SLOVENSKI STANDARD
oSIST prEN ISO 8528-13:2025

01-februar-2025

Agregati za proizvodnjo izmeničnega toka, gnani z batnim motorjem z notranjim zgorevanjem - 13. del: Varnost (ISO/DIS 8528-13:2024)

Reciprocating internal combustion engine driven alternating current generating sets - Part 13: Safety (ISO/DIS 8528-13:2024)

Stromerzeugungsaggregate mit Hubkolben-Verbrennungsmotor - Teil 13: Sicherheit (ISO/DIS 8528-13:2024)

Groupes électrogènes à courant alternatif entraînés par moteurs alternatifs à combustion interne - Partie 13: Sécurité (ISO/DIS 8528-13:2024)

Ta slovenski standard je istoveten z: **prEN ISO 8528-13**

ICS:

27.020	Motorji z notranjim zgorevanjem	Internal combustion engines
29.160.40	Električni agregati	Generating sets

oSIST prEN ISO 8528-13:2025 **en,fr,de**

DRAFT International Standard

ISO/DIS 8528-13

Reciprocating internal combustion engine driven alternating current generating sets —

Part 13: Safety

Groupes électrogènes à courant alternatif entraînés par moteurs alternatifs à combustion interne —

Partie 13: Sécurité

ICS: 27.020; 29.160.40

ISO/TC **70**

Secretariat: **SAC**

Voting begins on:
2024-12-13

Voting terminates on:
2025-03-07

Reference number
ISO/DIS 8528-13:2024(en)

COPYRIGHT PROTECTED DOCUMENT

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 70, *Internal combustion engines*.

This second edition cancels and replaces the first edition (ISO 8528-13:2016), which has been technically revised.

The main changes are as follows:

— the normative references have been updated;

— the definition of «high voltage electrical equipment» has been added;

— the Clause 6 has been modified;

— the Annex C has been updated;

A list of all parts in the ISO 8528 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document is a type-C standard as stated in ISO 12100.

This document is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

— machine manufacturers (small, medium and large enterprises);

— health and safety bodies (regulators, accident prevention organisations, market surveillance, etc.).

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

— machine users/employers (small, medium and large enterprises);

— machine users/employees (e.g. trade unions, organizations for people with special needs);

— service providers, e.g. for maintenance (small, medium and large enterprises);

— consumers (in the case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate at the drafting process of this document.

The machinery concerned and the extent to which hazards, hazardous situations or hazardous events are covered are indicated in the Scope of this document.

When requirements of this type-C standard are different from those which are stated in type-A or -B standards, the requirements of this type-C standard take precedence over the requirements of the other standards for machines that have been designed and built according to the requirements of this type-C standard.

Reciprocating internal combustion engine driven alternating current generating sets —

Part 13: Safety

1 Scope

This document specifies the safety requirements for reciprocating internal combustion (RIC) engine driven generating sets consisting of an RIC engine, an alternating current (AC) generator including the additional equipment required for operating, e.g. controlgear, switchgear, auxiliary equipment.

It is applicable to generating sets for land and marine use (domestic, recreational and industrial application). It is not applicable to generating sets used on board of seagoing vessels and mobile offshore units as well as on aircraft or to propel road vehicles and locomotives.

NOTE This document does not apply to arc welding equipment (IEC 60974 series).

The special requirements needed to cover operation in potentially explosive atmospheres are not covered in this document.

The hazards relevant to RIC engine driven generating sets are identified in Annex A.

This document deals with the special requirements of test and safety design which is observed in addition to the definitions and requirements in ISO 8528-1, ISO 8528-2, ISO 8528-3, ISO 8528-4, ISO 8528-5, ISO 8528-6 and ISO 8528-10, where applicable. It specifies safety requirements in order to protect the user from danger.

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.

