

Installations for electroheating and electromagnetic  
processing - General performance test methods

## EESTI STANDARDI EESSÕNA

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English Version

**Installations for electroheating and electromagnetic processing -  
General performance test methods  
(IEC 60398:2015)**

Installations pour traitement électrothermique et  
électromagnétique - Méthodes générales d'essai de  
fonctionnement  
(IEC 60398:2015)

Industrielle Elektrowärmeanlagen - Allgemeine  
Prüfverfahren  
(IEC 60398:2015)

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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

## Foreword

The text of document 27/949/FDIS, future edition 3 of IEC 60398, prepared by IEC/TC 27 "Industrial electroheating and electromagnetic processing" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60398:2015.

The following dates are fixed:

- latest date by which the document has to be (dop) 2016-02-14  
implemented at national level by  
publication of an identical national  
standard or by endorsement
- latest date by which the national (dow) 2018-05-14  
standards conflicting with the  
document have to be withdrawn

This document supersedes EN 60398:1999.

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## Endorsement notice

The text of the International Standard IEC 60398:2015 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	NOTE	Harmonized as EN 60038.
IEC 60519 (Series)	NOTE	Harmonized as EN 60519 (Series).
ISO 638:2008	NOTE	Harmonized as EN ISO 638:2008.
ISO 2813:2014	NOTE	Harmonized as EN ISO 2813:2014.
ISO 8254 (Series)	NOTE	Harmonized as EN ISO 8254 (Series).
ISO 12100:2010	NOTE	Harmonized as EN ISO 12100:2010.
ISO/IEC Guide 51	NOTE	Harmonized as ISO/IEC Guide 51.

## 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](http://www.cenelec.eu).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60519-1	-	Safety in installations for electroheating and electromagnetic processing -- Part 1: General requirements	EN 60519-1	-
ISO 50001	-	Energy efficiency and renewable energy	EN ISO 50001	2011
ISO/IEC 13273-1	-	sources - Common international terminology - Part 1: Energy efficiency	-	-
ISO/IEC Guide 99	-	International vocabulary of metrology - Basic and general concepts and associated terms (VIM)	-	-

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## INTRODUCTION

Designing equipment for electroheating (EH) or for electromagnetic processing of materials (EPM) is a complex task. The manufacturer of the installation or equipment usually needs to fulfil the following requirements, which come from different sources and are quite often in this order of priorities:

- a) to enable the intended process and make the installation to work properly;
- b) to be cost effective during design and manufacturing;
- c) to ensure that the equipment is safe to use in the sense of providing freedom from unacceptable risk of physical injury or damage to the health of the operator (safety in the narrower sense of ISO 12100:2010);
- d) to prove that the equipment is cost effective to operate and uses sufficiently small amounts of energy, material and other resources;
- e) to ensure that the equipment is safe to use in the sense of providing freedom from unacceptable risk of physical injury or damage to the health of people, or damage to property or the environment (adding other safety aims to c) and in the much broader definition of safety according to ISO/IEC Guide 51).

It is usually part of the proprietary knowledge of the manufacturer or user of the equipment, to make it cost effective or enabling intended processes with a benefit. IEC 60519-1:— assists with achieving safety in the ISO 12100:2010 sense. The focus of this standard is on basic requirements for measuring instrumentation and test methods concerned with energy and resource efficiency, performance of the intended process and assessing cost of ownership for installations and equipment for EH and EPM.



# INSTALLATIONS FOR ELECTROHEATING AND ELECTROMAGNETIC PROCESSING – GENERAL PERFORMANCE TEST METHODS

## 1 Scope

This International Standard specifies the basic test procedures, conditions and methods for establishing the main performance parameters and the main operational characteristics of industrial installations and equipment intended for electroheating (EH) or electromagnetic processing of materials (EPM).

Measurements and tests that are solely used for the verification of safety requirements of equipment for EH or for EPM are outside the scope of this standard and are covered by the IEC 60519 series.

This standard is applicable for the commissioning, verification of design improvements or for energy related tasks including benchmarking with respect to energy use or energy efficiency, establishing of an energy baseline, and labelling. Some concepts from this standard can directly be used as key performance indicators.

Detailed tests for specific types of EH or EPM equipment and installations are beyond the scope of this standard and are provided in particular test standards for EH or EPM equipment. This standard is intended as general reference for all future test standards applicable to particular EH or EPM equipment or installations.

This standard includes the concept and material presented in IEC TS 62796 on energy efficiency dealing with the electrical and processing parts of the equipment, as well as the overall performance.

## 2 Normative references

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.

IEC 60519-1:—<sup>2</sup>, *Safety in installations for electroheating and electromagnetic processing – Part 1: General Requirements*

ISO/IEC 13273-1<sup>3</sup>, *Energy efficiency and renewable energy sources – Common international terminology – Part 1: Energy Efficiency*

ISO/IEC Guide 99, *International vocabulary of metrology – Basic and general concepts and associated terms (VIM)*

ISO 50001:2011, *Energy management systems – Requirements with guidance for use*

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<sup>2</sup> Fifth edition to be published.

<sup>3</sup> To be published.