

STN	Systémy elektrických výkonových pohonov s nastaviteľnou rýchlosťou Časť 9-1: Ekodizajn systémov výkonových pohonov, spúšťačov motorov, výkonovej elektroniky a nimi ovládaných aplikácií Všeobecné požiadavky na tvorbu noriem na energetickú účinnosť zariadení s výkonovým pohonom použitím rozšíreného produktového prístupu (EPA) a semi-analytických modelov (SAM)	STN EN 61800-9-1 35 1725
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Adjustable speed electrical power drive systems - Part 9-1: Ecodesign for power drive systems, motor starters, power electronics and their driven applications - General requirements for setting energy efficiency standards for power driven equipment using the extended product approach (EPA) and semi analytic model (SAM)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 11/17

Obsahuje: EN 61800-9-1:2017, IEC 61800-9-1:2017

Oznámením tejto normy sa od 07.04.2020 ruší
STN EN 50598-1 (35 1725) z októbra 2015

125754

English Version

Adjustable speed electrical power drive systems -
Part 9-1: Ecodesign for power drive systems, motor starters,
power electronics and their driven applications - General
requirements for setting energy efficiency standards for power
driven equipment using the extended product approach (EPA)
and semi analytic model (SAM)
(IEC 61800-9-1:2017)

Entraînements électriques de puissance à vitesse variable -
Partie 9-1: Écoconception des entraînements électriques de
puissance, des démarreurs de moteurs, de l'électronique de
puissance et de leurs applications entraînées - Exigences
générales pour définir les normes d'efficacité énergétique
d'un équipement entraîné via l'approche produit étendu
(EPA) et le modèle semi-analytique (SAM)
(IEC 61800-9-1:2017)

Drehzahlveränderbare elektrische Antriebe -
Teil 9-1: Energieeffizienz für Antriebssysteme, Motorstarter,
Leistungselektronik und deren angetriebene Einrichtungen -
Allgemeine Anforderungen für die Erstellung von Normen
zur Energieeffizienz von Ausrüstungen mit Elektroantrieb
nach dem erweiterten Produktansatz (EPA) und semi-
analytischen Modellen (SAM)
(IEC 61800-9-1:2017)

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Europäisches Komitee für Elektrotechnische Normung

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European foreword

The text of document 22G/348/FDIS, future edition 1 of IEC 61800-9-1, prepared by SC 22G "Adjustable speed electric drive systems incorporating semiconductor power converters", of IEC/TC 22 "Power electronic systems and equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61800-9-1:2017.

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) 2018-01-07
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2020-04-07

This document supersedes EN 50598-1:2014.

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The text of the International Standard IEC 61800-9-1:2017 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 60034-1	NOTE	Harmonized as EN 60034-1.
IEC 60034-2-2	NOTE	Harmonized as EN 60034-2-2.
IEC 60034-30-1	NOTE	Harmonized as EN 60034-30-1.
IEC 60947-4-1	NOTE	Harmonized as EN 60947-4-1.
IEC 60947-4-2	NOTE	Harmonized as EN 60947-4-2.

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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-161	-	International Electrotechnical Vocabulary (IEV) - Chapter 161: Electromagnetic compatibility	-	-
IEC 60034-2-1	2014	Rotating electrical machines - Part 2-1: Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles)	EN 60034-2-1	2014
IEC/TS 60034-2-3	-	Rotating electrical machines - Part 2-3: Specific test methods for determining losses and efficiency of converter-fed AC induction motors	-	-
IEC 61800-9-2	2017	Adjustable speed electrical power drive systems - Part 9-2: Ecodesign for power drive systems, motor starters, power electronics and their driven applications - Energy efficiency indicators for power drive systems and motor starters	EN 61800-9-2	2017



INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Adjustable speed electrical power drive systems –
Part 9-1: Ecodesign for power drive systems, motor starters, power electronics
and their driven applications – General requirements for setting energy
efficiency standards for power driven equipment using the extended product
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énergétique d'un équipement entraîné via l'approche produit étendu (EPA) et
le modèle semi-analytique (SAM)**



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INTERNATIONAL STANDARD

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**Adjustable speed electrical power drive systems –
Part 9-1: Ecodesign for power drive systems, motor starters, power electronics
and their driven applications – General requirements for setting energy
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énergétique d'un équipement entraîné via l'approche produit étendu (EPA) et
le modèle semi-analytique (SAM)**

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ICS 29.130.01; 29.160.30; 29.200

