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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 12668.901-2021

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

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Foreword

GB/T 12668 "Speed Adjustable Electric Drive System" is divided into the following parts.

---Part 1.General requirements for the rated value of low-voltage DC speed-regulating electric drive systems;

---Part 2.General requirements for the rated value of low-voltage AC variable frequency electric drive systems;

---Part 3.Electromagnetic compatibility requirements and specific test methods;

---Part 4.Generally require AC voltage above 1000V but not more than 35kV AC speed control electric drive system rating

Value provision;

- Part 5-1.Safety requirements for electrical, thermal and energy;
- Part 5-2.Safety requirements function;
- Part 6.Guidelines for determining the type of load working system and the corresponding current rating;
- Part 701.General interface and use specification interface definition of electric drive system;
- Part 7-201.General interface and use specification of electric drive system Type 1 specification description;
- Part 7-301.General interface and usage specification of electric drive system, type 1 specification corresponds to network technology;
- Part 8.Voltage specification of power interface;
- Part 9-1.Eco-design of electric drive system, motor starter, power electronic equipment and its transmission application adopts extension Product Law (EPA) and Semi-Analytical Model (SAM) formulate general requirements for energy efficiency standards for electric drive equipment;
- Part 9-2.Eco-design of electrical drive systems, motor starters, power electronic equipment and their drive applications

Energy efficiency indicators of the system and motor starters.

This part is part 9-1 of GB/T 12668.

This section was drafted in accordance with the rules given in GB/T 1.1-2009.

The translation method used in this part is equivalent to the use of IEC 61800-9-1.2017
`Speed Regulating Electric Drive System Part 9-1.Electric Drive System

Eco-design of systems, motor starters, power electronic equipment and their transmission applications adopts Extended Product Method (EPA) and semi-analytical models

(SAM) General Requirements for the Development of Energy Efficiency Standards for Electric Drive Equipment.

The Chinese documents that have a consistent correspondence with the international documents cited in this section are as follows.

- GB/T 4365-2003 Electrotechnical terminology electromagnetic compatibility (IEC 60050-161.1990, IDT);
- GB/T 32877-2016 Frequency converter-powered AC induction motor specific test method for determining loss and efficiency (IEC /TS

60034-2-3.2013, IDT).

This part was proposed by the China Electrical Equipment Industry Association.

This part is under the jurisdiction of the National Power Electronic System and Equipment Standardization Technical Committee (SAC/TC60).

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Introduction

The core requirements of energy efficiency standardization are shown in Figure 1. Take the proposed reasonable goals as the best compromise plan for all relevant parties.

Figure 1 Examples of core requirements for energy efficiency standards

All parts of GB/T 12668 do not involve mechanical engineering components.

Note. Gear motors (motors with directly adapted gearboxes) are regarded as electric drive systems (converter plus motor). For the classification of gear motor losses, see

See IEC 60034-30-1. The efficiency level of the gearbox as a separate component is under consideration.

Each part is published in the form of national standards, some of which have already been published. Other parts will be released one after another, the following footnotes and figures

(For example. GB/T 12668.902) logo.

This part of GB/T 12668 describes the energy efficiency of a motor system driven by a motor starter or a transformer/frequency converter. The goal is to build

Establish a clear and simple system for comparing the energy performance of motor systems, which can help manufacturers improve their products and give users

Necessary transparency and information for users and provide a clear basis for regulatory agencies and minimum energy efficiency standards.

Adjustable Speed Electric Drive System Part 9-1.Electric Drive

System, motor starter, power electronic equipment and its drive

The applied eco-design adopts the extended product method (EPA)

And semi-analytical model (SAM) to develop electric drive equipment

General requirements for energy efficiency standards

1 Scope

This part of GB/T 12668 specifies the general method of energy efficiency standards for all extended products using the Extended Product Act (EPA).

The committee of the transmission equipment of the motor system (referred to as the extended product) can pass the phase of the connected motor system (for example, the electric drive system).

Calculate the system energy efficiency of the entire application for losses.

System energy efficiency is based on specific models of speed/load curve, working system, and corresponding torque-speed operating point relative loss.

Line calculation.

This section specifies the loss calculation method of the extended product and its components.

This section applies to motor systems controlled by motor starters or converters [electric drive systems (PDS)].

This section does not clearly put forward requirements for environmental impact declarations.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this article

Pieces. For undated reference documents, the latest version (including all amendments) is applicable to this document.

GB/T 12668.902-2021 Adjustable Speed Electric Drive System Part 9-2.Electric Drive