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Guidance on Industry Standard for Low Voltage A.C. Drives (NEMA)

GIS 12-502

**BP GROUP
ENGINEERING TECHNICAL PRACTICES**

Foreword

This is the first issue of Engineering Technical Practice (ETP) GIS 12-502. This Guidance on Industry Standard (GIS) is based on the following heritage documents from merged BP companies:

Amoco (ACES)

A EL-VFD-00-G	Electrical—AC Variable Frequency Drives—Guide.
A EL-VFD-LV-P	Electrical—AC Variable Frequency Drives—Low Voltage—Supply Specification

British Petroleum (RPSE)

GS 112-15	Guidance for Specification 112-15 Electrical Requirements for Variable Speed Drives
RP 12-12	Electrical System and Installations- Electrical Variable Speed Drives

BP Chemical US.

CP 17-26-1	Adjustable Frequency Drives for Low Voltage Induction Motor Below 500 HP
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BP Gulf of Mexico Deepwater Development Program

1400-20-EL-SP-4042	Medium Voltage Frequency Drives
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1. Scope

This GIS provides guidance on industry standard for design, material, fabrication, inspection, testing, documentation and shipping requirements for low voltage a.c. adjustable speed drive systems.

2. Normative references

The following normative documents contain requirements that, through reference in this text, constitute requirements of this technical practice. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this technical practice are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies.

BP Engineering Technical Practices (ETP)

GIS 12-052 Guidance on Industry Standard for Power Transformers (ANSI)

Institute of Electrical and Electronic Engineers (IEEE)

IEEE 519 IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems

National Electrical Manufacturers Association (NEMA)

NEMA ICS 1	Industrial Controls and Systems General Requirements
NEMA ICS 7	Industrial Controls and Systems: Adjustable-Speed Drives
NEMA ICS 7.1	Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems
NEMA 250	Enclosures for Electrical Equipment (1,000 Volts Maximum)

3. Design

3.1. Service conditions

- a. Minimum service conditions shall be as specified in NEMA ICS 1, section 6 unless otherwise specified in the enquiry documents.
- b. As a guide, at time of tender, vendor shall be provided with the following characteristics of electrical power system to which VFD (variable frequency drive) is to be connected:
 1. System voltage/frequency/tolerances
 2. System grounding
 3. Source impedance/symmetrical short circuit capacity
 4. Voltage imbalance
 5. Voltage harmonics
 6. Commutation notches
 7. Repetitive/non-repetitive transients
 8. Unusual conditions as specified in NEMA ICS 7, part 1, section 6
 9. Voltage for auxiliaries (if required)