ISBN 978-2-8322-3995-7

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CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	8
2 Normative references	8
3 Terms, definitions and symbols.....	9
3.1 Terms and definitions.....	9
3.2 Symbols.....	10
4 Requirements for the development of energy efficiency standards for extended products	12
4.1 General.....	12
4.2 Responsibility of the extended product standard or technical committee	13
4.3 Elements to achieve the extended product approach	14
5 Requirements for the semi analytic model (SAM) of the extended product	15
6 Requirements for the semi analytic model (SAM) of the motor system	16
6.1 General.....	16
6.2 Operating points of the PDS.....	16
6.3 Requirements if the motor system contains no CDM	17
7 Merging the semi analytic models (SAMs) to the extended product approach	17
7.1 General.....	17
7.2 Speed versus torque loss points of a motor system.....	18
7.3 How to determine intermediate speed versus torque loss points of a motor system	19
7.3.1 General	19
7.3.2 Loss determination by maximum losses of neighboured loss points	20
7.3.3 Loss determination by two-dimensional interpolation of losses of neighboured loss points	20
Annex A (informative) Example how to apply the SAM in the EPA for pump systems with a required speed versus torque loss points using the PDS.....	22
Annex B (informative) Calculation of the energy consumption based on the duty profile.....	24
Annex C (informative) Basic torque and power vs. speed profiles, operating points over time	25
C.1 General.....	25
C.2 Basic torque and power vs. speed profiles	25
C.3 Operating points over time	26
C.4 Definition of the operating points over time	26
C.4.1 General	26
C.4.2 Calculation of the energy consumption based on the operating points over time	27
C.4.3 Example of loss calculation for different operating points over time	28
Bibliography.....	31
Figure 1 – Illustration of core requirements of energy efficiency standardization	6
Figure 2 – Illustration of the extended product with embedded motor system	9
Figure 3 – Stakeholders and responsibilities for determination of the energy efficiency indicator for an extended product.....	13
Figure 4 – Illustration of the operating points (shaft speed, torque) for the determination of relative losses of the power drive system (PDS)	17

Figure 5 – Speed versus torque relative power loss operating points to determine the motor starter or switchgear losses	17
Figure 6 – Responsibilities and workflow to derive the energy efficiency index (EEI) of an extended product	18
Figure 7 – Four segments of deviating operating points of a PDS	19
Figure 8 – Two-dimensional interpolation for deviating operating points	20
Figure A.1 – Three points of relative losses and shaded area of interest for the pump manufactures while defining their EEI (energy efficiency index)	22
Figure A.2 – Example how the SAMs of the PDS and the pump system shall interact to the resulting efficiency index of a pump system	23
Figure C.1 – Typical basic torque and power vs. speed profiles	26
Figure C.2 – Example of operating points over time	27
Table 1 – Illustration how to combine essential elements of the efficiency contributions	15
Table C.1 – Operating points over time for the investigated examples	28
Table C.2 – Losses in the specified operating points for configuration 1	28
Table C.3 – Losses in the specified operating points for configuration 2	29

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ADJUSTABLE SPEED ELECTRICAL POWER DRIVE SYSTEMS –**Part 9-1: Ecodesign for power drive systems, motor starters,
power electronics and their driven applications –
General requirements for setting energy efficiency
standards for power driven equipment using the extended
product approach (EPA) and semi analytic model (SAM)**

FOREWORD

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International Standard IEC 61800-9-1 has been prepared by subcommittee 22G: Adjustable speed electric drive systems incorporating semiconductor power converters, of IEC technical committee 22: Power electronic systems and equipment.

The text of this standard is based on the following documents:

FDIS	Report on voting
22G/348/FDIS	22G/351/RVD

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

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

A list of all parts in the IEC 61800 series, published under the general title *Adjustable speed electrical power drive systems*, can be found on the IEC website.

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

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

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INTRODUCTION

IEC SC 22G includes the standardization task force for dealing with energy efficiency of motor systems. It has close collaboration with several other technical committees (for example, IEC TC 2, IEC SC 121A).

IEC SC 22G maintains responsibility for all relevant aspects in the field of energy efficiency and ecodesign requirements for power electronics, switchgear, control gear and power drive systems and their industrial applications.

The core requirements of energy efficiency standardization are illustrated in Figure 1. The work has been agreed to provide the reasonable target as a best compromise.

