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**NATIONAL STANDARD OF THE  
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Replacing GB/T 29326-2012

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**Selection of energy-efficient motors including variable speed  
applications - Application guidelines**

包括变速应用的能效电动机的选择 应用导则

**(English Translation)**

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## Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents" Drafting:

This document replaces GB/T 29326-2012 "Selection of energy-efficient motors including

variable speed applications--Application Guidelines" and is the same as GB/T 29326-2012, in addition to structural adjustments and editorial changes, the main technical changes are as follows:

- a) The scope has been changed and expanded to apply to all motors covered by IEC 60034-1 (see Chapter 1, Chapter 1 of the:2012 edition);
- b) Added symbols such as "Q (flow)" and abbreviations such as "AC (communication)" (see Chapter 3);
- c) Added analysis of the energy-saving potential of motors and variable frequency drives and introduction to IEC standards related to energy efficiency (see Chapter 4);
- d) Added examples of applications of motors operating at full load for a long time, square torque-speed characteristics and constant torque characteristics (see Chapter 5);
- e) Added the basic principles of motors (see Chapter 6);
- f) Added performance characteristics of constant-speed operation motors (see Chapter 7);
- g) Added performance characteristics of variable speed operation motors (see Chapter 8);
- h) Added motor system selection guide (see Chapter 9);
- i) Changes to maintenance and life expectancy analysis (see Chapter 10, Chapter 9 of the:2012 edition):

This document is equivalent to IEC TS60034-31:2021 "Rotating electrical machines Part 31: Energy-efficient electric motors including variable speed applications" "Select Application Guidelines", the file type is adjusted from IEC technical specifications to my country's national standards:

Please note that some content in this document may be subject to patents: The publisher of this document assumes no responsibility for identifying patents:

## Introduction

This document provides guidelines for the technical and economic application of energy-efficient electric motors in constant-speed and variable-speed operation:

In:2016, about 50% of global electricity consumption was used for electric motors, which consumed the largest amount of electricity among single types of equipment: Industrial electric motors alone accounted for Accounting for about 30% of the total power consumption: Although the term "power consumption" is widely used, most electricity is used to do useful work: Electric motors convert electrical energy into into mechanical energy, a small part of which is converted into heat loss: Therefore, the electric motor, especially the variable speed and torque can be controlled according to different load requirements:

High-speed electric motors are key equipment to achieve significant power savings:

A simple way to reduce energy consumption is to invest in more efficient electric motors: Since running costs mainly come from electricity bills, this approach often comes with Get a quick return on investment: However, greater energy saving potential must be determined from a holistic system perspective: It is estimated that although more than 50% of electric the machine will benefit from the control of the frequency converter, such as replacing high-energy-consuming mechanical control devices such as throttling devices that regulate medium flow, but in actual use Only 12% of motors are controlled by frequency converters: This document is intended to provide guidance on the correct use of constant speed and variable speed motors and provide practical Analyze when to use them in terms of their actual use and job characteristics:

This document gives examples of constant torque operating characteristics and square torque operating characteristics and describes their practical significance in order to deepen their feasibility:

sexual understanding: Parts of this document may also apply to other electric motors:

Includes selection of energy-efficient electric motors for variable speed applications  
Application Guidelines

## 1 Scope

This document provides technical and economic guidance on the application of AC motors in energy efficiency and is suitable for motor manufacturers, OEMs (original equipment manufacturers), end-users, regulatory agencies, legislators and other interested parties:

This document applies to all motors covered by IEC 60034-1, IEC 60034-30-1, and IEC TS60034-30-2:

## 2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text: Among them, the dated quotations for undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to this document:

GB/T 12668.902-2021 Speed-regulated electrical drive systems Part 9-2: Electric drive systems, motor starters, power electronics Ecological design of equipment and its drive applications Energy efficiency indicators for electrical drive systems and motor starters (IEC 61800-9-2:2017, IDT) GB/T 32877-2022 Specific test methods for determining losses and efficiency of AC motors powered by frequency converters (IEC 60034-2-3:

2020,IDT)