International Standard

ISO 8528-5

Sixth edition
2025-05

Reciprocating internal combustion engine driven alternating current generating sets —

Part 5: Generating sets

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

Partie 5: Groupes électrogènes

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Foreword

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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 document 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).

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

This sixth edition cancels and replaces the fifth edition (ISO 8528-5:2022), which has been technically revised.

The main changes are as follows:

— Clause 3 has been updated;

— Subclause 12.2 has been re-written;

— list of symbols has been added in 3.2;

— errors have been corrected in Table 4;

— Figure 4 has been added;

— previous Figures 3, 4, 5, 6, 7, 8, 9, 10 and 11 have been renumbered and modified

— previous figure 12 has been deleted;

— Figures 13, 14 and 15 have been modified;

— previous Figure 17 has been deleted;

— new Figures 16, 17 and 18 have been added.

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.

Reciprocating internal combustion engine driven alternating current generating sets —

Part 5:
Generating sets

1 Scope

This document specifies design and performance criteria arising out of the combination of a reciprocating internal combustion (RIC) engine and an alternating current (AC) generator when operating as a unit. This unit can run in parallel to the grid or not.

This document applies to AC generating sets driven by RIC engines for land and marine use, excluding generating sets used on aircraft, or to propel land vehicles and locomotives.

For some specific applications (e.g. essential hospital supplies and high-rise buildings), supplementary requirements can apply. The provisions of this document are a basis for establishing any supplementary requirements.

For generating sets driven by other reciprocating-type prime movers (e.g. steam engines), the provisions of this document can be used as a basis for establishing these requirements.

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 3046-5, *Reciprocating internal combustion engines — Performance — Part 5: Torsional vibrations*

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

ISO 8528-3:2020, *Reciprocating internal combustion engine driven alternating current generating sets — Part 3: Alternating current generators for generating sets*

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

3 Terms, definitions and symbols

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions 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/

3.1.1
frequency
f
reciprocal of the period

Note 1 to entry: The symbol f is mainly used when the period is a time.

3.1.2
no-load frequency
f_{i}
frequency at which the generating set is operating without load

3.1.3
rated no-load frequency
$f_{\mathrm{i,r}}$
frequency at which the generating set is designed to operate without load

3.1.4
rated frequency
f_{r}
frequency at which the generating set is designed to operate at rated load

3.1.5
maximum safety frequency
f_{maxs}
maximum frequency which causes a stop to production

3.1.6
minimum safety frequency
f_{mins}
minimum frequency which causes a stop to production

3.1.7
frequency setting rate of change
v_f
rate of change of frequency setting under remote control

Note 1 to entry: $v_f = \dfrac{\left(f_{\mathrm{i,max}} - f_{\mathrm{i,min}}\right) / f_r}{t} \times 100$

where

$f_{\mathrm{i,max}}$ is the maximum no-load frequency;

$f_{\mathrm{i,min}}$ is the minimum no-load frequency;

f_{r} is the *rated frequency* (3.1.4).

Note 2 to entry: Expressed as a percentage of related range of frequency setting per second.

3.1.8
voltage setting rate of change
v_{U}
rate of change of voltage setting under remote control

Note 1 to entry: $v_U = \dfrac{\left(U_{\mathrm{s,up}} - U_{\mathrm{s,do}}\right) / U_r}{t} \times 100$

where