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Basic Electrical Troubleshooting and Repair

Cost: $2499.00

This five-day program is used regularly by industrial plants and industries utilizing cross-training to increase productivity, effectiveness and flexibility in their workforce. It also provides an excellent foundation in electrical maintenance and troubleshooting for workers entering apprenticeship programs, leapfrogging them several years ahead in their knowledge, skills and abilities.

The successful student will receive a solid understanding of single and three phase electrical systems, installation procedures and troubleshooting techniques. The program places maximum emphasis on teaching troubleshooting and preventive maintenance skills combined with safe work practices and procedures. This program saved one client a year of OJT with increases in safety, quality and productivity.

Who Should Attend:
Millwrights, mechanics, and other trades who's jobs require a certain amount of cross training in industrial electrical systems. This also includes workers who may need simply to communicate effectively with electrical workers.

TEST ELECTRICAL CIRCUITS
Objective: Conduct basic measurements in an electrical circuit or system using a multimeter.
SUBTOPICS:

- Use Digital Multimeters
- Measure Voltage
- Measure Current
- Measure Power
- Evaluate Students

TEST ELECTRICAL COMPONENTS
Objective: Test electrical components and circuits using a DMM.
SUBTOPICS:

- Test Conductors
- Measure Circuit Resistance
- Test Insulation
- Evaluate Students

APPLY ELECTRICAL FUNDAMENTALS
Objective: Explain the basic principles of electricity and how circuits operate.
SUBTOPICS:

- Apply Ohms Law

- Apply Watts Law
- Apply Direct Current Theory
- Apply Alternating Current Theory
- Throubleshoot Electrical Circuits
- Evaluate Students

TROUBLESHOOT ELECTRICAL FAULTS
Objective: Troubleshoot electrical circuit and system faults.
SUBTOPICS:

- Identify System Problems
- Identify Maintenance Problems
- Identify Operating Problems
- Troubleshoot Circuit Problems
- Evaluate Students

OPERATE ELECTRICAL SYSTEMS
Objective: Inspect and evaluate the construction and operation of electrical circuits.
SUBTOPICS:

- Read Electrical Diagrams
- Identify Color Coding
- Plan Circuit Device Installations
- Inspect 120 Volt Circuit Installations
- Plan 120/240 Volt Circuit Installations
- Evaluate Transformer Applications
- Compare Three Phase Systems
- Evaluate Students

REPLACE SINGLE PHASE EQUIPMENT
Objective: Replace single phase electrical equipment following proper methods, techniques and applicable regulations.
SUBTOPICS:

- Inspect Circuit Simulator Boards
- Connect Wires
- Connect Cables
- Connect Cord Ends
- Connect Lights
- Connect Receptacles
- Connect Single Phase Motors
- Connect Single Phase Panels
- Evaluate Students

ARC FLASH AND LOW VOLTAGE SAFETY
Objective: Recognize the damage electricity can cause to the human body, identify common causes and follow safe work practices and procedures.
SUBTOPICS:

- Intro to the CSA Z462 standard.
- Avoid Electric Shocks.
- Avoid Arc Flash Hazards
- Select appropriate PPE

- Use Rubber Gloves Effectively.
- Isolate Circuits and Test Dead
- Safe Switching Methods

TROUBLESHOOT SINGLE PHASE SYSTEMS
Objective: Test, troubleshoot and diagnose single phase electrical circuit problems following proper methods and techniques.
SUBTOPICS:

- Troubleshoot Open Circuits
- Troubleshoot Short Circuits
- Evaluate Students

MAINTAIN PROTECTIVE SYSTEMS
Objective: the systems that protect people, equipment, materials and the environment.
SUBTOPICS:

- Describe Power Company Grounding
- Ground Electrical Systems
- Bond Electrical Equipment
- Ground Electrical Equipment
- Maintain Double Insulation
- Test Fuses
- Test Breakers
- Test GFCI's
- Evaluate Students

TEST CIRCUIT SAFETY AND CONTROL DEVICES
Objective: Test circuit safety, control and magnetic devices.
SUBTOPICS:

- Test Magnetic Devices
- Test Safety Devices
- Test Control Devices
- Evaluate Students

REPLACE THREE PHASE EQUIPMENT
Objective: Replace three phase electrical equipment following proper methods, techniques and applicable regulations.
SUBTOPICS:

- Mount System Simulator Boards
- Connect Three Phase Panel Boards
- Connect Three Phase Cables
- Connect Three Phase Manual Starters
- Connect Three Phase AC Motors
- Identify Three Phase Motor Failures
- Connect Three Phase Magnetic Starters
- Protect Three Phase Motors
- Evaluate Students

TROUBLESHOOT THREE PHASE SYSTEMS
Objective: Test, troubleshoot and diagnose three phase electrical circuit problems following proper methods and

techniques.
SUBTOPICS:

- Troubleshoot Power Circuit Faults
- Troubleshoot Control Circuit Faults
- Evaluate Students

"This course was well worth the time and money and gave a good foundation for solving problems. There was lots of real life issues covered as the instructor brought a lot of valuable experience to the class."

- Jody Beutler, Layne Christensen

"I got a better understanding of how different electrical systems work and got lots of hands on practical learning. My instructor was excellent and helped me personally, so I would remember and understand what I'd been taught."

- Paul Fitton, Champion Drilling

"I would recommend this course to anyone interested because you should have an understanding of troubleshooting in this line of work. The instructor was very good, gave detailed explanations and was always willing to help."

- Craig R Balfour, Brandt

"The practical portion of this course was excellent and kept interesting by our instructor. The troubleshooting and circuitry training made this a very worthwhile course."

- Don Dukart, Enbridge

"This was an informative course and covered a lot of aspects of electrical trade safety. The instructor was intelligent with a good sense of humor. I wish all electrical trades people had the opportunity to study this course."

- Yuri Piplenko, Millwright

"This is a good course to take to get a better understanding of what electricity actually does in a low voltage system. It also helped me understand which tools can help me while troubleshooting and what to expect when working with an electrician."

- Ron Book, Glenboro Mechanical