



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

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**IEEE Industry Applications Society**

Sponsored by the  
Petroleum and Chemical Industry Committee

1566<sup>TM</sup>

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IEEE  
3 Park Avenue  
New York, NY 10016-5997, USA

7 June 2006

**IEEE Std 1566<sup>TM</sup>-2005**



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

Sponsor

**Petroleum and Chemical Industry Committee  
of the  
IEEE Industry Applications Society**

Approved 15 May 2006

**American National Standards Institute**

Approved 6 December 2005

**IEEE-SA Standards Board**

**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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The Institute of Electrical and Electronics Engineers, Inc.  
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Print: ISBN 0-7381-4866-0                   SH95545  
PDF: ISBN 0-7381-4867-9                   SS95545

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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.
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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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# Contents

1. Overview .....	1
1.1 Scope .....	1
1.2 Purpose .....	1
1.3 Application .....	1
2. Normative references.....	2
3. Definitions .....	3
4. Safety.....	3
4.1 General .....	3
4.2 ASD construction requirements.....	4
5. Unit construction .....	5
5.1 ASD structure .....	5
5.2 Insulation .....	6
5.3 Nameplate.....	6
5.4 Rectifier .....	6
5.5 DC link .....	7
5.6 Inverter .....	7
5.7 Modular system .....	7
6. Adjustable speed operation.....	8
6.1 Power supply .....	8
6.2 Harmonics.....	8
6.3 Capacity.....	8
6.4 Performance.....	8
6.5 Grounding.....	9
6.6 Rating of supply.....	9
6.7 Transient overvoltages.....	9
6.8 Voltage sags.....	9
6.9 Loss of voltage.....	10
6.10 Three-phase voltage swells.....	10
6.11 Voltage distortion .....	10
6.12 Voltage unbalance .....	10
6.13 Common-mode voltage .....	10
6.14 Power-factor correction capacitors—Switching transients .....	10
6.15 Harmonic distortion.....	11
6.16 Electromagnetic interference and radio-frequency interference .....	11
6.17 Acoustic noise level.....	11

7. Control.....	11
7.1 General .....	11
7.2 Local control.....	12
7.3 Remote control (general).....	12
7.4 Bypass operation.....	13
8. Input transformer or reactor.....	14
8.1 Transformer .....	14
8.2 Reactor.....	15
9. Motor.....	15
9.1 Specification .....	15
9.2 Temperatures .....	15
9.3 Synchronous motor.....	16
9.4 Retrofit.....	16
10. Switchgear and starters.....	16
10.1 Requirements .....	16
10.2 Switchgear supply.....	16
11. Cooling system.....	17
11.1 Cooling system .....	17
11.2 Air cooling.....	17
11.3 Liquid cooling.....	17
12. System coordination .....	18
12.1 Responsibility .....	18
12.2 Compatibility .....	18
13. Engineering studies .....	18
13.1 General .....	18
13.2 Studies to determine process or driven equipment requirements.....	18
13.3 Power-system analysis to determine system response to ASD .....	18
13.4 Studies to determine the system mechanical constraints .....	19
13.5 Studies to determine the heating or cooling constraints .....	19
13.6 Reliability analysis .....	19
14. Inspection and factory tests .....	19
14.1 Records.....	19
14.2 Test plan .....	19
14.3 Motor tests .....	20
14.4 System test.....	20
14.5 Testing of synchronous motor applications .....	21

15. Commissioning and startup assistance .....	21
15.1 Commissioning plan .....	21
15.2 Field service.....	21
15.3 Results .....	22
15.4 Training .....	22
16. Spare parts .....	22
17. Data interchange.....	22
Annex A (normative) Technical data sheet (to be completed by the purchaser).....	23
Annex B (normative) Technical data sheet (to be completed by vendor).....	28
Annex C (informative) Engineering studies: Typical requirements (tutorial only).....	32
C.1 Process or driven equipment requirements .....	32
C.2 System response to ASD.....	32
C.3 Rotational dynamics.....	32
C.4 Studies to determine the heating or cooling requirements .....	34
Annex D (informative) Bibliography .....	35



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## 1. Overview

### 1.1 Scope

This standard applies to ac adjustable speed drive (ASD) systems rated above 375 kW and above 750 V output voltage as used in petrochemical and similar applications. It covers 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. 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; the system vendor shall specify any special requirements for the excluded equipment.

### 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