

**KÕRGEPINGEJAOTLA JA JUHTIMISAPARATUUR.  
OSA 202: TEHASETOOTELINE  
KÕRGEPINGE-/MADALPINGEALAJAAM**

**High-voltage switchgear and controlgear - Part 202:  
High-voltage/low-voltage prefabricated substation**

**EESTI STANDARDI EESSÕNA****NATIONAL FOREWORD**

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English Version

## High-voltage switchgear and controlgear - Part 202: High-voltage/low-voltage prefabricated substation (IEC 62271-202:2014)

Appareillages à haute tension - Partie 202: Postes  
préfabriqués haute tension/basse tension  
(CEI 62271-202:2014)

Hochspannungs-Schaltgeräte und -Schaltanlagen - Teil  
202: Fabrikfertige Stationen für  
Hochspannung/Niederspannung  
(IEC 62271-202:2014)

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## Foreword

The text of document 17C/595/FDIS, future edition 2 of IEC 62271-202, prepared by SC 17C "High-voltage switchgear and controlgear assemblies" of IEC TC 17 "Switchgear and controlgear" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62271-202:2014.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2014-11-01
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2017-05-01

This document supersedes EN 62271-202:2007.

EN 62271-202:2014 includes the following significant technical changes with respect to EN 62271-202:2007:

- a) regarding temperature-rise test an alternative method for liquid filled transformers is (re)introduced and the temperature-rise test method for dry-type transformers is specified more precisely;
- b) testing procedure for short time and peak withstand current tests are specified more precisely;
- c) assessment of electromagnetic fields is considered including a type test (optional) according CLC/TR 62271-208:2010;
- d) influence of the product on the environment is considered (Clause 12);
- e) internal arc test requirements have been adapted to EN 62271-200:2012 and requirements for the assessment of pressure relief volumes below the floor / ground has been assigned;
- f) the method for defining the load factor in an enclosure for liquid filled transformers is extended with different temperature rises for the transformer outside the enclosure (Annex DD);
- g) for the calculation of the load factor of dry-type transformers in an enclosure the insulation systems according to EN 60076-1:2011, Tables B.1 and B.2 are worked out in detail.

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## Endorsement notice

The text of the International Standard IEC 62271-202:2014 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60059:1999	NOTE	Harmonized as EN 60059:1999.
IEC 60068 (Series)	NOTE	Harmonized as EN 60068 (Series).
IEC 60076 (Series)	NOTE	Harmonized as EN 60076 (Series).
IEC 60243-1:2013	NOTE	Harmonized as EN 60243-1:2013.
IEC 61936-1:2010	NOTE	Harmonized as EN 61936-1:2010.
IEC 62271-4:2013	NOTE	Harmonized as EN 62271-4:2013.
IEC/TS 62271-304:2008	NOTE	Harmonized as CLC/TS 62271-304:2008.
ISO 1460	NOTE	Harmonized as EN ISO 1460.

ISO 1461	NOTE	Harmonized as EN ISO 1461.
ISO 2081	NOTE	Harmonized as EN ISO 2081.
ISO 2409	NOTE	Harmonized as EN ISO 2409.
ISO 3231:1993	NOTE	Harmonized as EN ISO 3231:1997.
ISO 7784 (Series)	NOTE	Harmonized as EN ISO 7784 (Series).
ISO 9227	NOTE	Harmonized as EN ISO 9227.
ISO 10546	NOTE	Harmonized as EN ISO 1460.
ISO 11997 (Series)	NOTE	Harmonized as EN ISO 11997 (Series).
ISO 12944 (Series)	NOTE	Harmonized as EN ISO 12944 (Series).
ISO 13732-1:2006	NOTE	Harmonized as EN ISO 13732-1:2008.

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## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

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

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu)