ISO 2261, *Reciprocating internal combustion engines — Hand-operated control devices — Standard direction of motion*

ISO 2710-1, *Reciprocating internal combustion engines — Vocabulary — Part 1: Terms for engine design and operation*

ISO 2710-2, *Reciprocating internal combustion engines — Vocabulary — Part 2: Terms for engine maintenance*

ISO 3046-1, *Reciprocating internal combustion engines — Performance — Part 1: Declarations of power, fuel and lubricating oil consumptions, and test methods — Additional requirements for engines for general use*

ISO 3046-6, *Reciprocating internal combustion engines — Performance — Part 6: Overspeed protection*

ISO 4871, *Acoustics — Declaration and verification of noise emission values of machinery and equipment*

ISO 6826:2022, *Reciprocating internal combustion engines — Fire protection*

ISO 7967-1, *Reciprocating internal combustion engines — Vocabulary of components and systems — Part 1: Structure and external covers*

ISO 7967-2, *Reciprocating internal combustion engines — Vocabulary of components and systems — Part 2: Main running gear*

ISO 7967-3, *Reciprocating internal combustion engines — Vocabulary of components and systems — Part 3: Valves, camshaft drives and actuating mechanisms*

ISO 7967-4, *Reciprocating internal combustion engines — Vocabulary of components and systems — Part 4: Pressure charging and air/exhaust gas ducting systems*

ISO 7967-8, *Reciprocating internal combustion engines — Vocabulary of components and systems — Part 8: Starting systems*

ISO 7967-9, *Reciprocating internal combustion engines — Vocabulary of components and systems — Part 9: Control and monitoring systems*

ISO 8528-1:2018, *Reciprocating internal combustion engine driven alternating current generating sets — Part 1: Application, ratings and performance*

ISO 8528-2, *Reciprocating internal combustion engine driven alternating current generating sets — Part 2: Engines*

ISO 8528-3, *Reciprocating internal combustion engine driven alternating current generating sets — Part 3: Alternating current generators for generating sets*

ISO 8528-4:2005, *Reciprocating internal combustion engine driven alternating current generating sets — Part 4: Controlgear and switchgear*

ISO 8528-5:2022, *Reciprocating internal combustion engine driven alternating current generating sets — Part 5: Generating sets*

ISO 8528-6, *Reciprocating internal combustion engine driven alternating current generating sets — Part 6: Test methods*

ISO 8528-7, *Reciprocating internal combustion engine driven alternating current generating sets — Part 7: Technical declarations for specification and design*

ISO 8528-8:2016, *Reciprocating internal combustion engine driven alternating current generating sets — Part 8: Requirements and tests for low-power generating sets*

ISO 8528-9, *Reciprocating internal combustion engine driven alternating current generating sets — Part 9: Measurement and evaluation of mechanical vibrations*

ISO 8528-10:2022, *Reciprocating internal combustion engine driven alternating current generating sets — Part 10: Measurement of airborne noise*

ISO 8999, *Reciprocating internal combustion engines — Graphical symbols*

ISO 11429, *Ergonomics — System of auditory and visual danger and information signals*

ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction*

ISO 13732-1, *Ergonomics of the thermal environment — Methods for the assessment of human responses to contact with surfaces — Part 1: Hot surfaces*

ISO 13850, *Safety of machinery — Emergency stop function — Principles for design*

ISO 13857:2019, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs*

ISO 14122-2, *Safety of machinery — Permanent means of access to machinery — Part 2: Working platforms and walkways*

ISO 14314:2009, *Reciprocal internal combustion engines — Recoil starting equipment — General safety requirements*

ISO 15534-2, *Ergonomic design for the safety of machinery — Part 2: Principles for determining the dimensions required for access openings*

IEC 60034-1:2022, *Rotating electrical machines — Part 1: Rating and performance*

IEC 60034-5:2020, *Rotating electrical machines — Part 5: Degrees of protection provided by the integral design of rotating electrical machines (IP code) — Classification*

