SLOVENSKI STANDARD
SIST EN IEC 63078:2020

01-maj-2020

Naprave za električno ogrevanje in elektromagnetno obdelavo - Preskusne metode za indukcijske naprave za segrevanje (IEC 63078:2019)

Installations for electroheating and electromagnetic processing - Test methods for induction through-heating installations (IEC 63078:2019)

Elektrowärmeanlagen und Anlagen für elektromagnetische Bearbeitungsprozesse - Prüfverfahren für induktive Durcherwärmungsanlagen (IEC 63078:2019)

Installations pour traitement électrothermique et électromagnétique - Méthodes d'essai pour les installations de chauffage par induction (IEC 63078:2019)

Ta slovenski standard je istoveten z: **EN IEC 63078:2020**

ICS:

25.180.10	Električne peči	Electric furnaces
97.100.01	Grelniki na splošno	Heating appliances in general

SIST EN IEC 63078:2020 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 63078

February 2020

ICS 25.180.10

English Version

Installations for electroheating and electromagnetic processing - Test methods for induction through-heating installations (IEC 63078:2019)

Installations pour traitement électrothermique et électromagnétique - Méthodes d'essai pour les installations de chauffage par induction (IEC 63078:2019)

Elektrowärmeanlagen und Anlagen für elektromagnetische Bearbeitungsprozesse - Prüfverfahren für induktive Durcherwärmungsanlagen (IEC 63078:2019)

This European Standard was approved by CENELEC on 2019-12-27. 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.

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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 IEC 63078:2020 E

European foreword

The text of document 27/1118/FDIS, future edition 1 of IEC 63078, prepared by IEC/TC 27 "Industrial electroheating and electromagnetic processing" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 63078:2020.

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) 2020-09-27
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2022-12-27

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 63078:2019 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 62076:2006	NOTE	Harmonized as EN 62076:2006 (not modified)
IEC 60683:2011	NOTE	Harmonized as EN 60683:2012 (not modified)

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.

Clause 2 of IEC 60398:2015 is applicable with the following additions:

Publication	Year	Title	EN/HD	Year
IEC 60398	2015	Installations for electroheating and electromagnetic processing - General performance test methods	EN 60398	2015
IEC 60519-1	—[1]	Safety in installations for electroheating and electromagnetic processing - Part 1: General requirements	EN IEC 60519-1	—[2]
IEC 60519-3	2005	Safety in electroheat installations - Part 3: Particular requirements for induction and conduction heating and induction melting installations	EN 60519-3	2005

[1] Under preparation. Stage at time of publication: IEC BPUB 60519-1:2020.

[2] Under preparation. Stage at time of publication: FprEN IEC 60519-1:2019.

IEC 63078

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Installations for electroheating and electromagnetic processing – Test methods for induction through-heating installations

Installations pour traitement électrothermique et électromagnétique – Méthodes d'essai pour les installations de chauffage par induction

INTERNATIONAL
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INSTALLATIONS FOR ELECTROHEATING AND ELECTROMAGNETIC PROCESSING – TEST METHODS FOR INDUCTION THROUGH-HEATING INSTALLATIONS

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 63078 has been prepared by IEC technical committee 27: Industrial electroheating and electromagnetic processing.

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

FDIS	Report on voting
27/1118/FDIS	27/1119/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.

This International Standard is to be used in conjunction with IEC 60398:2015.

The clauses of this document supplement, modify or replace clauses of IEC 60398. When this document states “addition”, "modification" or “replacement”, the relevant text in IEC 60398 is to be adapted accordingly.

Subclauses which are additional to those in IEC 60398 are numbered starting from 101. Additional annexes are numbered AA, BB, etc.

The committee has decided that the contents of this document 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 document. At this date, the document will be

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

INTRODUCTION

Induction through-heating and induction melting are very important applications of induction heating. However, an induction through-heating installation is more complex than an induction melting furnace, as it includes more heating manners, varieties and sizes. In addition, some performance tests which are very useful to users, for example the determination of temperature homogeneity of billets and energy efficiency of the installation, are not easy to carry out.

