SLOVENSKI STANDARD
SIST EN IEC 62822-3:2018

01-april-2018

Nadomešča:
SIST EN 50505:2008

Električna varilna oprema - Ocenjevanje omejitev z vidika izpostavljenosti človeka elektromagnetnim poljem (od 0 Hz do 300 Hz) - 3. del: Oprema za uporovno varjenje (IEC 62822-3:2017)

Electric welding equipment - Assessment of restrictions related to human exposure to electromagnetic fields (0 Hz to 300 Hz) - Part 3: Resistance welding equipment (IEC 62822-3:2017)

Matériels de soudage électrique - Évaluation des restrictions relatives à l'exposition humaine aux champs électromagnétiques (0 Hz à 300 GHz) - Partie 3: Matériels de soudage par résistance (IEC 62822-3:2017)

Ta slovenski standard je istoveten z: **EN IEC 62822-3:2018**

ICS:

13.280	Varstvo pred sevanjem	Radiation protection
25.160.30	Varilna oprema	Welding equipment

SIST EN IEC 62822-3:2018 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 62822-3

February 2018

ICS 25.160.30

Supersedes EN 50505:2008

English Version

Electric welding equipment - Assessment of restrictions related to human exposure to electromagnetic fields (0 Hz to 300 Hz) - Part 3: Resistance welding equipment (IEC 62822-3:2017)

Matériels de soudage électrique - Évaluation des restrictions relatives à l'exposition humaine aux champs électromagnétiques (0 Hz à 300 GHz) - Partie 3: Matériels de soudage par résistance (IEC 62822-3:2017)

Einrichtungen zum Widerstandsschweißen - Bewertung elektrischer Schweißeinrichtungen in Bezug auf Begrenzungen der Exposition von Personen gegenüber elektromagnetischen Feldern (0 Hz - 300 GHz) - Teil 3: Grundnorm für Widerstandsschweißeinrichtungen (IEC 62822-3:2017)

This European Standard was approved by CENELEC on 2017-10-20. 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, Serbia, 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

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

Ref. No. EN IEC 62822-3:2018 E

European foreword

The text of document 26/626A/FDIS, future edition 1 of IEC 62822-3, prepared by IEC/TC 26 "Electric welding" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62822-3:2018.

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)	2018-08-16
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2021-02-16

This document supersedes EN 50505:2008.

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.

Endorsement notice

The text of the International Standard IEC 62822-3:2017 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where 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 61786-1	-	Measurement of DC magnetic, AC magnetic and AC electric fields from 1 Hz to 100 kHz with regard to exposure of human beings - Part 1: Requirements for measuring instruments	EN 61786-1	-
IEC 61786-2	-	Measurement of DC magnetic, AC magnetic and AC electric fields from 1 Hz to 100 kHz with regard to exposure of human beings - Part 2: Basic standard for measurements	-	-
IEC 62226-2-1	-	Exposure to electric or magnetic fields in the low and intermediate frequency range - Methods for calculating the current density and internal electric field induced in the human body -- Part 2-1: Exposure to magnetic fields - 2D models	EN 62226-2-1	-
IEC 62822-1	-	Electric welding equipment - Assessment of restrictions related to human exposure to electromagnetic fields (0 Hz to 300 GHz) - Part 1: Product family standard	EN 62822-1	-

IEC 62822-3

Edition 1.0 2017-09

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Electric welding equipment – Assessment of restrictions related to human exposure to electromagnetic fields (0 Hz to 300 GHz) – Part 3: Resistance welding equipment

Matériels de soudage électrique – Évaluation des restrictions relatives à l'exposition humaine aux champs électromagnétiques (0 Hz à 300 GHz) – Partie 3: Matériels de soudage par résistance

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

ICS 25.160.30

ISBN 978-2-8322-4814-0

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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ELECTRIC WELDING EQUIPMENT – ASSESSMENT OF RESTRICTIONS RELATED TO HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS (0 Hz TO 300 GHz) –

Part 3: Resistance welding equipment

FOREWORD

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International Standard IEC 62822-3 has been prepared by IEC technical committee 26: Electric welding.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
26/626A/FDIS	26/630/RVD

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

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

A list of all parts in the IEC 62822 series, published under the general title *Electric welding equipment – Assessment of restrictions related to human exposure to electromagnetic fields (0 Hz to 300 GHz)*, can be found on the IEC website.

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

ELECTRIC WELDING EQUIPMENT – ASSESSMENT OF RESTRICTIONS RELATED TO HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS (0 Hz TO 300 GHz) –

Part 3: Resistance welding equipment

1 Scope

This part of IEC 62822 applies to equipment for resistance welding and allied processes designed for occupational use by professionals and for use by laymen.

