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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 12668.902-2021

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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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 9-2 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 61800-9-2.2017 ``Speed Adjustable Electric Drive System Part 9-2.Electric Drive System

Eco-design of power systems, motor starters, power electronic equipment and their transmission applications. Energy efficiency indicators of electrical drive systems and motor starters.

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

---GB/T 156-2017 standard voltage (IEC 60038.2009, MOD);

---GB/T 755-2019 Rotating motor rating and performance (IEC 60034-1.2017, IDT);

---GB/T 4365-2003 Electrotechnical terminology electromagnetic compatibility (IEC 60050-161.1990, IDT);

---GB/T 12668.8-2017 Adjustable speed electric drive system Part 8.Voltage specification for power interface (IEC /T S61800-

8.2010, IDT);

---GB/T 14048.4-2020 Low-voltage switchgear and control equipment Part 4-1.Contactors and motor starters

Electric contactors and motor starters (including motor protectors) (IEC 60947-4-1.2018, MOD);

---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);

---GB/T 32891.1-2016 Efficiency Classification of Rotating Electric Machines (IE Code) Part 1.AC electric motors powered by the grid

(IEC 60034-30-1.2014, 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 purpose of this part of GB/T 12668 is to evaluate the loss of complete drive module (CDM) and electric drive system (PDS).

The requirements for measuring the energy efficiency of motors powered by non-sine waves are formulated by IEC /TC2 and published in the IEC 60034 series.

IEC /SC22G also has a standardization working group on energy efficiency. This working group works closely with several other technical committees (e.g.,

IEC /TC2, IEC /SC121A).

IEC /SC22G is responsible for the energy efficiency and ecological design of power electronics, switchgear, control devices, and variable speed drive systems and their industrial applications

All relevant aspects of the field.

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 12668.901) logo.

key point.

---Requires that the energy efficiency design of the electric drive system is consistent with the transmitted load;

---Complete drive module (CDM) requirements and IE classification;

---Electric drive system (PDS) requirements and IES classification;

---Determine the PDS loss and the connection requirements with the driven equipment to determine the energy efficiency classification/evaluation of the extended product;

---Environmentally conscious system design and environmental declaration requirements for motor systems.

Adjustable Speed Electric Drive System Part 9-2.Electric Drive

System, motor starter, power electronic equipment and its drive

Applied eco-design electric drive system and motor

Energy efficiency index of starter

1 Scope

This part of GB/T 12668 specifies the complete drive module (CDM), electrical drive system (PDS) and motor starter for power electronic equipment.

The energy efficiency index of the actuator and all the equipment to be transmitted.

This section specifies the loss determination method of the complete drive module (CDM), electrical drive system (PDS) and motor system.

This section defines the IE/IES levels and their limits of the motor system, and provides the