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| <b>Document No.</b>  | GP 12-50     |
| <b>Applicability</b> | Group        |
| <b>Date</b>          | 25 July 2003 |

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# **Guidance on Practice for Variable Speed AC Drives**

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**GP 12-50**

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**BP GROUP**  
**ENGINEERING TECHNICAL PRACTICES**

## Foreword

This is the first issue of Engineering Technical Practice (ETP) GP 12-50. This Guidance on Practice (GP) is based on the following heritage documents from merged BP companies:

### Amoco (ACES)

|               |                                                                               |
|---------------|-------------------------------------------------------------------------------|
| A EL-VFD-00-E | Electrical—AC Variable Frequency Drives—Engineering Specification             |
| A EL-VFD-00-F | Electrical—AC Variable Frequency Drives—Data Sheet                            |
| 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      |
| A EL-VFD-MV-P | Electrical—AC Variable Frequency Drives —Medium Voltage—Supply Specification. |

### BP GOMDW

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

### BP Chemicals US

|            |                                                                             |
|------------|-----------------------------------------------------------------------------|
| CP 17-26-2 | Adjustable Frequency Drives for Large Frame Induction Motor 300 HP & Larger |
| CP 17-26-1 | Adjustable Frequency Drives for Low Voltage Induction Motor Below 500 HP    |

### BP (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               |

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## 1. Scope

This GP document provides guidance for design, selection, installation, operation, and maintenance of a.c. drives.

## 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 12-501 | Guidance on Industry Standard for Low Voltage AC Drives (IEC)    |
| GIS 12-502 | Guidance on Industry Standard for Low Voltage AC Drives (ANSI)   |
| GIS 12-503 | Guidance on Industry Standard for High Voltage AC Drives (IEC)   |
| GIS 12-504 | Guidance on Industry Standard for High Voltage AC Drives (ANSI)  |
| GP 12-60   | Guidance on Practice for Hazardous Area Electrical Installations |

### Institute of Electrical and Electronic Engineers (IEEE)

|          |                                                                                              |
|----------|----------------------------------------------------------------------------------------------|
| C 62.41  | IEEE Recommended Practice on Surge Voltages in AC Power Circuits                             |
| IEEE 519 | IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems |

### IEC International Electrotechnical Commission

|             |                                                                                                                                                                            |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IEC 61800-2 | Adjustable speed electrical power drive systems – Part 2: General requirements – rating specifications for low voltage adjustable frequency a.c. power drive systems.      |
| IEC 61800-4 | Adjustable speed electrical power drive systems – Part 4: General requirements – rating specifications for a.c. power drive systems above 1000 V a.c. not exceeding 35 kV. |

### National Fire Protection Association (NFPA)

|         |                                |
|---------|--------------------------------|
| NFPA 70 | National Electrical Code (NEC) |
|---------|--------------------------------|

### National Electrical Manufacturers Association (NEMA)

|       |                                                          |
|-------|----------------------------------------------------------|
| ICS 7 | Industrial Controls and Systems: Adjustable-Speed Drives |
|-------|----------------------------------------------------------|

### Process Industry Practices (PIP)

|             |                                                               |
|-------------|---------------------------------------------------------------|
| PIP ELSMC20 | Spec for Procurement of Low Voltage AC Adjustable Speed Drive |
|-------------|---------------------------------------------------------------|