Irish Standard
I.S. EN 60871-1:2014

Shunt capacitors for a.c. power systems having a rated voltage above 1 000 V - Part 1: General

I.S. EN 60871-1:2014

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

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This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.

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Údarás um Chaighdeáin Náisiúnta na hÉireann

EUROPEAN STANDARD

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EUROPÄISCHE NORM

EN 60871-1

August 2014

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Supersedes EN 60871-1:2005

English Version

Shunt capacitors for a.c. power systems having a rated voltage above 1 000 V - Part 1: General (IEC 60871-1:2014)

Condensateurs shunt pour réseaux à courant alternatif de tension assignée supérieure à 1 000 V - Partie 1: Généralités (CEI 60871-1:2014)

Parallelkondensatoren für Wechselspannungs-Starkstromanlagen mit einer Nennspannung über 1 kV - Teil 1: Allgemeines (IEC 60871-1:2014)

This European Standard was approved by CENELEC on 2014-06-26. 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.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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

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Ref. No. EN 60871-1:2014 E

Foreword

The text of document 33/559/FDIS, future edition 4 of IEC 60871-1, prepared by IEC/TC 33 "Power capacitors and their applications" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60871-1:2014.

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)	2015-03-26
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2017-06-26

This document supersedes EN 60871-1:2005.

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

Endorsement notice

The text of the International Standard IEC 60871-1:2014 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 60038:2009	NOTE	Harmonized as EN 60038:2011 (modified).
IEC 60071-2:1996	NOTE	Harmonized as EN 60071-2:1997 (not modified).
IEC 60099 Series	NOTE	Harmonized as EN 60099 Series (partly modified).
IEC 60110-1	NOTE	Harmonized as EN 60110-1.
IEC 60143 Series	NOTE	Harmonized as EN 60143 Series (not modified).
IEC 60252 Series	NOTE	Harmonized as EN 60252 Series (not modified).
IEC 60358 Series	NOTE	Harmonized as EN 60358 Series (not modified).
IEC 60831 Series	NOTE	Harmonized as EN 60831 Series (not modified).
IEC 60931 Series	NOTE	Harmonized as EN 60931 Series (not modified).
IEC 61048	NOTE	Harmonized as EN 61048.
IEC 61049	NOTE	Harmonized as EN 61049.
IEC 61071	NOTE	Harmonized as EN 61071.
IEC 61270-1	NOTE	Harmonized as EN 61270-1.
IEC 61642	NOTE	Harmonized as EN 61642.

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.

Publication	Year	Title	EN/HD	Year
IEC 60060-1	-	High-voltage test techniques - Part 1: General definitions and test requirements	EN 60060-1	-
IEC 60071-1	2006	Insulation co-ordination - Part 1: Definitions, principles and rules	EN 60071-1	2006
IEC 60549	-	High-voltage fuses for the external protection of shunt capacitors	EN 60549	-
IEC/TS 60815	series	Selection and dimensioning of high-voltage insulators intended for use in polluted conditions	-	
IEC 60871-4	1996	Shunt capacitors for a.c. power systems having a rated voltage above 1000 V - Part 4: Internal fuses	EN 60871-4	1996 [1)]

1) EN 60871-4:1996 is superseded by EN 60871-4:2014, which is based on IEC 60871-4:2014.

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IEC 60871-1

Edition 4.0 2014-05

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Shunt capacitors for a.c. power systems having a rated voltage above 1 000 V – Part 1: General

Condensateurs shunt pour réseaux à courant alternatif de tension assignée supérieure à 1 000 V – Partie 1: Généralités

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

SHUNT CAPACITORS FOR AC POWER SYSTEMS HAVING A RATED VOLTAGE ABOVE 1 000 V –

Part 1: General

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.
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International Standard IEC 60871-1 has been prepared by IEC technical committee 33: Power capacitors and their applications.

This fourth edition cancels and replaces the third edition published in 2005. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) the overvoltage cycling test has been moved to this standard from the IEC 60871-2;
b) the ranges of the standardized values of the highest voltage for equipment have been modified:
c) for installations installed on altitudes above 1 000 m a correction factor to all insulation requirements has been introduced;
d) new standard insulation tables have been defined;

The text of this standard is based on the following documents:

FDIS	Report on voting
33/559/FDIS	33/564/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 60871 series, published under the general title *Shunt capacitors for a.c. power systems having a rated voltage above 1 000 V*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

SHUNT CAPACITORS FOR AC POWER SYSTEMS HAVING A RATED VOLTAGE ABOVE 1 000 V –

Part 1: General

1 Scope

This part of IEC 60871 is applicable to both capacitor units and capacitor banks intended to be used, particularly, for power-factor correction of a.c. power systems having a rated voltage above 1 000 V and frequencies of 15 Hz to 60 Hz.

This part of IEC 60871 also applies to capacitors intended for use in power filter circuits. Additional definitions, requirements and tests for filter capacitors are given in Annex B.

Additional requirements for capacitors protected by internal fuses as well as requirements for the internal fuses are given in IEC 60871-4.

Requirements for capacitors to be protected by external fuses, as well as requirements for the same, are given in Annex C.

This standard does not apply to capacitors of the self-healing metallized dielectric type.

The following capacitors are excluded from this part of IEC 60871:

– capacitors for inductive heat-generating plants operating at frequencies between 40 Hz and 24 000 Hz (IEC 60110-1);
– series capacitors for power systems (see the IEC 60143 series);
– capacitors for motor applications and the like (see the IEC 60252 series);
– coupling capacitors and capacitor dividers (IEC 60358);
– shunt capacitors for a.c. power systems having rated voltage up to and including 1 000 V (see the IEC 60831 and IEC 60931 series);
– small a.c. capacitors to be used for fluorescent and discharge lamps (IEC 61048 and IEC 61049);
– capacitors to be used in power electronic circuits (IEC 61071);
– capacitors for microwave ovens (IEC 61270-1);
– capacitors for suppression of radio interference;
– capacitors intended for use with a.c. voltage superimposed on d.c. voltage.

Accessories such as insulators, switches, instrument transformers, external fuses, etc. are in accordance with the relevant IEC standards.

The object of this part of IEC 60871 is as follows:

a) to formulate uniform rules regarding the performance and rating of units and banks, and the testing of units;
b) to formulate specific safety rules;
c) to provide a guide for installation and operation.