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High-voltage direct current (HVDC) power transmission using voltage sourced converters (VSC)

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CONTENTS

FOREWORD.....	6
1 Scope.....	8
2 Normative references	8
3 Terms and definitions	8
3.1 General.....	8
3.2 Letter symbols.....	9
3.3 Power semiconductor terms	9
3.4 VSC topologies	10
3.5 VSC transmission.....	13
3.6 Operating states.....	14
3.7 Type tests	16
3.8 Production tests	17
3.9 Sample tests	17
3.10 Insulation co-ordination terms	17
3.11 Power losses.....	17
4 VSC transmission overview	18
4.1 Basic operating principles of VSC transmission.....	18
4.1.1 The voltage sourced converter as a black box	18
4.1.2 The principles of active and reactive power control.....	19
4.1.3 Operating principles of a VSC transmission scheme.....	21
4.1.4 Applications of VSC transmission.....	21
4.2 Design life.....	22
4.3 VSC transmission configurations.....	22
4.3.1 General.....	22
4.3.2 D.C. circuit configurations.....	22
4.3.3 Monopole configuration.....	22
4.3.4 Bipolar configuration.....	23
4.3.5 Parallel connection of two converters	24
4.3.6 Series connection of two converters	24
4.3.7 Parallel and series connection of more than two converters.....	25
4.4 Semiconductors for VSC transmission.....	25
5 VSC transmission converter topologies	26
5.1 General.....	26
5.2 Converter topologies with VSC valves of “switch” type	27
5.2.1 General	27
5.2.2 Operating principle	27
5.2.3 Topologies.....	28
5.3 Converter topologies with VSC valves of the “controllable voltage source” type.....	31
5.3.1 General	31
5.3.2 MMC topology with VSC levels in half-bridge topology.....	33
5.3.3 MMC topology with VSC levels in full-bridge topology.....	35
5.3.4 CTL topology with VSC cells in half-bridge topology.....	33
5.3.5 CTL topology with VSC cells in full-bridge topology	33
5.4 VSC valve design considerations	37
5.4.1 Reliability and failure mode	37
5.4.2 Current rating	37

5.4.3	Transient current and voltage requirements	37
5.4.4	Diode requirements	38
5.4.5	Additional design details	38
5.5	Other converter topologies	39
5.6	Other equipment for VSC transmission schemes	39
5.6.1	General	39
5.6.2	Power components of a VSC transmission scheme	39
5.6.3	VSC substation circuit breaker	40
5.6.4	A.C. system side harmonic filters	40
5.6.5	Radio frequency interference filters	40
5.6.6	Interface transformers and phase reactors	40
5.6.7	Valve reactor	41
5.6.8	D.C. capacitors	41
5.6.9	D.C. reactor	43
5.6.10	Common mode blocking reactor	43
5.6.11	D.C. filter	44
5.6.12	Dynamic braking system	44
6	Overview of VSC controls	44
6.1	General	44
6.2	Operational modes and operational options	45
6.3	Power transfer	46
6.3.1	General	46
6.3.2	Telecommunication between converter stations	47
6.4	Reactive power and a.c. voltage control	47
6.4.1	A.C. voltage control	47
6.4.2	Reactive power control	47
6.5	Black start capability	48
6.6	Supply from a wind farm	48
7	Steady state operation	48
7.1	Steady state capability	48
7.2	Converter power losses	50
8	Dynamic performance	50
8.1	A.C. system disturbances	50
8.2	D.C. system disturbances	51
8.2.1	D.C. cable fault	51
8.2.2	D.C. overhead line fault	51
8.3	Internal faults	51
9	HVDC performance requirements	52
9.1	Harmonic performance	52
9.2	Wave distortion	53
9.3	Fundamental and harmonics	53
9.3.1	Three-phase 2-level VSC	53
9.3.2	Selective harmonic elimination modulation	55
9.3.3	Multi-pulse and multi-level converters	56
9.4	Harmonic voltages on power systems due to VSC operation	56
9.5	Design considerations for harmonic filters (a.c. side)	57
9.6	D.C. side filtering	57