Induction through-heating installations are widely used in many industries for example machine building and metallurgy, for heating billets or workpieces of alloy steel, copper, aluminum, etc. before their subsequent hot forming (e.g. forging, extruding and rolling), with clean and fast heating, easy temperature control and automation as well as a high degree of energy-saving.

This document was prepared on the basis of IEC 60398:2015, with some references made to IEC 62076:2006 and “Induction Heating – Industrial Applications” published by UIE in 1992.

INSTALLATIONS FOR ELECTROHEATING AND ELECTROMAGNETIC PROCESSING – TEST METHODS FOR INDUCTION THROUGH-HEATING INSTALLATIONS

1 Scope

This clause of IEC 60398:2015 is replaced by the following.

This document specifies the test procedures, conditions and methods for determining the main performance parameters and operational characteristics of induction through-heating installations.

Measurements and tests that are solely used for the verification of safety requirements of the installations are outside the scope of this document and are covered by IEC 60519-1 and IEC 60519-3.

This document is applicable to the induction heating installations which through-heat the whole or part of metal billet or workpiece for its subsequent hot forming (e.g. forging, extruding and rolling), using low, mains or medium frequencies. It is possible to use it as a reference for other induction heating installations for heat-treatment and other purposes as well as superconducting DC induction through-heating installations.

This document includes the concept and material on energy efficiency dealing with the electrical and processing parts of the installations, as well as the overall performance.

2 Normative references

This clause of IEC 60398:2015 is applicable except as follows.

Replacement:

The following standards are referred to in the text in such a way that some or all of their contents constitutes requirements of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced standard (including any amendments) applies.

Modification:

Delete footnotes

Additions:

IEC 60398:2015, *Installations for electroheating and electromagnetic processing – General performance test methods*

IEC 60519-1:—[1], *Safety in installations for electroheating and electromagnetic processing – Part 1: General requirements*

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1 Sixth edition under preparation. Stage at the time of publication: IEC PRVC 60519-1:2019.

IEC 60519-3:2005, *Safety in electroheat installations – Part 3: Particular requirements for induction and conduction heating and induction melting installations*

3 Terms and definitions

This clause of IEC 60398:2015 is applicable except as follows.

Replacement:

For the purposes of this document, the terms and definitions given in IEC 60398:2015 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

Additions:

NOTE 101 For the following definitions of terms related to some parts and electrical parameters of power circuit of induction through-heating equipment, see also the explanatory diagrams in Annex AA. The symbols are also listed in Annex BB.

3.101
induction through-heating installation
installation comprising induction through-heating equipment and the electrical and mechanical auxiliaries necessary for the operation and utilization of the equipment

Note 1 to entry: The electrical auxiliaries comprise all electrical components in the power circuit of induction through-heating equipment, power supply for mechanical auxiliaries and control system; and the mechanical auxiliaries comprise billet handling mechanism and its mechanical power as well as water cooling system, etc.

3.102
induction through-heating equipment
equipment consisting of one or more heating inductors, supporting frames (cabinets) and the connections for cooling water and electricity, etc., for induction heating and holding of billet

3.103
batch heating
repetitive static heating manner, which involves placing an individual billet into a heating inductor for heating and holding, and then extracting it

[SOURCE: IEC 62076:2006, 3.39， modified – The differences between induction through-heating and induction melting in workload name and technological process have been considered.]

3.104
stage heating
heating manner having two or more heating inductors, in which, for a two heating inductor equipment for example, the billet is firstly placed into a heating inductor for heating, secondly moved to another heating inductor for holding and then extracted

3.105
continuous heating
heating manner, in which the billets progress continuously or rhythmically through one or more heating inductors for heating and holding