



POWER MAINTENANCE - Telecom Power Maintenance Methods

Length: 4.5 Days

Overview

POWER MAINTENANCE provides a necessary insight into the critical aspects associated with maintaining and understanding the telecommunications power systems. The lessons provide instruction on the various power systems employed in telecommunications facilities.

Throughout the course the lessons focus on the key power system components vital to maintaining smooth power service continuity; from the commercial power and standby power; through the DC power systems; batteries, rectifiers, main power boards, monitors and controllers, and distribution system.

Lessons throughout the course stress the safety elements required in connection with the operation and maintenance of telecommunications power systems. The lessons also provide an understanding of AC and DC power system operation, and discuss delivery of power to the telecommunications equipment during normal conditions when commercial power is available and during emergency conditions while commercial power is unavailable.

You will obtain the knowledge necessary to perform routine and corrective maintenance on telecommunications power systems, along with the ability to identify potential trouble conditions before they lead to service interruptions. This course contains hands-on activities with demonstrations that reinforce the concepts presented in the classroom in accordance with any client restrictions.

Who should attend: POWER MAINTENANCE is recommended for all personnel responsible for oversight of telecommunications power systems. This would include maintenance technicians, as well as engineers and managers who can benefit from the topics discussed.

Throughout the course knowledge assessments are used to reinforce the topics discussed. At the completion of the course you will be tested to document your knowledge. Successful completion of this test will earn TPI Trainers Certification.

Note: This course is not available as a public session offering due to the need to demonstrate maintenance methods on functioning power systems. Therefore, it is necessary to have access to a functioning power room as part of the training.

Customization: POWER MAINTENANCE depicts the current industry standards and can be customized to meet the needs of your specific work group. To discuss the need to customize this course you can contact Vicki Johnson by calling 1-630-607-9302.

Course Outline

- Power Systems Overview
 - commercial power
 - AC standby power
 - DC power systems
 - load equipment
 - grounding

- Safety precautions for:
 - periodic maintenance
 - repair maintenance
 - ESD events
 - battery maintenance
 - working in a “live” power environment
 - use of insulated tools
 - insulation methods

- Impact on telecommunications equipment
 - Method of Procedure (MOP)
 - Service Continuity
 - company required periodic maintenance

- Function of AC Power Systems
 - commercial power`
 - standby generators
 - inverters
 - UPS

- AC Power System Components
 - AC switchboard
 - transfer switches
 - paired breakers
 - standby generators
 - fuel
 - ventilation
 - engine fluids
 - controls and safeties
 - alarms

- Functions of DC Power Systems
 - equipment voltage limits
 - high
 - low
 - minimum battery voltage
 - voltage drop application

- DC Power System Components
 - batteries
 - rectifiers
 - controllers
 - converters
 - secondary power distribution bays
 - power distribution loads

- Batteries
 - Flooded batteries
 - lead calcium
 - lead-antimony
 - pure lead
 - Round Cell post corrosion inspections
 - tests / measurements
 - observations
 - Valve Regulated Lead-Acid (VRLA)
 - AGM
 - gelled
 - tests / measurements
 - observations
 - thermal runaway
 - occurrences
 - detection methods
 - Corrective Maintenance
 - Individual Cell Replacement
 - single string
 - multi-string

- Rectifiers
 - technologies
 - silicon controlled (SCR)
 - controlled ferro-resonant (ferro)
 - switched-mode (SMR)
 - components
 - observations
 - adjustments
 - corrective maintenance

- Controllers and Monitors
 - controls
 - thresholds
 - alarms
 - corrective maintenance
 - remote access
 - monitoring
 - load shunts
 - ancillary systems

- Application of circuit protection devices:
 - fuses
 - circuit breakers
 - protection co-ordination
 - power distribution loads

- Grounding Methods
 - OPGPB
 - CO ground system
 - power plant
 - grounding applications
 - CBN (Common Bonding Network)
 - IBN (Isolated Bonding Network)

- Testing and Acceptance
 - functional
 - operational
 - documentation

Class Exercise:

This course contains hands-on activities with demonstrations that reinforce the concepts presented in the classroom in accordance with any client restrictions regarding the activities listed below:

- Test alarms with Network Operations Center.
- Operate the standby generator with office load connected in accordance with local guidelines.
- Measure power system voltage and adjust rectifier output voltages as necessary.
- Adjust rectifier current limits as necessary.
- Verify that alarm thresholds operate properly.
- Calibrate rectifier, plant and load meters as required.
- Take battery voltage and passive measurements.

Take Home Materials:

A complete course manual will be provided. This manual will be a valuable reference as you return to your job.

Who Can Benefit:

This course is a benefit for individuals who are responsible for the maintenance and operation of telecommunications power systems. These individuals include telecommunications maintenance technicians, as well as engineers and managers who can benefit from the topics discussed.