10	Environmental impact	57
10.1	General	57
10.2	Audible noise	57
10.3	Electric and magnetic fields (EMF)	58
10.4	Electromagnetic compatibility (EMC)	58
11	Testing and commissioning	59
11.1	General	59
11.2	Factory tests	59
11.2.1	Component tests	59
11.2.2	Control system tests	59
11.3	Commissioning tests / System tests	60
11.3.1	General	60
11.3.2	Precommissioning tests	60
11.3.3	Subsystem tests	60
11.3.4	System tests	61
Annex A (informative)	Functional specification requirements for VSC transmission systems	65
Annex B (informative)	Determination of VSC valve power losses	73
Bibliography	82
Figure 1	– Major components that may be found in a VSC substation	9
Figure 2	– Diagram of a generic voltage source converter (a.c. filters not shown)	18
Figure 3	– The principle of active power control	19
Figure 4	– The principle of reactive power control	20
Figure 5	– A point-to-point VSC transmission scheme	21
Figure 6	– VSC transmission with a symmetrical monopole	23
Figure 7	– VSC transmission with an asymmetrical monopole with metallic return	23
Figure 8	– VSC transmission with an asymmetrical monopole with earth return	23
Figure 9	– VSC transmission in bipolar configuration	24
Figure 10	– Parallel connection of two converter units	24
Figure 11	– Symbol of a controllable switch turn-off semi-conductor device and associated free-wheeling diode	25
Figure 12	– Symbol of an IGBT and associated free-wheeling diode	26
Figure 13	– Diagram of a three-phase 2-level converter and associated a.c. waveform for one phase	28
Figure 14	– Single-phase a.c. output for 2-level converter with PWM switching at 21 times fundamental frequency	29
Figure 15	– Diagram of a three-phase 3-level NPC converter and associated a.c. waveform for one phase	30
Figure 16	– Single-phase a.c. output for 3-level NPC converter with PWM switching at 21 times fundamental frequency	31
Figure 17	– Electrical equivalent for a converter with VSC valves acting like a controllable voltage source	32
Figure 18	– VSC valve level arrangement and equivalent circuit in MMC topology in half-bridge topology	33
Figure 19	– Converter block arrangement with MMC topology in half-bridge topology	35

Figure 20 – VSC valve level arrangement and equivalent circuit in MMC topology with full-bridge topology	36
Figure 21 – Typical SSOA for the IGBT	37
Figure 22 – A 2-level VSC bridge with the IGBTs turned off	38
Figure 23 – Representing a VSC unit as an a.c. voltage of magnitude U and phase angle δ behind reactance.....	45
Figure 24 – Concept of vector control	46
Figure 25 – VSC power controller	46
Figure 26 – A.C. voltage controller.....	47
Figure 27 – A typical simplified PQ diagram.....	49
Figure 28 – Protection concept of a VSC substation.....	52
Figure 29 – Waveforms for three-phase 2-level VSC.....	54
Figure 30 – Voltage harmonics spectra of a 2-level VSC with carrier frequency at 21st harmonic.....	55
Figure 31 – Phase output voltage for selective harmonic elimination modulation (SHEM).....	55
Figure 32 – Equivalent circuit at the PCC of the VSC.....	56
Figure B.1 – On state voltage of an IGBT or free-wheeling diode.....	74
Figure B.2 – Piecewise-linear representation of IGBT or FWD on-state voltage	75
Figure B.3 – IGBT switching losses as a function of collector current.....	78
Figure B.4 – Free-wheeling diode recovery loss as a function of current.....	79

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In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions and deletions are displayed in red, with deletions being struck through. A separate Final version with all changes accepted is available in this publication.

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HIGH-VOLTAGE DIRECT CURRENT (HVDC) POWER TRANSMISSION USING VOLTAGE SOURCED CONVERTERS (VSC)

1 Scope

This technical report gives general guidance on the subject of voltage-sourced converters used for transmission of power by high voltage direct current (HVDC). It describes converters that are not only voltage-sourced (containing a capacitive energy storage medium and where the polarity of d.c. voltage remains fixed) but also self-commutated, using semiconductor devices which can both be turned on and turned off by control action. The scope includes 2-level and 3-level converters with pulse-width modulation (PWM), along with multi-level converters, **modular multi-level converters and cascaded two-level converters**, but excludes 2-level and 3-level converters operated without PWM, in square-wave output mode.

