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Assessment technical specification for eco-design product - Motor products

生态设计产品评价技术规范 电动机产品

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Assessment technical specification for eco-design product - Motor products

1 Scope

This Standard specifies evaluation principles, methods and basis, basic requirements and evaluation indicators for motor eco-design products.

This Standard applies to the following electric motor eco-design product evaluations:

- Small power motors that, when converted to 1500r/min, the maximum continuous rated power does not exceed 1.1kW, and it meets the energy efficiency level of IE3 and above in GB/T 32891.1-2016 or the energy efficiency level of level 2 and above in GB 25958-2010;

- Low-voltage three-phase AC asynchronous motors that the power is 0.75kW~1000kW, in line with IE3 and above energy efficiency level in GB/T 32891.1-2016 (hereinafter referred to as "low-voltage motors");

- High-voltage three-phase AC asynchronous motors that the power is 160kW~25000kW, and it meets the energy efficiency level of level 2 and above in GB 30254-2013 or meets the requirements of energy efficiency level of level 2 and above in JB/T 12729-2016 (hereinafter referred to as "high-voltage motors").

NOTE: The overlapping part of the product power of the low-power motor and the low-voltage motor is distinguished according to the product design application: Products for industrial use are low-voltage motors, and products for household and similar use are low-power motors.

This Standard applies to products directly supplied to end users, as well as products that are part of equipment.

This Standard does not apply to:

- Products used in explosive atmospheres (including potentially explosive atmospheres);

- Products for special purposes such as aerospace, radiation resistance, and marine use.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) is applicable to this standard.

GB/T 1032-2012, *Test procedures for three-phase induction motors*

GB/T 2900.1-2008, *Electrotechnical terminology - Fundamental terms*

GB 4343.1, *Electromagnetic compatibility requirements for household appliances, electric tools and similar apparatus - Part 1: Emission*

GB/T 5171.1-2014, *Small power motors - Part 1: General technical requirements*

GB/T 9651-2008, *Test procedures for single-phase induction motor*

GB/T 10069.1, *Measurement of airborne noise emitted by rotating electrical machines and the noise limits - Part 1: Method for the measurement of airborne noise emitted by rotating electrical machines*

GB/T 10069.3, *Measurement of airborne noise emitted by rotating electrical machines and the noise limits - Part 3: Noise limits*

GB/T 12350, *Safety requirements of small-power motors*

GB/T 14711, *General requirements for safety of small and medium size rotating electrical machines*

GB/T 16288, *Marking of plastics products*

GB/T 16716.4, *Packaging and the environment - Part 4: Material recycling*

GB 17625.1, *Electromagnetic compatibility - Limits - Limits for harmonic current emissions (equipment input current ≤16 A per phase)*

GB/T 18455, *Package recycling marking*

GB/T 19001, *Quality management systems - Requirements*

GB/T 24001, *Environmental management systems - Requirements with guidance for use*

GB/T 24040-2008, *Environmental management - Life cycle assessment - Principles and frameworks*

GB/T 24044, *Environmental management - Life cycle assessment - Requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions defined in GB/T 2900.1-2008, GB/T 24040-2008, GB/T 32161-2015 as well as the followings apply.

3.1 (electric) motor

a motor that converts electrical energy into mechanical energy

[Source: GB/T 2900.1-2008, 3.3.94]

3.2 eco-design

the activity that, according to the concept of the whole life cycle, at the product design and development stage, systematically consider the impact of raw material acquisition, manufacturing, packaging and transportation, use and maintenance, and recycling on resources and the environment, strive to minimize resource consumption in the whole life cycle of products, use as little or no raw materials containing harmful substances as possible, reduce the generation and discharge of pollutants, so as to achieve environmental protection

NOTE: Also known as environmentally aware design.

[Source: GB/T 32161-2015, 3.2, with modifications]

3.3 eco-design product

products that meet the eco-design concept and evaluation requirements

[Source: GB/T 32161-2015, 3.3]

3.4 life cycle

a series of successive stages in a product system, from the acquisition of raw materials in nature or from natural resources to final disposal

[Source: GB/T 24040-2008, 3.1]

3.5 life cycle assessment

compilation and evaluation of inputs, outputs and their potential environmental impacts over the life cycle of a product system

[Source: GB/T 24040-2008, 3.2]

4 Assessment principles, methods and basis

4.1 Assessment principles

Product assessment should follow the following principles:

- Life cycle philosophy: Using the idea of life cycle, systematically consider the important environmental factors that have a greater impact on the environment at each stage in the entire life cycle of the product.

- Principle of combining qualitative and quantitative assessment: The implementation of eco-design product evaluation shall propose qualitative or quantitative evaluation criteria. If feasible, the selection of quantitative evaluation requirements is encouraged to more accurately reflect the environmental performance of the product.

4.2 Assessment methods

The assessment methods are as follows:

- Indicator assessment, including but not limited to:

  ● Product environmental protection requirements specified in laws and regulations;

  ● Other advanced environmental protection requirements for products, including but not limited to industry environmental protection policies, national (industry) standards, customer requirements, environmental protection signs or green procurement technical specifications.

- Life cycle assessment: Carry out product life cycle assessment according to GB/T 24040-2008, GB/T 24044 and GB/T 40100.

4.3 Assessment basis

Products shall be assessed as eco-designed products according to the following criteria:

- Meet the basic requirements for production enterprises (see Chapter 5);

- Meet the product evaluation index requirements (see Chapter 6), and provide relevant compliance documents;

- Carry out product life cycle assessment according to GB/T 24040-2008, GB/T 24044 and GB/T 40100. Provide ecological design evaluation report.

5 Basic requirements

5.1 Management system requirements

The manufacturer should establish and effectively operate quality management systems, environmental management systems and occupational health and safety management systems in accordance with the requirements of GB/T 19001, GB/T 24001, GB/T 45001 (or equivalent standards). It should pass the third-party certification of quality management system, environmental management system and occupational health and safety management system.

5.2 Other basic requirements

Other basic requirements should include:

- Pollutant discharge meets the requirements of national or local pollutant discharge standards. The total amount of pollutants is controlled to reach the total pollutant discharge control target;

- Strictly implement relevant national standards for energy conservation and environmental protection and provide a list of standards. No major quality, safety and environmental pollution accidents in the past three years;

- Adopt advanced technology encouraged by the country. Do not use technologies, processes, equipment and related substances that are phased out or banned by the state or relevant departments;

- Solid waste has a special storage place. Avoid scattering, loss and leakage. Reduce the amount and hazard of solid waste. Make full and rational use and harmless disposal of solid waste;

- Carry out product eco-design according to relevant requirements of GB/T 24256. Product quality, safety, energy saving and comprehensive utilization level shall meet the relevant requirements of national and industry standards.

6 Assessment indicators

Product assessment indicators are divided into primary indicators and secondary indicators. The primary indicators include four categories of indicators: resource attributes, energy attributes, environmental attributes and product attributes. The secondary indicators are the specific assessment items in the primary attribute indicators, including indicator name, benchmark value, judgment basis. The requirements for product eco-design assessment indicator of three-phase AC asynchronous motor are shown in Table 1. See Table 2 for the assessment indicator requirements for eco-design of low-power motor products.

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