<u>Publication</u>	<u>Year series</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year series</u>
IEC 60050		International Electrotechnical Vocabulary - Part 461: Electric cables	-	
IEC 60068-2-75		Environmental testing -- Part 2-75: Tests - Test Eh: Hammer tests	EN 60068-2-75	
IEC 60076-1	2011	Power transformers -- Part 1: General	EN 60076-1	2011
IEC 60076-2	2011	Power transformers -- Part 2: Temperature rise for liquid-immersed transformers	EN 60076-2	2011
IEC 60076-3	2013	Power transformers -- Part 3: Insulation levels, dielectric tests and external clearances in air	EN 60076-3	2013
IEC 60076-5	2006	Power transformers -- Part 5: Ability to withstand short circuit	EN 60076-5	2006
IEC 60076-7	2005	Power transformers -- Part 7: Loading guide for oil-immersed power transformers	-	-
IEC 60076-10	2001	Power transformers -- Part 10: Determination of sound levels	EN 60076-10	2001
IEC 60076-11	2004	Power transformers -- Part 11: Dry-type transformers	EN 60076-11	2004
IEC 60076-12	2008	Power transformers -- Part 12: Loading guide for dry-type power transformers	-	-
IEC 60076-13	2006	Power transformers -- Part 13: Self-protected liquid-filled transformers	EN 60076-13	2006
IEC 60364-4-41 (mod)	2005	Low-voltage electrical installations -- Part 4-41: Protection for safety - Protection against electric shock	HD 60364-4-41	2007
			+HD 60364-4-41:2007/corrigendum Jul. 2007	2007
IEC 60529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529	1991
			+EN 60529:1991/corrigendum May 1993	1993
IEC 60529:1989/A1	1999		EN 60529:1991/A1	2000
IEC 60529:1989/A2	2013		EN 60529:1991/A2	2013
IEC 60664-1	2007	Insulation coordination for equipment within low-voltage systems -- Part 1: Principles, requirements and tests	EN 60664-1	2007
IEC 60721-1	1990	Classification of environmental conditions - Part 1: Environmental parameters and their severities	EN 60721-1	1995
+A1	1992		-	-
+A2	1995		+A2	1995

IEC 60721-2-2	2012	Classification of environmental conditions - EN 60721-2-2 - Part 2-2: Environmental conditions appearing in nature -- Precipitation and wind	2013
IEC 60721-2-4	1987	Classification of environmental conditions - HD 478.2.4 S1 - Part 2: Environmental conditions appearing in nature - Solar radiation and temperature	1989
+A1	1988	-	-
IEC 60947-1	2007	Low-voltage switchgear and controlgear -- Part 1: General rules	2007
IEC 61180-1	1992	High-voltage test techniques for low-voltage equipment -- Part 1: Definitions, test and procedure requirements	1994
IEC 61439-1	2011	Low-voltage switchgear and controlgear assemblies -- Part 1: General rules	2011
IEC 61439-2	2011	Low-voltage switchgear and controlgear assemblies -- Part 2: Power switchgear and controlgear assemblies	2011
IEC 62262	2002	Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)	2002
IEC 62271-1	2007	High-voltage switchgear and controlgear -- Part 1: Common specifications	2008
IEC 62271-200	2011	High-voltage switchgear and controlgear -- Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV	2012
IEC 62271-201	2006	High-voltage switchgear and controlgear -- Part 201: AC insulation-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV	2006
		+EN 62271-201:2006/corrigendum Nov. 2006	2006
IEC 62271-202	2014	High-voltage switchgear and controlgear -- Part 202: High-voltage/low-voltage prefabricated substation	2014
ISO 1052	1982	Steels for general engineering purposes	-
ISO 1182		Reaction to fire tests for products – Non-combustibility test	2010
ISO 1716		Reaction to fire tests for products – Determination of the gross heat of combustion (calorific value)	2010
ISO 6508-1		Metallic materials -- Rockwell hardness test -- Part 1: Test method (scales A, B, C, D, E, F, G, H, K, N, T)	2005
IEC/TR 62271-208	2009	High-voltage switchgear and controlgear -- Part 208: Methods to quantify the steady state, power-frequency electromagnetic fields generated by HV switchgear assemblies and HV/LV prefabricated substations	2010
IEC/TR 62271-300	2006	High-voltage switchgear and controlgear - Part 300: Seismic qualification of alternating current circuit-breakers	-

IEC/TS 60815-1	2008	Selection and dimensioning of high-voltage-insulators intended for use in polluted conditions - Part 1: Definitions, information and general principles	-
ISO/IEC Guide 51	1999	Safety aspects - Guidelines for their inclusion in standards	-