NOTE 1 Typical allied processes are resistance hard and soft soldering or resistance heating achieved by means comparable to resistance welding equipment.

This document specifies procedures for the assessment of human exposure to magnetic fields produced by resistance welding equipment. It covers non-thermal biological effects in the frequency range from 0 Hz to 10 MHz and defines standardized test scenarios.

NOTE 2 The general term "field" is used throughout this document for "magnetic field".

NOTE 3 For the assessment of exposure to electric fields and thermal effects, the methods specified in the Generic Standard IEC 62311 or relevant basic standards apply.

This document does not define methods for workplace assessment regarding the risks arising from electromagnetic fields (EMF). However, the EMF data that results from the application of this Basic Standard can be used to assist in workplace assessment.

Other standards can apply to products covered by this document. In particular this document cannot be used to demonstrate electromagnetic compatibility with other equipment. It does not specify any product safety requirements other than those specifically related to human exposure to electromagnetic fields.

This document focuses on the use of coupling coefficients to assess the exposure to EMF.

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.

IEC 61786-1, *Measurement of DC magnetic, AC magnetic and AC electric fields from 1 Hz to 100 kHz with regard to exposure of human beings – Part 1: Requirements for measuring instruments*

IEC 61786-2, *Measurement of DC magnetic, AC magnetic and AC electric fields from 1 Hz to 100 kHz with regard to exposure of human beings – Part 2: Basic standard for measurements*

IEC 62226-2-1, *Exposure to electric or magnetic fields in the low and intermediate frequency range – Methods for calculating the current density and internal electric field induced in the human body – Part 2-1: Exposure to magnetic fields – 2D models*

IEC 62822-1, *Electric welding equipment – Assessment of restrictions related to human exposure to electromagnetic fields (0 Hz to 300 GHz) – Part 1: Product family standard*

3 Terms, definitions, quantities, units and constants

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-851, IEC 60974-1, IEC 60974-6, and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1.1
basic restrictions
exposure limit value
restrictions on exposure to electric, magnetic and electromagnetic fields that are based directly on established health effects and biological considerations

3.1.2
coupling coefficient
CC_B, CC_J, CC_E
coupling-coefficient that map the electric current in a field source to the maximum of the external magnetic flux density (CC_B), the maximum intracorporeal induced electric current density (CC_J) or the maximum intracorporeal electric field strength (CC_E) respectively

Note 1 to entry: Keeping in mind that the electric conductivity can be frequency dependent, a conversion between CC_J and CC_E is possible with the relation given in Formula (1)

$$J(j\omega) = \sigma(j\omega) \cdot E(j\omega) \quad (1)$$

3.1.3
exposure index
EI
result of the evaluation of exposure to (both sinusoidal and non-sinusoidal) EMF, expressed as a fraction or percentage of the permissible values

Note 1 to entry: Fractions higher than 1 (100 %) exceed the permissible values.

3.1.4
general public
individuals of all ages and of varying health conditions

3.1.5
health effect
adverse effect, such as thermal heating or stimulation of nerve and muscle tissue as a result of human exposure to EMF

3.1.6
intracorporeal
situated or occurring within the body

3.1.7
layman
operator who does not weld in the performance of his profession and may have little or no formal instruction in welding

[SOURCE: IEC 60050-851, 851-11-14, modified – "Arc welding" was replaced by "welding".]

3.1.8
non-thermal effect
stimulation of muscles, nerves or sensory organs as a result of human exposure to EMF

3.1.9
occupational exposure
exposure of workers to EMF at their workplaces, generally under known conditions, and as a result of performing their regular or assigned job activities

Note 1 to entry: A worker is any person employed by an employer, including trainees and apprentices

3.1.10
reference level
directly measurable quantity, derived from basic restrictions, provided for practical exposure assessment purposes

Note 1 to entry: Respect of the reference levels will ensure respect of the relevant basic restriction. If the reference levels are exceeded, it does not necessarily follow that the basic restriction will be exceeded.

3.1.11
resistance welding system
combination of power source, transformer, cabling and welding circuit

3.1.12
sensory effect
transient disturbed sensory perceptions and minor change in brain functions as a result of human exposure to EMF

3.1.13
standardized configuration
configuration reflecting the normal operator positions

3.1.14
standardized distance
distance from the axis of a part of the welding circuit to the closest surface of the body in standardized configurations

3.1.15
welding circuit
conductive material through which the welding current is intended to flow

Note 1 to entry: In resistance welding, the workpieces are not part of the welding circuit for the purposes of this document.

[SOURCE: IEC 60050-851, 851-14-10, modified – The two notes to entry have been deleted, and a new note to entry has been added.]

3.2 Quantities and units

The internationally accepted SI units are used throughout this document.

Symbols set in bold type are vector quantities.