



Content
Community
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UPS System Training

Contact us Today for a FREE quotation to deliver this course at your company's location.

<https://www.electricityforum.com/onsite-training-rfq>

This 2-day technical course begins with a discussion of the need for UPS systems. It then covers the relative comparisons between various UPS topologies and their modes of operation. The batteries used for UPS systems are covered next. How a battery works, their maintenance, safety and testing is thoroughly discussed.

LEARNING OBJECTIVES:

- Understand The Functionality Of Different UPS Type
- Size The UPS And Battery Bank For An Application
- Recommend Solution For A Practical Implementation
- Perform Maintenance And Parameter Settings On A UPS
- Perform Battery Maintenance And Results Interpretation
- Design A Complete UPS System And Recommend The Proper Grounding Solution

WHO SHOULD ATTEND

- Industrial, Commercial, Institutional Electrical Engineers
- Electrical Maintenance Tradespeople & Technicians
- Instrumentation And Control Engineers
- Power System Protection And Control Engineers
- Consulting Electrical Engineers
- Building Service Designers
- Data Systems Planners And Managers
- Other Electrical Personnel Involved In The Maintenance Industrial, Commercial And Institutional Power Systems

STUDENTS RECEIVE

- 100-Page Digital Power Quality/UPS Handbook - Value \$20
- 1.4 Continuing Education Unit (CEU) Credits
- A **FREE** Magazine Subscription (Value \$50)
- **\$100** Coupon Toward Any Future Electricity Forum Event (Restrictions Apply)
- Course Materials In Paper Format

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COURSE OUTLINE

DAY ONE

Why Have a Uninterruptible Power Supply System (UPS)

Types and Duration of UPS

- **Power System Disturbances**
 - Sags
 - Surges and Spikes
 - Outages
 - Phase relationships

The CBEMA Curve

Three General Types of UPS

- Kinetic (Motor Generator Sets)
- Flywheel

Static

- Rectifier
- Batteries
- Inverter

THREE TYPES OF STATIC UPSs

- The Traditional UPS
- The Static UPS
- The Static UPS with Bypass

REVIEW OF PASSIVE ELECTRONIC COMPONENTS

Volts, Ohms and Amps in DC and AC Circuits

Resistors

Capacitors

- Formed Caps
- Failure Mode of Electrolytic Capacitors

Inductors

- Coils and Chokes
- Single Phase Transformers
- Three Phase Transformers
- Wye
- Delta

RLC Circuits in Series and Parallel

- Tuned Circuits
- Harmonics
- Ferro Resonance

DAY TWO

HOW BATTERIES WORK

Primary Batteries

Secondary Batteries

Lead Acid

- The Chemistry
- Battery Types
- Capacity Factors
- S-Curves
- Battery Safety and Maintenance
- Float and Equalize Voltages
- Load Testing

Nickel Cadmium

- The Chemistry
- Battery Types
- Capacity Factors
- Battery Safety and Maintenance
- Float and Equalize Voltages
- Load Testing

REVIEW OF ACTIVE COMPONENTS

Diodes

- Half-wave Rectification
- Full-wave Rectification
- Polyphase Rectification
- Wye/Delta Rectification
- Troubleshooting Diodes

Transistors

- Applications of Transistors
- Troubleshooting Transistors

Thyristors

- SCRs
- Applications
- Troubleshooting

TRIACS

- Applications
- Troubleshooting

IGBTs

- Applications
- Troubleshooting
- Triggering Circuits

Operational Amplifiers

- Instrumentation Amplifier
- Inverting Amplifier
- Non-Inverting Amplifier
- Ramping Applications

UPS TOPOLOGIES

Single Phase

- Rectifiers
- Inverters

Three Phase

- Rectifiers
- Inverters

TROUBLESHOOTING & MAINTENANCE

MANUFACTURER'S RECOMMENDED MAINTENANCE PRACTICES

- Installation
- Quarterly Checklists
- Annual Checklists
- Tools and Equipment
- Electrical Safety

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