



Basic Electricity II

Understanding basic electrical theory will significantly reduce the time and cost for maintenance and repair of power distribution and support equipment. This class provides an in depth discussion on the basics of electricity. Continuing from Basic Electricity I, this course concentrates on the more complex components. We provide detailed descriptions of the operation of lead-acid batteries and their associated monitoring and control systems, motor controllers, solid state UPS units, and major distribution circuit breakers. We will also include a comprehensive power distribution system analysis, including load sharing, adjusting field excitation and manual paralleling operations. Having a more thorough knowledge of these systems increases efficiency in diagnostics and operation while simultaneously providing a higher level of baseline knowledge concerning the energies present, thereby increasing the safety of the technician.

Duration: 8 Hour Program

Review of Electrical Fundamentals

Basic Atomic Theory
Electrical Units of Measurement
Ohm's Law
Kirchoff's Laws
Power Equations
Power Losses Due to Heat
Equipment Grounding
Grounded vs. Ungrounded Systems

Batteries

Sealed and Wet Battery Construction
Battery String Arrangement
Battery Voltage and Capacity
Calculating Battery Capacity

Solid State Systems

Semiconductor Fabrication
Hole Theory
Uses of Solid State Components
UPS Operation
VFD Operation

Motor Controllers

Common Types and Uses
Components and Their Functions
Controller Schematic Walkthroughs

Circuit Breakers

Principles of Operation
Circuit Breaker Construction
Components and Their Uses
Circuit Breaker Positions
Common Interlocks

Electrical Distribution System

Introduction to House Curves
Power Factors
Types of Power and Their Uses
Automatic Paralleling Operations
Manual Paralleling Operations