Training Program:

Troubleshooting Of Electrical Equipment & Control Systems

Introduction:

Accurate troubleshooting and subsequent repair of electrical equipment is necessary in today's sophisticated industrial environments to ensure continued efficient operation and productivity of the equipment.

Delegates are encouraged to raise queries both during and at any time after attending the course. Delegates are also encouraged to bring any specific issues that they may wish to raise to this course.

Who Should Attend?

Electrical Maintenance Engineers, Supervisors and Technicians working in electrical maintenance related.

Methodology

This interactive Training will be highly interactive, with opportunities to advance your opinions and ideas and will include;

- Lectures
- Workshop & Work Presentation
- Case Studies and Practical Exercise
- Videos and General Discussions

Accreditation:

BTS attendance certificate will be issued to all attendees completing a minimum of 80% of the total course duration.

Course Objectives:

At the end of this BTS training seminar, you will learn how to:

- Develop a structured approach to electrical troubleshooting using common terminology and to provide troubleshooting methods and solutions for various electrical equipment and control systems problems.
- Understanding of various test equipment used in electrical troubleshooting.
- Understanding of various electrical equipment and control systems design, functionality and failure modes.
- Work practices, which allow for successful troubleshooting including job plans.
- Successful troubleshooting techniques and 'hands on' experiences plus case studies and group problem solving exercises.
- Troubleshooting methods and solutions for various electrical equipment and control systems problems.

Course Outline

BASIC SKILLS FOR ELECTRICAL TROUBLESHOOTING

- Safety First
- OSHA Requirements Regarding Troubleshooting and Qualified Persons
- Using Electrical Drawings
- Using Meters and Circuit Measurements
- Developing a Logical, Systematic Approach to Troubleshooting

TROUBLESHOOTING CONTROL CIRCUITS

- Relays, Motor Starters and Control Devices
- Reading and Interpreting Ladder Diagrams
- Power Loss
- Control Circuit Industrial Applications
- Electric Motor Drives
- Solenoid-Operated Valves
- Heating Elements

TROUBLESHOOTING MOTORS

- Most Common Motor Problems
- Electrical Problems

- Testing Windings for Shorts, Opens and Ground Faults
- Phase Unbalance
- Mechanical Problems
- Phase Rotation Testing

TROUBLESHOOTING POWER DISTRIBUTION

- Wye and Delta Systems
- Overcurrent Protection
- Branch Circuits

TROUBLESHOOTING POWER QUALITY PROBLEMS

- Sources of Power Quality Problems
- Test Equipment for Troubleshooting Power Quality Problems
- Harmonics

TROUBLESHOOTING LIGHTING CIRCUITS

- Lighting Terminology
- Types of Lighting Circuits
- Incandescent Lighting
- Fluorescent Lighting
- HID Lighting

TROUBLESHOOTING PROGRAMMABLE LOGIC CONTROLLERS (PLCs)

- Overview of PLCs
- Reading PLC Ladder Diagrams
- Status Indicators and Error Codes
- Force and Disable
- Startup Procedures

TROUBLESHOOTING VARIABLE FREQUENCY DRIVES (VFDs)

- VFD Terminology
- VFD Basic Operation
- Components
- Pulse Width Modulation
- Types of VFDs
- Common Problems and Corrective Action

ELECTRICAL PREVENTIVE MAINTENANCE

- Why Perform Electrical Maintenance
- Overview of an Electrical Maintenance Program
- Building Your Own Walk-Through Inspection Checklist