PWR-ENG-DC - Telecom DC Power Engineering

Length: 4.5 Days

Overview
PWR-ENG-DC provides instruction on engineering all aspects of DC Power Systems, from new systems to augmenting existing power systems. The lessons include proven methods to forecast power plant growth based on the ever-changing forecasts of the telecommunications equipment additions.

Throughout the course, engineering strategies are discussed on methods required to cost effectively provision the power system. These strategies include effective measures to provision; power plant infrastructure, rectifiers, batteries, circuit protection and power distribution cables.

Power cabling can be the most expensive aspect to provisioning power in a telecommunications facility. Understanding the importance of relationship between voltage drop and battery capacity can significantly reduce the cost of provisioning power cables for telecommunications operators. The techniques addressed in Telecom DC Power Engineering course provides the student with the tools required to effectively provision the power distribution network.

While power systems do not directly provide telecommunications services to customers, the telecommunications equipment does rely on a dependable power system to ensure service continuity during normal and emergency conditions. A properly engineered power system will ensure service continuity during loss of commercial and standby power sources and in the event of failures of fuses or circuit breakers

PWR-ENG-DC contains case problems and in-class exercises to reinforce the engineering methods presented in the classroom.

Who should attend: PWR-ENG-DC is recommended for personnel responsible for the engineering, provisioning and quality acceptance of power system elements. Engineers, project mangers, auditors and planners, as well as others who may have responsibility for equipment installation over site 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.

Customization: PWR-ENG-DC 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

- Safety precautions:
  - general installation
  - ESD
  - installation and maintenance batteries
  - working on “live” power

- Telecommunications Equipment Impacts
  - MOP (Method of Procedure)
  - Service Continuity

- Protection of Equipment
  - General insulation practices
  - Insulated tools

- Classes of AC Power
  - commercial
  - back-up generators
  - inverters
  - UPS (Uninterruptible Power Systems

- DC Power Systems Function
  - equipment voltage limits
  - minimum voltages
  - voltage drop requirements

- The Various Components
  - batteries
  - rectifiers
  - controllers
  - converters
  - secondary power distribution bays
  - power distribution cable

- Flooded Batteries
  - lead calcium
  - lead-antimony
  - pure lead

- VRLA (Valve Regulated Lead-Acid)
  - AGM
  - gelled

- Thermal Runaway
  - How does it occur?
  - How to detect it?

- Types of rectifiers
  - SCR (silicon controlled)
  - Ferro (ferroresonant)
  - SMR (High Frequency)

- Circuit Protection Devices
  - fuses
  - circuit breakers
  - fuse / circuit breaker co-ordination
  - power cabling

- Proper Grounding Methods
  - grounding system
  - CBN (Common Bonding Network)
  - IBN (Isolated Bonding Network)
  - power plant grounding

- Testing & Acceptance Procedures
  - functional
  - operational
  - documentation

Take Home Materials:
You will receive a comprehensive course manual with numerous examples, formulas and diagrams that will be useful as a reference back on your job.

Who Can Benefit:
Telecommunications personnel (engineers, planners, supervisors and technicians) and installation vendors that are responsible provisioning DC power systems, ensuring battery reserve times and sizing DC distribution cables, fuses and circuit breakers within the telecommunications facility. Individuals, who are responsible for power system acceptance and maintenance will also benefit from this course.

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