	22	
3.2	Summary of asymmetrical voltage detection times from simulation resu	ults 27	
3.3	Summary of symmetrical voltage sag detection times from simulation		
	results	30	
3.4	Summary of asymmetrical voltage sag with phase-angle jump detection	n 🔥	
	times from simulation results	32	
4.1	Simulation Setup Parameters	42	
5.1	Parameters of Voltage Sag Detection System	52	

### LIST OF FIGURES

## Figure

Figu	re Pa	nge
2.1	Typical voltage sag compensation method using UPS	7
2.2	Typical voltage sag compensation method using DVR	8
2.3	Typical voltage sag compensation method using D-STATCOM	8
2.4	Typical voltage sag compensation method using STS	9
2.5	Typical voltage sag compensation method using Multi-tapped transformer	. 9
2.6	Typical voltage sag compensation method using AC-AC converter with	
	series transformer	10
3.1	Typical voltage sag compensation system	14
3.2	CSRRF-based voltage sag detection	16
3.3	Simulation results of CSRRF-based voltage sag detection at 0.5-pu single-	
	phase voltage sag and 30 degrees POW initiation (a) Under ideal grid	
	voltages (b) Under distorted grid voltages	17
3.4	Simulation results of MSRRF-based voltage sag detection at 0.5-pu single	-
	phase voltage sag and 30 degrees POW initiation (a) Under ideal grid	
	voltages (b) Under distorted grid voltages	18
3.5	IMSRRF-based voltage sag detection	18
3.6	Example waveforms of IMSRRF operation with 0.5-pu single-phase	
	voltage sag and 0 degrees of POW initiation	19
3.7	Simulation results of IMSRRF-based voltage sag detection at 0.5-pu	
	single-phase voltage sag and 30 degrees POW initiation (a) Under ideal	
	grid voltages (b) Under distorted grid voltages	21
3.8	Voltage sag detection time comparison for single-phase voltage sag under	
	distorted grid voltage between CSRRF-based and IMSRRF-based voltage	
	sag detection	22
3.9	Experimental setup	23
3.10	Operation results under distorted grid voltages of IMSRRF-based voltage	
	sag detection with 0.5-pu single-phase voltage sag and 41 degrees of	
	POW initiation (a) Simulation (b) Experimentation	24
3.11	Operation results under distorted grid voltages of IMSRRF-based voltage	
	sag detection with 0.5-pu single-phase voltage sag and 131 degrees of	
	POW initiation (a) Simulation (b) Experimentation	24
3.12	Operation results under distorted grid voltages of IMSRRF-based voltage	
	sag detection with 0.7-pu single-phase voltage sag and 41 degrees of POW	
	initiation (a) Simulation (b) Experimentation	25
3.13	Operation results under distorted grid voltages of IMSRRF-based voltage	
	sag detection with 0.7-pu single-phase voltage sag and 131 degrees of	
	POW initiation (a) Simulation (b) Experimentation	25