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## CONTENTS

FOREWORD.....	8
INTRODUCTION.....	10
1 General.....	11
1.1 Scope.....	11
1.2 Normative references.....	11
2 Normal and special service conditions.....	13
2.1 Normal service conditions.....	13
2.1.1 Indoor switchgear and controlgear.....	13
2.1.1.101 Low-voltage switchgear and controlgear.....	13
2.1.1.102 Transformer.....	13
2.1.2 Outdoor switchgear and controlgear.....	14
2.2 Special service conditions.....	14
2.2.1 Altitude.....	14
2.2.2 Pollution.....	14
2.2.3 Temperature and humidity.....	15
2.2.4 Vibrations, shock or tilting.....	15
2.2.5 Wind speed.....	15
2.2.6 Other parameters.....	15
3 Terms and definitions.....	15
4 Ratings.....	17
4.1 Rated voltage ( $U_r$ ).....	18
4.2 Rated insulation level.....	18
4.3 Rated frequency ( $f_r$ ).....	19
4.4 Rated normal current and temperature rise.....	19
4.4.1 Rated normal current ( $I_r$ ).....	19
4.4.2 Temperature rise.....	19
4.4.3 Particular points of Table 3.....	19
4.5 Rated short-time withstand current ( $I_k$ ).....	19
4.5.101 Rated short-time withstand current of high voltage switchgear and controlgear and high voltage interconnection ( $I_k$ ).....	20
4.5.102 Rated short-time phase to earth withstand current ( $I_{ke}$ ).....	20
4.5.103 Rated short-time withstand currents of low voltage switchgear and controlgear and low voltage interconnection ( $I_{cw}$ ).....	20
4.6 Rated peak withstand current ( $I_p$ ).....	20
4.6.101 Rated peak withstand current ( $I_p$ ).....	20
4.6.102 Rated peak phase to earth withstand current ( $I_{pe}$ ).....	20
4.6.103 Rated peak withstand currents of low voltage switchgear and controlgear and low voltage interconnection ( $I_{pk}$ ).....	20
4.7 Rated durations of short circuit ( $t_k$ ).....	20
4.7.101 Rated duration of short circuit ( $t_k$ ).....	21
4.7.102 Rated duration of phase to earth short circuit ( $t_{ke}$ ).....	21
4.7.103 Rated duration of short circuits for low voltage switchgear and controlgear and low voltage interconnection.....	21
4.7.104 Rated duration of short circuits for transformers.....	21
4.8 Rated supply voltage of closing and opening devices and auxiliary and control circuits ( $U_a$ ).....	21
4.9 Rated supply frequency of closing and opening devices and of auxiliary circuits.....	21

4.10	Rated pressure of compressed gas supply for controlled pressure systems .....	21
4.11	Rated filling levels for insulation and/or operation .....	21
4.101	Rated maximum power and class of enclosure .....	22
4.101.1	Rated maximum power of the prefabricated substation .....	22
4.101.2	Rated class of enclosure .....	22
4.102	Ratings of the internal arc classification .....	22
4.102.1	General .....	22
4.102.2	Types of accessibility (A, B, AB) .....	22
4.102.3	Rated arc fault currents ( $I_A$ , $I_{Ae}$ ) .....	22
4.102.4	Rated arc fault duration ( $t_A$ , $t_{Ae}$ ) .....	23
5	Design and construction .....	23
5.1	Requirements for liquids in switchgear and controlgear .....	23
5.2	Requirements for gases in switchgear and controlgear .....	23
5.3	Earthing of switchgear and controlgear .....	24
5.4	Auxiliary and control equipment .....	25
5.5	Dependent power operation .....	25
5.6	Stored energy operation .....	25
5.7	Independent manual or power operation (independent unlatched operation) .....	25
5.8	Operation of releases .....	25
5.9	Low- and high-pressure interlocking and monitoring devices .....	25
5.10	Nameplates .....	25
5.11	Interlocking devices .....	25
5.12	Position indication .....	26
5.13	Degree of protection provided by enclosures .....	26
5.14	Creepage distances for outdoor insulators .....	26
5.15	Gas and vacuum tightness .....	26
5.16	Liquid tightness .....	26
5.17	Fire hazard (flammability) .....	26
5.18	Electromagnetic compatibility (EMC) .....	26
5.101	Protection of the prefabricated substation against mechanical stress .....	26
5.102	Protection of the environment due to internal defects .....	27
5.103	Internal arc fault .....	27
5.104	Enclosure .....	28
5.104.1	General .....	28
5.104.2	Fire behaviour .....	28
5.104.3	Corrosion .....	29
5.104.4	Covers and doors .....	30
5.104.5	Ventilation openings .....	30
5.104.6	Partitions .....	30
5.105	Other provisions .....	31
5.105.1	Provisions for dielectric tests on cables .....	31
5.105.2	Accessories .....	31
5.105.3	Operation aisle .....	31
5.105.4	Labels .....	31
5.106	Sound emission .....	31
5.107	Electromagnetic fields .....	31
6	Type tests .....	31