HVDC power transmission using voltage sourced converters is known as “VSC transmission”.

The various types of circuit that can be used for VSC transmission are described in the report, along with their principal operational characteristics and typical applications. The overall aim is to provide a guide for purchasers to assist with the task of specifying a VSC transmission scheme.

Line-commutated and current-sourced converters are specifically excluded from this report.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60633, *Terminology for high-voltage direct-current (HVDC) transmission*

IEC 61975, *High-voltage direct current (HVDC) installations – System tests*

FINAL VERSION



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CONTENTS

FOREWORD.....	6
1 Scope.....	8
2 Normative references	8
3 Terms and definitions	8
3.1 General.....	8
3.2 Letter symbols.....	9
3.3 Power semiconductor terms	9
3.4 VSC topologies	10
3.5 VSC transmission.....	13
3.6 Operating states.....	14
3.7 Type tests	16
3.8 Production tests	16
3.9 Sample tests	16
3.10 Insulation co-ordination terms	16
3.11 Power losses.....	17
4 VSC transmission overview	17
4.1 Basic operating principles of VSC transmission.....	17
4.1.1 The voltage sourced converter as a black box	17
4.1.2 The principles of active and reactive power control.....	18
4.1.3 Operating principles of a VSC transmission scheme.....	20
4.1.4 Applications of VSC transmission.....	21
4.2 Design life.....	21
4.3 VSC transmission configurations.....	21
4.3.1 General.....	21
4.3.2 D.C. circuit configurations.....	22
4.3.3 Monopole configuration.....	22
4.3.4 Bipolar configuration.....	23
4.3.5 Parallel connection of two converters	23
4.3.6 Series connection of two converters	24
4.3.7 Parallel and series connection of more than two converters.....	24
4.4 Semiconductors for VSC transmission.....	24
5 VSC transmission converter topologies	26
5.1 General.....	26
5.2 Converter topologies with VSC valves of “switch” type	26
5.2.1 General	26
5.2.2 Operating principle	27
5.2.3 Topologies.....	27
5.3 Converter topologies with VSC valves of the “controllable voltage source” type.....	30
5.3.1 General	30
5.3.2 MMC topology with VSC levels in half-bridge topology.....	31
5.3.3 MMC topology with VSC levels in full-bridge topology.....	33
5.3.4 CTL topology with VSC cells in half-bridge topology	33
5.3.5 CTL topology with VSC cells in full-bridge topology	33
5.4 VSC valve design considerations	34
5.4.1 Reliability and failure mode	34
5.4.2 Current rating	34

5.4.3	Transient current and voltage requirements	34
5.4.4	Diode requirements	35
5.4.5	Additional design details	35
5.5	Other converter topologies	36
5.6	Other equipment for VSC transmission schemes	36
5.6.1	General	36
5.6.2	Power components of a VSC transmission scheme	36
5.6.3	VSC substation circuit breaker	37
5.6.4	A.C. system side harmonic filters	37
5.6.5	Radio frequency interference filters	37
5.6.6	Interface transformers and phase reactors	37
5.6.7	Valve reactor	38
5.6.8	D.C. capacitors	38
5.6.9	D.C. reactor	40
5.6.10	Common mode blocking reactor	40
5.6.11	D.C. filter	41
5.6.12	Dynamic braking system	41
6	Overview of VSC controls	41
6.1	General	41
6.2	Operational modes and operational options	42
6.3	Power transfer	43
6.3.1	General	43
6.3.2	Telecommunication between converter stations	44
6.4	Reactive power and a.c. voltage control	44
6.4.1	A.C. voltage control	44
6.4.2	Reactive power control	44
6.5	Black start capability	45
6.6	Supply from a wind farm	45
7	Steady state operation	45
7.1	Steady state capability	45
7.2	Converter power losses	47
8	Dynamic performance	47
8.1	A.C. system disturbances	47
8.2	D.C. system disturbances	48
8.2.1	D.C. cable fault	48
8.2.2	D.C. overhead line fault	48
8.3	Internal faults	48
9	HVDC performance requirements	49
9.1	Harmonic performance	49
9.2	Wave distortion	50
9.3	Fundamental and harmonics	50
9.3.1	Three-phase 2-level VSC	50
9.3.2	Selective harmonic elimination modulation	52
9.3.3	Multi-pulse and multi-level converters	53
9.4	Harmonic voltages on power systems due to VSC operation	53
9.5	Design considerations for harmonic filters (a.c. side)	54
9.6	D.C. side filtering	54