3.14	Simulation and experimental results for operation under distorted grid voltages of IMSRRF-based voltage sag detection with asymmetrical voltage sag in function of POW initiation (a) Single-phase voltage sag	•
3.15	(b) Two-phase voltage sag Operation results under distorted grid voltages of IMSRRF-based voltage	26
	sag detection with 0.5-pu three-phase voltage sag and 41 degrees of POW initiation (a) Simulation (b) Experimentation	28
3.16	Operation results under distorted grid voltages of IMSRRF-based voltage	20
	sag detection with 0.5-pu three-phase voltage sag and 131 degrees of POW	7
2 17	initiation (a) Simulation (b) Experimentation	28
5.17	sag detection with 0.7-pu three-phase voltage sag and 41 degrees of POW	
	initiation (a) Simulation (b) Experimentation	29
3.18	Operation results under distorted grid voltages of IMSRRF-based voltage	
	sag detection with 0.7-pu three-phase voltage sag and 131 degrees of POW	7
2 10	initiation (a) Simulation (b) Experimentation	29
5.19	voltages of IMSRRF-based voltage sag detection with symmetrical or	
	three-phase voltage sag in function of POW initiation	30
3.20	Operation results under distorted grid voltages of IMSRRF-based voltage	
	sag detection with 0.5-pu unbalance phase voltage sag and 41 degrees of	21
3 21	POW initiation (a) Simulation (b) Experimentation Operation results under distorted grid voltages of IMSPRE based voltage	31
5.21	sag detection with 0.5-pu unbalance phase voltage sag with and 131	
	degrees of POW initiation (a) Simulation. (b) Experimentation	32
3.22	Simulation and experimental results for operation under distorted grid	
	voltages of IMSRRF-based voltage sag detection with unbalance phase	22
3 23	Experimental results under distorted grid voltages of CSRRE-based	52
5.25	voltage sag detection with 0.5-pu single-phase voltage sag and 41 degrees	
	of POW initiation	34
3.24	Experimental results under distorted grid voltages of CSRRF-based	
	voltage sag detection with 0.5-pu three-phase voltage sag and 41 degrees	3/
3.25	Experimental results under distorted grid voltages of CSRRF-based	54
	voltage sag detection with 0.5-pu unbalance phase voltage sag and 41	
	degrees of POW initiation	34
3.26	Comparison of simulation results under distorted grid voltages of	25
41	Thyristor based STS (a) STS circuit diagram (b) One	33
7.1	phase circuit diagram	36
4.2	Operation modes of STS	37
4.3	The sequential gate drive signals of main static transfer switch	38
4.4	Key waveforms of the load current and load voltage in case of inductive	20
4.5	Load transfer in t1 stage	30 39
4.6	Load transfer in t2 stage	40
	-	

xiii

4.7	Load transfer in t3 stage	40
4.8	Load transfer in t4 stage	41
4.9	Operation of STS with inductive load in t1 stage	42
4.10	Operation of STS with inductive load in t2 stage	43
4.11	Extended view of delay time from inductive load transferring in t2 stage	43
4.12	Simulation result of non linear load transferring	44
5.1	Configuration of the proposed voltage sag compensator using	
5.1	hack-to-back converters	46
5.2	Control strategy of PWM rectifier	47
53	Control strategy of the inverter	48
54	IMSRRE-based voltage sag detection	49
5.5	Model of the proposed voltage sag compensator for simulation	51
5.6	Experimental setup for proposed voltage sag compensator system test	52
5.0 5.7	Simulation setup for back-to-back converter operation	53
5.7	Simulation results of back-to-back converter operation at input side under	55
5.0	three-phase voltage sag and rectifier load (a) Normal view (b) Extended	
	View	54
59	Simulation results of back-to-back converter operation at input side under	Öje
5.7	three-phase voltage sag and inductive load (a) Normal view (b) Extended	
	view	55
5 10	Simulation results of back-to-back converter operation at output side	55
5.10	under three-phase voltage sag and rectifier load (a) Normal view	
	(b) Extended view	56
5.11	Simulation results of back-to-back converter operation at output side	30
5.11	under three-phase voltage sag and inductive load (a) Normal view (b)	
	Extended view	57
5.12	Simulation setup for load compensated operation	58
5.12	Simulation results of load compensation under three-phase voltage sag and	1
5.15	rectifier load (a) Normal view (b) Extended view (sag entry) (c) Extended	1
	view (sag end)	50
5 14	Simulation results of load compensation under three phase voltage sag and	1
J.14	inductive load (a) Normal view (b) Extended view (sag entry) (c) Extended	ı d
	view (sag end)	u 60
5 1 5	Experimental setup for back to back converter operation	61
5.15	Experimentation results of back to back converter operation at input side	01
5.10	under three phase voltage sag and rectifier load (a) Normal view (b)	
	Extended view	62
5.17	Extended view	02
5.17	under three phase voltage sag and inductive load (a) Normal view (b)	
	Extended view	62
5 18	Extended view	02
5.10	under three phase voltage sag and rectifier load (a) Normal view (b)	
	Extended view	63
5 10	Examinute view	05
5.17	under three phase voltage sag and inductive load (a) Normal view (b)	
	Extended view	63
5 20	Extended view	64
5.20	Experimental setup for toat compensation	04

