



Edition 1.0 2025-03

TECHNICAL SPECIFICATION

High-voltage switchgear and controlgear — a roll Part 320: Environmental aspects and life cycle assessment rules for high-voltage switchgear and controlgear 100 a roll 100 and 100 and 100 are 100 and 100 are 100 and 100 are 100 ar

Document Preview

IEC TS 62271-320:2025

https://standards.iteh.ai/catalog/standards/iec/071feb3d-0789-4884-ad63-5027f5f983b6/iec-ts-62271-320-2025





THIS PUBLICATION IS COPYRIGHT PROTECTED Copyright © 2025 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Secretariat 3, rue de Varembé CH-1211 Geneva 20 Switzerland

Tel.: +41 22 919 02 11 info@iec.ch

www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, ...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished
Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch

Discover our powerful search engine and read freely all the publications previews, graphical symbols and the glossary. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org

The world's leading online dictionary on electrotechnology, containing more than 22 500 terminological entries in English and French, with equivalent terms in 25 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.



IEC TS 62271-320

Edition 1.0 2025-03

TECHNICAL SPECIFICATION

High-voltage switchgear and controlgear — 12 1 0 S
Part 320: Environmental aspects and life cycle assessment rules for high-voltage switchgear and controlgear 1 0 2 1 0 S. I.C. a. I.

Document Preview

IEC TS 62271-320:2025

https://standards.iteh.ai/catalog/standards/iec/071feb3d-0789-4884-ad63-5027f5f983b6/iec-ts-62271-320-2025

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ICS 13.020.30; 29.130.10

ISBN 978-2-8327-0293-2

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

	F	OREWO	PRD	5
	IN	ITRODU	JCTION	7
	1	Scop	e	8
	2	Norm	native references	9
	3	Term	is and definitions	9
		3.1	Switchgear and controlgear	10
		3.2	Environmental aspects	
		3.3	Index of definitions	
		3.4	Abbreviated terms	
	4	Description and classification of high-voltage switchgear and controlgear (SG&CG)		
		•		
		4.1	General	
		4.2	Description and classification of switching devices	
	_	4.3	Description and classification of assemblies	
	5		ronmentally conscious design	
		5.1	General	
		5.2	Life cycle thinking	
		5.3	Reference service life	
		5.3.1		
		5.3.2		
		5.4	Material circularities 3.// Stallual us.iteli.al)	
	6	PSR	for life cycle assessment	
		6.1	General	32
		6.2	Product specific rules (PSR)	32
		6.3	Inputs <u>IEC TS 62271-320:2025</u> tOutputs alog/standards/iec/071feb3d-0789-4884-ad63-5027f5f983b6/iec-ts-6	33
		6.4ds.i	to a //catalog/standards/iec/0/1feb3d-0/89-4884-ad63-502/f5f983b6/iec-ts-6	35
		6.5	Qualitative and quantitative assessments	
		6.6	LCA functional unit (LCA-FU)	35
		6.6.1	General	35
		6.6.2	LCA functional unit(s) for switching devices	36
		6.6.3	LCA standard functional unit for assemblies	47
		6.7	System boundaries	56
		6.7.1	General	56
		6.7.2	Material circularities	58
		6.7.3	Exclusions from system boundary	60
		6.7.4	Cut-off rules for SG&CG	60
		6.8	Life cycle inventory analysis	61
		6.8.1	General	61
		6.8.2	Manufacturing	61
		6.8.3	Distribution	61
		6.8.4		
		6.8.5	Use	62
		6.8.6		
		6.9	Scenarios	
		6.9.1		
		6.9.2		

	6.9.3	Manufacturing and installation scenario	66
	6.9.4	Distribution scenario	66
	6.9.5	Use scenario	67
	6.9.6	End-of-life scenarios	72
	6.10	Impact categories	76
	6.11	Guidance for extrapolation of LCA results within a homogenous product family	78
	6.12	LCA comparison aspects	79
7	Infor	mation	79
	7.1	General	79
	7.2	Material declaration	80
	7.2.1	General	80
	7.2.2	Additional reporting recommendations	80
	7.3	End-of-life information	81
	7.3.1	General	81
	7.3.2	End-of-life information provision	81
	7.4	Digitization of high-voltage switchgear and controlgear and information related to LCA	
	7.5	LCA report	82
	7.5.1	General	82
	7.5.2	General information	82
	7.5.3		83
	7.5.4		83
	7.5.5	Environmental impact assessment	83
	7.5.6	Additional environmental information	84
Aı	nnex A	informative) Environmental aspects in environmentally conscious design	85
	A.1	General	85
	A.2	Inputs and outputs to be considered	85
	A.2.1	General	85
	A.2.2	? Inputs	85
	A.2.3	Outputs	86
	A.3	Tools for including environmental impacts in high-voltage switchgear and controlgear design	86
Aı	nnex B	informative) Brief introduction to life cycle assessment (LCA)	88
	B.1	General	88
	B.2	Definition of the goal and scope of the LCA	88
	B.3	Inventory analysis	
	B.4	Impact assessment	89
	B.5	Interpretation	90
Aı	nnex C	(informative) Environmental impact criteria	91
	C.1	General	91
	C.2	Sustainable development goals (SDGs) and environmental impact category	
Aı	nnex D	(informative) Equivalent energy mix – Example of calculation	
	D.1	Hypothesis	
	D.2	Example	
			105

INTERNATIONAL ELECTROTECHNICAL COMMISSION

HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR -

Part 320: Environmental aspects and life cycle assessment rules for high-voltage switchgear and controlgear

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at https://patents.iec.ch. IEC shall not be held responsible for identifying any or all such patent rights.

IEC TS 62271-320 has been prepared by IEC technical committee 17: High-voltage switchgear and controlgear. It is a Technical Specification.

The text of this Technical Specification is based on the following documents:

Draft	Report on voting
17/1161/DTS	17/1169/RVDTS

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Technical Specification is English.