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

GB/T 22713-2008

**Effects of unbalanced voltages on the performance of
three-phase cage induction motor**

不平衡电压对三相笼型感应电动机性能的影响

(English Translation)

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Foreword

This is equivalent to using the standard IEC 60034-26:2006 "unbalanced voltage on three-phase cage induction motor performance." this standard 60034-26 and IEC on technical content 2006 no difference.

The Standard Appendix A, Appendix B is an informative annex.

The standard proposed by China Electrical Equipment Industrial Association.

The standard rotary motor by the National Standardization Technical Committee (SAC/TC26) centralized.

1 Scope

This standard specifies the effects of unbalanced voltage three phase cage induction motor performance.

This standard applies to three-phase cage induction motors.

2 Normative references

The following documents contain provisions which, through reference in this standard and become the standard terms. For dated references, subsequent Amendments (not including errata content) or revisions do not apply to this standard, however, encourage the parties to the agreement are based on research Whether the latest versions of these documents. For undated reference documents, the latest versions apply to this standard.

GB/T 21210 single-speed three-phase cage induction motor starting performance (GB/T 21210-2007, IEC 60034-12:2002, IDT) 3 in the motor voltage unbalance performance 3.1 to

3.3 The following describes the effects of unbalanced voltages on the motor performance.

3.1 Current

Negative sequence voltage imbalance produces a rotation of the rotor in the opposite direction of the magnetic field in the motor air gap. Small negative sequence voltage Components may make the current flowing through the winding voltage much larger than the current equilibrium. Flowing through the rotor cage bars current rated frequency is almost Frequency of 2 times, so squish effect squirrel cage rotor bar current loss is increased so that the value of the rotor winding is larger than the value of the stator winding losses increase a lot of.

Unbalanced voltage at the motor rated speed operation, the current imbalance in the degree of large, about six times the voltage unbalance degree ~ 10 times.

Voltage unbalance, locked rotor current unbalanced degree of voltage unbalance degree of the same, but stall the apparent value of the power increase is small.

3.2 Fever

The motor runs at a voltage imbalance, since the current and voltage in the negative sequence component of the stator caused loss increases, so the stator windings Temperature rise than in the equilibrium temperature rise Voltage runtime.

The degree of increase in losses due to the rotor squish effect of current and increased.

In addition, the voltage imbalance is usually associated with reduced voltage sequence components related to Chiang Kai-shek, Chiang Kai-shek rotor which makes the current sequence component increases.

3.3 Torque

When the voltage unbalance, stall torque, minimum torque and maximum torque decrease. If the voltage imbalance is very serious, the motor can not it can operate normally.

Voltage unbalance and frequency of twice the frequency of the oscillation of torque generated about. Increases torque oscillation amplitude of the voltage sequence components and Chiang Kai-shek 25% of the range. When the oscillation frequency torsional torque is nearly 2 times the critical frequency, the entire shafting torsional vibration may cause impermissible.

3.4 Full speed

When the motor is running at full voltage unbalance, because the rotor slip with an additional increase in loss increases, and thus the speed at this time Slightly decreased.

4 Derating motor running to prevent overheating

When the three-phase AC motor system voltage frequency power supply is connected, the negative sequence component of long-term (at least for the motor thermal time constant)
GB/T 22713-2008/IEC 60034-26:2006