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GB 30254-2024

Replacing GB 30254-2013

**Minimum Allowable Values of Energy Efficiency and
Energy Efficiency Grades for Cage Three-Phase High
Voltage Induction Motor**

高压三相笼型异步电动机能效限定值及能效等级

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Foreword

This Document was drafted as per the rules specified in GB/T 1.1-2020 *Directives for Standardization – Part 1: Rules for the Structure and Drafting of Standardizing Documents*.

This Document replaced GB 30254-2013 *Minimum Allowable Values of Energy Efficiency and the Energy Efficiency Grades for Cage Three-phase High Voltage Induction Motor*. Compared with GB 30254-2013, the major technical changes of this Document are as follows besides the structural adjustments and editorial modifications:

- a) Change the scope of the standard (see Clause 1 of this Edition; Clause 1 of the 2013 Edition);
- b) Delete the energy-saving evaluation value of cage three-phase high voltage induction motors (see 3.2 of the 2013 Edition);
- c) Add the requirements for the energy efficiency limit value of motors (see 5.2 of this Edition; 4.3 of the 2013 Edition);
- d) Delete the requirements for the energy-saving evaluation value of motors (see 4.4 of the 2013 Edition);
- e) Change the range of application of the test method for rated power (see Clause 6 of this Edition; Clause 5 of the 2013 Edition);
- f) Add the energy efficiency rating indicators of cage three-phase high voltage induction motors with 2 poles (rated power 3,550 kW~10,000 kW) under 3 kV (3.3 kV) and 6 kV voltage IC01, IC11, IC21, IC31, IC81W cooling methods (see Table 1 of this Edition; Table 1 of the 2013 Edition);
- g) Add energy efficiency rating indicators for cage three-phase high voltage induction motors with 2 poles (rated power 2,500 kW~10,000 kW) under 10 kV voltage IC01, IC11, IC21, IC31, IC81W cooling methods (see Table 2 of this Edition; Table 2 of the 2013 Edition);
- h) Add energy efficiency rating indicators for cage three-phase high voltage induction motors with 2 poles (rated power 2,800 kW~10,000 kW), 4 poles (rated power 2,500 kW~10,000 kW), 6 poles (rated power 1,800 kW~8,000 kW), and 8 poles (rated power 1,400 kW~6,300 kW), 10 poles (rated power 1,250 kW~5,000 kW), 12 poles (rated power 900 kW~4,000 kW) under 3 kV (3.3 kV) and 6 kV voltage IC611, IC616, IC511, IC516 cooling methods (see Table 3 of this Edition; Table 3 of the 2013 Edition);
- i) Added energy efficiency rating indicators for cage three-phase high voltage induction motors under 10 kV voltage IC611, IC616, IC511, and IC516 cooling methods (see Table 4 of this Edition);

Minimum Allowable Values of Energy Efficiency and Energy Efficiency Grades for Cage Three-Phase High Voltage Induction Motor

1 Scope

This document specifies the energy efficiency level, technical requirements and test methods of high-voltage three-phase cage-type asynchronous motors (hereinafter referred to as "motors").

This document is applicable to 50 Hz three-phase AC power supply, continuous working vertical, horizontal motors and explosion-proof motors, with 2 poles to 12 poles, voltage, cooling method, rated power range as follows:

- a) Under 3 kV (3.3 kV) and 6 kV voltage, IC01, IC11, IC21, IC31, IC81W cooling method, rated power is 200 kW to 25,000 kW;
- b) Under 10 kV voltage, IC01, IC11, IC21, IC31, IC81W cooling method, rated power is 200 kW to 22,400 kW;
- c) Under 3 kV (3.3 kV) and 6 kV voltage, IC611, IC616, IC511, IC516 cooling method, rated power is 200 kW to 10,000 kW;
- d) Under 10 kV voltage, IC611, IC616, IC511, IC516 cooling method, rated power is 200 kW~10,000 kW;
- e) Under 3 kV (3.3 kV) and 6 kV voltage, IC411 cooling method, rated power is 200 kW~3,150 kW;
- f) Under 10 kV voltage, IC411 cooling method, rated power is 200 kW~2,800 kW.

2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in 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 Document.

GB/T 755 Rotating electrical machines - Rating and performance

GB/T 1032-2023 Test methods of three-phase induction motors

3 Terms and Definitions

For the purposes of this Document, the following terms and definitions apply.

3.1 Minimum allowable values of energy efficiency for cage three-phase high voltage induction motor

Under specified test conditions, the lowest standard value of the efficiency of cage three-phase high-voltage induction motors is allowed.

4 Energy Efficiency Grades

The energy efficiency grade of motors is divided into 3 grades, among which Grade-1 has the highest energy efficiency. The measured efficiency of motors of each grade at rated output power shall be no lower than the requirements of Tables 1 to 6, and the tolerance shall comply with the provisions of GB/T 755.

Within the specified range, the efficiency of motors whose rated power values are not listed in the table is determined by linear interpolation.

5 Technical Requirements

The requirements for energy efficiency limit values of motors are as follows:

- a) The measured efficiency of motors under 3 kV (3.3 kV) and 6 kV, 10 kV voltages and IC01, IC11, IC21, IC31, IC81W cooling methods at rated output power shall be no lower than the provisions of Grade-3 in Tables 1 and 2;
- b) The measured efficiency of motors under 3 kV (3.3 kV) and 6 kV, 10 kV voltages and IC611, IC616, IC511, IC516 cooling methods at rated output power shall be no lower than the requirements of Grade-3 in Tables 3 and 4;
- c) The measured efficiency of motors under 3 kV (3.3 kV) and 6 kV, 10 kV voltages and IC411 cooling methods at rated output power shall be no lower than the requirements of Grade-3 in Tables 5 and 6.

6 Test Methods

For motors with a rated power of 2,000 kW or less, the power loss shall be determined according to the Method-B (loss analysis method for measuring input and output power) specified in 12.3 of GB/T 1032-2023. For motors with a rated power of more than 2,000 kW, the power loss shall

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