6.1	General.....	31
6.1.1	Grouping of tests .....	32
6.1.2	Information for identification of specimens .....	32
6.1.3	Information to be included in type-test reports .....	32
6.2	Dielectric tests .....	33
6.2.1	Ambient air conditions during tests .....	33
6.2.2	Wet test procedure .....	33
6.2.3	Conditions of switchgear and controlgear during dielectric tests .....	33
6.2.4	Criteria to pass the test .....	33
6.2.5	Application of the test voltage and test conditions.....	33
6.2.6	Tests of switchgear and controlgear of $U_r \leq 245$ kV .....	33
6.2.7	Tests of switchgear and controlgear of $U_r > 245$ kV .....	33
6.2.8	Artificial pollution tests for outdoor insulators.....	33
6.2.9	Partial discharge tests .....	33
6.2.10	Dielectric tests on auxiliary and control circuits.....	34
6.2.11	Voltage test as condition check .....	34
6.2.101	Tests on the high-voltage interconnection.....	34
6.2.102	Tests on low-voltage interconnection .....	35
6.3	Radio interference voltage (r.i.v.) test .....	36
6.4	Measurement of the resistance of circuits .....	36
6.5	Temperature-rise tests .....	36
6.5.101	General .....	36
6.5.102	Test conditions .....	37
6.5.103	Test methods.....	38
6.5.104	Measurements .....	41
6.5.105	Acceptance criteria .....	42
6.6	Short-time withstand current and peak withstand current tests .....	43
6.7	Verification of the protection .....	43
6.8	Tightness tests .....	43
6.9	Electromagnetic compatibility tests (EMC) .....	43
6.10	Additional tests on auxiliary and control circuits .....	44
6.10.1	General .....	44
6.10.2	Functional tests .....	44
6.10.3	Electrical continuity of earthed metallic parts test .....	44
6.10.4	Verification of the operational characteristics of auxiliary contacts.....	44
6.10.5	Environmental tests .....	44
6.10.6	Dielectric test .....	44
6.11	X-radiation test procedures for vacuum interrupters .....	44
6.101	Calculations and mechanical tests .....	44
6.101.1	Wind pressure .....	44
6.101.2	Roof loads .....	45
6.101.3	Mechanical impacts .....	45
6.102	Internal arc test.....	45
6.102.1	General .....	45
6.102.2	Test conditions .....	45
6.102.3	Arrangement of the equipment.....	46
6.102.4	Test procedure .....	46

6.102.5	Criteria to pass the test .....	46
6.102.6	Test report.....	47
6.102.7	Transferability of tests results.....	48
6.103	Measurement or calculation of electromagnetic fields .....	48
7	Routine tests .....	48
	<i>Replacement:</i> .....	49
7.101	Dielectric test on the high voltage interconnection.....	49
7.102	Voltage withstand tests on auxiliary circuits .....	49
7.103	Functional tests .....	49
7.104	Verification of correct wiring.....	49
7.105	Tests after assembly on site .....	49
8	Guide to the selection of prefabricated substation .....	49
	<i>Replacement:</i> .....	49
8.101	General.....	49
8.102	Selection of rated values.....	50
8.103	Selection of class of enclosure.....	50
8.104	Internal arc fault.....	50
	8.104.1 General .....	50
	8.104.2 Causes and preventive measures .....	51
	8.104.3 Supplementary protective measures .....	51
	8.104.4 Considerations for the selection and installation .....	53
	8.104.5 Internal arc test .....	53
	8.104.6 IAC classification .....	53
8.105	Summary of technical requirements, ratings and optional tests .....	54
9	Information to be given with enquiries, tenders and orders .....	58
9.1	Information with enquiries and orders .....	58
9.2	Information with tenders.....	59
10	Transport, storage, installation, operation, maintenance .....	60
10.1	Conditions during transport, storage and installation .....	60
10.2	Installation .....	60
	10.2.1 Unpacking and lifting .....	61
	10.2.2 Assembly.....	61
	10.2.3 Mounting .....	61
	10.2.4 Connections .....	61
	10.2.5 Final installation inspection.....	61
	10.2.6 Basic input data by the user .....	61
	10.2.7 Basic input data by the manufacturer .....	61
10.3	Operation.....	61
10.4	Maintenance .....	62
10.101	Dismantling, recycling and disposal at the end-of-service life .....	62
11	Safety.....	62
11.101	Electrical aspects.....	62
11.102	Mechanical aspects .....	62
11.103	Thermal aspects .....	62
11.104	Internal arc aspects .....	62
12	Influence of the product on the environment .....	63
Annex AA (normative)	Internal arc fault – Method to verify the internal arc classification (IAC) .....	64

