

Advanced Electrical I

Understanding the operation of motor control circuit equipment and developing effective troubleshooting skills will significantly reduce the length of an outage. This class presents a logical approach to troubleshooting electrical control systems. Resources for predicting the likelihood of equipment failure will be provided, and a basic program for clearly identifying problems. Common electrical devices and their operational requirements will be discussed. Diagram analysis for troubleshooting will be practiced. The proper use of safety equipment, knowledge of electrical hazards, and knowledge of how to respond in the event of an electrical disaster are absolutely essential for all electrical personnel. Anyone who works on or near power generation, transmission, or distribution systems should attend this course. Additionally, supervisors, managers, safety personnel, and those responsible for ensuring a safe work environment should attend this course.

Duration: 8 Hour Program

Electrical Fundamentals

- Series circuit
- Parallel circuit
- Series-Parallel Combination
- Resistance, Capacitance, & Inductance
- Ohm's Law
- Kirchoff's Law
- Solve for Voltage and Current
- Connect a given circuit
- Make measurements of Voltage and Current

Motor Fundamentals

- Single-phase
- Shaded poles
- Capacitor start and CSCR
- Three-phase
- Solving for synchronous speed
- Schematic diagrams and drawings
- Tracing and reading various diagrams
- Site-specific controllers (buckets)
- Wye and Delta Connections
- Single Speed/Voltage
- Dual Speed (high/low speed)

Motor Fundamentals (cont)

- Dual Voltage (high/low voltage)
- Reversing rotation (1 Φ /3 Φ motors)
- Continuity check
- Insulation resistance test
- Resistance testing and measurements

PPE and Safe work Practices

- Hand and Portable Tools
- De-Energizing Equipment
- Lockout/Tag out Procedures
- Working On or Near Energized Equipment
- Minimum Approach Distances
- Conductive Materials and Equipment
- Voltage and Current measurement
- Personal Grounding Installation
- How to conduct Live-Dead-Live test
- 6-point checks
- Opening circuits under load
 - Proper switching position

Circuit breakers

- ACB
- Molded type