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Guidance on Industry Standard for High Voltage A.C. Drives

GIS 12-504

BP GROUP
ENGINEERING TECHNICAL PRACTICES

Foreword

This is the first issue of Engineering Technical Practice (ETP) GIS 12-504. This Guidance on Industry Standard (GIS) is based on the following heritage documents from merged BP companies:

BP Chemical US.

CP 17-26-2 Adjustable Frequency Drives for Large Frame Induction Motor 300 HP & Larger

BP Gulf of Mexico Deepwater Development Program

1400-20-EL-SP-4042 Medium Voltage Frequency Drives

Amoco ACES

A EL-VFD-MV-P Electrical — Variable Frequency Drives — Medium Voltage—Supply Specification.

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1. Scope

This GIS provides guidance on industry standard for design, material, fabrication, inspection, testing, documentation and shipping requirements for high voltage a.c. adjustable speed drive systems rated 1000 to 7200 V.

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)
GIS 12-204	Guidance on Industry Standard for High Voltage Induction Motors (API 541)
GIS 12-206	Guidance on Industry Standard for Synchronous Motors (API 546)

Institute of Electrical and Electronic Engineers (IEEE)

IEEE 519	IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems
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National Electrical Manufacturers Association (NEMA)

NEMA ICS 1	Industrial Controls and Systems: General Requirements
NEMA ICS 6	Industrial Controls and Systems: Enclosures
NEMA ICS 7	Industrial Controls and Systems: Adjustable-Speed Drives

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) shall be connected:
 1. System voltage/frequency/tolerances
 2. System grounding
 3. Source impedance/symmetrical short circuit capacity
 4. Voltage fluctuations/dips
 5. Voltage imbalance
 6. Voltage harmonics/interharmonics – steady state/transient
 7. Commutation notches
 8. Repetitive/non-repetitive transients