AA.1	General.....	64
AA.2	Room simulation .....	64
AA.3	Indicators (for assessing the thermal effects of the gases).....	64
AA.3.1	General .....	64
AA.3.2	Arrangement of indicators.....	65
AA.4	Tolerances for geometrical dimensions of test arrangements .....	66
AA.5	Test parameters.....	67
AA.6	Test procedure.....	67
Annex BB	(normative) Test to verify the sound level of a prefabricated substation .....	76
BB.1	Purpose .....	76
BB.2	Test specimen .....	76
BB.3	Test method.....	76
BB.4	Measurements .....	76
BB.5	Presentation and calculation of the results .....	76
Annex CC	(normative) Mechanical impact test .....	78
CC.1	Test for the verification of the resistance to mechanical impact.....	78
CC.2	Apparatus for the verification of the protection against mechanical damage.....	78
Annex DD	(informative) Rating of transformers in an enclosure .....	80
DD.1	General.....	80
DD.2	Liquid-filled transformer .....	80
DD.3	Dry-type transformer .....	81
DD.4	Example.....	85
Annex EE	(informative) Examples of earthing circuits .....	88
Annex FF	(informative) Characteristics of enclosure materials .....	91
FF.1	Metals.....	91
FF.1.1	Coatings .....	91
FF.1.2	Paints .....	91
FF.2	Concrete .....	91
Bibliography	.....	93
Figure 101	– Measurement of transformer temperature rise in ambient air: $\Delta t_1$ .....	37
Figure 102	– Measurement of transformer temperature rise in an enclosure: $\Delta t_2$ .....	37
Figure 103	– Diagram of the preferred temperature-rise test method .....	39
Figure 104	– Diagram of the alternative temperature-rise test method .....	40
Figure 105	– Diagram for open-circuit test .....	41
Figure AA.1	– Mounting frame for vertical indicators .....	68
Figure AA.2	– Horizontal indicators .....	68
Figure AA.3	– Arrangement of indicators.....	71
Figure AA.4	– Selection of tests on high voltage switchgear for class IAC-A .....	72
Figure AA.5	– Selection of tests on high voltage switchgear for class IAC-B .....	73
Figure AA.6	– Selection of tests on high voltage interconnections for class IAC-A .....	74
Figure AA.7	– Selection of tests on high voltage interconnections for class IAC-B .....	75
Figure CC.1	– Impact test apparatus.....	79
Figure DD.1	– Liquid-filled transformer load factor in an enclosure .....	81
Figure DD.2	– Dry-type transformer load factor outside of the enclosure.....	81

Figure DD.3 – Insulation class 105 °C (A) dry-type transformers load factor in an enclosure.....	82
Figure DD.4 – Insulation class 120 °C (E) dry-type transformers load factor in an enclosure.....	82
Figure DD.5 – Insulation class 130 °C (B) dry-type transformers load factor in an enclosure.....	83
Figure DD.6 – Insulation class 155 °C (F) dry-type transformers load factor in an enclosure.....	83
Figure DD.7 – Insulation class 180 °C (H) dry-type transformers load factor in an enclosure.....	84
Figure DD.8 – Insulation class 200 °C (H) dry-type transformers load factor in an enclosure.....	84
Figure DD.9 – Insulation class 220 °C (H) dry-type transformers load factor in an enclosure.....	85
Figure EE.1 – Example of earthing circuits.....	88
Figure EE.2 – Example of earthing circuits.....	89
Figure EE.3 – Example within the framework serving as the main earthing conductor.....	90
Table 101 – Synthetic material characteristics.....	29
Table 102 – Locations, causes and examples of measures decreasing the probability of internal arcs.....	52
Table 103 – Single phase-to-earth arc fault current depending on the network neutral earthing.....	54
Table 104 – Summary of technical requirements and ratings for prefabricated substations (1 of 4).....	55
Table FF.1 – Treatment of coatings.....	91
Table FF.2 – Tests of coatings.....	91
Table FF.3 – Test of concrete.....	92

## INTRODUCTION

Prefabricated substations are defined as a type-tested assembly comprising an enclosure containing in general transformers, low-voltage and high-voltage switchgear, connections and auxiliary equipment to supply low-voltage energy from a high-voltage system or vice versa. These substations are in locations accessible to the public and should ensure protection to persons according to the specified service conditions.

This means that, in addition to the specified characteristics, ratings and relevant test procedures, particular attention has been paid to the specification concerning the protection of persons, both operators and general public. Use of type-tested components and suitable design and construction of the enclosure ensure this protection. The correct design and performance of the prefabricated substation are verified by means of relevant type tests described in this standard, including internal arc tests.

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