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High-Voltage switchgear and controlgear - Insulating pressurised partitions for gas filled metal enclosures

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 50089:2022 sisaldab Euroopa standardi EN 50089:2022 ingliskeelset teksti.	This Estonian standard EVS-EN 50089:2022 consists of the English text of the European standard EN 50089:2022.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 28.10.2022.	Date of Availability of the European standard is 28.10.2022.
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ICS 29.130.10

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50089

October 2022

ICS 29.130.10

Supersedes EN 50089:1992; EN 50089:1992/A1:1994

English Version

High-Voltage switchgear and controlgear - Insulating pressurised partitions for gas filled metal enclosures

Appareillage à haute tension - Cloisons isolées sous pression pour enveloppes métalliques sous pression de gaz

Hochspannungs-Schaltgeräte und -Schaltanlagen - Isolierende, druckbeaufschlagte Zwischenwände für gasgefüllte metallgekapselte Anlagen

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

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European foreword

This document (EN 50089:2022) has been prepared by CLC/TC 17AC “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)	2023-09-05
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2025-09-05

This document supersedes EN 50089:1992 and all of its amendments and corrigenda (if any).

EN 50089:2022 includes the following significant technical changes with respect to EN 50089:1992:

— Title made more general;

— Modification of scope of voltage, pressure level and gas mixtures;

— Addition of more specific terms and definitions (e.g. partition)

— Material not limited only to cast resin;

— Mechanical properties;

— Possibilities of reduction of test pressures.

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.

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Introduction

This document has been revised by CENELEC Technical Committee 17AC “High-voltage switchgear and controlgear”. It supplements the relevant product standards on gas-insulated switchgear and controlgear providing specific requirements for partitions based on insulating material being part of pressurized high-voltage switchgear and controlgear.

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

This document covers the requirements for the design, construction, testing, inspection and certification of partitions based on insulating material for gas-filled enclosures for use specifically in high-voltage switchgear and controlgear, or for associated gas-filled equipment.

Special consideration is given to these partitions for the following reasons.

a) For electrical reasons the partitions need to be manufactured from an insulating material.

b) The partitions usually form the containment of electrical equipment, thus their shape is determined by electrical rather than mechanical requirements. The mechanical requirements should be met in any case.

c) The enclosures in which the partitions are integrated are installed in restricted access areas and the equipment is operated by instructed, authorized persons only.

d) The insulating material is generally qualified against decomposition products of SF6 and other insulating gases. The thorough drying of gas-filling medium is fundamental for the satisfactory operation of the electrical equipment. The gas is periodically checked. For this reason, no corrosion allowance is required on the wall thickness of these partitions.

e) The enclosures are subjected to only small (in the relation to design pressure) fluctuations of pressure as the gas-filling density will be maintained within close limits to ensure satisfactory insulating and arc-quenching properties. Therefore, the partitions are not liable to fatigue due to pressure cycling.

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

This document should be a base for a mutual agreement between a manufacturer of electrical equipment and producer of partitions but not limited to it. Additional delivery and test instructions may be agreed between the parties if necessary.

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1 Scope

This document applies to pressurized partitions used in indoor and outdoor installations of high-voltage AC and DC switchgear and controlgear with rated voltages (Ur) above 1 kV AC / 1,5 kV DC and with design pressure higher than 300 kPa, where the gas is used principally for its dielectric and/or arc-quenching properties.

The partitions comprise pressurized barriers in electrical equipment not necessarily limited to the following examples:

— circuit-breakers;

— switch-disconnectors;

— disconnectors;

— earthing switches;

— current transformers;

— voltage transformers;

— surge arresters;

— busbars and connections;

— cable connections/terminations;

— cable bushings.

Partitions which are only pressurized from one side are also covered.

1 kV AC / 1,5 kV DC means it is valid for the apparatus applied and where the partitions are installed; however, the application of voltages below 1 kV AC / 1,5 kV DC as in, for example, current and voltage transformers are not excluded.

This document does not apply to high voltage bushings (see EN 60137, EN 61462 and EN 62155).

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 10204, *Metallic products — Types of inspection documents*

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

EN IEC 62271-200:2021, *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 (IEC 62271-200:2021)*

EN IEC 62271-203:2022, *High-voltage switchgear and controlgear — Part 203: AC gas-insulated metal-enclosed switchgear for rated voltages above 52 kV (IEC 62271-203:2022)*

EN ISO 527 (series), *Plastics — Determination of tensile properties (ISO 527 series)*

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