- 5.21 Experimentation results of load compensation under three-phase voltage sag and rectifier load (a) Normal view (b) Extended view (sag entry) (c) Extended view (sag end)
  65
- 5.22 Experimentation results of load compensation under three-phase voltage sag and inductive load (a) Normal view (b) Extended view

66



### LIST OF SYMBOLS

w  $V_{ds}$  $V_{qs}$  $V_{sabc}$  $V_{sa}, V_{sb}, V_{sc}$  $V_{sa}(pu), V_{sb}(pu), V_{sc}(pu)$  $V_{LPF}$  $V_{NF}$  $V_{qs}$  $V_{qn}$  $V_{diff}$  $V_{qm}$  $V_m$  $V_{sab}, V_{sbc}, V_{sca}$  $V_{oab}, V_{obc}, V_{oca}$  $I_{sa}(pu) I_{sa}, I_{sb}, I_{sc}$  $f_c$ f  $f_{c,LPF}$  $\bar{V}_{LPF}$  $V_{dc}$  $R_s$  $L_s$  $S_{abc_r}$  $S_{abc_i}$  $i_C$  $V_{ai}, V_{bi}, V_{ci}$  $L_f$  $C_{f}$  $P_C$ 

angular speed of electrical power system distribution, rad/s d axis voltage, V q axis voltage, V set of three phase voltage, V grid phase voltages, V grid phase voltages, pu low pass filter output voltage, V noise filter output voltage, V differential result of  $V_{as}$ , V normalization value of  $V_{as}$ , V sum of  $V_{ds}$  and  $V_{qn}$  voltage, V peak value of  $V_{as}$ , V peak voltage, V grid line voltage, V grid line voltage, V grid current, A LPF cut-off frequency, Hz grid voltage frequency, Hz cut-off frequency of LC filter, Hz local averaging value of  $V_{LPF}$ , V  $V_{ra}(pu), V_{rb}(pu), V_{rc}(pu)$  set of PWM rectifier input phase voltage, pu DC bus voltage or DC link voltage, V input resistor of PWM rectifier, W input inductor of PWM rectifier, H control signal of PWM rectifier control signal of PWM inverter output current of PWM rectifier, A input current of PWM inverter, A current of DC link capacitor, A set of PWM inverter output voltage, V output inductor of PWM inverter, H output resistor of PWM inverter, mF input power of back-to-back converter, W DC-link command voltage, V

 $I_{ds}^*$  $I_{qs}^*$  $V_{dr}^*$  $V_{ar}^*, V_{br}^*, V$  $q_e$  $V_{qr}^*$  $T_s$  $V_{s1a}, V_{s1b}, V_{s1c}$  $V_{s2a}, V_{s2b}, V_{s2c}$  $I_{s1a}, I_{s1b}, I_{s1c}$  $I_{s2a}, I_{s2b}, I_{s2c}$  $I_{o1}, I_{o2}, I_{o3}$  $V_{o1}, V_{o2}, V_{o3}$ Abbreviations pu rms SLGF PLC VSD US DVR UPS **SSVR** AVC **D-STATCOM** SPDT **SMES** HTS DC AC STS SRRF CSRRF LPF **MSRRF** POW THD NF **IMSRRF** BBM MBB **PWM** PLL

d axis command current, A q axis command current, A command voltage in d axis command voltage of SVM, V phase angle of grid voltage, rad command voltage in q axis, V controller sampling time grid voltages, V alternate supply voltages, V grid currents, A alternate supply currents, A load currents, A load voltages, V

per unit root mean square single line-to-ground fault programmable logic controller variable speed drive united state dynamic voltage restorer uninterruptible power supply solid state restorer active voltage conditioner distribution static compensator single pole, double throw superconducting magnetic energy storage high temperature superconducting direct current alternating current static transfer switch synchronously rotating reference frame conventional synchronously rotating reference frame low-pass filter modified synchronously rotating reference frame point-on-wave total harmonic distortion noise filter improved modified synchronously rotating reference frame break before make make before break pulse width modulation phase locked loop

![](_page_10_Picture_0.jpeg)

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