SVENSK STANDARD
SS-EN 50187, utg 2:2023

| Fastställd | Sida | Ansvarig kommitté |
|---|---|---|
| 2023-02-22 | 1 (15) | SEK TK 17AC |



# Kopplingsapparater för spänning över 1 kV – Gasfyllda celler för ställverk för växelspänning med märkspänning över 1 kV till och med 52 kV

*High-voltage switchgear and controlgear – Gas-filled compartments for AC switchgear and controlgear for rated voltages above 1 kV up to and including 52 kV*

Som svensk standard gäller europastandarden EN 50187:2022. Den svenska standarden innehåller den officiella engelska språkversionen av EN 50187:2022.

## Nationellt förord

Tidigare fastställd svensk standard SS-EN 50187, utg 1:1996, gäller ej fr o m 2025-10-03.

ICS 29.130.99

Denna standard är fastställd av SEK Svensk Elstandard,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
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## *Standarder underlättar utvecklingen och höjer elsäkerheten*

Det finns många fördelar med att ha gemensamma tekniska regler för bl a mätning, säkerhet och provning och för utförande, skötsel och dokumentation av elprodukter och elanläggningar.

Genom att utforma sådana standarder blir säkerhetsfordringar tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

## *SEK är Sveriges röst i standardiseringsarbetet inom elområdet*

SEK Svensk Elstandard svarar för standardiseringen inom elområdet i Sverige och samordnar svensk medverkan i internationell och europeisk standardisering. SEK är en ideell organisation med frivilligt deltagande från svenska myndigheter, företag och organisationer som vill medverka till och påverka utformningen av tekniska regler inom elektrotekniken.

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Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

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Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

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Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN 50187

November 2022

ICS 29.130.99

Supersedes EN 50187:1996/corrigendum Sep. 1996;
EN 50187:1996

English Version

# High-voltage switchgear and controlgear - Gas-filled compartments of AC switchgear and controlgear with rated voltages above 1 kV up to and including 52 kV

Appareillage à haute tension - Compartiments sous pression de gaz pour appareillage à courant alternatif de tensions assignées supérieures à 1 kV et inférieures ou égales à 52 kV

Hochspannungs-Schaltgeräte und -Schaltanlagen - Gasgefüllte Schotträume für Wechselstrom-Schaltgeräte und -Schaltanlagen mit Bemessungsspannungen über 1 kV bis einschlielßlich 52 kV

This European Standard was approved by CENELEC on 2022-10-03. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**



Ref. No. EN 50187:2022 E

SEK Svensk Elstandard SS-EN 50187, utg 2:2023

# Contents

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# European foreword

This document (EN 50187:2022) has been prepared by CLC/TC17AC “High-voltage switchgear and controlgear”.

The following dates are fixed:

| | | |
|---|---|---|
| • latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement | (dop) | 2023-10-03 |
| • latest date by which the national standards conflicting with this document have to be withdrawn | (dow) | 2025-10-03 |

This document supersedes EN 50187:1996 and all its amendments and corrigenda (if any).

This edition includes the following significant technical changes with respect to EN 50187:1996:

- Consistency with EN IEC 62271-200:2021;
- Added references to quality standards for welding;
- Added Clause 10 on transport;
- Removal of the limitation on maximum product pressure x volume of 2 000 bar litres in the scope;
- Removal of the 300 kPa design pressure limitation;
- Extend scope to non-corrosive gases and gas mixtures in the conditions that prevail inside.

The present document has been established as an international specification for the design, construction, testing and certification of pressurized compartments used in high-voltage switchgear and controlgear for rated voltage above 1kV and up to and including 52kV regarding safety aspects.

In this respect, this document constitutes the exclusion of HV switchgear and controlgear from the scope of the Directive 2014/68/EU (superseding 97/23/EC) concerning pressure equipment. Article 1, 2. (l) excludes “compartments for high-voltage electrical equipment such as switchgear, controlgear, transformers, and rotating machines” from the scope of the Directive.

This document supplements the general specifications given in EN IEC 62271-200:2021 in that it provides specific requirements for pressurized gas-filled compartments of high-voltage switchgear and controlgear for rated voltage above 1kV and up to and including 52kV.

Due to compartment geometries that are determined by electrical requirements and by installation conditions, validation of the design requires physical proof testing. Common pressure vessel geometries and their calculation codes mostly cannot be applied.

National deviations from this document are listed in Annex A (informative).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users’ national committee. A complete listing of these bodies can be found on the CENELEC website.

# Introduction

This document covers the requirements for the design, construction, testing, transportation, inspection and certification (for filling pressure above 50 kPa relative) of gas-filled compartments, for use in AC switchgear and controlgear for rated voltage above 1 kV and up to and including 52 kV or for associated gas-filled equipment. Special consideration is given to these compartments for the following reasons:

a) The compartments form the containment of electrical equipment; thus, their shape is determined by electrical rather than mechanical requirements.

b) The compartments are part of equipment installed in public or restricted areas, but the equipment is operated by instructed authorized persons only.

c) Compartments are filled with a thoroughly dried gas or gas mixture that is stable and non-corrosive in the conditions that prevail inside the compartment. For this reason, no internal corrosion allowance is required on the wall thickness of these compartments.

d) The compartments are subjected to only small fluctuations of pressure as the gas-filling density will be maintained within close product related limitations to ensure satisfactory insulating and arc-quenching properties. Therefore, the compartments are not liable to fatigue due to pressure cycling.

e) The design pressure is below 500 kPa (rel.).

Due to the foregoing reasons and to ensure the maximum service continuity as well as to reduce the risk of moisture and dust entering the compartments which could endanger safe electrical operation of the switchgear and controlgear, no pressure tests should be carried out after installation and before placing in service and no periodic inspection of the compartment interiors or pressure tests should be carried out after the equipment is placed in service.

Examples of gases and gas mixtures which have been applied or proposed to be applied in high-voltage gas-filled switchgear and controlgear for rated voltage above 1 kV and up to and including 52 kV are mentioned in IEC 62271-4.

It is possible to apply this document to both other gases and gas mixtures based - or not - on those mentioned above which comply with the condition c) above.

In this document, the term pressure is referring to the relative pressure unless otherwise specified.

# 1 Scope

This document applies to pressurized gas-filled compartments of AC switchgear and controlgear with rated voltages above 1 kV and up to and including 52 kV for indoor or outdoor installations, where the gas or gas mixture is being used principally for its dielectric and/or arc-quenching properties and where the gases or gas mixtures in the compartment can be considered in conditions being chemically stable over its lifetime and non-corrosive to the material of the pressurized compartment in the conditions that prevail inside.

# 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EN 62271-1:2017, *High-voltage switchgear and controlgear — Part 1: Common specifications for alternating current switchgear and controlgear*

EN ISO 3834 (all parts), *Quality requirements for fusion welding of metallic materials (ISO 3834)*

EN ISO 5817, *Welding — Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) — Quality levels for imperfections (ISO 5817)*

EN ISO 9606 (all parts), *Qualification testing of welders — Fusion welding (ISO 9606)*

EN ISO 14732, *Welding personnel — Qualification testing of welding operators and weld setters for mechanized and automatic welding of metallic materials (ISO 14732)*