IEC 60245-4, *Rubber insulated cables — Rated voltages up to and including 450/750 V — Part 4: Cords and flexible cables*

IEC 60204-1:2021, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements*

IEC 60204-11, *Safety of machinery — Electrical equipment of machines — Part 11: Requirements for equipment for voltages above 1 000 V AC or 1 500 V DC and not exceeding 36 kV*

IEC 60335-1:2021, *Household and similar electrical appliances — Safety — Part 1: General requirements*

IEC 60364-1, *Low-voltage electrical installations — Part 1: Fundamental principles, assessment of general characteristics, definitions*

IEC 60364-4-41, *Low-voltage electrical installations — Part 4-41: Protection for safety — Protection against electric shock*

IEC 60068-2-75, *Environmental testing — Part 2-75: Tests — Test Eh: Hammer tests*

IEC 60073, *Basic and safety principles for man-machine interface, marking and identification — Coding principles for indicators and actuators*

IEC 61310-1, *Safety of machinery — Indication, marking and actuation — Part 1: Requirements for visual, acoustic and tactile signals*

IEC 61310-2, *Safety of machinery — Indication, marking and actuation — Part 2: Requirements for marking*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 2710-1, ISO 2710-2, ISO 3046-1, ISO 3046-6, ISO 7967-1, ISO 7967-2, ISO 7967-3, ISO 7967-4, ISO 7967-8, ISO 7967-9, ISO 8528-1, ISO 8528-2, ISO 8528-3, ISO 8528-4, ISO 8528-5, ISO 8528-6, ISO 8528-7, ISO 8528-8, ISO 8528-9, ISO 8528-10, ISO 12100, IEC 60364-1, IEC 60204-11 and the following apply.

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
layperson
person who does not necessarily recognize potential danger resulting from electricity, moving parts or hot parts

Note 1 to entry: The layperson has normally a lack of training, knowledge and experience.

3.2
close proximity
30 mm space immediately around the operating and adjusting controls and carrying handles, including their whole movement range

3.3
low power power
electric power assigned by the manufacturer according to ISO 8528-1:2018, Clause 13 (COP, PRP, LTP, ESP), except for low power generating sets to ISO 8528-8:2016, 3.3 (COP)

3.4
low power generating sets
power generating sets for the purpose of this part of ISO 8528 which are determined by the following special features:

— low power is taken to mean rated power of a magnitude up to 10 kW/50 Hz, 12 kW/60 Hz;

— users normally are layperson;

— complete generating set is usually transportable, or mobile;

— electrical output is connected by means of plugs, sockets and screwed terminal except for extra low voltages;

— generating set is ready for use without any additional installation work by the user.

[SOURCE: ISO 8528-8:2016, Clause 1]

3.5
frame contour
outmost of low power generating sets, consisting of robust parts such as, the frame made of pipe, the fuel tank, the handle, the control box, etc

3.6
operator interface
means by which information is communicated between a human operator(s) and the SIS (e.g. LCD, indicating lights, push-buttons, horns, alarms)

Note 1 to entry: The operator interface is sometimes referred to as the human-machine interface (HMI).

3.7
control device
device connected into the control circuit (circuit used for the control, including monitoring) and used for controlling the operation of the machine (e.g. relay, contactor, position sensor PLC module, actuator,...)

3.8
controlgear
switching device and its combination with associated control, measuring, protective and regulating equipment, intended in principle for the control of electrical energy consuming equipment

3.9
enclosure
part providing protection of equipment against external influences and, in any direction, protection against direct contact

3.10
electrical equipment
material, fitting, device, component, appliance, fixture, apparatus, and the like using electric currents or electromagnetic fields, except for the safety extra low voltage circuits

3.11
control
operation consisting of interacting by touching the machine in the places defined for this purpose during the starting, functioning and stopping phases

3.12
monitoring
operation consisting of observing the operating parameters of the machine during its operation while maintaining appropriate safety distances depending on the risks identified