TVPPA Education & Training

Certified Power Technology (CPT) - TVPPA's Certified Power Technology (CPT) program supplements the formal education of engineers not schooled in power theory and methodology. It is also valuable for engineering technicians and associate engineers who have limited electrical power education. The CPT program addresses technological changes within the electric utility industry. Additionally, the program is designed for distributors who have acquired substations and transmission lines.

Core:

Power System Theory- This workshop provides participants with the theory of generating an alternating current and the application and effects of resistors, inductors, and capacitors. Also included are the theory, construction, and use of vector diagrams; series, parallel, and series-parallel circuits; power factor calculation and correction; three-phase system theory and application; and the theory and use of transformers in single phase and three-phase systems. Attendees are assigned practical problems to solve during class, with a group discussion of solutions. Following a review of the basic formulae and equations of power electrical engineering, group activities and problem-solving sessions provide overviews for per unit system representation, symmetrical component and fault current calculations, equipment interruption theory and calculations, and transformer capacity calculations.

Power System Equipment: Functions & Maintenance- This workshop covers features of power system equipment, methods of construction, insulation systems, and equipment applications. Participants study circuit breakers and switches, reclosers and sectionalizers, fuses, transformers, voltage regulators, capacitor banks, surge arrestors, stand-by batteries and grounding.

System Configuration, Switching & Troubleshooting- Participants gain an understanding of electric system components, substation drawings, switching procedures, substation troubleshooting techniques, and the latest grounding procedures for safety. Instructional methods include presentations, group discussion, practical exercises, video, and the use of electrical drawings

Instrumentation & Metering- This workshop covers the theory and methodology of making electrical measurements on a power system. Included are instrument transformers, meter construction, calibration techniques for instruments, and safety considerations. New technology in metering reactive loads is also covered. Practical, hands-on exercises in electrical measurements aid in understanding. A current copy of the NESC will be required for the class.

Relaying & System Protection- This course covers the philosophy and practical guidelines for electrical protection of distribution systems. Participants gain an understanding of distribution protection methods, basic fault current calculations and analysis, fuses and applications, relay types and applications, lightning protection, and methods used to calculate the settings of various protection relays. Coordination of protection equipment is also discussed.