10	Environmental impact	54
10.1	General	54
10.2	Audible noise	54
10.3	Electric and magnetic fields (EMF)	55
10.4	Electromagnetic compatibility (EMC)	55
11	Testing and commissioning	56
11.1	General	56
11.2	Factory tests	56
11.2.1	Component tests	56
11.2.2	Control system tests	56
11.3	Commissioning tests / System tests	57
11.3.1	General	57
11.3.2	Precommissioning tests	57
11.3.3	Subsystem tests	57
11.3.4	System tests	58
Annex A (informative)	Functional specification requirements for VSC transmission systems	62
Annex B (informative)	Determination of VSC valve power losses	70
Bibliography	79
Figure 1	– Major components that may be found in a VSC substation	9
Figure 2	– Diagram of a generic voltage source converter (a.c. filters not shown)	18
Figure 3	– The principle of active power control	19
Figure 4	– The principle of reactive power control	20
Figure 5	– A point-to-point VSC transmission scheme	20
Figure 6	– VSC transmission with a symmetrical monopole	22
Figure 7	– VSC transmission with an asymmetrical monopole with metallic return	22
Figure 8	– VSC transmission with an asymmetrical monopole with earth return	23
Figure 9	– VSC transmission in bipolar configuration	23
Figure 10	– Parallel connection of two converter units	24
Figure 11	– Symbol of a turn-off semi-conductor device and associated free-wheeling diode	25
Figure 12	– Symbol of an IGBT and associated free-wheeling diode	25
Figure 13	– Diagram of a three-phase 2-level converter and associated a.c. waveform for one phase	28
Figure 14	– Single-phase a.c. output for 2-level converter with PWM switching at 21 times fundamental frequency	28
Figure 15	– Diagram of a three-phase 3-level NPC converter and associated a.c. waveform for one phase	29
Figure 16	– Single-phase a.c. output for 3-level NPC converter with PWM switching at 21 times fundamental frequency	30
Figure 17	– Electrical equivalent for a converter with VSC valves acting like a controllable voltage source	31
Figure 18	– VSC valve level arrangement and equivalent circuit in MMC topology in half-bridge topology	32
Figure 19	– Converter block arrangement with MMC topology in half-bridge topology	32

Figure 20 – VSC valve level arrangement and equivalent circuit in MMC topology with full-bridge topology	33
Figure 21 – Typical SSOA for the IGBT	34
Figure 22 – A 2-level VSC bridge with the IGBTs turned off	35
Figure 23 – Representing a VSC unit as an a.c. voltage of magnitude U and phase angle δ behind reactance.....	42
Figure 24 – Concept of vector control	43
Figure 25 – VSC power controller	43
Figure 26 – A.C. voltage controller.....	44
Figure 27 – A typical simplified PQ diagram.....	46
Figure 28 – Protection concept of a VSC substation.....	49
Figure 29 – Waveforms for three-phase 2-level VSC.....	51
Figure 30 – Voltage harmonics spectra of a 2-level VSC with carrier frequency at 21st harmonic.....	52
Figure 31 – Phase output voltage for selective harmonic elimination modulation (SHEM).....	52
Figure 32 – Equivalent circuit at the PCC of the VSC.....	53
Figure B.1 – On state voltage of an IGBT or free-wheeling diode.....	71
Figure B.2 – Piecewise-linear representation of IGBT or FWD on-state voltage	72
Figure B.3 – IGBT switching losses as a function of collector current.....	75
Figure B.4 – Free-wheeling diode recovery loss as a function of current.....	76

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