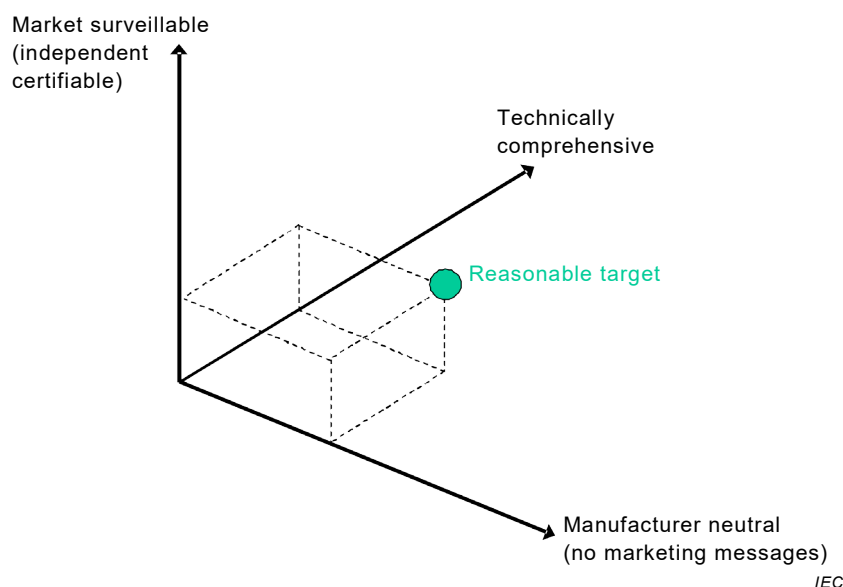


Figure 1 – Illustration of core requirements of energy efficiency standardization

IEC 61800 (all parts) does not deal with mechanical engineering components.

NOTE Geared motors (motors with directly adapted gearboxes) are treated like power drive systems (converter plus motor). See IEC 60034-30-1 for classification of the losses of a geared motor. The efficiency classes of gearboxes as individual components are under consideration.

IEC 61800-9-1 is a subpart of the IEC 61800 series, which has the following structure:

- *Part 1: General requirements – Rating specifications for low voltage adjustable speed d.c. power drive systems*
- *Part 2: General requirements – Rating specifications for low voltage adjustable speed a.c. power drive systems*
- *Part 3: EMC requirements and specific test methods*
- *Part 4: General requirements – Rating specifications for a.c. power drive systems above 1 000 V a.c. and not exceeding 35 kV*
- *Part 5: Safety requirements*
- *Part 6: Guide for determination of types of load duty and corresponding current ratings*
- *Part 7: Generic interface and use of profiles for power drive systems*
- *Part 8: Specification of voltage on the power interface*
- *Part 9: Ecodesign for power drive systems, motor starters, power electronics and their driven applications*

Each part is further subdivided into several subparts, published either as International Standards or as Technical Specifications or Technical Reports, some of which have already been published. Other will be published with the part number followed by a dash and a second number identifying the subdivision (for example, IEC 61800-9-2).

This subpart of IEC 61800-9 is an International Standard for characterizing the energy efficiency of motor systems when supplied by a motor starter or by a variable voltage/frequency converter. The goal of this part of IEC 61800-9 is to establish a clear and simple system for the comparison of the energy performance of motor systems that can help manufacturers to improve their products, to give users the necessary transparency and information and to provide a robust reference base for regulators and minimum energy performance standards.

The IEC 61800-9 series (Ecodesign for power drive systems, motor starters, power electronics and their driven applications) will consist of the following subparts:

- *Part 9-1: General requirements for setting energy efficiency standards for power driven equipment using the extended product approach (EPA) and semi analytic model (SAM)*
- *Part 9-2: Energy efficiency indicators for power drive systems and motor starters*

ADJUSTABLE SPEED ELECTRICAL POWER DRIVE SYSTEMS –

Part 9-1: Ecodesign of power drive systems, motor starters, power electronics and their driven applications – General requirements for setting energy efficiency standards for power driven equipment using the extended product approach (EPA) and semi analytic model (SAM)

1 Scope

This part of IEC 61800 specifies the general methodology to energy efficiency standardization for any extended product by using the guidance of the extended product approach (EPA).

It enables product committees for driven equipment connected to motor systems (so called extended products) to interface with the relative power losses of the connected motor system (e.g. power drive system) in order to calculate the system energy efficiency for the whole application.

This is based on specified calculation models for speed/load profiles, the duty profiles and relative power losses of appropriate torque versus speed operating points.

This document specifies the methodology of determination of losses of the extended product and its sub-parts.

This document is applicable to motor systems operated by a motor starter or by a converter (power drive systems).

This document does not specify requirements for environmental impact declarations.

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 60050-161, *International Electrotechnical Vocabulary – Part 161: Electromagnetic compatibility*

IEC 60034-2-1:2014, *Rotating electrical machines – Part 2-1: Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles)*

IEC TS 60034-2-3, *Rotating electrical machines – Part 2-3: Specific test methods for determining losses and efficiency of converter-fed AC induction motors*

IEC 61800-9-2:2016, *Adjustable speed electrical power drive systems – Part 9-2: Ecodesign for power drive systems, motor starters, power electronics and their driven applications – Energy efficiency indicators for power drive systems and motor starters*

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