IEEE Standard for Performance of Adjustable Speed AC Drives Rated 375 kW and Larger

IEEE Industry Applications Society

Sponsored by the
Petroleum and Chemical Industry Committee

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Abstract: This standard is applied to ac adjustable speed drive (ASD) systems rated above 375 kW and above 750 V output voltage as used in petrochemical and similar applications. The performance requirements for an ASD system including, but not limited to, input transformer or reactor as required, power electronics, control interfaces, cooling system, switchgear, and motor are covered. Requirements for power quality, engineering analysis, start-up assistance, training, and spare parts are also included. Certain items such as the motor, switchgear, or transformer may be excluded from the scope of vendor supply if specified in the data sheets; any special requirements for the excluded equipment shall be given by the system vendor.

Keywords: adjustable speed, large drives

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Introduction

This introduction is not part of IEEE Std 1566-2005, IEEE Standard for Performance of Adjustable Speed AC Drives Rated 375 kW and Larger.

The need for a performance standard for adjustable speed drive systems was perceived, as a means to reduce confusion when specifying large drive systems for petrochemical and similar applications. Therefore, the work of this document was started in 2000. Input was received from users, manufacturers, and consultants in the industry.

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1. Overview

1.1 Scope

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1.2 Purpose

The purpose of this standard is to assist users in defining the required performance of a drive system in clear terms. It is not intended to specify a particular technology that must be followed. It is intended to be used with the data sheets given in Annex A and Annex B.

1.3 Application

The drive system will be used to start, accelerate, and control the speed of a motor-driven load. When specified, the ASD shall be capable of achieving synchronization with the utility power system and connecting the motor directly to this system. The ASD supplier shall define the requirements for matching the motor and ASD to the load and the ASD, including input transformer if required, to the power system such that they operate as a system with no unsatisfactory transient, torsional, heating, or power-quality problems. The ASD system shall be suitable for the service conditions described in the data sheets, including the ambient temperature and humidity conditions; altitude; input power-supply voltage and minimum and maximum short-circuit capacities of the source; and auxiliary power-supply voltage.

Unless otherwise specified, the ASD and all related parts shall be suitable for a minimum of five years of continuous operation. The vendor shall identify any redundancy requirements necessary to meet this end. The vendor shall provide an expected mean time between failures (MTBF) and mean time to repair